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| **World Meteorological Organization**  **Inter-Commission Coordination Group On WIGOS/Task Team on WIGOS Metadata**  **Sixth Session** Zurich, Switzerland, 27-29 November 2017 | **TT-WMD-6/Doc.5.4** |
| Submitted by: Secretariat  22.11.2017  **Version 4** |

# 

# CHANGES/UPDATES TO CODE TABLES/ 5.4

(Submitted by Jörg Klausen)

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| **Summary and purpose of document**  The document presents a list of changes to the content of some WMDS code tables and the introduction of new concept recommended for approval to the TT-WMD.  Notice that the term **WMO306\_CD**, used in the present document,refers to thecode which is/ or will be used in the code registry.  The text in red highlights changes with respect to the CBS document and the code registry.  Note: Version 3 was discussed during the meeting. This version 4 of the document was revised after the meeting. Annex (5.4.4.3) documents the recommendations of the meeting. The status of the table is labelled next to the title in the document (*pending*; *approved*; *approved but incomplete*) |

**Action proposed**

TT-WMD-6 is requested to take note of the document.

**References:**

* WMO-No. 1183\_CBS-16\_2016 document: <https://library.wmo.int/opac/doc_num.php?explnum_id=3505>
* WMO codes registry: <https://codes.wmo.int/>
* GAWSIS-OSCAR DB

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# 5.4.1 Proposed additional concepts to the code registry

Problem: some entries in the oscar DB and in use in the application are neither available in a WMDS code list, nor another public code list referred in the XSD.

Suggestion: if likely also used outside oscar, introduce these concepts as new codelists in the code registry.

### 5.4.1.2 Program function *[pending]*

Code table: 10-02 (category 10: contact)

Code table title: Functions of an individual that relate to organizations, programs or networks

| **#** | **ID** | **Short name** | **Definition** | **WMO306\_CD** |
| --- | --- | --- | --- | --- |
|  | 1 | GAW SSC | Member of Scientific Steering Committee of the CAS OPAG EPAC | gawSSC |
|  | 2 | SAG O3 | Member of GAW Science Advisory Group for Ozone | gawSAGO3 |
|  | 3 | SAG GG | Member of GAW Science Advisory Group for Greenhouse Gases | gawSAGGG |
|  | 4 | SAG RG | Member of GAW Science Advisory Group for Reactive Gases | gawSAGRG |
|  | 5 | SAG Aerosols | Member of GAW Science Advisory Group for Aerosols | gawSAGAer |
|  | 6 | SAG TAD | Member of GAW SAG Total Atmospheric Deposition | gawSAGTAD |
|  | 7 | SAG UV | Member of GAW Science Advisory Group for UV | gawSAGUV |
|  | 8 | SAG GURME | Member of GAW Science Advisory Group for GURME | gawSAGGURME |
|  | 9 | ET-WDC | Member of GAW Expert Team on World Data Centres | gawETWDC |
|  | 10 | QA/SAC | GAW Quality Assurance / Scientific Activity Centre | gawQASAC |
|  | 11 | WCC | GAW World Calibration Centre | gawWCC |
|  | 12 | RCC | GAW Regional Calibration Centre | gawRCC |
|  | 13 | CCL | GAW Central Calibration Laboratory | gawCCL |
|  | 14 | WDC | GAW World Data Centre | gawWDC |
|  | 15 | CDC | Data Centre of a GAW Contributing Network | gawCDC |
|  | 17 | CHAIR | Chairperson | chair |
|  | 18 | PI | Chief Researcher, Principal Investigator | principalInvestigator |
|  | 19 | DACM | Global Data Center (distribution) manager | gdacMgr |
|  | 20 | PM | Program manager | progMgr |
|  | 21 | TE | Technical Expert on instrumentation (engineer) | techExpert |
|  | 22 | PGC | Data manager (GTS) | progGTSCoord |
|  | 23 | MANUF | Platform provider or manufacturer for a programme | manuf |
|  | 24 | DM | Data management delayed mode quality control operator | delayedModeOpr |
|  | 25 | OP | Operation at sea manager | operMgr |
|  | 27 | VCHAIR | Vice chairperson | viceChair |
|  | 28 | TC | JCOMMOPS technical coordinator | techCoord |
|  | 29 | SIOC | IOC secretariat | iocSecretariat |
|  | 30 | SWMO | WMO secretariat | wmoSecretariat |
|  | 31 | CSC | Coordinator, Science & Communication | coordSciComm |

Long names in annex 1

### 5.4.1.3. Station classes *[pending]*

Problem: The station class concept is not yet in the WMDS, but used in OSCAR/Surface for historic reasons. At present, there are some inconsistencies in scope: some “classes” refer to the observed variable (UpperWind) and others to the mean to observe the variable (radiosonde), yet others are highly subjective (M: mountain station).

Suggestion: Need to agree on the concept of station class and what the purpose of a station class should be, then scrutinize the entries.

Code table: TBD

Code table title: Station classes

|  |  |  |  |
| --- | --- | --- | --- |
| **ID** | **Name** | **Definition** | **WMO306\_CD** |
| 1 | A | Aerodrome | aerodrome |
| 2 | AGRIMET | Agrometeorological station | agrimetStation |
| 3 | C | Coastal station | coastalStation |
| 4 | HD/A | Helideck, Offshore | helideckOffshore |
| 5 | HU/FC | Hurricane, tropical cyclone or typhoon forecast centre | hurricaneForecastCentre |
| 6 | HY/A | Seaplane base | seaplaneBase |
| 7 | L | Lightship | lightship |
| 8 | LH | Lighthouse | lighthouse |
| 9 | M | Mountain station | mountainStation |
| 10 | R/FC | River forecast centre | riverForecastCentre |
| 11 | TI/WA/FC | Tidal wave forecast centre | tidalWaveForecastCentre |
| 12 | WN | Upper-wind station (radiosonde observations made by using navigation aids (NAVAID)) | upperWindNAVAID |
| 13 | WP | Wind Profiler | windProfiler |
| 14 | WR | Upper-wind station (observations made by radar) | upperWindRadar |
| 15 | WT | Upper-wind station (observations made by radiotheodolite) | upperWindRadioTheodolite |
| 16 | WTR | Upper-wind station (observations made by radiotheodolite/radar composite method) | upperWindComposite |
| 18 | R | Radiosonde station (observation atmospheric pressure, temperature, humidity in the upper-air) | radiosondeSation |
| 17 | RADAR | Weather radar | weatherRadar |

### 5.4.1.4. Geometry features *[approved]*

Code table: 1-06 (category 1: observed variable)

Code table title: Geometry features

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| # | **ID** | **Name** | **Definition** | **WMO306\_CD** |
|  | 1 | Point | a zero-dimensional feature | point |
|  | 2 | Total column | the integral of the vertical distribution of a feature | totColumn |
|  | 3 | Vertical profile | synonymous to vertical distribution of a feature | verticalPoint |
|  | 4 | Line | a one-dimensional feature, either a straight line, or a curve; synonmous with trajectory | lineString |
|  | 5 | Area | a two-dimensional feature, either a plane, or some other surface | area |
|  | 6 | Volume | a three-dimensional feature | volume |
|  | 7 | (unspecified) | (null) | unspecified |

### 5.4.1.4. Direction of view table in OSCAR *[approved but incomplete]*

Problem: This table is not explicitly mentioned in the WMDS, but serves well to better describe photos, which is part of WMDS category 4 Station Information.

Code table: 4-05-01 (category 4: environment; 4-05 Site information)  
Code table title: Direction of view for picture

| **#** | **Name** | **Definition** | **WMO306\_CD** |
| --- | --- | --- | --- |
|  | N | View from North | viewFromN |
|  | NE | View from North east | viewFromNE |
|  | E | View from East | viewFromE |
|  | SE | View from South east | viewFromSE |
|  | S | View from South | viewFromS |
|  | SW | View from South west | viewFromSW |
|  | W | View from West | viewFromW |
|  | NW | View from North west | viewFromNW |

# 5.4.2 Proposed updates/changes to existing vocabularies (WMDS reference tables) in the code registry

### 5.4.2.1 Programs/networks *[pending]*

Suggestion: Addition of some definitions (in red), one new entry: MOZAIC, modification of WMO306\_CD.  
The formatting of the WMO306 code follow the rules:

* Program abbreviations are in capital letters, otherwise camelcase is used (i.e. GAWABOS, coSponsored)
* If a non-abbreviation is preceeded by an abbreviation the first capital letter is replaced by a lower case one. (i.e NRTpilot)
* WMO306\_CD must be unique values in a code list independently of the case used
* entries.

Code table: 2-02

Code table title: Programme/Network affiliation

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **#** | **ID** | **Name** | **Definition** | **WMO306\_CD** |
|  | 2 | GCOS | GCOS | GCOS |
|  | 9 | GRUAN | GRUAN | GRUAN |
|  | 10 | GSN | GSN | GSN |
|  | 11 | GUAN | GUAN | GUAN |
|  | 62 | GOOS | GOOS | GOOS |
|  | 13 | Argo | Argo | argo |
|  | 73 | ARGO ARGENTINA | ARGO ARGENTINA | argoArgentina |
|  | 74 | ARGO AUSTRALIA | ARGO AUSTRALIA | argoAustralia |
|  | 75 | ARGO AUSTRALIA EQ. | ARGO AUSTRALIA EQ. | argoAustraliaEq |
|  | 76 | ARGO AWI | ARGO AWI | argoAWI |
|  | 77 | ARGO BRAZIL | ARGO BRAZIL | argoBrazil |
|  | 318 | ARGO BRAZIL NAVY | ARGO BRAZIL NAVY | argoBrazilNavy |
|  | 78 | ARGO BSH | ARGO BSH | argoBSH |
|  | 79 | ARGO CANADA | ARGO CANADA | argoCanada |
|  | 80 | ARGO CHILE | ARGO CHILE | argoChile |
|  | 81 | ARGO CHINA | ARGO CHINA | argoChina |
|  | 82 | ARGO CHINA SOA | ARGO CHINA SOA | argoChinaSOA |
|  | 83 | ARGO COSTA RICA | ARGO COSTA RICA | argoCostaRica |
|  | 84 | ARGO DENMARK | ARGO DENMARK | argoDenmark |
|  | 85 | ARGO ECUADOR | ARGO ECUADOR | argoEcuador |
|  | 86 | ARGO EQ. AOML | ARGO EQ. AOML | argoEqAOML |
|  | 87 | ARGO EQ. AWI | ARGO EQ. AWI | argoEqAWI |
|  | 88 | ARGO EQ. BSH | ARGO EQ. BSH | argoEqBSH |
|  | 89 | ARGO EQ. CHINA | ARGO EQ. CHINA | argoEqChina |
|  | 90 | ARGO EQ. ESP-OMZ | ARGO EQ. ESP-OMZ | argoEqESPOMZ |
|  | 91 | ARGO EQ. FERHRI | ARGO EQ. FERHRI | argoEqFERHRI |
|  | 92 | ARGO EQ. FSU | ARGO EQ. FSU | argoEqFSU |
|  | 93 | ARGO EQ. HNFRI | ARGO EQ. HNFRI | argoEqHNFRI |
|  | 94 | ARGO EQ. IFM | ARGO EQ. IFM | argoEqIFM |
|  | 95 | ARGO EQ. IFM2 | ARGO EQ. IFM2 | argoEqIFM2 |
|  | 96 | ARGO EQ. IRELAND | ARGO EQ. IRELAND | argoEqIreland |
|  | 97 | ARGO EQ. JAMSTEC | ARGO EQ. JAMSTEC | argoEqJamstec |
|  | 98 | ARGO EQ. JMA | ARGO EQ. JMA | argoEqJMA |
|  | 99 | ARGO EQ. NAVOCEANO | ARGO EQ. NAVOCEANO | argoEqNavoceano |
|  | 100 | ARGO EQ. NDBC | ARGO EQ. NDBC | argoEqNDBC |
|  | 101 | ARGO EQ. NIPR | ARGO EQ. NIPR | argoEqNIPR |
|  | 102 | ARGO EQ. NRIFS | ARGO EQ. NRIFS | argoEqNRIFS |
|  | 103 | ARGO EQ. OIST | ARGO EQ. OIST | argoEqOIST |
|  | 104 | ARGO EQ. ORI | ARGO EQ. ORI | argoEqORI |
|  | 105 | ARGO EQ. PMEL | ARGO EQ. PMEL | argoEqPMEL |
|  | 106 | ARGO EQ. POMME | ARGO EQ. POMME | argoEqPomme |
|  | 107 | ARGO EQ. SAGE | ARGO EQ. SAGE | argoEqSage |
|  | 108 | ARGO EQ. TNFRI | ARGO EQ. TNFRI | argoEqTNFRI |
|  | 109 | ARGO EQ. TSK | ARGO EQ. TSK | argoEqTSK |
|  | 110 | ARGO EQ. TU | ARGO EQ. TU | argoEqTU |
|  | 111 | ARGO EQ. UH | ARGO EQ. UH | argoEqUH |
|  | 112 | ARGO EQ. UHH | ARGO EQ. UHH | argoEqUHH |
|  | 113 | ARGO EQ. UM-OSU | ARGO EQ. UM-OSU | argoEqUMOSU |
|  | 114 | ARGO EQ. VOCALS | ARGO EQ. VOCALS | argoEqVocals |
|  | 115 | ARGO EQ. WHOI | ARGO EQ. WHOI | argoEqWHOI |
|  | 116 | ARGO FINLAND | ARGO FINLAND | argoFinland |
|  | 117 | ARGO GABON | ARGO GABON | argoGabon |
|  | 118 | ARGO GERMANY | ARGO GERMANY | argoGermany |
|  | 119 | ARGO GREECE | ARGO GREECE | argoGreece |
|  | 120 | ARGO IFM-GEOMAR | ARGO IFM-GEOMAR | argoIFMGeomar |
|  | 121 | ARGO INDIA | ARGO INDIA | argoIndia |
|  | 122 | ARGO IRELAND | ARGO IRELAND | argoIreland |
|  | 123 | ARGO ITALY | ARGO ITALY | argoItaly |
|  | 124 | ARGO JAMSTEC | ARGO JAMSTEC | argoJamstec |
|  | 125 | ARGO JMA | ARGO JMA | argoJMA |
|  | 126 | ARGO KENYA | ARGO KENYA | argoKenya |
|  | 127 | ARGO KIOST | ARGO KIOST | argoKiost |
|  | 128 | ARGO LEBANON | ARGO LEBANON | argoLebanon |
|  | 129 | ARGO MAURITIUS | ARGO MAURITIUS | argoMauritius |
|  | 130 | ARGO MEX-CO-US | ARGO MEX-CO-US | argoMexCoUS |
|  | 131 | ARGO MEXICO | ARGO MEXICO | argoMexico |
|  | 132 | ARGO NETHERLANDS | ARGO NETHERLANDS | argoNetherlands |
|  | 133 | ARGO NEW ZEALAND | ARGO NEW ZEALAND | argoNewZealand |
|  | 134 | ARGO NIMR/KMA | ARGO NIMR/KMA | argoMIMRKMA |
|  | 135 | ARGO NORWAY | ARGO NORWAY | argoNorway |
|  | 136 | ARGO PMEL | ARGO PMEL | argoPMEL |
|  | 137 | ARGO POLAND | ARGO POLAND | argoPoland |
|  | 138 | ARGO RUSSIA | ARGO RUSSIA | argoRussia |
|  | 139 | ARGO SAUDI ARABIA | ARGO SAUDI ARABIA | argoSaudiArabia |
|  | 140 | ARGO SIO | ARGO SIO | argoSIO |
|  | 141 | ARGO SIO EQ (ASIRI) | ARGO SIO EQ (ASIRI) | argoSIOEqASIRI |
|  | 142 | ARGO SIO EQ. (OKMC) | ARGO SIO EQ. (OKMC) | argoSIOEqOKMC |
|  | 143 | ARGO SOUTH AFRICA | ARGO SOUTH AFRICA | argoSouthAfrica |
|  | 144 | ARGO SPAIN | ARGO SPAIN | argoSpain |
|  | 145 | ARGO SRI LANKA | ARGO SRI LANKA | argoSriLanka |
|  | 146 | ARGO TWR ENGINEERING | ARGO TWR ENGINEERING | argoTWREng |
|  | 147 | ARGO UK | ARGO UK | argoUK |
|  | 148 | ARGO UK BIO | ARGO UK BIO | argoUKBIO |
|  | 149 | ARGO UK EQ. | ARGO UK EQ. | argoUKEq |
|  | 150 | ARGO UW | ARGO UW | argoUW |
|  | 151 | ARGO UW EQ. | ARGO UW EQ. | argoUWEq |
|  | 152 | ARGO UW-APL EQ. | ARGO UW-APL EQ. | argoUWAplEq |
|  | 153 | ARGO UW-MBARI EQ. | ARGO UW-MBARI EQ. | argoUWMbariEq |
|  | 154 | ARGO UW-SOCCOM EQ. | ARGO UW-SOCCOM EQ. | argoUWSoccomEq |
|  | 155 | ARGO UW-SPURS EQ. | ARGO UW-SPURS EQ. | argoUWSpursEq |
|  | 156 | ARGO UW-UA EQ. | ARGO UW-UA EQ. | argoUWUAEq |
|  | 157 | ARGO WHOI | ARGO WHOI | argoWHOI |
|  | 158 | ARGO WHOI EQ. IR | ARGO WHOI EQ. IR | argoWHOIEqIR |
|  | 159 | ARGO WHOI-MRV EQ. | ARGO WHOI-MRV EQ. | argoWHOIMRVEq |
|  | 169 | BULARGO | BULARGO | BULARGO |
|  | 175 | CORIOLIS | CORIOLIS | coriolis |
|  | 176 | CORIOLIS-BIOARGO |  | coriolisBioargo |
|  | 177 | CORIOLIS-CANOA |  | coriolisCanoa |
|  | 178 | CORIOLIS-CONGAS |  | coriolisCongas |
|  | 179 | CORIOLIS-DRAKE | Argo South West Atlantic | coriolisDrake |
|  | 180 | CORIOLIS-EGEE |  | coriolisEGEE |
|  | 181 | CORIOLIS-EGYPT |  | coriolisEqypt |
|  | 182 | CORIOLIS-FLOPS | CORIOLIS project for FLOtteurs du Pacifique Sud-es | coriolisFlops |
|  | 183 | CORIOLIS-FLOSTRAL |  | coriolisFlostral |
|  | 184 | CORIOLIS-FNOB-JCOMMOPS | CORIOLIS project under JCOMMOPS initiative, within a larger cooperation between the Fundació Navegació Oceànica Barcelona (FNOB) | coriolisFNOBJCOMMOPS |
|  | 185 | CORIOLIS-FRONTALIS |  | coriolisFrontalis |
|  | 186 | CORIOLIS-GOOD HOPE |  | coriolisGoodHope |
|  | 187 | CORIOLIS-OVIDE |  | coriolisOvide |
|  | 188 | CORIOLIS-PIRATA |  | coriolisPirata |
|  | 189 | CORIOLIS-PREVIMER |  | coriolisPrevimer |
|  | 190 | CORIOLIS-PROSAT |  | coriolisProsat |
|  | 191 | CORIOLIS-REMOCEAN |  | coriolisRemocean |
|  | 320 | CORIOLIS-REMOCEAN EQ. |  | coriolisRemooceanEq |
|  | 192 | CORIOLIS-SPICE |  | coriolisSpice |
|  | 193 | CORIOLIS-TRACK |  | coriolisTrack |
|  | 196 | DEKOSIM | DEKOSIM is an interdisciplinary research project funded by the Turkish Ministry of Development. | DEKOSIM |
|  | 198 | E-AIMS | Euro-Argo Improvements for the GMES Marine Service | eAIMS |
|  | 207 | EUROARGO | European contribution to Argo program | EUROARGO |
|  | 213 | GYROSCOPE | GyroScope project is aimed to develop a European component of a global in situ observing system of ocean variability in the North Atlantic, as a contribution to the Argo project. | gyroscope |
|  | 228 | ITP-DAMOCLES |  | ITPdamocles |
|  | 229 | ITP-WHOI |  | ITPWHOI |
|  | 234 | MEDARGO |  | MEDARGO |
|  | 235 | MERIDIAN GOODHOPE |  | meridianGoodHope |
|  | 236 | MERSEA |  | MERSEA |
|  | 240 | NAOS-FRANCE | Novel Argo Ocean Observing System (NOAS) France project | NAOSfrance |
|  | 70 | AOML | Atlantic Oceanographic and Meteorological Laboratory (AOML) Drifting Buoy | AOML |
|  | 71 | AOML-E-SURFMAR | Atlantic Oceanographic and Meteorological Laboratory E\_SURFMAR (EUMETNET Composite Observing System (EUCOS)Surface Marine Programme) Drifter Buoy Program | AOMLeSurfmar |
|  | 330 | AOML-MF DB | Atlantic Oceanographic and Meteorological Laboratory MeteoFrance Drifter Buoy (AOML-MF DB) Program | AOMLMFDB |
|  | 72 | APL-UW | Applied Physics Laboratory University of Washington program | APLUW |
|  | 161 | AWI-DB | Alfred Wagner Institute Drifter Buoy program | AWIDB |
|  | 162 | BOM DB | Bureau of Meterology (BOM) Drifting Buoy program | BOMDB |
|  | 163 | BOM-TSU | Bureau of Meterology (BOM) Tsunameter Buoy | BOMTSU |
|  | 164 | BP INC |  | BPINC |
|  | 165 | BRAZIL PNBOIA-INPE | Programa Nacional de Boias (PNBOIA) is the brazilian contribution to the Global Ocean Observation System (GOOS). Instituto Nacional de Pesquisas Espacias (INPE) | brazilPNBOIAINPE |
|  | 166 | BSH-DWD-FIXED |  | BSHDWDfixed |
|  | 167 | BSH-DWD-MB |  | BSHDWDMB |
|  | 168 | BSH-MB |  | BSHMB |
|  | 170 | CANDHIS | CANDHIS Wave buoys (CETMEF/Meteo France - (Centre d'Archivage National de Données de Houle In-Situ) ) | CANDHIS |
|  | 171 | CARICOOS | CarICOOS is the observing arm of the Caribbean Regional Association for Integrated Coastal Ocean Observing (CaRA) | CARICOOS |
|  | 172 | CARIOCA | CARIOCA SOUTHERN OCEAN | CARIOCA |
|  | 173 | CDIP | Coastal Data Information Program (CDIP) | CDIP |
|  | 174 | COLOMBIA-TSU | Colombia Tsunameter buoy | colombiaTSU |
|  | 194 | CORMP-NC | Coastal Ocean Research and Monitoring Program -NC | CORMPNC |
|  | 195 | DBCP |  | DBCP |
|  | 197 | DFO DB | Department of Fisheries and Oceans Drifter Buoys | DFODB |
|  | 205 | EC DB | Canada Drifting Buoys | ECDB |
|  | 206 | EC MB | Canadian Moored Buoy Programme (MSC) | ECMB |
|  | 321 | EC-IABP | International Arctic Buoy Program | ECIABP |
|  | 200 | E-SURFMAR | EUMETNET Composite Observing System (EUCOS)Surface Marine Programme | eSurfmar |
|  | 201 | E-SURFMAR-IRISH IMI | EUMETNET Composite Observing System (EUCOS)Surface Marine Programme and IRISH MARINE INSTITUTE (EUROPEAN CONTRIBUTION) | eSurfmarIrishIMI |
|  | 202 | E-SURFMAR-NOAA |  | eSurfmarNOAA |
|  | 203 | E-SURFMAR-UK MB | UKMO moored buoy programme | eSurfmarUKMB |
|  | 204 | E-SURFMAR-UK/FR MB |  | eSurfmarUKFRMB |
|  | 208 | EUROSITES PLANIER |  | EurositesPlanier |
|  | 209 | FERHRI-TSU | Far Eastern Regional Hydrometeorological Research Institute Tsunameter Buoys | FERHRITSU |
|  | 210 | GERMANY MB | KIEL GEK BUOY | germanyMB |
|  | 211 | GLOSCAL | GLOSCAL is a French Project sponsored by ESA , which aims to calibrate and validate sea surface salinity (SSS) measurements carried out by satellite (e.g. SMOS and Aquarius). | GLOSCAL |
|  | 212 | GREECE MB | Moored buoys in the Greek Poseiden Network | greeceMB |
|  | 322 | HK-OBS-DB | Hong Kong Observatory Drifter Buoy | HKOBSDB |
|  | 214 | IABP | International Arctic Buoy Programme (IABP) | IABP |
|  | 215 | IABP CANADA | ICE FLOE DRIFT | IABPcanada |
|  | 216 | IABP NIC |  | IABPNIC |
|  | 217 | IABP US | Coordination/data management of the Intl Arctic Buoy program | IABPUS |
|  | 218 | IABP-EC |  | IABPEC |
|  | 219 | IABP-UW | Intl Arctic Buoy Program (IABP) University of Washington (UW) | IABPUW |
|  | 220 | IBPIO | International Buoy Programme for the Indian Ocean (IBPIO) | IBPIO |
|  | 221 | INCOIS-TSU | Indian National Centre for Ocean Information Services Tsunameter buoys | INCOISTSU |
|  | 222 | INDIA NIO | Collection of METOCEAN data in India Ocean | INDIANIO |
|  | 223 | INDIA NIO-TSU | NIO Tsunameter buoys | indiaNIOTSU |
|  | 224 | INDIA-NIOT | Indian Ocean Observing Program | indiaNIOT |
|  | 225 | INOCAR-TSU | Instituto Oceanográfico de la Armada Tsunameter buoys | INOCARTSU |
|  | 226 | ITALY DB | Italian Drifting Buoys (EXPARGOS) | italyDB |
|  | 227 | ITALY-OGS |  | italyOGS |
|  | 230 | JMA DB | JMA Drifting Buoy | JMADB |
|  | 231 | JMA-TSU | JMA Tsunameter buoys | JMATSU |
|  | 232 | KMA MB | Korea Meteorological Department Moored Buoy programme | KMAMB |
|  | 233 | LOCEAN | Laboratory of Oceanography and Climate: Experiments and Digital Approaches | LOCEAN |
|  | 323 | MARLIN-DB |  | marlinDB |
|  | 237 | METEO FRANCE DB | MF Drifters Atlantic and Indian Ocean | MeteoFranceDB |
|  | 238 | METEO FRANCE MB | Meteo-France moored buoys (operational) | MeteoFranceMB |
|  | 239 | METEO FRANCE WB | Meteo-France waverider (operational) | MeteoFranceWB |
|  | 241 | NCCOOS |  | NCCOOS |
|  | 242 | NDBC-BP |  | NDBCBP |
|  | 243 | NDBC-COE |  | NDBCCOE |
|  | 244 | NDBC-CSI |  | NDBCCSI |
|  | 245 | NDBC-MB |  | NDBCMB |
|  | 246 | NDBC-MBARI |  | NDBCMBARI |
|  | 247 | NDBC-NASA |  | NDBCNASA |
|  | 248 | NDBC-NOAA-NWS |  | NDBCNOAANWS |
|  | 249 | NDBC-TABS |  | NDBCTABS |
|  | 250 | NDBC-TSU | NDBC Tsunameter buoys | NDBCTSU |
|  | 251 | NDBC-USCG |  | NDBCUSCG |
|  | 252 | NDWC-TSU | National Disaster Warning Center Tsunameter buoys | NDWCTSU |
|  | 253 | NEW ZEALAND DB |  | NewZealandDB |
|  | 324 | NIC-IABP |  | NICIABP |
|  | 254 | NOAA-CBIBS | The National Oceanic and Atmospheric Administration's (NOAA) Chesapeake Bay Interpretive Buoy System (CBIBS) is a network of observing platforms (buoys) that collect meteorological, oceanographic, and water-quality data and relay that information using wireless technology to a variety of users. | NOAACBIBS |
|  | 255 | NORWAY-IMR | Institute of Marine Research Drifting Buoy Program | NorwayIMR |
|  | 256 | NWS-NDBC-MB | NWS NDBC Moored buoy | NWSNDBCMB |
|  | 257 | NWS-NDBC-WB | NWS NDBC Wave buoy | NWSNDBCWB |
|  | 258 | PACIOOS | Pacific Islands Ocean Observing System Stations | pacIOOS |
|  | 259 | PETROBRAS |  | petrobras |
|  | 325 | PMEL MB | PMEL Moored Buoys | PMELMB |
|  | 260 | SCRIPPS |  | scripps |
|  | 261 | SHELL | SHELL Beaufort sea ice movement | shell |
|  | 262 | SHOA-TSU | Chilean Navy Hydrographic And Oceanographic Service Tsunameter buoys | shoaTSU |
|  | 263 | SIO-DB | Scripps Institution of Oceanography Drifter Buoy | SIODB |
|  | 264 | SPAIN-PDE MB | Puertos del EStado Spain Moored buoy | spainPDEMB |
|  | 265 | STRATUS | Woodshole IO OceanSITES | stratus |
|  | 266 | TAO ATLAS | TAO Array of ATLAS buoys in the Equatorial Ocean | taoAtlas |
|  | 267 | TAO PIRATA | PIRATA Array of ATLAS buoys in the Equatorial Atlantic Ocean | taoPirata |
|  | 268 | TAO PIRATA US |  | taoPirataUS |
|  | 269 | TAO RAMA US-INDIA | TAO Triton Buoys in the Indian Ocean | taoRamaUSindia |
|  | 270 | TAO TRITON | Triton buoy network | taoTriton |
|  | 271 | UCSD-SCRIPPS | SIO/CICESE Sea of Cortez Drifters | UCSDscripps |
|  | 272 | UK-JERSEY MB |  | UKjerseyMB |
|  | 273 | UK-MO DB | UK MetOffice Iridium Drifters | UKMODB |
|  | 274 | UK-MO FIXED | UK Metoffice Fixed station | UKMOfixed |
|  | 327 | UK-MO LV | UK Metoffice Light Vessel | UKMOLV |
|  | 275 | UK-MO MB | United Kingdom Met Office Moored Buoys | UKMOMB |
|  | 276 | US-CG DB | USCG Drift Buoys | USCGDB |
|  | 69 | SOT |  | SOT |
|  | 14 | ASAP | GOS Automated Shipboard Upper-Air Sounding Program | ASAP |
|  | 160 | ASAP-AWI |  | ASAPAWI |
|  | 199 | E-ASAP |  | eASAP |
|  | 319 | ASAP-ZA |  | ASAPZA |
|  | 304 | GO-SHIP | Global Ocean Ship-Based Hydrographic Investigations Programme | GOship |
|  | 326 | SOOP-BOM |  | SOOPBOM |
|  | 305 | SOOT | Ship Of Opportunity Programme | SOOT |
|  | 19 | VOS | GOS Voluntary Observing Ship Program | VOS |
|  | 277 | VOS-3P |  | VOS3P |
|  | 278 | VOS-AU |  | VOSAU |
|  | 279 | VOS-CA |  | VOSCA |
|  | 280 | VOS-CL |  | VOSCL |
|  | 281 | VOS-DE |  | VOSDE |
|  | 282 | VOS-ES |  | VOSES |
|  | 283 | VOS-EU |  | VOSEU |
|  | 284 | VOS-FR |  | VOSFR |
|  | 285 | VOS-GB |  | VOSGB |
|  | 286 | VOS-GR |  | VOSGR |
|  | 287 | VOS-HK |  | VOSHK |
|  | 288 | VOS-IE |  | VOSIE |
|  | 289 | VOS-IL |  | VOSIL |
|  | 290 | VOS-IN |  | VOSIN |
|  | 291 | VOS-IS |  | VOSIS |
|  | 292 | VOS-JP |  | VOSJP |
|  | 293 | VOS-KR |  | VOSKR |
|  | 294 | VOS-MY |  | VOSMY |
|  | 295 | VOS-NL |  | VOSNL |
|  | 296 | VOS-NO |  | VOSNO |
|  | 297 | VOS-NZ |  | VOSNZ |
|  | 298 | VOS-RU |  | VOSRU |
|  | 299 | VOS-SE |  | VOSSE |
|  | 300 | VOS-SHIP-MASK | Program created for platforms transmitting under "SHIP" GTS identifier | VOSSHIPMASK |
|  | 301 | VOS-US |  | VOSUS |
|  | 302 | VOS-ZA |  | VOSZA |
|  | 328 | VOS-PL |  | VOSPL |
|  | 63 | GTOS | Global Terrestrial Observing System | GTOS |
|  | 303 | Non-affiliated | Observing elements that are not affiliated with WIGOS or any of the co-sponsored programs | WIGOSnonAffiliated |
|  | 15 | WIGOS | WMO Integrated Observing System components | WIGOS |
|  | 34 | CASTNET | Clean Air Status and Trends Network | CASTNET |
|  | 37 | ADNet | AD-Net Asian Dust and Lidar Observation Network | ADNet |
|  | 39 | CIS-LiNet | Atmosphere aerosol and ozone monitoring in CIS regions through lidar stations network | CIS-LiNet |
|  | 35 | EARLINET | EARLINET European Lidar | EARLINET |
|  | 38 | LALINET | LALINET Latin America Lidar Network | LALINET |
|  | 41 | MPLNET | Micro-Pulse Lidar Network | MPLNET |
|  | 40 | NDACC | Network for the Detection of Atmospheric Composition Change | GALIONNDACC |
|  | 8 | GAW-PFR | GAW Precision Filter Radiometer Network | GAWPFR |
|  | 316 | IDAF | IGAC/DEBITS Africa | IDAF |
|  | 28 | IMPROVE | IMPROVE Optical Aerosol | IMPROVE |
|  | 22 | NADP | National Atmospheric Deposition Program | NADP |
|  | 31 | TCCON | Total Carbon Column Observing Network | TCCON |
|  | 306 | GAW Global | Global GAW station | GAWglobal |
|  | 308 | GAW Local | Local GAW station | GAWlocal |
|  | 27 | IAGOS | ~~MOZAIC~~-IAGOS. In-service Aircraft for a Global Observing System | IAGOS |
|  | TBD | MOZAIC | Measurement of Ozone and Water Vapour on Airbus In-service Aircraft. | MOZAIC |
|  | 23 | AGAGE | AGAGE/SOGE/NIES | AGAGE |
|  | 43 | AEROCAN | AEROCAN, federated to AERONET | AEROCAN |
|  | 44 | AERONET | AERONET | AERONET |
|  | 47 | German AOD network | German AOD network | germanAODnetwork |
|  | 45 | PHOTONS | PHOTONS, federated to AERONET | PHOTONS |
|  | 46 | PolarAOD | PolarAOD | polarAOD |
|  | 48 | SibRad | SibRad | sibRad |
|  | 49 | SKYNET | SKYNET | skynet |
|  | 24 | CAPMoN | Canadian Air and Precipitation Monitoring Network | CAPMoN |
|  | 42 | CLN | The NOAA Cooperative Remote Sencing Science and Technology (CREST) Lidar network | CLN |
|  | 25 | EANET | EANET | EANET |
|  | 21 | EMEP | European Monitoring and Evaluation Programme | EMEP |
|  | 26 | ESRLCCG | NOAA-ESRL (CCG) | ESRLCCG |
|  | 33 | NDACC | Network for the Detection of Atmospheric Composition Change | NDACC |
|  | 317 | Non-affiliated | Observing elements that are not affiliated with GAW or any of the co-sponsored programs | GAWnonAffiliated |
|  | 30 | SHADOZ | Southern Hemisphere ADditional Ozonesondes | SHADOZ |
|  | 307 | GAW Regional | Regional GAW station | GAWregional |
|  | 3 | GCW | Global Cryosphere Watch | GCW |
|  | 66 | CryoNet |  | CryoNet |
|  | 4 | GOS | Global Observing System | GOS |
|  | 310 | GOS Contributing networks | Networks contributing to the Global Observing System (GOS) | GOScontributingNetworks |
|  | 55 | CTBTO | Comprehensive Nuclear-Test Ban Treaty Organization International Monitoring System Network monitoring station | CTBTO |
|  | 311 | GOS Other elements | Other elements of the Global Observing System (GOS) | GOSother |
|  | 396 | ABOS | Aircraft-Based Observing Systems | ABOS |
|  | 392 | ADD | Aircraft Derived Data (Mode-S/ADS-B) | ADD |
|  | 391 | ADS-C | Automatic Data Surveillance (ICAO). These are transmitted at selected points of the flightpath. | ADSC |
|  | 394 | AFIRS | Automated Flight Information & Reporting System (Commercial/FLYHT). Not currently open to GTS, contract with Panasonic and airline and/or NMHS | AFIRS |
|  | 390 | AIREP | Aircraft Report (Manual). These are transmitted by the aircraft when a weather event encountered e.g. severe turbulence or icing. | AIREP |
|  | 12 | AMDAR | Aircraft Meteorological Data Relay | AMDAR |
|  | 393 | TAMDAR | Tropospheric Aircraft Meteorological Data Relay (Commercial/Panasonic). Not currently open to GTS, contract with Panasonic and airline and/or NMHS | TAMDAR |
|  | 64 | Ceilometers | Elastic lidar (ceilometer) networks | ceilometers |
|  | 314 | GNSS radio-occultation system | GNSS radio-occultation system | GNSSradioOccultation |
|  | 313 | Lightning detection system | Surface-based lightning detection system | lightningDetection |
|  | 312 | Wind Profilers | Wind profilers for upper-air wind observations | windProfiler |
|  | 20 | WRO | GOS Weather Radar | WRO |
|  | 309 | GOS Surface networks | Surface-based observing networks of the Global Observing System (GOS) | GOSsurfaceNetworks |
|  | 50 | ANTON | Antarctic Observing Network surface synoptic station (SYNOP/CLIMAT) | ANTON |
|  | 51 | ANTON(T) | Antarctic Observing Network upper-air station (TEMP) | ANTONt |
|  | 32 | BSRN | Baseline Surface Radiation Network | BSRN |
|  | 56 | RBCN | Regional Basic Climatological Networks | RBCN |
|  | 52 | CLIMAT(C) | Station for which monthly climatological means of surface elements are transmitted | CLIMATc |
|  | 54 | CLIMAT(CT) | Station for which monthly climatological means of both surface and upper- air elements are transmitted | CLIMATct |
|  | 53 | CLIMAT(T) | Station for which monthly climatological means of upper-air elements are transmitted | CLIMATt |
|  | 397 | RBON-Pilot | Regional Basic Observing Network (pilot) | RBONpilot |
|  | 16 | RBSN | GOS Regional Basic Synoptic Networks | RBSN |
|  | 59 | RBSN(P) | Regional Basic Synoptic Network upper-air station (PILOT) | RBSNp |
|  | 57 | RBSN(S) | Regional Basic Synoptic Network surface station (SYNOP) | RBSNs |
|  | 61 | RBSN(SP) | Regional Basic Synoptic Network surface and upper-wind station (SYNOP/PILOT) | RBSNsp |
|  | 60 | RBSN(ST) | Regional Basic Synoptic Network surface and upper-air station (SYNOP/TEMP) | RBSNst |
|  | 58 | RBSN(T) | Regional Basic Synoptic Network upper-air station (TEMP) | RBSNt |
|  | 329 | OceanSITES |  | oceanSITES |
|  | 331 | OS-AWI | AWI OceanSITES program | OSAWI |
|  | 332 | OS-BAS |  | OSBAS |
|  | 333 | OS-BCCR |  | OSBCCR |
|  | 334 | OS-BIOS |  | OSBIOS |
|  | 335 | OS-CENTRE D'OCEANOLOGIE DE MARSEILLE |  | OSCOM |
|  | 336 | OS-CNR |  | OSCNR |
|  | 337 | OS-CNRS |  | OSCNRS |
|  | 338 | OS-CSIRO |  | OSCSIRO |
|  | 339 | OS-DFO |  | OSDFO |
|  | 340 | OS-DML |  | OSDML |
|  | 341 | OS-EU-THOR |  | OSEUTHOR |
|  | 342 | OS-GEOMAR |  | OSGEOMAR |
|  | 343 | OS-HAMBURG UNIVERSITY |  | OShamburgUniversity |
|  | 344 | OS-HAV |  | OSHAV |
|  | 345 | OS-HELLENIC CENTRE FOR MARINE RESEARCH |  | OSHCMR |
|  | 346 | OS-ICCM - ACIISI - GOBIERNO DE CANARIAS |  | OSICCMCanarias |
|  | 347 | OS-IFREMER |  | OSIFREMER |
|  | 348 | OS-IMARPE |  | OIMARPE |
|  | 349 | OS-INSTITUTE OF MARINE RESEARCH |  | OSIMR |
|  | 350 | OS-IO-NTU |  | OSIONTU |
|  | 351 | OS-IO-WARNEMUENDE |  | OSIOwarnemuende |
|  | 352 | OS-IRD |  | OSIRD |
|  | 353 | OS-JAMSTEC |  | OSJAMSTEC |
|  | 354 | OS-KIOST |  | OSKIOST |
|  | 355 | OS-LDEO |  | OSLDEO |
|  | 356 | OS-MARUM |  | OSMARUM |
|  | 357 | OS-MBARI |  | OSMBARI |
|  | 358 | OS-NIO |  | OSNIO |
|  | 359 | OS-NIOT |  | OSNIOT |
|  | 360 | OS-NIWA |  | OSNIWA |
|  | 361 | OS-NOAA/AOML |  | OSNOAA-AOML |
|  | 362 | OS-NOAA/PMEL |  | OSNOAA-PMEL |
|  | 363 | OS-NOC |  | OSNOC |
|  | 364 | OS-OGS |  | OSOGS |
|  | 365 | OS-ROYAL NETHERLANDS INSTITUTE FOR SEA RESEARCH (NIOZ) |  | OSNIOZ |
|  | 366 | OS-SIO |  | OSSIO |
|  | 367 | OS-SNU |  | OSSNU |
|  | 368 | OS-SOA |  | OSSOA |
|  | 369 | OS-UN\_HAWAII\_MANOA |  | OSUNhawaiiManoa |
|  | 370 | OS-UN\_MIAMI |  | OSUNmiami |
|  | 371 | OS-USP |  | OSUSP |
|  | 372 | OS-UW |  | OSUW |
|  | 373 | OS-WHOI |  | OSWHOI |
|  | 374 | OS-WHOI/SIO/OSU |  | OSWHOI-SIO-OSU |
|  | 65 | WHOS |  | WHOS |
|  | 67 | WHYCOS |  | WHYCOS |
|  | | |  |  |

### 5.4.2.2 Topography *[approved]*

Problem: The description of altitude and depth is merged in WMDS code list, whereas in OSCAR, the distinction is made between below sea level and above sea level. This is important if the attribute should be usable as a filter criterion in station search.

Suggested solution: New entries in code table 4-03-04 and update the current ones accordingly. The new entries are in red and the deprecated text is struck through.

Code table: 4-03-04

Code table title: Altitude/Depth http://codes.wmo.int/common/wmdsAltitudeOrDepth

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Name** | **Definition** | **WMO306\_CD** |
| 4-03-04-1 | Not applicable | None of the codes in the table are applicable in the context of this particular observation (nilReason) | notApplicable |
| 4-03-04-2 | ~~Very small~~ Very shallow depth | ~~between -100 m and 100 m~~ Less than 100 m below mean sea level | ~~verySmall~~ veryShallowDepth |
| new entry | Very low altitude | Less than 100 m above mean sea level | veryLowAltitude |
| 4-03-04-3 | ~~Small~~ Shallow depth | ~~Between -300 and -100 m or between 100 and 300 m~~ Between 100 and 300 m below mean sea level | ~~small~~ shallowDepth |
| new entry | Low altitude | Between 100 and 300 m above mean sea level | lowAltitude |
| 4-03-04-4 | Middle depth | ~~Between -1000 and -300 m or between 300 and 1000 m~~ Between 300 and 1000 m below mean sea level | ~~Middle~~ middleDepth |
| new entry | Middle altitude | Between 300 and 1000 m above mean sea level | middleAltitude |
| 4-03-04-5 | ~~Large~~ Great depth | ~~Between -3000 and -1000 m Between 1000 and 3000 m~~ Between 1000 and 3000 m below mean sea level | ~~large~~ greatDepth |
| new entry | High altitude | Between 1000 and 3000 m above mean sea level | highAltitude |
| 4-03-04-6 | ~~Very large~~ Very great depth | ~~Deeper than -3000 m or above 3000 m~~ Deeper than 3000 m below mean sea level | ~~veryLarge~~ veryGreatDepth |
| new entry | Very high altitude | Higher than 3000 m above mean sea level | veryHighAltitude |

Code table: 4-03-03

Code table title: Topographic context http://codes.wmo.int/common/wmdsTopographicContext

| **#** | **Name** | **Definition** | **WMO306\_CD** |
| --- | --- | --- | --- |
| 4-03-03-1 | Not applicable | None of the codes in the table are applicable in the context of this particular observation (nilReason) | ~~nilReason~~  notApplicable |
| 4-03-03-2 | Plains | Very low relief (differences <30 m within 5-10 km range) on land | plains |
| 4-03-03-3 | Hollows | Low relief (differences 30-250 m within 5-10 km range) on land, tending to convergent form | hollows |
| 4-03-03-4 | Rises | Low relief (differences 30-250 m within 5-10 km range) on land, tending to divergent form | rises |
| 4-03-03-5 | Valleys | Medium relief (differences 250-1000 m within 5-10 km range) on land, tending to convergent form | valleys |
| 4-03-03-6 | Hills | Medium relief (differences 250-1000 m within 5-10 km range) on land, tending to divergent form | hills |
| 4-03-03-7 | Mountains | High relief (differences > 1000 m within 5-10 km range) on land | mountains |
| New entry | Basins | A depression of the sea floor more or less equidimensional in form and of very variable extent | basins |
| New entry | Guyots | An undersea mountain having a comparatively smooth flat top. Also called a table mount | guyots |
| New entry | Ridges | A long, narrow elevation with steep sides; or: A long, narrow elevation often separating ocean basins; or: The major oceanic mountain systems of global extent | ridges |
| New entry | Sea Mounts | An isolated or comparatively isolated elevation rising 1 000 meters or more from the sea floor and of limited extent across the summit | seaMounts |
| New entry | Trenches | A long, narrow and deep depression of the sea floor with relatively steep sides | trenches |

Code table: 4-03-01

Code table title: Local topography http://codes.wmo.int/common/wmdsLocalTopography

| **#** | **Name** | **Definition** | **WMO306\_CD** |
| --- | --- | --- | --- |
| 4-03-01-1 | Not applicable | None of the codes in the table are applicable in the context of this particular observation (nilReason) | ~~nilReason~~ notApplicable |
| 4-03-01-2 | Hilltop | Higher than all or nearly all of the surrounding land ~~or subsurface~~ beyond a 50 m radius. | hilltop |
| 4-03-01-3 | Ridge | ~~Higher than all or nearly all of the surrounding land or subsurface, but elongated and extending beyond a 50 m radius.~~  As for hilltop but elongated and extending beyond a 50 m radius. | ridge |
| 4-03-01-4 | Slope | Neither crest nor depression or valley bottom, and with a slope more than 3%. | slope |
| 4-03-01-5 | Flat | Slope less than 3% and not a top, ridge, valley bottom or depression. Use for plains. | flat |
| 4-03-01-6 | Valley bottom | Lower than nearly all of surrounding land or subsurface, but water can flow out. | valleyBottom |
| 4-03-01-7 | Depression | Lower than surrounding land or subsurface, with no above-ground outlet for water. | depression |
| New entry | Saddle | A depression located along the axial trend of an anticline; an area confined on two sides by downward slopes and on two sides by upward slopes. | saddle |

Code table: 4-03-02

Code table title: Relative elevation context http://codes.wmo.int/common/RelativeElevation

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Name** | **Definition** | **WMO306\_CD** |
| 4-03-02-1 | Not applicable | None of the codes in the table are applicable in the context of this particular observation (nilReason) | ~~nilReason~~ notApplicable |
| 4-03-02-2 | Lowest | In the bottom 5% of the elevation range | lowest |
| 4-03-02-3 | Low | Between 5% and 25% of the elevation range | low |
| 4-03-02-4 | Middle | Between 25% and 75% of the elevation range | middle |
| 4-03-02-5 | High | Between 75% and 95% of the elevation range | high |
| 4-03-02-6 | Highest | In the highest 5% of the elevation range | highest |

### 5.4.2.3 Measurement unit *[approved]*

Problems: The table available in the code registry (common/unit) has a problem with the notation of entries “Minutes (angle)” and “Second (angle)”. Moreover, there are some entries missing in OSCAR DB and two entries missing in the code registry.

Suggestion: deprecate or correct entries so that notation will be “minute\_(angle)” and “second\_(angle)”. Add new entries in the code table, addition of two more specific definitions for Degree Celsius unit and correction of erroneous notations. See in red in the code table below. ~~The WMO306 code has been decided to be the internal OSCAR id and not the abbreviation of the unit~~. The WMO306 code corresponds to the end of the URL in the code registry for unit: <http://codes.wmo.int/common/_unit>, already effective.

Code table: 1-02

Code table title: Measurement unit http://codes.wmo.int/common/unit

| **#** | **Label** | **Notation** | **Definition** | **WMO306\_CD** |
| --- | --- | --- | --- | --- |
| <<http://codes.wmo.int/common/unit/'>> | minute (angle) | ' |  | ‚ |
| <http://codes.wmo.int/common/unit/''> | second (angle) | '' |  | '' |
| <http://codes.wmo.int/common/unit/0.001> | parts per thousand | 0/00 |  | 0.001 |
| <http://codes.wmo.int/common/unit/A> | ampere | A |  | A |
| <http://codes.wmo.int/common/unit/AU> | astronomic unit | AU |  | AU |
| <http://codes.wmo.int/common/unit/Bq> | becquerel | Bq | s^-1 | Bq |
| <http://codes.wmo.int/common/unit/Bq\_l-1> | becquerels per litre | Bq/l |  | Bq\_l-1 |
| <http://codes.wmo.int/common/unit/Bq\_m-2> | becquerels per square metre | Bq m-2 |  | Bq\_m-2 |
| <http://codes.wmo.int/common/unit/Bq\_m-3> | becquerels per cubic metre | Bq m-3 |  | Bq\_m-3 |
| <http://codes.wmo.int/common/unit/Bq\_s\_m-3> | becquerel seconds per cubic metre | Bq s m-3 |  | Bq\_s\_m-3 |
| <http://codes.wmo.int/common/unit/C> | coulomb | C | A s | C |
| <http://codes.wmo.int/common/unit/C\_-1> | degrees Celsius per 100 metres | C/100 m |  | C\_-1 |
| <http://codes.wmo.int/common/unit/C\_m-1> | degrees Celsius per metre | C/m |  | C\_m-1 |
| <http://codes.wmo.int/common/unit/Cel> | degree Celsius | Cel | ~~K+273.15~~  Unit of Celsius temperature, which is by definition equal in magnitude to the kelvin, the unit of thermodynamic temperature given by the 10th CGPM (1954, Resolution 3), which selected the triple point of water as the fundamental fixed point and assigned to it the temperature 273.16 K. The numerical value of a Celsius temperature expressed in degrees Celsius is related to the numerical value of the thermodynamic temperature expressed in kelvins by the relation t(°C) = T(K) – 273.15. | Cel |
| <http://codes.wmo.int/common/unit/DU> | Dobson Unit (9) | DU |  | DU |
| <http://codes.wmo.int/common/unit/F> | farad | F | kg^-1 m^-2 s^4 A^2 | F |
| <http://codes.wmo.int/common/unit/Gy> | gray | Gy | m^2 s^-2 | Gy |
| <http://codes.wmo.int/common/unit/H> | henry | H | kg m^2 s^-2 A^-2 | H |
| <http://codes.wmo.int/common/unit/Hz> | hertz | Hz | s-^1 | Hz |
| <http://codes.wmo.int/common/unit/J> | joule | J | kg m^2 s^-2 | J |
| <http://codes.wmo.int/common/unit/J\_kg-1> | joules per kilogram | J/kg |  | J\_kg-1 |
| <http://codes.wmo.int/common/unit/J\_m-2> | joules per square metre | J m-2 |  | J\_m-2 |
| <http://codes.wmo.int/common/unit/K> | kelvin | K |  | K |
| <http://codes.wmo.int/common/unit/K\_m-1> | kelvins per metre | K/m |  | K\_m-1 |
| <http://codes.wmo.int/common/unit/K\_m2\_kg-1\_s-1> | kelvin square metres per kilogram per second | K m2 kg-1 s-1 |  | K\_m2\_kg-1\_s-1 |
| <http://codes.wmo.int/common/unit/K\_m\_s-1> | kelvin metres per second | K m s-1 |  | K\_m\_s-1 |
| <http://codes.wmo.int/common/unit/N> | newton | N | kg m s^-2 | N |
| <http://codes.wmo.int/common/unit/N\_m-2> | newtons per square metre | N m-2 |  | N\_m-2 |
| <http://codes.wmo.int/common/unit/N\_units> | N units | N units |  | N\_units |
| <http://codes.wmo.int/common/unit/Ohm> | ohm | Ohm | kg m^2 s^-3 A^-2 | Ohm |
| <http://codes.wmo.int/common/unit/Pa> | pascal | Pa | kg m^-1 s^-2 | Pa |
| <http://codes.wmo.int/common/unit/Pa\_s-1> | pascals per second | Pa/s |  | Pa\_s-1 |
| <http://codes.wmo.int/common/unit/S> | siemens | S | kg^-1 m^-2 s^3 A^2 | S |
| <http://codes.wmo.int/common/unit/S\_m-1> | siemens per metre | S/m |  | S\_m-1 |
| <http://codes.wmo.int/common/unit/Sv> | sievert | Sv | m^2 s^-2 | Sv |
| <http://codes.wmo.int/common/unit/T> | tesla | T | kg s^-2 A^-1 | T |
| <http://codes.wmo.int/common/unit/V> | volt | V | kg m^2 s^-3 A^-1 | V |
| <http://codes.wmo.int/common/unit/W> | watt | W | kg m^2 s^-3 | W |
| <http://codes.wmo.int/common/unit/W\_m-1\_sr-1> | watts per metre per steradian | W m-1 sr-1 |  | W\_m-1\_sr-1 |
| <http://codes.wmo.int/common/unit/W\_m-2> | watts per square metre | W m-2 |  | W\_m-2 |
| <http://codes.wmo.int/common/unit/W\_m-2\_sr-1> | watts per square metre per steradian | W m-2 sr-1 |  | W\_m-2\_sr-1 |
| <http://codes.wmo.int/common/unit/W\_m-2\_sr-1\_cm> | watts per square metre per steradian centimetre | W m-2 sr-1 cm |  | W\_m-2\_sr-1\_cm |
| <http://codes.wmo.int/common/unit/W\_m-2\_sr-1\_m> | watts per square metre per steradian metre | W m-2 sr-1 m |  | W\_m-2\_sr-1\_m |
| <http://codes.wmo.int/common/unit/W\_m-3\_sr-1> | watts per cubic metre per steradian | W m-3 sr-1 |  | W\_m-3\_sr-1 |
| <http://codes.wmo.int/common/unit/Wb> | weber | Wb | kg m^2 s^-2 A^-1 | Wb |
| <http://codes.wmo.int/common/unit/a> | year | a |  | a |
| <http://codes.wmo.int/common/unit/cb\_-1> | centibars per 12 hours | cb/12 h |  | cb\_-1 |
| <http://codes.wmo.int/common/unit/cb\_s-1> | centibars per second | cb/s |  | cb\_s-1 |
| <http://codes.wmo.int/common/unit/cd> | candela | cd |  | cd |
| <http://codes.wmo.int/common/unit/cm> | centimetre | cm |  | cm |
| <http://codes.wmo.int/common/unit/cm\_h-1> | centimetres per hour | cm/h |  | cm\_h-1 |
| <http://codes.wmo.int/common/unit/cm\_s-1> | centimetres per second | cm/s |  | cm\_s-1 |
| <http://codes.wmo.int/common/unit/d> | day | d |  | d |
| <http://codes.wmo.int/common/unit/dB> | decibel (6) | dB |  | dB |
| <http://codes.wmo.int/common/unit/dB\_deg-1> | decibels per degree | dB/deg |  | dB\_deg-1 |
| <http://codes.wmo.int/common/unit/dB\_m-1> | decibels per metre | dB/m |  | dB\_m-1 |
| <http://codes.wmo.int/common/unit/dPa\_s-1> | decipascals per second (microbar per second) | dPa/s |  | dPa\_s-1 |
| <http://codes.wmo.int/common/unit/daPa> | dekapascal | daPa |  | daPa |
| <http://codes.wmo.int/common/unit/deg2> | square degrees | deg^2 |  | deg2 |
| <http://codes.wmo.int/common/unit/degC> | degrees Celsius (8) | degC | Prior to 1954 and the 10th General Conference on Weights and Measures (CGPM),°C was defined as unit of Celsius temperature scale and divided into 100 degrees separating the boiling and freezing points of water. The original scale set 0 as the boiling point of water and 100 as the freezing point at the mean barometric pressure at mean sea level. This scale was flipped ~~it~~ around soon after inventing it. | degC |
| <http://codes.wmo.int/common/unit/deg\_s-1> | degrees per second | deg/s |  | deg\_s-1 |
| <http://codes.wmo.int/common/unit/degree\_(angle)> | degree (angle) | deg |  | degree\_(angle) |
| <http://codes.wmo.int/common/unit/degrees\_true> | degrees true | deg |  | degrees\_true |
| <http://codes.wmo.int/common/unit/dm> | decimetre | dm |  | dm |
| <http://codes.wmo.int/common/unit/eV> | electron volt | eV |  | eV |
| <http://codes.wmo.int/common/unit/ft> | foot | ft |  | ft |
| <http://codes.wmo.int/common/unit/g> | acceleration due to gravity | g |  | g |
| <http://codes.wmo.int/common/unit/g\_kg-1> | grams per kilogram | g/kg |  | g\_kg-1 |
| <http://codes.wmo.int/common/unit/g\_kg-1\_s-1> | grams per kilogram per second | g kg-1 s-1 |  | g\_kg-1\_s-1 |
| <http://codes.wmo.int/common/unit/gpm> | geopotential metre | gpm |  | gpm |
| <http://codes.wmo.int/common/unit/h> | hour | h |  | h |
| <http://codes.wmo.int/common/unit/hPa> | hectopascal | hPa |  | hPa |
| <http://codes.wmo.int/common/unit/hPa\_-1> | hectopascals per 3 hours | hPa/3 h |  | hPa\_-1 |
| <http://codes.wmo.int/common/unit/hPa\_h-1> | hectopascals per hour | hPa/h |  | hPa\_h-1 |
| <http://codes.wmo.int/common/unit/hPa\_s-1> | hectopascals per second | hPa/s |  | hPa\_s-1 |
| <http://codes.wmo.int/common/unit/ha> | hectare | ha |  | ha |
| <http://codes.wmo.int/common/unit/kPa> | kilopascal | kPa |  | kPa |
| <http://codes.wmo.int/common/unit/kg> | kilogram | kg |  | kg |
| <http://codes.wmo.int/common/unit/kg-2\_s-1> | per square kilogram per second | kg-2 s-1 |  | kg-2\_s-1 |
| <http://codes.wmo.int/common/unit/kg\_kg-1> | kilograms per kilogram | kg/kg |  | kg\_kg-1 |
| <http://codes.wmo.int/common/unit/kg\_kg-1\_s-1> | kilograms per kilogram per second | kg kg-1 s-1 |  | kg\_kg-1\_s-1 |
| <http://codes.wmo.int/common/unit/kg\_m-1> | kilograms per metre | kg/m |  | kg\_m-1 |
| <http://codes.wmo.int/common/unit/kg\_m-2> | kilograms per square metre | kg m-2 |  | kg\_m-2 |
| <http://codes.wmo.int/common/unit/kg\_m-2\_s-1> | kilograms per square metre per second | kg m-2 s-1 |  | kg\_m-2\_s-1 |
| <http://codes.wmo.int/common/unit/kg\_m-3> | kilograms per cubic metre | kg m-3 |  | kg\_m-3 |
| <http://codes.wmo.int/common/unit/km> | kilometre | km |  | km |
| <http://codes.wmo.int/common/unit/km\_d-1> | kilometres per day | km/d |  | km\_d-1 |
| <http://codes.wmo.int/common/unit/km\_h-1> | kilometres per hour | km/h |  | km\_h-1 |
| <http://codes.wmo.int/common/unit/kt> | knot | kt |  | kt |
| <http://codes.wmo.int/common/unit/kt\_km-1> | knots per 1000 metres | kt/km |  | kt\_km-1 |
| <http://codes.wmo.int/common/unit/l> | litre | l |  | l |
| <http://codes.wmo.int/common/unit/lm> | lumen | lm | cd sr | lm |
| <http://codes.wmo.int/common/unit/log\_(m-1)> | logarithm per metre | log (m-1) |  | log\_(m-1) |
| <http://codes.wmo.int/common/unit/log\_(m-2)> | logarithm per square metre | log (m-2) |  | log\_(m-2) |
| <http://codes.wmo.int/common/unit/lx> | lux | lx | cd sr m^-2 | lx |
| <http://codes.wmo.int/common/unit/m> | metre | m |  | m |
| <http://codes.wmo.int/common/unit/m-1> | per metre | m-1 |  | m-1 |
| <http://codes.wmo.int/common/unit/m2> | square metres | m2 |  | m2 |
| <http://codes.wmo.int/common/unit/m2\_-1> | metres to the two thirds power per second | m2/3 s-1 |  | m2\_-1 |
| <http://codes.wmo.int/common/unit/m2\_Hz-1> | square metres per hertz | m2/Hz |  | m2\_Hz-1 |
| <http://codes.wmo.int/common/unit/m2\_rad-1\_s> | square metres per radian ~~square~~ second | m2 rad-1 s |  | m2\_rad-1\_s |
| <http://codes.wmo.int/common/unit/m2\_s> | square metres second | m2 s |  | m2\_s |
| <http://codes.wmo.int/common/unit/m2\_s-1> | square metres per second | m2/s |  | m2\_s-1 |
| <http://codes.wmo.int/common/unit/m2\_s-2> | square metres per second squared | m2 s-2 |  | m2\_s-2 |
| <http://codes.wmo.int/common/unit/m3> | cubic metres | m3 |  | m3 |
| <http://codes.wmo.int/common/unit/m3\_m-3> | cubic metres per cubic metre | m3 m-3 |  | m3\_m-3 |
| <http://codes.wmo.int/common/unit/m3\_s-1> | cubic metres per second | m3/s |  | m3\_s-1 |
| <http://codes.wmo.int/common/unit/m4> | metres to the fourth power | m4 |  | m4 |
| <http://codes.wmo.int/common/unit/mSv> | millisievert | mSv |  | mSv |
| <http://codes.wmo.int/common/unit/m\_s-1> | metres per second | m/s |  | m\_s-1 |
| <http://codes.wmo.int/common/unit/m\_s-1\_km-1> | metres per second per 1000 metres | m s-1/km |  | m\_s-1\_km-1 |
| <http://codes.wmo.int/common/unit/m\_s-1\_m-1> | metres per second per metre | m s-1/m |  | m\_s-1\_m-1 |
| <http://codes.wmo.int/common/unit/m\_s-2> | metres per second squared | m s-2 |  | m\_s-2 |
| <http://codes.wmo.int/common/unit/min> | minute (time) | min |  | min |
| <http://codes.wmo.int/common/unit/mm> | millimetre | mm |  | mm |
| <http://codes.wmo.int/common/unit/mm6\_m-3> | millimetres ~~per~~ to the sixth power per cubic metre | mm6 m-3 |  | mm6\_m-3 |
| <http://codes.wmo.int/common/unit/mm\_h-1> | millimetres per hour | mm/h |  | mm\_h-1 |
| <http://codes.wmo.int/common/unit/mm\_s-1> | millimetres per second~~s~~ | mm/s |  | mm\_s-1 |
| <http://codes.wmo.int/common/unit/mol> | mole | mol |  | mol |
| <http://codes.wmo.int/common/unit/mol\_mol-1> | moles per mole | mol/mol |  | mol\_mol-1 |
| <http://codes.wmo.int/common/unit/mon> | month | mon |  | mon |
| <http://codes.wmo.int/common/unit/nautical\_mile> | nautical mile | NM |  | nautical\_mile |
| <http://codes.wmo.int/common/unit/nbar> | nanobar = hPa 10^-6 | nbar |  | nbar |
| <http://codes.wmo.int/common/unit/okta> | eighths of cloud | okta |  | okta |
| <http://codes.wmo.int/common/unit/pH\_unit> | pH unit | pH unit |  | pH\_unit |
| <http://codes.wmo.int/common/unit/pc> | parsec | pc |  | pc |
| <http://codes.wmo.int/common/unit/percent> | per cent | % |  | percent |
| <http://codes.wmo.int/common/unit/rad> | radian | rad |  | rad |
| <http://codes.wmo.int/common/unit/rad\_m-1> | radians per metre | rad/m |  | rad\_m-1 |
| <http://codes.wmo.int/common/unit/s> | second | s |  | s |
| <http://codes.wmo.int/common/unit/s-1> | per second (same as hertz) | /s |  | s-1 |
| <http://codes.wmo.int/common/unit/s-2> | per second squared | s-2 |  | s-2 |
| <http://codes.wmo.int/common/unit/s\_m-1> | seconds per metre | s/m |  | s\_m-1 |
| <http://codes.wmo.int/common/unit/sr> | steradian | sr |  | sr |
| <http://codes.wmo.int/common/unit/t> | tonne | t |  | t |
| <http://codes.wmo.int/common/unit/u> | atomic mass unit | u |  | u |
| <http://codes.wmo.int/common/unit/week> | week |  |  | week |
| <http://codes.wmo.int/common/unit/(Y)\_pref> | (yotta) | (Y) |  | (Y)\_pref |
| <http://codes.wmo.int/common/unit/(Z)\_pref> | (zetta) | (Z) |  | (Z)\_pref |
| <http://codes.wmo.int/common/unit/(y)\_pref> | (yocto) | (y) |  | (y)\_pref |
| <http://codes.wmo.int/common/unit/(z)\_pref> | (zepto) | (z) |  | (z)\_pref |
| <http://codes.wmo.int/common/unit/1> | Dimensionless | 1 |  | 1 |
| <http://codes.wmo.int/common/unit/E\_pref> | exa | E |  | E\_pref |
| <http://codes.wmo.int/common/unit/G\_pref> | giga | G |  | G\_pref |
| <http://codes.wmo.int/common/unit/M\_pref> | mega | M |  | M\_pref |
| <http://codes.wmo.int/common/unit/P\_pref> | peta | P |  | P\_pref |
| <http://codes.wmo.int/common/unit/T\_pref> | tera | T |  | T\_pref |
| <http://codes.wmo.int/common/unit/a\_pref> | atto | a |  | a\_pref |
| <http://codes.wmo.int/common/unit/c\_pref> | centi | c |  | c\_pref |
| <http://codes.wmo.int/common/unit/d\_pref> | deci | d |  | d\_pref |
| <http://codes.wmo.int/common/unit/da\_pref> | deca | da |  | da\_pref |
| <http://codes.wmo.int/common/unit/f\_pref> | femto | f |  | f\_pref |
| <http://codes.wmo.int/common/unit/h\_pref> | hecto | h |  | h\_pref |
| <http://codes.wmo.int/common/unit/k\_pref> | kilo | k |  | k\_pref |
| <http://codes.wmo.int/common/unit/m\_pref> | milli | m |  | m\_pref |
| <http://codes.wmo.int/common/unit/n\_pref> | nano | n |  | n\_pref |
| <http://codes.wmo.int/common/unit/p\_pref> | pico | p |  | p\_pref |
| <http://codes.wmo.int/common/unit/u\_pref> | micro | u |  | u\_pref |
| <http://codes.wmo.int/common/unit/in> | inch | in |  | in |
| <http://codes.wmo.int/common/unit/unknown> | unknown | unknown |  | unknown |

### 5.4.2.4 Observed variable – measurand *[pending]*

Problem: A number of entries in the observed variables list are non controversial and others are still under discussion in the ad hoc group working on variables (see Annex 3.2 for the lists of participants). The “Comments” column comes from the work produced by this group and can help here to clarify what the problem in some cases. Some entries are not in OSCAR/surface and some are not in OSCAR/Req. They are splitted in subsections for easier reading.

Suggestion: The internal OSCAR/Surface DB id is suggested to be used as WMO306\_CD.

#### 5.4.2.4.1 Non-controversial entries

Code table 1-01

Code table title: Observed Variable – measurand

| **#** | **PATH** | **NAME** | **DEFINITION** | **WMO306\_CD = OSCAR\_ID** | **Medium** | **Species** | **Used in OSCAR/Surface** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 6 | \Earth\Crustal motion (horizontal and vertical) | Crustal motion (horizontal and vertical) | Changes in time of the position and height of the Earth plates. Indicative of the lithosphere dynamics, thus useful for earthquake prediction - Physical unit: [ mm/y ] - Accuracy unit: [ mm/y ]. | 6 | earth |  | x |
| 8 | \Earth\Earth Rotation | Earth Rotation | Rotation velocity of the Earth, determining the length of the day - Physical unit: [Rad/s] - Accuracy unit: [Arcsec/century]. | 8 | earth |  |  |
| 12 | \Earth\Gravity gradients | Gravity gradients | Gradient of the Earthҳ gravity field measured at the satellite orbital height - Physical unit: [ E ] , E?tv?s (1 E = 1 mGal / 10 km) - Accuracy unit: [ E ]. | 12 | earth |  |  |
| 39 | \Atmosphere\Atmospheric density | Atmospheric density | 3D field of density of the atmosphere | 39 |  |  | x |
| 64 | \Ocean\Topography\Ocean dynamic topography (ODT) | Ocean dynamic topography (ODT) | Deviation of sea level from the geoid caused by ocean currents (after corrections for tides and atmospheric pressure effects) - Physical unit: [ cm ] - Accuracy unit: [ cm ]. | 64 | sea-water |  |  |
| 73 | \Ocean\Miscellaneous\Oil spill cover | Oil spill cover | Fraction of an ocean area polluted by hydrocarbons released from ships or off-shore platforms, accidentally or deliberately. | 73 | sea-water |  |  |
| 78 | \Ocean\Miscellaneous\Total alkalinity (AT) | Total alkalinity (AT) | The amount of acid necessary to titrate all weak bases in seawater. | 78 | sea-water |  |  |
| 79 | \Ocean\Miscellaneous\pH | pH | The hydrogen ion concentration in seawater, which is a measure of acidity and alkalinity | 79 | sea-water |  |  |
| 86 | \Ocean\Other Gas\Ocean subsurface dissolved oxygen concentration | Ocean subsurface dissolved oxygen concentration | Concentration of dissolved oxygen | 86 | sea-water | ion |  |
| 89 | \Ocean\Radiation\Water-leaving spectral radiance | Water-leaving spectral radiance | Upward spectral radiance from the ocean surface, i.e. amount of light leaving the ocean per unit area, per wavelength and per solid angle. | 89 | sea-water |  |  |
| 92 | \Ocean\Basic Physical Properties\Sea surface salinity | Sea surface salinity | Salinity of sea water in the surface layer (upper ~ 1 m if observed in MW). In the open ocean the correct term should be “halinity” with reference of the diversity of salts involved. | 92 | sea-water |  |  |
| 95 | \Ocean\Basic Physical Properties\Sea surface temperature | Sea surface temperature | Temperature of the sea water at surface. The “bulk” temperature refers to the depth of typically 2 m, the “skin” temperature refers to within the upper 1 mm. | 95 | sea-water |  | x |
| 96 | \Ocean\Topography\Coastal sea level (tide) | Coastal sea level (tide) | Deviation of sea level from local references in coastal zones, caused by local currents and tides (astronomical and wind-induced). | 96 | sea-water |  | x |
| 98 | \Ocean\Waves\Dominant wave direction | Dominant wave direction | One feature of the ocean wave spectrum. It is the direction of the most energetic wave in the spectrum - Physical unit: [ degrees ] - Accuracy unit: [ degrees ]. | 98 | sea-water |  |  |
| 99 | \Ocean\Waves\Dominant wave period | Dominant wave period | The period of the most energetic wave in the ocean wave spectrum. | 99 | sea-water |  |  |
| 100 | \Ocean\Waves\Significant wave height | Significant wave height | Average amplitude of the highest 30 of 100 waves. | 100 | sea-water |  |  |
| 101 | \Ocean\Waves\Wave 1D energy frequency spectrum | Wave 1D energy frequency spectrum | 1D variable colloquially referred to as &ldquo wave spectrum&rdquo. Describes the wave energy in each frequency band (e.g. 25 frequency bands) regardless of the direction of propagation | 101 | sea-water |  |  |
| 102 | \Ocean\Waves\Wave directional energy frequency spectrum | Wave directional energy frequency spectrum | 2D variable colloquially referred to as wave spectrum. Describes the wave energy travelling in each direction and frequency band (e.g., 24 distinct azimuth sectors each 15&deg; wide, and 25 frequency bands) | 102 | sea-water |  |  |
| 103 | \Ocean\Wind\Wind stress | Wind stress | The shear force per unit area exerted by wind blowing over the sea surface - | 103 | sea-water |  |  |
| 105 | \Outer Space\Energetic particles / solar wind \Electrostatic charge | Electrostatic charge | Measurement of the electrostatic charge of a satellite accumulated because of the environmental situation. | 105 | outer\_space |  |  |
| 107 | \Outer Space\Energetic particles / solar wind \Heavy ion flux energy and mass spectrum | Heavy ion flux energy and mass spectrum | Flux density energy and mass spectrum of heavy ions ranging from Helium to Iron. | 107 | outer\_space |  |  |
| 108 | \Outer Space\Energetic particles / solar wind \Interplanetary magnetic field | Interplanetary magnetic field | Vector magnetic field (3D) in the solar wind.The reference frame is Cartesian or Cylindrical with many different axis orientations. Important in Space Weather to monitor magnetic disturbances of the near earth environment. | 108 | outer\_space |  |  |
| 111 | \Outer Space\Energetic particles / solar wind \Radiation Dose Rate | Radiation Dose Rate | 3D field of the dose rate of energetic particles | 111 | outer\_space |  |  |
| 112 | \Outer Space\Energetic particles / solar wind \Solar wind temperature | Solar wind temperature | Temperature of solar wind protons | 112 | outer\_space |  |  |
| 113 | \Outer Space\Energetic particles / solar wind \Solar wind velocity | Solar wind velocity | Vector velocity of solar wind plasma | 113 | outer\_space |  |  |
| 116 | \Outer Space\Ionospheric disturbances\Electron Density | Electron Density | 3-D field of the electron density in the ionosphere | 116 | outer\_space |  |  |
| 117 | \Outer Space\Ionospheric disturbances\Ionospheric Radio Absorption | Ionospheric Radio Absorption | Attenuation of a radio wave passing through the lower ionosphere. | 117 | outer\_space |  |  |
| 120 | \Outer Space\Ionospheric disturbances\Ionospheric plasma density | Ionospheric plasma density | Total number of ionized particles in a volume unit of ionospheric plasma | 120 | outer\_space |  |  |
| 122 | \Outer Space\Ionospheric disturbances\Spread F | Spread F | Vertical thickness of highly structured ion density in the F-region of the ionosphere. | 122 | outer\_space |  |  |
| 123 | \Outer Space\Ionospheric disturbances\foEs | foEs | The highest ordinary-wave frequency reflected back from a sporadic E layer and observed by an ionosonde. | 123 | outer\_space |  |  |
| 124 | \Outer Space\Ionospheric disturbances\foF2 | foF2 | Critical frequency of the F2 layer of the ionosphere. This critical frequency (f, in MHz) is associated with the electron density (Ne, in cm<sup>-3</sup>): f=9\*10<sup>-3</sup>\*sqrt(Ne). | 124 | outer\_space |  |  |
| 126 | \Outer Space\Ionospheric disturbances\hmF2 | hmF2 | Altitude of the peak density in the ionospheric F2 layer. | 126 | outer\_space |  |  |
| 127 | \Outer Space\Solar monitoring\EUV flux | EUV flux | Radiative flux integrated over the EUV band. | 127 | outer\_space |  |  |
| 128 | \Outer Space\Solar monitoring\EUV flux spectrum | EUV flux spectrum | Energy spectrum of the radiative flux measured in the EUV band. | 128 | outer\_space |  |  |
| 129 | \Outer Space\Solar monitoring\EUV sky image | EUV sky image | EUV image of the sky | 129 | outer\_space |  |  |
| 130 | \Outer Space\Solar monitoring\Gamma-ray flux | Gamma-ray flux | Radiative flux integrated over the gamma-ray domain. | 130 | outer\_space |  |  |
| 131 | \Outer Space\Solar monitoring\Gamma-ray flux spectrum | Gamma-ray flux spectrum | Energy spectrum of the radiative flux measured in the gamma-ray domain. | 131 | outer\_space |  |  |
| 132 | \Outer Space\Solar monitoring\Heliospheric image | Heliospheric image | Image of the interplanetary space between the Sun and Earth | 132 | outer\_space |  |  |
| 134 | \Outer Space\Solar monitoring\Solar Ca II-K image | Solar Ca II-K image | Image of the Sun in the K-line of Ca-II(393.4 nm) | 134 | outer\_space |  |  |
| 135 | \Outer Space\Solar monitoring\Solar EUV flux | Solar EUV flux | Integrated EUV flux over the solar disk | 135 | outer\_space |  |  |
| 136 | \Outer Space\Solar monitoring\Solar EUV flux spectrum | Solar EUV flux spectrum | Energy spectrum of the EUV flux integrated over the solar disk. | 136 | outer\_space |  |  |
| 137 | \Outer Space\Solar monitoring\Solar EUV image | Solar EUV image | Images of the Sun in the Extreme Ultra-Violet (EUV) wavelengths in order to identify features such as filaments, active regions and coronal holes. | 137 | outer\_space |  |  |
| 138 | \Outer Space\Solar monitoring\Solar H-alpha image | Solar H-alpha image | Image of the Sun in the Hydrogen-alpha transition wavelength (656.3 nm). | 138 | outer\_space |  |  |
| 139 | \Outer Space\Solar monitoring\Solar Lyman-alpha flux | Solar Lyman-alpha flux | Solar flux in the Hydrogen Lyman-alpha transition wavelength (121.6 nm) | 139 | outer\_space |  |  |
| 140 | \Outer Space\Solar monitoring\Solar Lyman-alpha image | Solar Lyman-alpha image | Image of the Sun in the Hydrogen Lyman-alpha transition wavelength (121.6 nm) | 140 | outer\_space |  |  |
| 141 | \Outer Space\Solar monitoring\Solar UV flux | Solar UV flux | Integrated UV flux over the solar disk. | 141 | outer\_space |  |  |
| 142 | \Outer Space\Solar monitoring\Solar UV flux spectrum | Solar UV flux spectrum | Energy spectrum of the UV flux integrated over the solar disk. | 142 | outer\_space |  |  |
| 143 | \Outer Space\Solar monitoring\Solar UV image | Solar UV image | Images of the Sun in the UV wavelengths. | 143 | outer\_space |  |  |
| 144 | \Outer Space\Solar monitoring\Solar VIS flux | Solar VIS flux | Integrated VIS flux over the solar disk | 144 | outer\_space |  |  |
| 145 | \Outer Space\Solar monitoring\Solar VIS flux spectrum | Solar VIS flux spectrum | Energy spectrum of the integrated VIS flux over the solar disk. | 145 | outer\_space |  |  |
| 146 | \Outer Space\Solar monitoring\Solar VIS image | Solar VIS image | Images of the Sun in the VIS wavelengths. | 146 | outer\_space |  |  |
| 147 | \Outer Space\Solar monitoring\Solar X-ray flux | Solar X-ray flux | Integrated X-ray flux over the solar disk | 147 | outer\_space |  |  |
| 148 | \Outer Space\Solar monitoring\Solar X-ray flux spectrum | Solar X-ray flux spectrum | Energy spectrum of the X-ray flux integrated over the solar disk. | 148 | outer\_space |  |  |
| 149 | \Outer Space\Solar monitoring\Solar X-ray image | Solar X-ray image | Image of the Sun in X-ray wavelengths | 149 | outer\_space |  |  |
| 150 | \Outer Space\Solar monitoring\Solar coronagraphic image | Solar coronagraphic image | Image of the solar corona surrounding the Sun. | 150 | outer\_space |  |  |
| 151 | \Outer Space\Solar monitoring\Solar electric field | Solar electric field | Map of magnitude and direction of the electric field at the solar surface (photosphere). | 151 | outer\_space |  |  |
| 152 | \Outer Space\Solar monitoring\Solar gamma-ray flux | Solar gamma-ray flux | Integrated gamma-ray flux over the solar disk | 152 | outer\_space |  |  |
| 153 | \Outer Space\Solar monitoring\Solar gamma-ray flux spectrum | Solar gamma-ray flux spectrum | Energy spectrum of the gamma-ray flux integrated over the solar disk | 153 | outer\_space |  |  |
| 155 | \Outer Space\Solar monitoring\Solar radio flux | Solar radio flux | Integrated radio flux over the solar disk. | 155 | outer\_space |  |  |
| 156 | \Outer Space\Solar monitoring\Solar radio flux spectrum | Solar radio flux spectrum | Solar radio flux energy spectrum integrated over the solar disk. | 156 | outer\_space |  |  |
| 157 | \Outer Space\Solar monitoring\Solar radio image | Solar radio image | 2D image of the solar radio flux | 157 | outer\_space |  |  |
| 158 | \Outer Space\Solar monitoring\Solar velocity fields | Solar velocity fields | Map of 3D velocity of particles of the Solar atmosphere, significant of the Sun interior. | 158 | outer\_space |  |  |
| 159 | \Outer Space\Solar monitoring\Solar white light image | Solar white light image | Image of the Sun in white light | 159 | outer\_space |  |  |
| 160 | \Outer Space\Solar monitoring\UV flux | UV flux | Integrated UV flux. | 160 | outer\_space |  |  |
| 161 | \Outer Space\Solar monitoring\UV sky image | UV sky image | UV image of the sky | 161 | outer\_space |  |  |
| 162 | \Outer Space\Solar monitoring\X-ray flux | X-ray flux | Integrated X-ray flux. | 162 | outer\_space |  |  |
| 163 | \Outer Space\Solar monitoring\X-ray flux spectrum | X-ray flux spectrum | Energy spectrum of the integrated X-ray flux. | 163 | outer\_space |  |  |
| 164 | \Outer Space\Solar monitoring\X-ray sky image | X-ray sky image | X-ray image of the sky | 164 | outer\_space |  |  |
| 165 | \Terrestrial\Ground water\Ground water (amount per unit area) | Ground water (amount per unit area) | Amount of water present beneath the ground surface per unit area | 165 | ground\_water | liquid-and-ice-water(?) |  |
| 171 | \Terrestrial\River\River discharge | River discharge | Volume of water flowing through a river per unit of time | 171 | river | liquid-and-ice-water(?) | x |
| 180 | \Atmosphere\Clouds\Cloud cover | Cloud cover |  | 180 | clouds | liquid-and-ice-water(?) | x |
| 186 | \Atmosphere\Clouds\Melting layer depth in clouds | Melting layer depth in clouds | Depth of the atmospheric layer in cloud where liquid-solid states transform into each other | 186 | clouds | liquid-and-ice-water(?) |  |
| 201 | \Atmosphere\Gas\Greenhouse Gas\N2O | N2O |  | 201 | air | dinitrogen-oxide | x |
| 206 | \Atmosphere\Gas\Other Gas\H2O (as a chemical species) | H2O (as a chemical species) | 3D field of mole fraction of H<sub>2</sub>O = Water vapour (intended as a chemical species relevant for atmospheric chemistry). | 206 | air | normal-water-vapor |  |
| 207 | \Atmosphere\Gas\Other Gas\HDO (as a chemical species) | HDO (as a chemical species) | 3D field of mole fraction of HDO = Water vapour (with one hydrogen nucleus replaced by its deuterium isotope) | 207 | air | deuteriated-water-vapor |  |
| 215 | \Atmosphere\Precipitation\Type of precipitation | Type of precipitation |  | 215 |  | liquid-and-ice-water(?) |  |
| 232 | \Terrestrial\Land surface\Coastlines | Coastlines | Location of coastlines (Lat/Long) | 232 | land\_surface |  |  |
| 236 | \Terrestrial\Land surface\Land cover | Land cover | Processed from land surface imagery by assigning identified cluster(s) within a given area to specific classes of objects - Accuracy expressed as number of classes. Actually [ classes-1 ] is used, so that smaller figure corresponds to better performance, as usual. | 236 | land\_surface |  |  |
| 243 | \Terrestrial\Land surface\Wetland extent | Wetland extent | Fraction of an area flood by water | 243 | land\_surface |  |  |
| 246 | \Terrestrial\Soil\Soil type | Soil type | Result of the classification of different types of soil within an area - Accuracy expressed as inverse of the number of classes, so that smaller figures correspond to better performance. | 246 | soil |  |  |
| 249 | \Atmosphere\Dynamics\Turbulence | Turbulence | 3D field of kinetic energy density of turbulent motion of the air | 249 | clouds |  |  |
| 252 | \Atmosphere\Humidity\Integrated water vapour | Integrated water vapour |  | 252 | air | water-vapor (?) |  |
| 263 | \Atmosphere\Gas\Ozone\Total column ozone | Total column ozone |  | 263 | air | ozone | x |
| 267 | \Atmosphere\Radiation\Background luminance | Background luminance |  | 267 |  |  |  |
| 271 | \Atmosphere\Radiation\Surface albedo | Surface albedo |  | 271 |  |  |  |
| 274 | \Atmosphere\Gas\Reactive Gas\BrO (bromine monoxide) | BrO (bromine monoxide) |  | 274 | air | bromine-oxide | x |
| 284 | \Atmosphere\Gas\Reactive Gas\CO | CO |  | 284 | air | carbon-monoxide | x |
| 286 | \Atmosphere\Gas\Reactive Gas\ClO (chlorine monoxide) | ClO (chlorine monoxide) |  | 286 | air | chlorine-oxide | x |
| 288 | \Atmosphere\Gas\Reactive Gas\HCl (hydrochloric acid) | HCl (hydrochloric acid) |  | 288 | air | hydrogen-chloride | x |
| 305 | \Atmosphere\Wind\Gust Speed | Gust Speed |  | 305 | air |  | x |
| 307 | \Atmosphere\Wind\Wind (Z component, vertical) | Wind (Z component, vertical) | Z component of wind vector (horizontal and vertical profile) | 307 | air |  |  |
| 310 | \Atmosphere\Wind\Upper wind (X, Y components, horizontal) | Upper wind (X, Y components, horizontal) |  | 310 | air |  | x |
| 314 | \Atmosphere\Aerosol\Optical properties\Aerosol Absorption Optical Depth | Aerosol Absorption Optical Depth | Vertical column integral of spectral aerosol absorption coefficient: AAOD = exp(-K. &Delta z) where K is the absorption coefficient [km<sup>-1</sup>] and &Delta z the vertical path [km] | 314 | aerosol | particle-phase-species | x |
| 315 | \Atmosphere\Aerosol\Optical properties\Aerosol Extinction Coefficient | Aerosol Extinction Coefficient | 3D field of spectral volumetric extinction cross-section of aerosol particles. | 315 | aerosol | particle-phase-species |  |
| 327 | \Atmosphere\Clouds\Ice\Cloud ice | Cloud ice | 3D field of atmospheric water in the solid phase (precipitating or not). | 327 | clouds | liquid-and-ice-water(?) |  |
| 328 | \Atmosphere\Clouds\Ice\Cloud ice (total column) | Cloud ice (total column) | Field of atmospheric water in the solid phase (precipitating or not) as total column. | 328 | clouds | liquid-and-ice-water(?) |  |
| 330 | \Atmosphere\Clouds\Ice\Freezing level height in clouds | Freezing level height in clouds | Height of the atmospheric layer in cloud where liquid-solid states transform into each other | 330 | clouds | liquid-and-ice-water(?) |  |
| 361 | \Atmosphere\Aerosol\Physical properties - primary\Aerosol column burden (mass density) | Aerosol column burden (mass density) | 2D field of the column burden of condensed particles in the atmosphere | 361 | aerosol | particle-phase-species |  |
| 373 | \Atmosphere\Clouds\Liquid water\Cloud liquid water (CLW) | Cloud liquid water (CLW) | 3D field of atmospheric water in the liquid phase (precipitating or not). | 373 | clouds | liquid-and-ice-water(?) |  |
| 386 | \Terrestrial\Land surface\Fire\Fire fractional cover | Fire fractional cover | Fraction of a land area where fire is occurring | 386 | land\_surface |  |  |
| 387 | \Terrestrial\Land surface\Fire\Fire radiative power | Fire radiative power | Power radiated by the fire occurring within an area | 387 | land\_surface |  |  |
| 388 | \Terrestrial\Land surface\Fire\Fire temperature | Fire temperature | Temperature of the fire occurring within an area | 388 | land\_surface |  |  |
| 389 | \Terrestrial\Land surface\Temperature\Land surface temperature | Land surface temperature | Temperature of the apparent surface of land (bare soil or vegetation) - Physical unit: [ K ] - Accuracy unit: [ K ]. | 389 | land\_surface |  | x |
| 391 | \Atmosphere\Gas\Reactive Gas\Nitrogen containing compounds\C2H3O5N (peroxyacetylnitrate, PAN) | C2H3O5N (peroxyacetylnitrate, PAN) |  | 391 | air | peroxyacetylnitrate | x |
| 392 | \Atmosphere\Gas\Reactive Gas\Nitrogen containing compounds\ClONO2 (chlorine nitrate) | ClONO2 (chlorine nitrate) |  | 392 | air | chlorine-nitrate | x |
| 394 | \Atmosphere\Gas\Reactive Gas\Nitrogen containing compounds\HNO3 (nitric acid) | HNO3 (nitric acid) |  | 394 | air | nitric-acid | x |
| 395 | \Atmosphere\Gas\Reactive Gas\Nitrogen containing compounds\NO | NO |  | 395 | air | nitrogen monoxide | x |
| 396 | \Atmosphere\Gas\Reactive Gas\Nitrogen containing compounds\NO2 | NO2 |  | 396 | air | nitrogen-dioxide | x |
| 401 | \Ocean\Snow / Ice / Glacier\Ice\Sea-ice cover | Sea-ice cover | Fraction of an ocean area where ice is present | 401 | sea-water | ice-water(?) |  |
| 402 | \Ocean\Snow / Ice / Glacier\Ice\Sea-ice elevation | Sea-ice elevation | Elevation of the surface of the sea-ice sheet above sea level | 402 | sea-water | ice-water(?) |  |
| 404 | \Ocean\Snow / Ice / Glacier\Ice\Sea-ice surface characteristics | Sea-ice surface characteristics | Sea-ice surface characteristics (albedo, meltpond, dust, snow properties, temperature) | 404 | sea-water | ice-water(?) |  |
| 405 | \Ocean\Snow / Ice / Glacier\Ice\Sea-ice surface temperature | Sea-ice surface temperature | Temperature of the surface of sea-ice. | 405 | sea-water | ice-water(?) |  |
| 406 | \Ocean\Snow / Ice / Glacier\Ice\Sea-ice thickness | Sea-ice thickness | Thickness of the ice sheet. It is related to sea-ice elevation and ice density | 406 | sea-water | ice-water(?) |  |
| 407 | \Ocean\Snow / Ice / Glacier\Ice\Sea-ice type | Sea-ice type | Variable convolving several factors (age, roughness, density, etc.) - Accuracy expressed as number of classes. Actually [ classes^-1 ] is used, so that smaller figure corresponds to better performance as usual. | 407 | sea-water | ice-water(?) |  |
| 409 | \Outer Space\Energetic particles / solar wind \Particle density\Solar wind density | Solar wind density | Density of solar wind plasma | 409 | outer\_space |  |  |
| 410 | \Terrestrial\Lake\Temperature\Lake Surface Temperature | Lake Surface Temperature | Temperature of the lake surface - Physical unit: [ K ] - Accuracy unit: [ K ]. | 410 | lake |  |  |
| 422 | \Terrestrial\Land surface\Greenhouse Gas\CO2 flux | CO2 flux | Flux of carbon dioxide from the surface to the atmosphere | 422 | land\_surface | carbon-dioxide |  |
| 423 | \Terrestrial\Land surface\Vegetation\Biomass | Biomass | Total amount of vegetation in a reference area - Physical unit: [ t/ha (tons/hectare) ] - Accuracy unit: [ t/ha ] | 423 | land\_surface |  |  |
| 424 | \Terrestrial\Land surface\Vegetation\Fraction of vegetated land | Fraction of vegetated land | Fraction of a land area where vegetation is present | 424 | land\_surface |  |  |
| 425 | \Terrestrial\Land surface\Vegetation\Leaf Area Index (LAI) | Leaf Area Index (LAI) | LAI is the total one-sided area of photosynthetic tissue per unit ground surface area | 425 | land\_surface |  |  |
| 426 | \Terrestrial\Land surface\Vegetation\Normalised Difference Vegetation Index (NDVI) | Normalised Difference Vegetation Index (NDVI) | Difference between maximum (in NIR) and minimum (around the Red) vegetation reflectance, normalised to the summation. Representative of total biomass, supportive for computing LAI if not directly measured | 426 | land\_surface |  |  |
| 427 | \Terrestrial\Land surface\Vegetation\Vegetation type | Vegetation type | Result of the classification of different types of vegetation within a vegetated area - Accuracy expressed as inverse of the number of classes, so that smaller figures correspond to better performance. | 427 | land\_surface |  |  |
| 428 | \Atmosphere\Gas\Reactive Gas\Sulfur containing compounds\COS (OCS, carbon oxide sulfide, carbonyl sulfide) | COS (OCS, carbon oxide sulfide, carbonyl sulfide) |  | 428 | air | carbonyl-sulfide | x |
| 430 | \Atmosphere\Gas\Reactive Gas\Sulfur containing compounds\SO2 | SO2 |  | 430 | air | sulfur-dioxide | x |
| 431 | \Atmosphere\Lightning\Position\Lightning detection (time and location) | Lightning detection (time and location) | Detection of the time and location (latitude, longitude) of lightning events. Accuracy expressed in terms of Hit Rate and False Alarm Rate, which requires predetermination of a specific distance and time tolerance . | 431 | air |  | x |
| 434 | \Atmosphere\Gas\Reactive Gas\VOC\C2H2 (ethyne, acetylene) | C2H2 (ethyne, acetylene) |  | 434 | air | ethyne | x |
| 437 | \Atmosphere\Gas\Reactive Gas\VOC\C2H6 (ethane) | C2H6 (ethane) |  | 437 | air | ethane | x |
| 438 | \Atmosphere\Gas\Reactive Gas\VOC\C2H6S (dimethylsulfide, DMS) | C2H6S (dimethylsulfide, DMS) |  | 438 | air | dimethylsulfide | x |
| 443 | \Atmosphere\Gas\Reactive Gas\VOC\C3H6O (acetone, propanone) | C3H6O (acetone, propanone) |  | 443 | air | acetone | x |
| 445 | \Atmosphere\Gas\Reactive Gas\VOC\C3H8 (propane) | C3H8 (propane) |  | 445 | air | propane | x |
| 464 | \Atmosphere\Gas\Reactive Gas\VOC\C5H8 (2-methyl-1,3-butadiene, isoprene) | C5H8 (2-methyl-1,3-butadiene, isoprene) |  | 464 | air |  | x |
| 476 | \Atmosphere\Gas\Reactive Gas\VOC\C6H6 (benzene) | C6H6 (benzene) |  | 476 | air | benzene | x |
| 482 | \Atmosphere\Gas\Reactive Gas\VOC\C7H8 (toluene) | C7H8 (toluene) |  | 482 | air | toluene | x |
| 489 | \Atmosphere\Gas\Reactive Gas\VOC\CH2O (formaldehyde) | CH2O (formaldehyde) |  | 489 | air | formaldehyde | x |
| 490 | \Atmosphere\Gas\Reactive Gas\VOC\CH3CH2OH (ethanol) | CH3CH2OH (ethanol) |  | 490 | air | ethanol |  |
| 492 | \Atmosphere\Gas\Reactive Gas\VOC\CH3CN (acetonitrile) | CH3CN (acetonitrile) |  | 492 | air | acetonitrile |  |
| 493 | \Atmosphere\Gas\Reactive Gas\VOC\CH3OH (methanol) | CH3OH (methanol) |  | 493 | air | methanol | x |
| 497 | \Atmosphere\Gas\Reactive Gas\VOC\i-C4H10 (2-methylpropane, iso-butane) | i-C4H10 (2-methylpropane, iso-butane) |  | 497 | air | 2-methylpropane | x |
| 499 | \Atmosphere\Gas\Reactive Gas\VOC\i-C5H12 (2-methylbutane, iso-pentane) | i-C5H12 (2-methylbutane, iso-pentane) |  | 499 | air | trans-2-pentene | x |
| 501 | \Atmosphere\Gas\Reactive Gas\VOC\n-C4H10 (n-butane) | n-C4H10 (n-butane) |  | 501 | air | butane | x |
| 502 | \Atmosphere\Gas\Reactive Gas\VOC\n-C5H12 (n-pentane) | n-C5H12 (n-pentane) |  | 502 | air | pentane | x |
| 506 | \Atmosphere\Clouds\Optical properties\Cloud optical depth | Cloud optical depth | Effective depth of a cloud from the viewpoint of radiation propagation. OD = exp(-K.&Deltaz) where K is the extinction coefficient [km<sup>-1</sup> ] and &Delta z the vertical path [km] between the base and the top of the cloud | 506 | clouds | liquid-and-ice-water(?) |  |
| 511 | \Outer Space\Energetic particles / solar wind \Particle flux\Alpha particles differential directional flux | Alpha particles differential directional flux |  | 511 | outer\_space |  |  |
| 512 | \Outer Space\Energetic particles / solar wind \Particle flux\Alpha particles integral directional flux | Alpha particles integral directional flux | An alpha particle has positive charge and consists of two protons and two neutrons (the nucleus of a helium atom). Flux is the rate of flow through a reference surface, measured in particles per unit area.The directional flux is the flux limited to a certain solid angle as a function of the direction (pitch angle). | 512 | outer\_space |  |  |
| 513 | \Outer Space\Energetic particles / solar wind \Particle flux\Cosmic ray neutron flux spectrum | Cosmic ray neutron flux spectrum | Flux density energy spectrum of neutrons from the Sun or as component of the cosmic radiation. | 513 | outer\_space |  |  |
| 517 | \Outer Space\Energetic particles / solar wind \Particle flux\Heavy ion differential directional flux | Heavy ion differential directional flux | Flux density of heavy ions (eavier than Helium) per unit solid angle | 517 | outer\_space |  |  |
| 518 | \Outer Space\Energetic particles / solar wind \Particle flux\Heavy ion integral directional flux | Heavy ion integral directional flux | Flux density of heavy ions ranging from Helium to Iron. | 518 | outer\_space |  |  |
| 523 | \Atmosphere\Visibility\Obscurations\Hydrometeor type | Hydrometeor type |  | 523 | air |  |  |
| 525 | \Atmosphere\Visibility\Obscurations\Meteorological Optical Range | Meteorological Optical Range |  | 525 | air |  | x |
| 528 | \Terrestrial\Soil\Humidity\Soil moisture at surface | Soil moisture at surface | Fractional content of water in a volume of wet soil. Surface layer (upper few centimetres) | 528 | soil | liquid-water(?) |  |
| 531 | \Atmosphere\Clouds\Position\Height of cloud base | Height of cloud base |  | 531 | clouds | liquid-and-ice-water(?) | x |
| 532 | \Atmosphere\Clouds\Position\Height of cloud top | Height of cloud top |  | 532 | clouds | liquid-and-ice-water(?) |  |
| 550 | \Atmosphere\Clouds\Type\Type of cloud | Type of cloud | Result of cloud type classification - Accuracy expressed as inverse of number of classes, so that smaller figures correspond to better performance. | 550 | clouds | liquid-and-ice-water(?) | x |
| 563 | \Terrestrial\Land surface\Radiation\Fraction of Absorbed PAR (FAPAR) | Fraction of Absorbed PAR (FAPAR) | Fraction of PAR absorbed by vegetation (land or marine) for photosynthesis processes (generally around the 'red' ) | 563 | land\_surface |  |  |
| 564 | \Terrestrial\Land surface\Radiation\Photosynthetically Active Radiation (PAR) | Photosynthetically Active Radiation (PAR) | Flux of downwelling photons of wavelength 0.4-0.7 | 564 | land\_surface |  |  |
| 592 | \Atmosphere\Gas\Greenhouse Gas\CFCs\CCl2F2 (dichlorodifluoromethane, CFC-12) | CCl2F2 (dichlorodifluoromethane, CFC-12) |  | 592 | air | dichlorodifluoromethane | x |
| 593 | \Atmosphere\Gas\Greenhouse Gas\CFCs\CCl3F (trichlorofluoromethane, CFC-11) | CCl3F (trichlorofluoromethane, CFC-11) |  | 593 | air | trichlorofluoromethane | x |
| 610 | \Terrestrial\Land surface\Snow / Ice / Glacier\Glacier\Glacier cover | Glacier cover | Fraction of a land area covered by permanent ice | 610 | land\_surface | ice-water(?) |  |
| 611 | \Terrestrial\Land surface\Snow / Ice / Glacier\Glacier\Glacier motion | Glacier motion | Velocity of the ice measured at the surface of a glacier | 611 | land\_surface | ice-water(?) |  |
| 628 | \Terrestrial\Land surface\Snow / Ice / Glacier\Snow\Snow cover (fraction of area) | Snow cover (fraction of area) | Fraction of a given area which is covered by snow | 628 | land\_surface | ice-water(?) |  |
| 629 | \Terrestrial\Land surface\Snow / Ice / Glacier\Snow\Snow depth | Snow depth | Vertical distance from the snow surface to the underlying surface (ground, glacier ice or sea ice). | 629 | land\_surface | ice-water(?) | x |
| 630 | \Terrestrial\Land surface\Snow / Ice / Glacier\Snow\Snow status (wet/dry) | Snow status (wet/dry) | Binary product (dry or melting/thawing) expressing the presence of liquid water in a snow layer- Accuracy expressed as Hit Rate [ HR ] and False Alarm Rate [ FAR ]. | 630 | land\_surface | ice-water(?) |  |
| 631 | \Terrestrial\Land surface\Snow / Ice / Glacier\Snow\Snow water equivalent | Snow water equivalent | Vertical depth of the water that would be obtained by melting a snow layer. Linked to snow depth through the density of the snow layer. | 631 | land\_surface | ice-water(?) | x |
| 727 | \Atmosphere\Aerosol\Physical properties - primary\Dust\Aerosol dust concentration (mass) | Aerosol dust concentration (mass) | 3-D field of concentration of dust or sand in the atmosphere | 727 | aerosol | dust |  |
| 728 | \Atmosphere\Aerosol\Physical properties - primary\Volcanic ash\Aerosol volcanic ash (mass concentration) | Aerosol volcanic ash (mass concentration) | 3D field of mass mixing ratio of volcanic ash | 728 | aerosol | volcanic-ash |  |
| 729 | \Atmosphere\Aerosol\Physical properties - primary\Volcanic ash\Aerosol volcanic ash (Total column) | Aerosol volcanic ash (Total column) | Field of total column mass of volcanic ash | 729 | aerosol | volcanic-ash |  |
| 12001 | \Atmosphere\Lightning\Total lightning density | Total lightning density |  | 12001 | air |  |  |
| 12002 | \Atmosphere\Lightning\Lightning density cloud-to-ground | Cloud to Ground lightning density |  | 12002 | air |  |  |
| 12005 | \Atmosphere\Wind\Horizontal wind direction at specified distance from reference surface | Horizontal wind direction at specified distance from reference surface | Horizontal wind direction at specified distance from reference surface | 12005 |  |  | x |
| 12006 | \Atmosphere\Wind\Horizontal wind speed at specified distance from reference surface | Horizontal wind speed at specified distance from reference surface | Horizontal wind speed at specified distance from reference surface | 12006 |  |  | x |

#### 5.4.2.1.2 Under discussion entries

##### Existing in both OSCAR/Surface and in OSCAR/Requirements

Code table 1-01

Code table title: Observed Variable – measurand

| **#** | **PATH** | **NAME** | **DEFINITION** | **WMO306\_CD = OSCAR\_ID** | **Medium** | **Species** | **COMMENTS[[1]](#footnote-1)** | **Used in OSCAR/Surface** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 7 | \Earth\Crustal plates positioning | Crustal plates positioning | Basis for monitoring the evolution of the lithosphere dynamics - Physical unit: [ cm ] - Accuracy unit: [ cm ]. | 7 | earth |  | JE170920: Definition not clear - position relative to what? |  |
| 9 | \Earth\Geoid | Geoid | Equipotential surface which would coincide exactly with the mean ocean surface of the Earth, if the oceans were in equilibrium, at rest, and extended through the continents (such as with very narrow channels) - Physical unit: [ cm ] - Accuracy unit: [ cm ]. | 9 | earth |  | JE:This is a height but relative to what? Centre of the Earth? |  |
| 10 | \Earth\Geomagnetic field | Geomagnetic field | Magnitude and direction of the 3D magnetic field on the surface of Earth and within the magnetosphere (i.e., in low-Earth orbit and in geosynchronous orbit). | 10 | earth |  | JE:The definition is not clear. Is this two separate 2D fields? | x |
| 11 | \Earth\Gravity field | Gravity field | Indicative of the statics and dynamics of the lithosphere and the mantle - Physical unit: [ mGal ] where : 1 Gal = 0.01 m.s<sup>-2</sup> | 11 | earth |  | JE:Definition is not clear. Is it: field of gravitational acceleration (for consistency with units given)? |  |
| 13 | \Ocean\Topography\Bathymetry | Bathymetry | Bathymetry is the measurement of the depth of water in oceans, rivers, or lakes. | 13 | sea-water |  | JE170920: Definition needed |  |
| 18 | \Ocean\Basic Physical Properties\Pressure | Pressure | Pressure(depth) measured by CTD | 18 | perastu |  | Not in OSCAR/Req. JE170920: Definition not clear - pressure of what? Duplicate of #216? | x |
| 63 | \Ocean\Currents\Ocean Current - Speed | Ocean Current - Speed | Ocean motion measured at various depth levels. | 63 | sea-water |  | JE:Definition should be made consistent with that of other 3D fields |  |
| 65 | \Ocean\Currents\Ocean surface currents (vector) | Ocean surface currents (vector) | Water flow on ocean surface - Physical unit: [ cm/s ] - Accuracy unit: [ cm/s ] intended as vector error, i.e. the module of the vector difference between the observed vector and the true vector. | 65 | sea-water |  | JE170920: What about currents below surface? Are there reqs for and obs of these? |  |
| 67 | \Ocean\Miscellaneous\Carbon species\Dissolved inorganic carbon (DIC) | Dissolved inorganic carbon (DIC) | The cumulated concentration of inorganic carbon species (dissolved carbon dioxide, carbonic acid, bicarbonate and carbonate) in solution. | 67 | sea-water | inorganic carbon species | JE170920: Definition not clear. |  |
| 70 | \Ocean\Miscellaneous\Diffuse attenuation coefficient (DAC), turbidity | Diffuse attenuation coefficient (DAC), turbidity | Indicator of water turbidity and vertical processes in the ocean, extracted from ocean colour observation. | 70 | sea-water |  | JE170920: Definition not clear - how is the coefficient defined? |  |
| 71 | \Ocean\Biology\Chlorophyll concentration | Chlorophyll concentration | Indicator of living phytoplankton biomass, extracted from ocean colour observation. Uncertainty is expressed in mg/m<sup>3</sup> for a given concentration of 1 mg/m<sup>3</sup> . | 71 | sea-water |  | JE170920: Definition not clear - how is the coefficient defined? |  |
| 72 | \Ocean\Miscellaneous\Ocean suspended sediments concentration | Ocean suspended sediments concentration | Variable extracted from ocean colour observation. Indicative of river outflow, re-suspension or pollution of other-than-biological origin. Uncertainty expressed in g/m<sup>3</sup>&nbsp;at a specific concentration (e.g., 2 g/m<sup>3</sup>&nbsp;). | 72 | sea-water |  | JE170920: Definition not clear - how is the concentration defined? |  |
| 75 | \Ocean\Miscellaneous\Sea surface Mass Flux | Sea surface Mass Flux | Sea Surface Mass Flux | 75 | sea-water |  | JE:Definition says no more than the variable name. Is this flux of water? |  |
| 76 | \Ocean\Miscellaneous\Sea surface heat flux | Sea surface heat flux | Sea Surface Heat Flux | 76 | sea-water |  | JE:Definition says no more than the variable name. Is this sensible heat only? |  |
| 77 | \Ocean\Topography\Sea surface height anomaly (SSHA) | Sea surface height anomaly (SSHA) | Sea surface height anomaly | 77 | sea-water |  | JE:Definition says no more than the variable name. Anomaly relative to what? Also, is this a duplicate on #112. |  |
| 91 | \Ocean\Basic Physical Properties\Ocean salinity | Ocean salinity | 3D field of salinity of the ocean Requested in upper and deep ocean - Physical unit: [ psu ], Practical Salinity Unit, close to 1, determined by CTD | 91 | sea-water |  | JE170920: "Requested in ..." should not be part of definition | x |
| 94 | \Ocean\Basic Physical Properties\Ocean temperature | 3D field of the atmospheric temperature | 3D field of temperature of the ocean Requested in upper and deep ocean. | 94 | sea-water |  | JE170920: "Requested in ..." should not be part of definition | x |
| 104 | \Outer Space\Energetic particles / solar wind \Electron flux energy spectrum | Electron flux energy spectrum | Flux density energy spectrum of low-, medium-, and high-energy electrons from the magnetosphere, the radiation belts or the interplanetary medium. | 104 | outer\_space |  | JE170920: 3 variables or 1? |  |
| 106 | \Outer Space\Energetic particles / solar wind \Heavy ion angular flux energy and mass spectrum | Heavy ion angular flux energy and mass spectrum | Flux density energy and mass spectrum of heavy ions ranging from Helium to Iron, per unit solid angle | 106 | outer\_space |  | JE170920: This sounds like more than one variable. At ToA? |  |
| 114 | \Outer Space\Ionospheric disturbances\Aurora | Aurora | Occurence of fluorescence of the upper atmosphere through ionization by energetic charged particles accelerated by the Earth's magnetic field. | 114 | outer\_space |  | JE170920: Does occurrence mean yes/no, or is it quantified? |  |
| 115 | \Outer Space\Ionospheric disturbances\Electric Field | Electric Field | Magnitude and direction of the Earth's electriv field | 115 | outer\_space |  | JE170920: Is this a 3D field or a particular height/surface? |  |
| 118 | \Outer Space\Ionospheric disturbances\Ionospheric Scintillation | Ionospheric Scintillation | Random fluctuations of radio waves resulting of small scale variations of the ionospheric electron density in space and time. | 118 | outer\_space |  | JE170920: The geophsyical variable seems rather vague. |  |
| 119 | \Outer Space\Ionospheric disturbances\Ionospheric Vertical Total Electron Content (VTEC) | Ionospheric Vertical Total Electron Content (VTEC) | Number of electrons between two points. | 119 | outer\_space |  | JE:This definition is not satisfactory. I suggest: the number of electrons per unit area in a vertical column. |  |
| 121 | \Outer Space\Ionospheric disturbances\Ionospheric plasma velocity | Ionospheric plasma velocity | Velocity of bulk plasma or electrons (depending on measurement technique) as a function of altitude in the ionosphere. | 121 | outer\_space |  | JE170920: "as a function of altitude" means 3D field? |  |
| 125 | \Outer Space\Ionospheric disturbances\h'F | h'F | Virtual height of the bottom of the ionospheric F-layer. | 125 | outer\_space |  | JE:Definition is not clear. What is “virtual height”? |  |
| 133 | \Outer Space\Solar monitoring\Radio-waves | Radio-waves | Travelling radio-waves of solar, galactic and extragalactic origin, entering the Earth's environment. | 133 | outer\_space |  | JE170920: Geophysical variable is rather vague. |  |
| 154 | \Outer Space\Solar monitoring\Solar magnetic field | Solar magnetic field | Vector magnetic field (1D or 3D) at the solar surface (photosphere/chromosphere) | 154 | outer\_space |  | JE:This is defined as both a 3D and a 1D variable, and it should logically be 2 separate variables. |  |
| 167 | \Terrestrial\Lake\Lake area | Lake area | Aera extent of the surface of a lake | 167 | lake | liquid-and-ice-water(?) | JE:Definition is not clear. Is the 2D field of the fractional coverage of lakes, or is it the areas of specific lakes? |  |
| 168 | \Terrestrial\Lake\Lake level | Lake level | boundary layer | 168 | lake | liquid-and-ice-water(?) | JE:Delete “map of the” in definition? |  |
| 192 | \Atmosphere\Gas\Greenhouse Gas\CH4 | CH4 | 1D variable colloquially referred to as &ldquo wave spectrum&rdquo. Describes the wave energy in each frequency band (e.g. 25 frequency bands) regardless of the direction of propagation | 192 | air | methane | JE: Definitions (both) are not clear | x |
| 194 | \Atmosphere\Gas\Greenhouse Gas\CO2 | CO2 |  | 194 | air | carbon-dioxide | JE170920: Definition is not clear. | x |
| 203 | \Atmosphere\Gas\Greenhouse Gas\SF6 | SF6 |  | 203 | air | sulfur-hexafluoride | JE170920: Definition is not clear. | x |
| 216 | \Atmosphere\Pressure\Atmospheric pressure | Atmospheric pressure |  | 216 |  |  | JE170920: OSCAR/Req name (at surface) is more restrictive than OSCAR/Surf name | x |
| 224 | \Atmosphere\Temperature\Air temperature (at specified distance from reference surface) | Air temperature (at specified distance from reference surface) |  | 224 | air |  | JE170920: These names and definitions are not consistent | x |
| 237 | \Terrestrial\Land surface\Land surface topography | Land surface topography | Map of land surface heights - Physical unit: [ m ] - Accuracy unit: [ m ]. | 237 | land\_surface |  | JE:Delete “map of” in definition? |  |
| 251 | \Atmosphere\Humidity\Humidity (at specified distance from reference surface) | Humidity (at specified distance from reference surface) |  | 251 | air | water-vapor (?) | JE170920: These names and definitions are not consistent | x |
| 354 | \Terrestrial\Land surface\Snow / Ice / Glacier\Permafrost | Permafrost | Permafrost is a permanently frozen layer below the Earths surface. It consists of soil, gravel, and sand, usually bound together by ice. Permafrost usually remains at or below 0C (32F) for at least two years. | 354 | land\_surface | ice-water(?) | JE:Definition is not clear. It says what permafrost is but not what is observed or required. Is this essentially a yes/no decision (permafrost or not) or is the observation or requirement more complicated than this? |  |
| 362 | \Atmosphere\Aerosol\Physical properties - primary\Aerosol effective radius | Aerosol Extinction Coefficient | 3D field of mean aerosol particle size, defined as the ratio of the third and second moments of the number size distribution of aerosol particles. Requested in the troposphere (assumed height: 12 km) and as columnar average. | 362 | aerosol | particle-phase-species | JE170920: There is an error here - particle size is not exticntion coeff. Also, "requested in ..." should not be part of the definition. |  |
| 374 | \Atmosphere\Clouds\Liquid water\Cloud liquid water (CLW, total column) | Cloud liquid water (CLW, total column) | Field of atmospheric water in the liquid phase (precipitating or not). | 374 | clouds | liquid-and-ice-water(?) | JE170920: Names and definitions are not consistent. |  |
| 403 | \Ocean\Snow / Ice / Glacier\Ice\Sea-ice motion | Sea-ice motion | Sea-ice motion | 403 | sea-water | ice-water(?) | JE170920. Definition needed that is more than the variable name. |  |
| 509 | \Atmosphere\Clouds\Optical properties\Short-wave cloud reflectance | Short-wave cloud reflectance | Reflectance of the solar radiation from clouds | 509 | clouds | liquid-and-ice-water(?) | JE:The definition is not correct – reflectance is a property of the cloud, not of the radiation reflected from it. I suggest: fraction of solar radiation reflected by cloud. |  |
| 510 | \Terrestrial\Land surface\Humidity\Evaporation | Evaporation | Quantity of water evaporated from the soil and plants when the ground is at its natural moisture content. | 510 | land\_surface |  | JE:Definition is not clear. Should be quantity of water per unit time …? | x |
| 514 | \Outer Space\Energetic particles / solar wind \Particle flux\Electron differential directional flux | Electron differential directional flux | Flux density energy spectrum of low-, medium-, and high-energy electrons from the magnetosphere, the radiation belts or the interplanetary medium, per unit solid angle | 514 | outer\_space |  | JE170920: This sounds like 3 variables not 1 |  |
| 515 | \Outer Space\Energetic particles / solar wind \Particle flux\Electron flux density | Electron flux density | Flux density of low-, medium-, and high-energy electrons from the magnetosphere, the radiation belts or the interplanetary medium. | 515 | outer\_space |  | JE170920: This sounds like 3 variables not 1 |  |
| 516 | \Outer Space\Energetic particles / solar wind \Particle flux\Electron integral directional flux | Electron integral directional flux | Flux density of low-, medium-, and high-energy electrons from the magnetosphere, the radiation belts or the interplanetary medium, per unit solid angle. | 516 | outer\_space |  | JE170920: This sounds like 3 variables not 1 |  |
| 519 | \Outer Space\Energetic particles / solar wind \Particle flux\Proton differential directional flux | Proton differential directional flux | Flux density energy spectrum of low-, medium-, and high-energy protons from the magnetosphere, the radiation belts or the interplanetary medium, per unit solid angle. | 519 | outer\_space |  | JE170920: This sounds like 3 variables not 1 |  |
| 520 | \Outer Space\Energetic particles / solar wind \Particle flux\Proton integral directional flux | Proton integral directional flux | Flux density of low-, medium-, and high-energy protons from the magnetosphere, the radiation belts or the interplanetary medium. | 520 | outer\_space |  | JE170920: This sounds like 3 variables not 1 |  |
| 527 | \Terrestrial\Soil\Humidity\Soil moisture (in the roots region) | Soil moisture (in the roots region) | Sub-soil 3D field of the fractional content of water in a volume of wet soil. Requested from surface down to ~ 3 m | 527 | soil | liquid-water(?) | JE:“Request from …” is unnecessary as part of the definition – delete sentence? |  |
| 573 | \Atmosphere\Radiation\Solar\Global solar radiation (downwelling) | Global solar radiation (downwelling) |  | 573 |  |  | JE170920: Error in name? why "global"? Also, names and definition are not consistent. | x |
| 596 | \Terrestrial\Soil\Temperature\Soil temperature | Soil temperature | The standard depths for soil temperature measurements are 5, 10, 20, 50 and 100 cm below the surface; additional depths may be included. The site for such measurements should be a level plot of bare ground (about 75 cm^2 ) and typical of the surrounding soil for which information is required. | 596 | soil |  | JE:This definition is not satisfactory. It should be expressed to capture a requirement to monitor a 3D field, and not be about standard measurements. | x |
| 612 | \Terrestrial\Land surface\Snow / Ice / Glacier\Glacier\Glacier topography | Glacier topography | Map of the height of the glacier surface. | 612 | land\_surface | ice-water(?) | JE:Delete “map of the” in definition? |  |
| 613 | \Terrestrial\Land surface\Snow / Ice / Glacier\Ice\Ice sheet topography | Ice sheet topography | Map of ice sheet height over land . | 613 | land\_surface | ice-water(?) | JE:Delete “map of” in definition? |  |
| 735 | \Ocean\Greenhouse Gas\pCO2 | pCO2 | Partial pressure of CO2 | 735 | sea-water | carbon-dioxide | JE170920: Is definition too restrictive? - at surface of sea only? |  |
| 739 | \Ocean\Miscellaneous\Fluorescence (DOM) | Fluorescence (DOM) | Flurometric colored dissolved Organic matter concentration | 739 | sea-water |  | JE:We have 3 definitions here and I don’t fully understand any of them. Does it mean: the concentration (density?) of dissolved organic matter that absorbs visible or UV light? |  |
| 181 | \Atmosphere\Clouds\Cloud drop effective radius | Cloud drop effective radius | Size distribution of liquid water drops, assimilated to spheres of the same volume. Considered as both a 3D field throughout the troposphere and a 2D field at the top of cloud surface. | 181 | clouds | liquid-and-ice-water(?) | JE:This is defined as both a 3D and a 2D variable, and it should logically be 2 separate variables. |  |
| 188 | \Atmosphere\Clouds\PSC occurrence | PSC occurrence | 3D field of Polar Stratospheric Clouds occurrence. - Accuracy expressed as Hit Rate [ HR ] and False Alarm Rate [ FAR ].Simplified: [ FAR/HR] | 188 | clouds | liquid-and-ice-water(?) | JE:This variable and definition look OK for now. |  |
| 210 | \Atmosphere\Precipitation\Amount of precipitation | Amount of precipitation |  | 210 |  | liquid-and-ice-water(?) |  | x |
| 212 | \Atmosphere\Precipitation\Intensity of precipitation | Intensity of precipitation |  | 212 |  | liquid-and-ice-water(?) | See comments ID\_OSCAR\_req=127. Confusing. | x |
| 325 | \Atmosphere\Aerosol\Optical properties\Multiwavelength optical depth, total aerosol | Multiwavelength optical depth, total aerosol | Aerosol optical depth of the atmospheric column determined at multiple wavelengths | 325 | aerosol | particle-phase-species | The definition given in the DB of OSCAR/Surface speaks about Vertical column integral of spectral aerosol absorption coefficient, whereas OSCAR/Requirement gives: Vertical column integral of spectral aerosol extinction coefficient. I asked to experts: "The extinction is simply the sum of absorption and scattering, so the two variables are different.ʺ --> AOD should be added into OSCAR/Surface DB. #325 in OSCAR/Surface "Multiwavelength optical depth, total aerosol" (def OSCAR/Surface: Aerosol optical depth of the atmospheric column determined at multiple wavelengths) ? --> longwave dependent variable. DEFINITION REVIEW NEEDED: There are problems with the definitions of both: OSCAR/Req does not give the reference wavelength, and OSCAR/Surface does not explain what is meant by multiple wavelengths (i.e. whether this is multiple optical depths, or a single optical depth derived from measurements at multiple wavelengths). | x |
| 329 | \Atmosphere\Clouds\Ice\Cloud ice effective radius | Cloud ice effective radius | Size distribution of ice particles, assimilated to spheres of the same volume. Considered as both a 3D field throughout the troposphere and a 2D field at the top of cloud surface | 329 | clouds | liquid-and-ice-water(?) | JE:This is defined as both a 3D and a 2D variable, and it should logically be 2 separate variables. |  |
| 331 | \Atmosphere\Clouds\Ice\Icing potential | Icing potential | 3D field of super-cooled liquid water, enabling the formation of ice coating on an object. | 331 | clouds | liquid-and-ice-water(?) | JE:Definition is not clear. The name “icing potential” has several definitions in practical use. Is it a density of cloud water, or is it a probability? |  |
| 566 | \Atmosphere\Radiation\IR\Long-wave radiation (downwelling) | Long-wave radiation (downwelling) |  | 566 |  |  |  | x |
|  |  | Upward long-wave irradiance at Earth surface | Flux density of terrestrial radiation emitted by the Earth surface |  |  |  | Not an exact match. Link to #567surf Long-wave radiation (upwelling). |  |
|  |  | Earth surface short-wave bidirectional reflectance | Reflectance of the Earth surface as a function of the viewing angle and the illumination angle in the range 0.4-0.7 . The distribution of this variable is represented by the Bidirectional Reflectance Distribution Function (BRDF) |  |  |  | Reflected solar radiation (#575) exists in OSCAR/Surface, but the Reflectance (ratio with of the reflected solar radiation to the Incident radiation) does not exist. |  |
|  |  | Aerosol mass mixing ratio | 3D field of the mass mixing ratio of condensed particles in the atmosphere |  |  |  | Closest in OSCAR/Surface is #368 "Mass concentration (total aerosol) or Mass TSP". The two are related but different.. |  |
|  |  | Long-wave Earth surface emissivity | Emissivity of the Earth surface in the thermal IR, function of the wavelength |  |  |  | Not in OSCAR/Surface. |  |
|  |  | Precipitation (liquid or solid) | 3D field of the vertical flux of precipitating water mass (precipitation intensity) |  |  |  | Should be rename I think to better distinguish with the "Intensity precipitation" variable. The definitions are confusing: "precipitation intensity" is mentionned in the first definition, and Precipitation intensity is in the second varibale name. I am not sure to understand the difference btw "amount of precipitation" and "Intensity of precipitation" distinguished in OSCAR/Surface. But I guess it is the same thing measured differently. |  |
|  |  | Specific humidity | 3D field of the specific humidity in the atmosphere. The specific humidity is the ratio between the mass of water vapour and the mass of moist air. |  |  |  | Very similar to OSCAR/Surface #253 Mass mixing ratio, but not the same. Specific Humidity- The mass of water vapor per unit mass of air (i.e. mass aof air= mass of water vapor + mass of dry air m\_d). While Mass mixing ratio=The mass of water vapor relative to the mass of the other gases, the denumerator is just m\_d. They both indicate the humidity but it is slightly different. Should choose one maybe or approximate that there are the same ? [Ref: http://www.atmo.ttu.edu/schroeder/ATMO\_1300/Notes/chapter5.pdf and http://www.engr.colostate.edu/~ramirez/ce\_old/classes/ce520\_ramirez/WaterVapor/EarthAtmosphereSystem.pdf].. |  |
|  |  | Aerosol species mole fraction | 3D field of the mole fraction of condensed-phase chemical species (e.g., sulfate, nitrate, ammonium, elemental carbon, organic carbon), in the atmosphere |  |  |  | Not in OSCAR/Surface and is badly defined in OSCAR/Req. Either it is many variables and not one, or it is a combination of different species and so it is not clear how it can be a mole fraction. \Atmosphere\Aerosol path --> many info in OSCAR/Surface. Further discussion needed. |  |
|  |  | Aerosol type | Selection, out of a pre-defined set of aerosol classes, that best fits an input data set (observed or modeled). The pre-defined set of aerosol classes includes specification of the particle composition, mixing state, complex refractive index, and shape as a function of particle size. The definition of aerosol type includes specification of all the classes as well as the algorithm used to choose the best fit to the input data. |  |  |  | Not in OSCAR/Surface. It is a separate variable (retrieved from satellite observations). |  |
|  |  | Ocean subsurface tracers | Concentration of trace molecules such as tritium and CFCs |  |  |  | Not in OSCAR/Surface and is badly defined in OSCAR/Req. It is many variables, not one. |  |
|  |  | Precipitation intensity at surface (solid) | Intensity of solid precipitation reaching the ground - Physical unit: [ mm/h ] (mm of liquid water after melting) |  |  |  | Not in OSCAR/Surface. It is a separate variable for which there are stated requirements. Cf. discussion #128. Further discussion required. Solid and/or Liquid distinction. |  |
|  |  | Atmospheric temperature | 3D field of the atmospheric temperature |  |  |  | It is different that the Temperature profile (#227 OSCAR/Surface). Add Atmospheric temperature (upper air) variable to OSCAR/Surface. |  |

##### In use in OSCAR/Surface and not in OSCAR/Requirements

Code table 1-01

Code table title: Observed Variable – measurand

| **#** | **PATH** | **NAME** | **DEFINITION** | **WMO306\_CD = OSCAR\_ID** | **Medium** | **Species** | **Used in OSCAR/Surface** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 37 | \Atmosphere\Aerological soundings | Aerological soundings |  | 37 |  |  | x |
| 44 | \Atmosphere\Integrated air samples | Integrated air samples |  | 44 |  |  | x |
| 87 | \Ocean\Other Gas\Oxygen, dissolved | Oxygen, dissolved |  | 87 | sea-water |  | x |
| 172 | \Terrestrial\River\River stage (level above reference) | River stage (level above reference) |  | 172 | river | liquid-and-ice-water(?) | x |
| 179 | \Atmosphere\Clouds\Cloud amount | Cloud amount |  | 179 | clouds | liquid-and-ice-water(?) | x |
| 193 | \Atmosphere\Gas\Greenhouse Gas\CH4 [C-13] | CH4 [C-13] |  | 193 | air | 13c-methane | x |
| 195 | \Atmosphere\Gas\Greenhouse Gas\CO2 [C-13] | CO2 [C-13] |  | 195 | air | 13c-carbon-dioxide | x |
| 196 | \Atmosphere\Gas\Greenhouse Gas\CO2 [O-18] | CO2 [O-18] |  | 196 | air | 18o-carbon-dioxide | x |
| 204 | \Atmosphere\Gas\Greenhouse Gas\SO2F2 (sulfuryl fluoride) | SO2F2 (sulphuryl fluoride) |  | 204 | air | sulfuryl-fluoride | x |
| 205 | \Atmosphere\Gas\Other Gas\H2 | H2 |  | 205 | air | hydrogen-molecule | x |
| 211 | \Atmosphere\Precipitation\Duration of precipitation | Duration of precipitation |  | 211 |  | liquid-and-ice-water(?) | x |
| 213 | \Atmosphere\Precipitation\Occurrence of precipitation during last period | Occurrence of precipitation during last period |  | 213 |  | liquid-and-ice-water(?) | x |
| 217 | \Atmosphere\Pressure\Characteristic of pressure tendency | Characteristic of pressure tendency |  | 217 |  |  | x |
| 218 | \Atmosphere\Pressure\Pressure tendency | Pressure tendency |  | 218 |  |  | x |
| 219 | \Atmosphere\Radionuclide\Beryllium [Be-7] | Beryllium [Be-7] |  | 219 | air | beryllium | x |
| 220 | \Atmosphere\Radionuclide\CO2 [C-14] | CO2 [C-14] |  | 220 | air | 14c carbon dioxide | x |
| 221 | \Atmosphere\Radionuclide\Krypton [Kr-85] | Krypton [Kr-85] |  | 221 | air | krypton | x |
| 222 | \Atmosphere\Radionuclide\Lead [Pb-210] | Lead [Pb-210] |  | 222 | air | lead | x |
| 223 | \Atmosphere\Radionuclide\Radon [Rn-222] | Radon [Rn-222] |  | 223 | air | radon | x |
| 225 | \Atmosphere\Temperature\Dew-point temperature (at specified distance from reference surface) | Dew-point temperature (at specified distance from reference surface) |  | 225 | air |  | x |
| 226 | \Atmosphere\Temperature\Extreme temperature (min, max) (at specified distance from reference surface) | Extreme temperature (min, max) (at specified distance from reference surface) |  | 226 | air |  | x |
| 227 | \Atmosphere\Temperature\Temperature profile | Temperature profile |  | 227 | air |  | x |
| 230 | \Atmosphere\Visibility\Visibility | Visibility |  | 230 | air |  | x |
| 248 | \Atmosphere\Dynamics\Transport calculations (e.g., trajectories) | Transport calculations (e.g., trajectories) |  | 248 | clouds |  | x |
| 256 | \Atmosphere\Humidity\Watervapor profile | Watervapor profile |  | 256 | air | water-vapor (?) | x |
| 262 | \Atmosphere\Gas\Ozone\Surface ozone | Surface ozone |  | 262 | air | ozone | x |
| 265 | \Atmosphere\Past weather\Past weather | Past weather |  | 265 |  |  | x |
| 266 | \Atmosphere\Present weather\Present weather | Present weather |  | 266 |  |  | x |
| 270 | \Atmosphere\Radiation\Sunshine duration | Sunshine duration |  | 270 |  |  | x |
| 275 | \Atmosphere\Gas\Reactive Gas\C2Cl4 (tetrachloroethene) | C2Cl4 (tetrachloroethene) |  | 275 | air | tetrachloroethene | x |
| 276 | \Atmosphere\Gas\Reactive Gas\C2HCl3 (trichloroethene) | C2HCl3 (trichloroethene) |  | 276 | air | trichloroethene | x |
| 277 | \Atmosphere\Gas\Reactive Gas\CH2Br2 (dibromomethane) | CH2Br2 (dibrimomethane) |  | 277 | air | dibromomethane | x |
| 278 | \Atmosphere\Gas\Reactive Gas\CH2Cl2 (dichloromethane) | CH2Cl2 (dichloromethane) |  | 278 | air |  | x |
| 279 | \Atmosphere\Gas\Reactive Gas\CH3Br (methylbromide) | CH3Br (methylbromide) |  | 279 | air | bromomethane | x |
| 280 | \Atmosphere\Gas\Reactive Gas\CH3Cl (methylchloride) | CH3Cl (methylchloride) |  | 280 | air | chloromethane | x |
| 281 | \Atmosphere\Gas\Reactive Gas\CH3I (methyliodide) | CH3I (methyliodide) |  | 281 | air | iodomethane | x |
| 282 | \Atmosphere\Gas\Reactive Gas\CHBr3 (bromoform) | CHBr3 (bromoform) |  | 282 | air | tribromomethane | x |
| 283 | \Atmosphere\Gas\Reactive Gas\CHCl3 (chloroform) | CHCl3 (chloroform) |  | 283 | air | trichloromethane | x |
| 287 | \Atmosphere\Gas\Reactive Gas\H2O2 (hydrogen peroxide) | H2O2 (hydrogen peroxide) |  | 287 | air | hydrogen peroxide | x |
| 289 | \Atmosphere\Gas\Reactive Gas\HF (hydrofluoric acid) | HF (hydrofluoric acid) |  | 289 | air | hydrogen-fluoride | x |
| 291 | \Atmosphere\Gas\Reactive Gas\ROOH | ROOH |  | 291 | air | organic-peroxide | x |
| 294 | \Atmosphere\Total Atmospheric Deposition\Acidity/Alkalinity | Acidity/Alkalinity |  | 294 | total\_atmospheric\_deposition |  | x |
| 295 | \Atmosphere\Total Atmospheric Deposition\Electric conductivity | Electric conductivity |  | 295 | total\_atmospheric\_deposition |  | x |
| 296 | \Atmosphere\Total Atmospheric Deposition\Hydrogen ion (H+) or pH | Hydrogen ion (H+) or pH |  | 296 | total\_atmospheric\_deposition | hydrogen-ion | x |
| 309 | \Atmosphere\Wind\Wind (surface wind direction and speed, horizontal) - deprecated | Wind (surface wind direction and speed, horizontal) - deprecated |  | 309 | air |  | x |
| 316 | \Atmosphere\Aerosol\Optical properties\Light absorption coefficient, PM1 | Light absorption coefficient, PM1 |  | 316 | pm1 | particle-phase-species | x |
| 317 | \Atmosphere\Aerosol\Optical properties\Light absorption coefficient, PM10 | Light absorption coefficient, PM10 |  | 317 | pm10 | particle-phase-species | x |
| 318 | \Atmosphere\Aerosol\Optical properties\Light absorption coefficient, total aerosol | Light absorption coefficient, total aerosol |  | 318 | aerosol | particle-phase-species | x |
| 319 | \Atmosphere\Aerosol\Optical properties\Light backscattering coefficient, PM1 | Light backscattering coefficient, PM1 |  | 319 | pm1 | particle-phase-species | x |
| 320 | \Atmosphere\Aerosol\Optical properties\Light backscattering coefficient, PM10 | Light backscattering coefficient, PM10 |  | 320 | pm10 | particle-phase-species | x |
| 321 | \Atmosphere\Aerosol\Optical properties\Light backscattering coefficient, total aerosol | Light backscattering coefficient, total aerosol |  | 321 | aerosol | particle-phase-species | x |
| 322 | \Atmosphere\Aerosol\Optical properties\Light scattering coefficient, PM1 | Light scattering coefficient, PM1 |  | 322 | pm1 | particle-phase-species | x |
| 323 | \Atmosphere\Aerosol\Optical properties\Light scattering coefficient, PM10 | Light scattering coefficient, PM10 |  | 323 | pm10 | particle-phase-species | x |
| 324 | \Atmosphere\Aerosol\Optical properties\Light scattering coefficient, total aerosol | Light scattering coefficient, total aerosol |  | 324 | aerosol | particle-phase-species | x |
| 326 | \Atmosphere\Aerosol\Optical properties\Vertical distribution of properties | Vertical distribution of properties |  | 326 | aerosol | particle-phase-species | x |
| 332 | \Atmosphere\Gas\Greenhouse Gas\Halon\CBrClF2 (Halon 1211) | CBrClF2 (Halon 1211) |  | 332 | air | bromochlorodifluoromethane | x |
| 333 | \Atmosphere\Gas\Greenhouse Gas\Halon\CBrF3 (bromotrifluoromethane, Halon 1301) | CBrF3 (bromotrifluoromethane, Halon 1301) |  | 333 | air | bromotrifluoromethane | x |
| 334 | \Atmosphere\POPs\PAH\C13H10 (9H-fluorene, fluorene), in air | C13H10 (9H-fluorene, fluorene), in air |  | 334 | air | fluorene | x |
| 335 | \Atmosphere\POPs\PAH\C14H10 (anthracene), PM10 | C14H10 (anthracene), PM10 |  | 335 | pm10 | anthracene | x |
| 336 | \Atmosphere\POPs\PAH\C14H10 (anthracene), in aerosol | C14H10 (anthracene), in aerosol |  | 336 | aerosol | anthracene | x |
| 337 | \Atmosphere\POPs\PAH\C14H10 (anthracene), in air and aerosol | C14H10 (anthracene), in aerosol and air |  | 337 | air-and-aerosol | anthracene | x |
| 338 | \Atmosphere\POPs\PAH\C14H10 (anthracene), in air | C14H10 (anthracene), in air |  | 338 | air | anthracene | x |
| 339 | \Atmosphere\POPs\PAH\C14H10 (phenanthrene), PM10 | C14H10 (phenanthrene), PM10 |  | 339 | pm10 | phenantrene | x |
| 340 | \Atmosphere\POPs\PAH\C14H10 (phenanthrene), in aerosol | C14H10 (phenanthrene), in aerosol |  | 340 | aerosol | phenantrene | x |
| 341 | \Atmosphere\POPs\PAH\C14H10 (phenanthrene), in air | C14H10 (phenanthrene), in air |  | 341 | air | phenantrene | x |
| 342 | \Atmosphere\POPs\PAH\C14H10 (phenanthrene), in air and aerosol | C14H10 (phenanthrene), in air and aerosol |  | 342 | air-and-aerosol | phenantrene | x |
| 343 | \Atmosphere\POPs\PAH\C14H10 (phenanthrene), in wet deposition | C14H10 (phenanthrene), in precipitation |  | 343 | wet\_atmospheric\_deposition | phenantrene | x |
| 344 | \Atmosphere\POPs\PAH\C14H10 (phenanthrene), in total precipitation | C14H10 (phenanthrene), in total precipitation |  | 344 | total\_atmospheric\_deposition | phenantrene | x |
| 345 | \Atmosphere\POPs\PAH\C16H10 (pyrene), in air and aerosol | C16H10 (pyrene), in air and aerosol |  | 345 | air-and-aerosol | pyrene | x |
| 346 | \Atmosphere\POPs\PAH\C18H12 (Benz(a)anthracene), PM10 | C18H12 (Benz(a)anthracene), PM10 |  | 346 | pm10 | benz(a)anthracene | x |
| 347 | \Atmosphere\POPs\PAH\C18H12 (Benz(a)anthracene), in aerosol | C18H12 (Benz(a)anthracene), in aerosol |  | 347 | aerosol | benz(a)anthracene | x |
| 348 | \Atmosphere\POPs\PAH\C18H12 (Benz(a)anthracene), in air | C18H12 (Benz(a)anthracene), in air |  | 348 | air | benz(a)anthracene | x |
| 349 | \Atmosphere\POPs\PAH\C18H12 (Benz(a)anthracene), in air and aerosol | C18H12 (Benz(a)anthracene), in air and aerosol |  | 349 | air-and-aerosol | benz(a)anthracene | x |
| 350 | \Atmosphere\POPs\PAH\C18H12 (Benz(a)anthracene), in precipitation | C18H12 (Benz(a)anthracene), in precipitation |  | 350 | wet\_atmospheric\_deposition | benz(a)anthracene | x |
| 351 | \Atmosphere\POPs\PAH\C18H12 (Benz(a)anthracene), in total precipitation | C18H12 (Benz(a)anthracene), in total precipitation |  | 351 | total\_atmospheric\_deposition | benz(a)anthracene | x |
| 356 | \Atmosphere\Radiation\UV\UV Broadband | UV Broadband |  | 356 |  |  | x |
| 357 | \Atmosphere\Radiation\UV\UV Erythemally weighted | UV Erythemally weighted |  | 357 |  |  | x |
| 358 | \Atmosphere\Radiation\UV\UV Multiband | UV Multiband |  | 358 |  |  | x |
| 359 | \Atmosphere\Radiation\UV\UV Spectral | UV Spectral |  | 359 |  |  | x |
| 364 | \Atmosphere\Aerosol\Physical properties - primary\Mass concentration (coarse) or Mass PM10 | Mass concentration (coarse) or Mass PM10 |  | 364 | pm10 | particle-phase-species | x |
| 365 | \Atmosphere\Aerosol\Physical properties - primary\Mass concentration (fine) or Mass PM1 | Mass concentration (fine) or Mass PM1 |  | 365 | pm1 | particle-phase-species | x |
| 366 | \Atmosphere\Aerosol\Physical properties - primary\Mass concentration (medium), PM2.5 | Mass concentration (medium), PM2.5 |  | 366 | pm2.5 | particle-phase-species | x |
| 367 | \Atmosphere\Aerosol\Physical properties - primary\Mass concentration (size fractionated) | Mass concentration (size fractionated) |  | 367 | aerosol | particle-phase-species | x |
| 368 | \Atmosphere\Aerosol\Physical properties - primary\Mass concentration (total aerosol) or Mass TSP | Mass concentration (total aerosol) or Mass TSP |  | 368 | aerosol | particle-phase-species | x |
| 369 | \Atmosphere\Aerosol\Physical properties - primary\Number concentration | Number concentration |  | 369 | aerosol | particle-phase-species | x |
| 370 | \Atmosphere\Aerosol\Physical properties - primary\Number size distribution, PM10 | Number size distribution, PM10 |  | 370 | pm10 | particle-phase-species | x |
| 371 | \Atmosphere\Aerosol\Physical properties - primary\Number size distribution, total aerosol | Number size distribution, total aerosol |  | 371 | aerosol | particle-phase-species | x |
| 375 | \Atmosphere\POPs\POP\C12H8Cl6 (aldrin), in aerosol | C12H8Cl6 (aldrin), in aerosol |  | 375 | aerosol | aldrin | x |
| 376 | \Atmosphere\POPs\POP\C12H8Cl6 (aldrin), in air | C12H8Cl6 (aldrin), in air |  | 376 | air | aldrin | x |
| 377 | \Atmosphere\POPs\POP\C12H8Cl6 (aldrin), in air and aerosol | C12H8Cl6 (aldrin), in air and aerosol |  | 377 | air-and-aerosol | aldrin | x |
| 378 | \Atmosphere\POPs\POP\C12H8Cl6 (aldrin), in total precipitation | C12H8Cl6 (aldrin), in total precipitation |  | 378 | total\_atmospheric\_deposition | aldrin | x |
| 379 | \Atmosphere\POPs\POP\C12H8Cl6 (aldrin), in wet precipitation | C12H8Cl6 (aldrin), in wet precipitation |  | 379 | wet\_atmospheric\_deposition | aldrin | x |
| 380 | \Atmosphere\POPs\POP\C6Cl6 (hexachlorobenzene, HCB), in air | C6Cl6 (hexachlorobenzene, HCB), in air |  | 380 | air | hexachlorobenzene | x |
| 381 | \Atmosphere\POPs\POP\C6H6Cl6 (1,2,3,4,5,6-hexachlorocyclohexane, alpha-lindane, alpha-HCH), in aerosol | C6H6Cl6 (1,2,3,4,5,6-hexachlorocyclohexane, alpha-lindane, alpha-HCH), in aerosol |  | 381 | aerosol | alpha-hexachlorocyclohexane | x |
| 382 | \Atmosphere\POPs\POP\C6H6Cl6 (1,2,3,4,5,6-hexachlorocyclohexane, alpha-lindane, alpha-HCH), in air | C6H6Cl6 (1,2,3,4,5,6-hexachlorocyclohexane, alpha-lindane, alpha-HCH), in air |  | 382 | air | alpha-hexachlorocyclohexane | x |
| 383 | \Atmosphere\POPs\POP\C6H6Cl6 (1,2,3,4,5,6-hexachlorocyclohexane, alpha-lindane, alpha-HCH), in wet precipitation | C6H6Cl6 (1,2,3,4,5,6-hexachlorocyclohexane, alpha-lindane, alpha-HCH), in wet precipitation |  | 383 | wet\_atmospheric\_deposition | alpha-hexachlorocyclohexane | x |
| 384 | \Atmosphere\POPs\POP\C6H6Cl6 (1,2,3,4,5,6-hexachlorocyclohexane, gamma-lindane, gamma-HCH), in air | C6H6Cl6 (1,2,3,4,5,6-hexachlorocyclohexane, gamma-lindane, gamma-HCH), in air |  | 384 | air | alpha-hexachlorocyclohexane | x |
| 385 | \Atmosphere\POPs\POP\C6H6Cl6 (1,2,3,4,5,6-hexachlorocyclohexane, gamma-lindane, gamma-HCH), in wet precipitation | C6H6Cl6 (1,2,3,4,5,6-hexachlorocyclohexane, gamma-lindane, gamma-HCH), in wet precipitation |  | 385 | wet\_atmospheric\_deposition | alpha-hexachlorocyclohexane | x |
| 390 | \Atmosphere\Gas\Reactive Gas\Nitrogen containing compounds\Ammonia (NH3) | Ammonia (NH3) |  | 390 | air | ammonia | x |
| 393 | \Atmosphere\Gas\Reactive Gas\Nitrogen containing compounds\HCN (formonitrile, hydrogen cyanide) | HCN (formonitrile, hydrogen cyanide) |  | 393 | air | hydrogen-cyanide | x |
| 397 | \Atmosphere\Gas\Reactive Gas\Nitrogen containing compounds\NOx | NOx |  | 397 | air | nox | x |
| 398 | \Atmosphere\Gas\Reactive Gas\Nitrogen containing compounds\NOy | NOy |  | 398 | air | noy | x |
| 411 | \Atmosphere\Aerosol\Physical properties - secondary\CCN concentration at single supersaturation | CCN concentration at single supersaturation |  | 411 | aerosol | particle-phase-species | x |
| 412 | \Atmosphere\Aerosol\Physical properties - secondary\CCN concentration spectra | CCN concentration spectra |  | 412 | aerosol | particle-phase-species | x |
| 413 | \Atmosphere\Aerosol\Physical properties - secondary\Hygroscopic growth factor, 110 μm equivalent | Hygroscopic growth factor, 110 μm equivalent |  | 413 | aerosol | particle-phase-species | x |
| 414 | \Atmosphere\Aerosol\Physical properties - secondary\Hygroscopic growth factor, 165 μm equivalent | Hygroscopic growth factor, 165 μm equivalent |  | 414 | aerosol | particle-phase-species | x |
| 415 | \Atmosphere\Aerosol\Physical properties - secondary\Hygroscopic growth factor, 35 μm equivalent | Hygroscopic growth factor, 35 μm equivalent |  | 415 | aerosol | particle-phase-species | x |
| 416 | \Atmosphere\Aerosol\Physical properties - secondary\Hygroscopic growth factor, 50 μm equivalent | Hygroscopic growth factor, 50 μm equivalent |  | 416 | aerosol | particle-phase-species | x |
| 417 | \Atmosphere\Aerosol\Physical properties - secondary\Hygroscopic growth factor, 75 μm equivalent | Hygroscopic growth factor, 75 μm equivalent |  | 417 | aerosol | particle-phase-species | x |
| 418 | \Atmosphere\Aerosol\Physical properties - secondary\Hygroscopic growth factor, total aerosol | Hygroscopic growth factor, total aerosol |  | 418 | aerosol | particle-phase-species | x |
| 419 | \Atmosphere\Gas\Greenhouse Gas\PFCs\C2F6 (hexafluoroethane, PFC-116) | C2F6 (hexafluoroethane, PFC-116) |  | 419 | air | hexafluoroethane | x |
| 420 | \Atmosphere\Gas\Greenhouse Gas\PFCs\C3F8 (octafluoropropane, PFC-218) | C3F8 (octafluoropropane, PFC-218) |  | 420 | air | octafluoropropane | x |
| 421 | \Atmosphere\Gas\Greenhouse Gas\PFCs\CF4 (tetrafluoromethane, carbon tetrafluoride, perfluoromethane, PFC-14) | CF4 (tetrafluoromethane, carbon tetrafluoride, perfluoromethane, PFC-14) |  | 421 | air | tetrafluoromethane | x |
| 435 | \Atmosphere\Gas\Reactive Gas\VOC\C2H2O2 (oxaldehyde, ethanedial) | C2H2O2 (oxaldehyde, ethanedial) |  | 435 | air |  | x |
| 436 | \Atmosphere\Gas\Reactive Gas\VOC\C2H4 (ethene) | C2H4 (ethene) |  | 436 | air | ethene | x |
| 439 | \Atmosphere\Gas\Reactive Gas\VOC\C3H4 (propyne) | C3H4 (propyne) |  | 439 | air | propyne | x |
| 442 | \Atmosphere\Gas\Reactive Gas\VOC\C3H6 (propene) | C3H6 (propene) |  | 442 | air | propene | x |
| 444 | \Atmosphere\Gas\Reactive Gas\VOC\C3H6O (propanal) | C3H6O (propanal) |  | 444 | air | propanal | x |
| 446 | \Atmosphere\Gas\Reactive Gas\VOC\C4H6 (1,3-butadiene, butadiene) | C4H6 (1,3-butadiene, butadiene) |  | 446 | air | buta-1,3-diene | x |
| 449 | \Atmosphere\Gas\Reactive Gas\VOC\C4H8 (1-butene) | C4H8 (1-butene) |  | 449 | air | 1-butene | x |
| 450 | \Atmosphere\Gas\Reactive Gas\VOC\C4H8 (sum of butenes) | C4H8 (sum of butenes) |  | 450 | air | butenes | x |
| 452 | \Atmosphere\Gas\Reactive Gas\VOC\C4H8O (butanal isomers) | C4H8O (butanal isomers) |  | 452 | air | butanal | x |
| 453 | \Atmosphere\Gas\Reactive Gas\VOC\C5H10 (1-pentene) | C5H10 (1-pentene) |  | 453 | air | pentenes | x |
| 457 | \Atmosphere\Gas\Reactive Gas\VOC\C5H10 (cyclopentane) | C5H10 (cyclopentane) |  | 457 | air | pentenes | x |
| 459 | \Atmosphere\Gas\Reactive Gas\VOC\C5H10 (sum of pentenes) | C5H10 (sum of pentenes) |  | 459 | air | pentenes | x |
| 460 | \Atmosphere\Gas\Reactive Gas\VOC\C5H10O (pentanal, valeraldehyde) | C5H10O (pentanal, valeraldehyde) |  | 460 | air | pentanal | x |
| 465 | \Atmosphere\Gas\Reactive Gas\VOC\C5H8 (cyclopentene) | C5H8 (cyclopentene) |  | 465 | air |  | x |
| 467 | \Atmosphere\Gas\Reactive Gas\VOC\C5Hn (n={12, 10}; sum of n-pentane & cyclopentane) | C5Hn (n={12, 10}; sum of n-pentane & cyclopentane) |  | 467 | air |  | x |
| 468 | \Atmosphere\Gas\Reactive Gas\VOC\C6H12 (cyclohexane) | C6H12 (cyclohexane) |  | 468 | air |  | x |
| 470 | \Atmosphere\Gas\Reactive Gas\VOC\C6H12O (hexanal isomers) | C6H12O (hexanal isomers) |  | 470 | air |  | x |
| 472 | \Atmosphere\Gas\Reactive Gas\VOC\C6H14 (2-methylpentane) | C6H14 (2-methylpentane) |  | 472 | air | 2-methyl pentane | x |
| 473 | \Atmosphere\Gas\Reactive Gas\VOC\C6H14 (3-methylpentane) | C6H14 (3-methylpentane) |  | 473 | air | 3-methyl pentane | x |
| 474 | \Atmosphere\Gas\Reactive Gas\VOC\C6H14 (n-hexane) | C6H14 (n-hexane) |  | 474 | air | hexanes | x |
| 475 | \Atmosphere\Gas\Reactive Gas\VOC\C6H14 (sum of methylpentanes) | C6H14 (sum of methylpentanes) |  | 475 | air | hexanes | x |
| 480 | \Atmosphere\Gas\Reactive Gas\VOC\C7H16 (sum of methylhexanes) | C7H16 (sum of methylhexanes) |  | 480 | air | heptanes | x |
| 481 | \Atmosphere\Gas\Reactive Gas\VOC\C7H6O (benzene carbaldehyde) | C7H6O (benzene carbaldehyde) |  | 481 | air |  | x |
| 483 | \Atmosphere\Gas\Reactive Gas\VOC\C8H10 (ethylbenzene) | C8H10 (ethylbenzene) |  | 483 | air | ethylbenzene | x |
| 484 | \Atmosphere\Gas\Reactive Gas\VOC\C8H10 (m-xylene) | C8H10 (m-xylene) |  | 484 | air | m-xylene | x |
| 485 | \Atmosphere\Gas\Reactive Gas\VOC\C8H10 (o-xylene) | C8H10 (o-xylene) |  | 485 | air | o-xylene | x |
| 486 | \Atmosphere\Gas\Reactive Gas\VOC\C8H10 (p,m-xylene) | C8H10 (p,m-xylene) |  | 486 | air | xylenes | x |
| 491 | \Atmosphere\Gas\Reactive Gas\VOC\CH3CHO (acetaldehyde, ethanal) | CH3CHO (acetaldehyde, ethanal) |  | 491 | air | ethylaldehyde | x |
| 494 | \Atmosphere\Gas\Reactive Gas\VOC\NMHC | NMHC |  | 494 | air | non-methane-hydrocarbon | x |
| 495 | \Atmosphere\Gas\Reactive Gas\VOC\c-C4H8 (cis-2-butene) | c-C4H8 (cis-2-butene) |  | 495 | air | 2-butene | x |
| 496 | \Atmosphere\Gas\Reactive Gas\VOC\c-C5H10 (cis-2-pentene) | c-C5H10 (cis-2-pentene) |  | 496 | air | pentenes | x |
| 498 | \Atmosphere\Gas\Reactive Gas\VOC\i-C4H8 (2-methylpropene, iso-butene) | i-C4H8 (2-methylpropene, iso-butene) |  | 498 | air | trans-2-butene | x |
| 503 | \Atmosphere\Gas\Reactive Gas\VOC\n-C7H16 (n-heptane) | n-C7H16 (n-heptane) |  | 503 | air | n-heptane | x |
| 504 | \Atmosphere\Gas\Reactive Gas\VOC\t-C4H8 (trans-2-butene) | t-C4H8 (trans-2-butene) |  | 504 | air | trans-2-butene | x |
| 505 | \Atmosphere\Gas\Reactive Gas\VOC\t-C5H10 (trans-2-pentene) | t-C5H10 (trans-2-pentene) |  | 505 | air | trans-2-pentene | x |
| 534 | \Atmosphere\Gas\Greenhouse Gas\HCFCs\C2H3Cl2F (1,1-dichloro-1-fluoroethane, HCFC-141b) | C2H3Cl2F (1,1-dichloro-1-fluoroethane, HCFC-141b) |  | 534 | air | 1,1-dichloro-1-fluoroethane | x |
| 535 | \Atmosphere\Gas\Greenhouse Gas\HCFCs\C2H3ClF2 (1-chloro-1,1-difluoroethane, HCFC-142b) | C2H3ClF2 (1-chloro-1,1-difluoroethane, HCFC-142b) |  | 535 | air | 1-chloro-1,1-difluoroethane | x |
| 536 | \Atmosphere\Gas\Greenhouse Gas\HCFCs\C2H3F3 (1,1,1-trifluoroethane, HCFC-143a) | C2H3F3 (1,1,1-trifluoroethane, HCFC-143a) |  | 536 | air | 1,1,1-trifluoroethane | x |
| 537 | \Atmosphere\Gas\Greenhouse Gas\HCFCs\CHClF2 (chlorodifluoromethane, HCFC-22) | CHClF2 (chlorodifluoromethane, HCFC-22) |  | 537 | air | chlorodifluoromethane | x |
| 538 | \Atmosphere\Total Atmospheric Deposition\Inorganic anions\Bromide (Br-) | Bromide (Br-) |  | 538 | total\_atmospheric\_deposition | bromide ion | x |
| 539 | \Atmosphere\Total Atmospheric Deposition\Inorganic anions\Chloride (Cl-) | Chloride (Cl-) |  | 539 | total\_atmospheric\_deposition | chloride-ion | x |
| 540 | \Atmosphere\Total Atmospheric Deposition\Inorganic anions\Fluoride (F-) | Fluoride (F-) |  | 540 | total\_atmospheric\_deposition | fluoride-ion | x |
| 543 | \Atmosphere\Total Atmospheric Deposition\Inorganic anions\Sulfate (SO4=), corrected | Sulphate (SO4=), corrected |  | 543 | total\_atmospheric\_deposition | sulphate-ion | x |
| 544 | \Atmosphere\Total Atmospheric Deposition\Inorganic anions\Sulfate (SO4=), total | Sulphate (SO4=), total |  | 544 | total\_atmospheric\_deposition | sulphate-ion | x |
| 545 | \Atmosphere\Total Atmospheric Deposition\Inorganic cations\Calcium (Ca++) | Calcium (Ca++) |  | 545 | total\_atmospheric\_deposition | calcium-ion | x |
| 546 | \Atmosphere\Total Atmospheric Deposition\Inorganic cations\Magnesium (Mg++) | Magnesium (Mg++) |  | 546 | total\_atmospheric\_deposition | magnesium-ion | x |
| 547 | \Atmosphere\Total Atmospheric Deposition\Inorganic cations\Potassium (K+) | Potassium (K+) |  | 547 | total\_atmospheric\_deposition | potassium-ion | x |
| 548 | \Atmosphere\Total Atmospheric Deposition\Inorganic cations\Sodium (Na+) | Sodium (Na+) |  | 548 | total\_atmospheric\_deposition | sodium-ion | x |
| 551 | \Atmosphere\Clouds\Type\Type of high clouds | Type of high clouds |  | 551 | clouds | liquid-and-ice-water(?) | x |
| 552 | \Atmosphere\Clouds\Type\Type of low clouds | Type of low clouds |  | 552 | clouds | liquid-and-ice-water(?) | x |
| 553 | \Atmosphere\Clouds\Type\Type of middle clouds | Type of middle clouds |  | 553 | clouds | liquid-and-ice-water(?) | x |
| 554 | \Atmosphere\Gas\Greenhouse Gas\HFCs\C2H2F4 (1,1,1,2-tetrafluoroethane, HFC-134a) | C2H2F4 (1,1,1,2-tetrafluoroethane, HFC-134a) |  | 554 | air | 1,1,1,2-tetrafluoroethane | x |
| 555 | \Atmosphere\Gas\Greenhouse Gas\HFCs\C2H4F2 (1,1-difluoroethane, HFC-152a) | C2H4F2 (1,1-difluoroethane, HFC-152a) |  | 555 | air | 1,1-difluoroethane | x |
| 556 | \Atmosphere\Gas\Greenhouse Gas\HFCs\C2HF5 (pentafluoroethane, HFC-125) | C2HF5 (pentafluoroethane, HFC-125) |  | 556 | air | pentafluoroethane | x |
| 557 | \Atmosphere\Gas\Greenhouse Gas\HFCs\C3H2F6 (1,1,1,2,3,3-hexafluoropropane, HFC-236fa) | C3H2F6 (1,1,1,2,3,3-hexafluoropropane, HFC-236fa) |  | 557 | air | 1,1,1,2,3,3-hexafluoropropane | x |
| 558 | \Atmosphere\Gas\Greenhouse Gas\HFCs\C3H3F5 (1,1,1,3,3-Pentafluoropropane, HFC-245fa) | C3H3F5 (1,1,1,3,3-Pentafluoropropane, HFC-245fa) |  | 558 | air | 1,1,1,3,3-pentafluoropropane | x |
| 559 | \Atmosphere\Gas\Greenhouse Gas\HFCs\C3HF7 (1,1,1,2,3,3,3-Heptafluoropropane, HFC-227ea) | C3HF7 (1,1,1,2,3,3,3-Heptafluoropropane, HFC-227ea) |  | 559 | air | 1,1,1,2,3,3,3-heptafluoropropane | x |
| 560 | \Atmosphere\Gas\Greenhouse Gas\HFCs\C4H5F5 (1,1,1,3,3-pentafluorobutane, HFC-365mfc) | C4H5F5 (1,1,1,3,3-pentafluorobutane, HFC-365mfc) |  | 560 | air | 1,1,1,3,3-pentafluorobutane | x |
| 561 | \Atmosphere\Gas\Greenhouse Gas\HFCs\CH2F2 (difluoromethane, HFC-32) | CH2F2 (difluoromethane, HFC-32) |  | 561 | air | difluoromethane | x |
| 562 | \Atmosphere\Gas\Greenhouse Gas\HFCs\CHF3 (trifluoromethane, HFC-23) | CHF3 (trifluoromethane, HFC-23) |  | 562 | air | trifluoromethane | x |
| 565 | \Atmosphere\Radiation\IR\Long-wave radiation (direction unspecified) | Long-wave radiation (direction unspecified) |  | 565 |  |  | x |
| 567 | \Atmosphere\Radiation\IR\Long-wave radiation (upwelling) | Long-wave radiation (upwelling) |  | 567 |  |  | x |
| 568 | \Atmosphere\Total Atmospheric Deposition\Inorganic nitrogen species\Ammonium (NH4+) | Ammonium (NH4+) |  | 568 | total\_atmospheric\_deposition | ammonium | x |
| 569 | \Atmosphere\Total Atmospheric Deposition\Inorganic nitrogen species\Nitrate (NO3-) | Nitrate (NO3-) |  | 569 | total\_atmospheric\_deposition | nitrate-ion | x |
| 570 | \Atmosphere\Total Atmospheric Deposition\Inorganic nitrogen species\Nitrite (NO2-) | Nitrite (NO2-) |  | 570 | total\_atmospheric\_deposition | nitrite-ion | x |
| 571 | \Atmosphere\Radiation\Solar\Diffuse solar radiation | Diffuse solar radiation |  | 571 |  |  | x |
| 572 | \Atmosphere\Radiation\Solar\Direct solar radiation | Direct solar radiation |  | 572 |  |  | x |
| 575 | \Atmosphere\Radiation\Solar\Reflected solar radiation | Reflected solar radiation |  | 575 |  |  | x |
| 579 | \Atmosphere\Aerosol\Composition\Acidity/Alkalinity, total aerosol | Acidity/Alkalinity, total aerosol |  | 579 | aerosol |  | x |
| 589 | \Atmosphere\Gas\Greenhouse Gas\CFCs\C2Cl2F4 (1,2-dichlorotetrafluoroethane, CFC-114) | C2Cl2F4 (1,2-dichlorotetrafluoroethane, CFC-114) |  | 589 | air | 1,2-dichlorotetrafluoroethane | x |
| 590 | \Atmosphere\Gas\Greenhouse Gas\CFCs\C2Cl3F3 (1,1,2-trichloro-1,2,2-trifluoroethane, CFC-113) | C2Cl3F3 (1,1,2-trichloro-1,2,2-trifluoroethane, CFC-113) |  | 590 | air | 1,1,2-trichloro-1,2,2-trifluoroethane | x |
| 591 | \Atmosphere\Gas\Greenhouse Gas\CFCs\C2ClF5 (1-chloro-1,1,2,2,2-pentafluoroethane, CFC-115) | C2ClF5 (1-chloro-1,1,2,2,2-pentafluoroethane, CFC-115) |  | 591 | air | chloropentafluoroethane | x |
| 594 | \Atmosphere\Gas\Greenhouse Gas\Halocarbons\CCl4 (carbon tetrachloride) | CCl4 (carbon tetrachloride) |  | 594 | air | carbon-tetrachloride | x |
| 595 | \Atmosphere\Gas\Greenhouse Gas\Halocarbons\CH3CCl3 (1,1,1-trichloroethane) | CH3CCl3 (1,1,1-trichloroethane) |  | 595 | air | 1,1,1-trichloroethane | x |
| 597 | \Atmosphere\Total Atmospheric Deposition\Trace elements\Aluminium (Al) | Aluminum (Al) |  | 597 | total\_atmospheric\_deposition | aluminium | x |
| 598 | \Atmosphere\Total Atmospheric Deposition\Trace elements\Arsenic (As) | Arsenic (As) |  | 598 | total\_atmospheric\_deposition | arsenic | x |
| 599 | \Atmosphere\Total Atmospheric Deposition\Trace elements\Cadmium (Cd) | Cadmium (Cd) |  | 599 | total\_atmospheric\_deposition | cadmium | x |
| 600 | \Atmosphere\Total Atmospheric Deposition\Trace elements\Chromium (Cr) | Chromium (Cr) |  | 600 | total\_atmospheric\_deposition | chromium | x |
| 601 | \Atmosphere\Total Atmospheric Deposition\Trace elements\Cobalt (Co) | Cobalt (Co) |  | 601 | total\_atmospheric\_deposition | cobalt | x |
| 602 | \Atmosphere\Total Atmospheric Deposition\Trace elements\Copper (Cu) | Copper (Cu) |  | 602 | total\_atmospheric\_deposition | copper | x |
| 603 | \Atmosphere\Total Atmospheric Deposition\Trace elements\Iron (Fe) | Iron (Fe) |  | 603 | total\_atmospheric\_deposition | iron | x |
| 604 | \Atmosphere\Total Atmospheric Deposition\Trace elements\Lead (Pb) | Lead (Pb) |  | 604 | total\_atmospheric\_deposition | lead | x |
| 605 | \Atmosphere\Total Atmospheric Deposition\Trace elements\Manganese (Mn) | Manganese (Mn) |  | 605 | total\_atmospheric\_deposition | manganese | x |
| 606 | \Atmosphere\Total Atmospheric Deposition\Trace elements\Mercury (Hg) | Mercury (Hg) |  | 606 | total\_atmospheric\_deposition | mercury | x |
| 607 | \Atmosphere\Total Atmospheric Deposition\Trace elements\Nickel (Ni) | Nickel (Ni) |  | 607 | total\_atmospheric\_deposition | nickel | x |
| 608 | \Atmosphere\Total Atmospheric Deposition\Trace elements\Vanadium (V) | Vanadium (V) |  | 608 | total\_atmospheric\_deposition | vanadium | x |
| 609 | \Atmosphere\Total Atmospheric Deposition\Trace elements\Zinc (Zn) | Zinc (Zn) |  | 609 | total\_atmospheric\_deposition | zinc | x |
| 614 | \Atmosphere\Aerosol\Composition\Inorganic anions\Chloride (Cl-), PM1 | Chloride (Cl-), PM1 |  | 614 | pm1 | chloride-ion | x |
| 615 | \Atmosphere\Aerosol\Composition\Inorganic anions\Chloride (Cl-), PM10 | Chloride (Cl-), PM10 |  | 615 | pm10 | chloride-ion | x |
| 616 | \Atmosphere\Aerosol\Composition\Inorganic anions\Chloride (Cl-), PM2.5 | Chloride (Cl-), PM2.5 |  | 616 | pm2.5 | chloride-ion | x |
| 617 | \Atmosphere\Aerosol\Composition\Inorganic anions\Chloride (Cl-), total aerosol | Chloride (Cl-), total aerosol |  | 617 | aerosol | chloride-ion | x |
| 618 | \Atmosphere\Aerosol\Composition\Inorganic anions\Fluoride (F-), total aerosol | Fluoride (F-), total aerosol |  | 618 | aerosol | fluoride-ion | x |
| 619 | \Atmosphere\Aerosol\Composition\Inorganic anions\Sulfate (SO4=), corrected | Sulphate (SO4=), corrected |  | 619 | aerosol | sulphate-ion | x |
| 620 | \Atmosphere\Aerosol\Composition\Inorganic anions\Sulfate (SO4=), total | Sulphate (SO4=), total |  | 620 | aerosol | sulphate-ion | x |
| 621 | \Atmosphere\Aerosol\Composition\Inorganic anions\Sulfate (SO4=), total, PM10 | Sulphate (SO4=), total, PM10 |  | 621 | pm10 | sulphate-ion | x |
| 622 | \Atmosphere\Aerosol\Composition\Inorganic anions\Sulfate (SO4=), total, PM2.5 | Sulphate (SO4=), total, PM2.5 |  | 622 | pm2.5 | sulphate-ion | x |
| 623 | \Atmosphere\Aerosol\Composition\Inorganic carbonaceous\Elemental carbon (coarse), PM10 | Elemental carbon (coarse), PM10 |  | 623 | pm10 | elemental-carbon | x |
| 624 | \Atmosphere\Aerosol\Composition\Inorganic carbonaceous\Elemental carbon, PM1 | Elemental carbon, PM1 |  | 624 | pm1 | elemental-carbon | x |
| 625 | \Atmosphere\Aerosol\Composition\Inorganic carbonaceous\Elemental carbon, PM2.5 | Elemental carbon, PM2.5 |  | 625 | pm2.5 | elemental-carbon | x |
| 626 | \Atmosphere\Aerosol\Composition\Inorganic carbonaceous\Total carbon (coarse), PM10 | Total carbon (coarse), PM10 |  | 626 | pm10 | total-carbon | x |
| 627 | \Terrestrial\Land surface\Snow / Ice / Glacier\Snow\Depth of fresh snowfall | Depth of fresh snowfall |  | 627 | land\_surface | ice-water(?) | x |
| 632 | \Atmosphere\Aerosol\Composition\Inorganic cations\Calcium (Ca++), PM10 | Calcium (Ca++), PM10 |  | 632 | pm10 | calcium-ion | x |
| 633 | \Atmosphere\Aerosol\Composition\Inorganic cations\Calcium (Ca++), PM2.5 | Calcium (Ca++), PM2.5 |  | 633 | pm2.5 | calcium-ion | x |
| 634 | \Atmosphere\Aerosol\Composition\Inorganic cations\Calcium (Ca++), total aerosol | Calcium (Ca++), total aerosol |  | 634 | aerosol | calcium-ion | x |
| 635 | \Atmosphere\Aerosol\Composition\Inorganic cations\Magnesium (Mg++), PM10 | Magnesium (Mg++), PM10 |  | 635 | pm10 | magnesium-ion | x |
| 636 | \Atmosphere\Aerosol\Composition\Inorganic cations\Magnesium (Mg++), PM2.5 | Magnesium (Mg++), PM2.5 |  | 636 | pm2.5 | magnesium-ion | x |
| 637 | \Atmosphere\Aerosol\Composition\Inorganic cations\Magnesium (Mg++), total aerosol | Magnesium (Mg++), total aerosol |  | 637 | aerosol | magnesium-ion | x |
| 638 | \Atmosphere\Aerosol\Composition\Inorganic cations\Potassium (K+), PM10 | Potassium (K+), PM10 |  | 638 | pm10 | potassium-ion | x |
| 639 | \Atmosphere\Aerosol\Composition\Inorganic cations\Potassium (K+), PM2.5 | Potassium (K+), PM2.5 |  | 639 | pm2.5 | potassium-ion | x |
| 640 | \Atmosphere\Aerosol\Composition\Inorganic cations\Potassium (K+), total aerosol | Potassium (K+), total aerosol |  | 640 | aerosol | potassium-ion | x |
| 641 | \Atmosphere\Aerosol\Composition\Inorganic cations\Sodium (Na+), PM10 | Sodium (Na+), PM10 |  | 641 | pm10 | sodium-ion | x |
| 642 | \Atmosphere\Aerosol\Composition\Inorganic cations\Sodium (Na+), PM2.5 | Sodium (Na+), PM2.5 |  | 642 | pm2.5 | sodium-ion | x |
| 643 | \Atmosphere\Aerosol\Composition\Inorganic cations\Sodium (Na+), total aerosol | Sodium (Na+), total aerosol |  | 643 | aerosol | sodium-ion | x |
| 645 | \Atmosphere\Aerosol\Composition\Inorganic nitrogen species\Ammonium (NH4+), PM10 | Ammonium (NH4+), PM10 |  | 645 | pm10 | ammonium | x |
| 646 | \Atmosphere\Aerosol\Composition\Inorganic nitrogen species\Ammonium (NH4+), PM2.5 | Ammonium (NH4+), PM2.5 |  | 646 | pm2.5 | ammonium | x |
| 647 | \Atmosphere\Aerosol\Composition\Inorganic nitrogen species\Ammonium (NH4+), total aerosol | Ammonium (NH4+), total aerosol |  | 647 | aerosol | ammonium | x |
| 648 | \Atmosphere\Aerosol\Composition\Inorganic nitrogen species\Ammonium nitrate (NH4NO3), total aerosol | Ammonium nitrate (NH4NO3), total aerosol |  | 648 | aerosol | ammonium-nitrate | x |
| 649 | \Atmosphere\Aerosol\Composition\Inorganic nitrogen species\Ammonium nitrate (NH4NO3), PM1 | Ammonium nitrate (NH4NO3, PM1 |  | 649 | pm1 | ammonium-nitrate | x |
| 650 | \Atmosphere\Aerosol\Composition\Inorganic nitrogen species\Nitrate (NO3-), PM10 | Nitrate (NO3-), PM10 |  | 650 | pm10 | nitrate-ion | x |
| 651 | \Atmosphere\Aerosol\Composition\Inorganic nitrogen species\Nitrate (NO3-), PM2.5 | Nitrate (NO3-), PM2.5 |  | 651 | pm2.5 | nitrate-ion | x |
| 652 | \Atmosphere\Aerosol\Composition\Inorganic nitrogen species\Nitrate (NO3-), total aerosol | Nitrate (NO3-), total aerosol |  | 652 | aerosol | nitrate-ion | x |
| 653 | \Atmosphere\Aerosol\Composition\Inorganic nitrogen species\Nitrite (NO2-), total aerosol | Nitrite (NO2-), total aerosol |  | 653 | aerosol | nitrogen-dioxide | x |
| 654 | \Atmosphere\Aerosol\Composition\Inorganic nitrogen species\Sum of ammonia (NH3) and ammonium (NH4+), in air and aerosol | Sum of ammonia (NH3) and ammonium (NH4+), in air and aerosol |  | 654 | air-and-aerosol | ammonium | x |
| 655 | \Atmosphere\Aerosol\Composition\Inorganic nitrogen species\Sum of nitric acid (HNO3) and nitrate (NO3-), in air and aerosol | Sum of nitric acid (HNO3) and nitrate (NO3-), in air and aerosol |  | 655 | air-and-aerosol | nitrate-ion | x |
| 656 | \Atmosphere\Aerosol\Composition\Major inorganic components\Major chemical components (size fractionated) | Major chemical components (size fractionated) |  | 656 | aerosol |  | x |
| 657 | \Atmosphere\Aerosol\Composition\Major inorganic components\Major inorganic components (TSP) | Major inorganic components (TSP) |  | 657 | aerosol |  | x |
| 658 | \Atmosphere\Aerosol\Composition\Major inorganic components\Major inorganic components (coarse) | Major inorganic components (coarse) |  | 658 | aerosol |  | x |
| 659 | \Atmosphere\Aerosol\Composition\Major inorganic components\Major inorganic components (fine) | Major inorganic components (fine) |  | 659 | aerosol |  | x |
| 660 | \Atmosphere\Aerosol\Composition\Major inorganic components\Other chemical components (coarse) | Other chemical components (coarse) |  | 660 | aerosol |  | x |
| 661 | \Atmosphere\Aerosol\Composition\Major inorganic components\Other chemical components (fine) | Other chemical components (fine) |  | 661 | aerosol |  | x |
| 662 | \Atmosphere\Aerosol\Composition\Organic anions\C2H3O2- (CH3COO-, acetate), PM1 | C2H3O2- (CH3COO-, acetate), PM1 |  | 662 | pm1 | acetate-ion | x |
| 663 | \Atmosphere\Aerosol\Composition\Organic anions\C2H3O2- (CH3COO-, acetate), in aerosol | C2H3O2- (CH3COO-, acetate), in aerosol |  | 663 | aerosol | acetate-ion | x |
| 664 | \Atmosphere\Aerosol\Composition\Organic anions\C2O4= (oxalate, ethanedioate), PM1 | C2O4= (oxalate, ethanedioate), PM1.0 |  | 664 | pm1 | oxalate | x |
| 665 | \Atmosphere\Aerosol\Composition\Organic anions\C2O4= (oxalate, ethanedioate), PM10 | C2O4= (oxalate, ethanedioate), PM10 |  | 665 | pm10 | oxalate | x |
| 666 | \Atmosphere\Aerosol\Composition\Organic anions\C2O4= (oxalate, ethanedioate), total aerosol | C2O4= (oxalate, ethanedioate), total aerosol |  | 666 | aerosol | oxalate | x |
| 667 | \Atmosphere\Aerosol\Composition\Organic anions\CH3O3S- (methanesulfonate), PM1 | CH3O3S- (methanesulphonate), PM1.0 |  | 667 | pm1 | methane-sulfonate-ion | x |
| 668 | \Atmosphere\Aerosol\Composition\Organic anions\CH3O3S- (methanesulfonate), total aerosol | CH3O3S- (methanesulphonate), total aerosol |  | 668 | aerosol | methane-sulfonate-ion | x |
| 669 | \Atmosphere\Aerosol\Composition\Organic anions\CHO2- (HCOO-, formate), in aerosol | CHO2- (HCOO-, formate), in aerosol |  | 669 | aerosol | formate-ion | x |
| 670 | \Atmosphere\Aerosol\Composition\Organic carbonaceous\Carbonaceous/organic material (coarse), PM10 | Carbonaceous/organic material (coarse), PM10 |  | 670 | pm10 | organic-carbon | x |
| 671 | \Atmosphere\Aerosol\Composition\Organic carbonaceous\Carbonaceous/organic material (fine) | Carbonaceous/organic material (fine) |  | 671 | aerosol | organic-carbon | x |
| 677 | \Atmosphere\Aerosol\Composition\Trace elements\Arsenic (As), PM10 | Arsenic (As), PM10 |  | 677 | pm10 | arsenic | x |
| 678 | \Atmosphere\Aerosol\Composition\Trace elements\Arsenic (As), total aerosol | Arsenic (As), total aerosol |  | 678 | aerosol | arsenic | x |
| 683 | \Atmosphere\Aerosol\Composition\Trace elements\Cadmium (Cd), PM1 | Cadmium (Cd), PM1 |  | 683 | pm1 | cadmium | x |
| 684 | \Atmosphere\Aerosol\Composition\Trace elements\Cadmium (Cd), PM10 | Cadmium (Cd), PM10 |  | 684 | pm10 | cadmium | x |
| 685 | \Atmosphere\Aerosol\Composition\Trace elements\Cadmium (Cd), PM2.5 | Cadmium (Cd), PM2.5 |  | 685 | pm2.5 | cadmium | x |
| 687 | \Atmosphere\Aerosol\Composition\Trace elements\Cadmium (Cd), total aerosol | Cadmium (Cd), total aerosol |  | 687 | aerosol | cadmium | x |
| 690 | \Atmosphere\Aerosol\Composition\Trace elements\Chromium (Cr), total aerosol | Chromium (Cr), total aerosol |  | 690 | aerosol | chromium | x |
| 691 | \Atmosphere\Aerosol\Composition\Trace elements\Cobalt (Co), total aerosol | Cobalt (Co), total aerosol |  | 691 | aerosol | cobalt | x |
| 692 | \Atmosphere\Aerosol\Composition\Trace elements\Copper (Cu), PM10 | Copper (Cu), PM10 |  | 692 | pm10 | copper | x |
| 693 | \Atmosphere\Aerosol\Composition\Trace elements\Copper (Cu), total aerosol | Copper (Cu), total aerosol |  | 693 | aerosol | copper | x |
| 694 | \Atmosphere\Aerosol\Composition\Trace elements\Iron (Fe), total aerosol | Iron (Fe), total aerosol |  | 694 | aerosol | iron | x |
| 697 | \Atmosphere\Aerosol\Composition\Trace elements\Lead (Pb), PM10 | Lead (Pb), PM10 |  | 697 | pm10 | lead | x |
| 698 | \Atmosphere\Aerosol\Composition\Trace elements\Lead (Pb), total aerosol | Lead (Pb), total aerosol |  | 698 | aerosol | lead | x |
| 701 | \Atmosphere\Aerosol\Composition\Trace elements\Manganese (Mn), PM10 | Manganese (Mn), PM10 |  | 701 | pm10 | manganese | x |
| 702 | \Atmosphere\Aerosol\Composition\Trace elements\Manganese (Mn), total aerosol | Manganese (Mn), total aerosol |  | 702 | aerosol | manganese | x |
| 703 | \Atmosphere\Aerosol\Composition\Trace elements\Mercury (Hg), total aerosol | Mercury (Hg), total aerosol |  | 703 | aerosol | mercury | x |
| 704 | \Atmosphere\Aerosol\Composition\Trace elements\Nickel (Ni), PM10 | Nickel (Ni), PM10 |  | 704 | pm10 | nickel | x |
| 705 | \Atmosphere\Aerosol\Composition\Trace elements\Nickel (Ni), total aerosol | Nickel (Ni), total aerosol |  | 705 | aerosol | nickel | x |
| 710 | \Atmosphere\Aerosol\Composition\Trace elements\Selenium (Se), total aerosol | Selenium (Se), total aerosol |  | 710 | aerosol | selenium | x |
| 722 | \Atmosphere\Aerosol\Composition\Trace elements\Vanadium (V), total aerosol | Vanadium (V), total aerosol |  | 722 | aerosol | vanadium | x |
| 724 | \Atmosphere\Aerosol\Composition\Trace elements\Zinc (Zn), total aerosol | Zinc (Zn), total aerosol |  | 724 | aerosol | zinc | x |
| 12000 | \Atmosphere\Pressure\Atmospheric pressure profile | Atmospheric pressure profile | Upper-air atmospheric pressure | 12000 |  |  | x |

##### Not yet in use in OSCAR/Surface and not in use in OSCAR/Requirements

Suggestion: #56 is recommended to be deprecated.

Code table 1-01

Code table title: Observed Variable – measurand

| **#** | **PATH** | **NAME** | **DEFINITION** | **WMO306\_CD = OSCAR\_ID** | **Medium** | **Species** | **Used in OSCAR/ Surface** | **COMMENTS** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 56 | \Atmosphere\Special phenomena | Special phenomena |  | 56 | air |  |  | To be deprecated |
| 57 | \Atmosphere\State of ground | State of ground |  | 57 | air |  |  |  |
| 62 | \Ocean\Currents\Ocean Current - Direction | Ocean Current - Direction |  | 62 | sea-water |  |  |  |
| 68 | \Ocean\Miscellaneous\Carbon species\Dissolved organic carbon | Dissolved organic carbon |  | 68 | sea-water | organic-carbon |  |  |
| 69 | \Ocean\Miscellaneous\Nitrogen species\Dissolved organic nitrogen | Dissolved organic nitrogen |  | 69 | sea-water |  |  |  |
| 74 | \Ocean\Biology\Primary production | Primary production |  | 74 | sea-water |  |  |  |
| 82 | \Ocean\Biology\SiO3= (metasilicate) | SiO3= (metasilicate) |  | 82 | sea-water |  |  |  |
| 84 | \Ocean\Other Gas\N2, Ar, O2 | N2, Ar, O2 |  | 84 | sea-water |  |  |  |
| 85 | \Ocean\Other Gas\O2/Ar ratio | O2/Ar ratio |  | 85 | sea-water |  |  |  |
| 90 | \Ocean\Reactive Gas\C2H6S (dimethylsulfide, DMS) | C2H6S (dimethylsulfide, DMS) |  | 90 | sea-water | dimethylsulfide |  |  |
| 166 | \Terrestrial\Ground water\Ground water (level) | Ground water (level) |  | 166 | ground\_water | liquid-and-ice-water(?) |  |  |
| 174 | \Terrestrial\Well\Well discharge | Well discharge |  | 174 | well |  |  |  |
| 182 | \Atmosphere\Clouds\Cloud hydrometeor concentration | Cloud hydrometeor concentration |  | 182 | clouds | liquid-and-ice-water(?) |  |  |
| 183 | \Atmosphere\Clouds\Effective radius of cloud hydrometeors | Effective radius of cloud hydrometeors |  | 183 | clouds | liquid-and-ice-water(?) |  |  |
| 214 | \Atmosphere\Precipitation\Rate of ice accretion | Rate of ice accretion |  | 214 |  | liquid-and-ice-water(?) |  |  |
| 229 | \Atmosphere\Visibility\Runway visual range | Runway visual range |  | 229 | air |  |  |  |
| 231 | \Terrestrial\Land surface\Breaking action/friction coefficient | Braking action/friction coefficient |  | 231 | land\_surface |  |  |  |
| 239 | \Terrestrial\Land surface\Runway conditions | Runway conditions |  | 239 | land\_surface |  |  |  |
| 245 | \Terrestrial\Soil\Soil heat Flux | Soil heat Flux |  | 245 | soil |  |  |  |
| 250 | \Atmosphere\Dynamics\Turbulence type (low levels and wake vortex) | Turbulence type (low levels and wake vortex) |  | 250 | clouds |  |  |  |
| 253 | \Atmosphere\Humidity\Mass mixing ratio | Mass mixing ratio |  | 253 | air | water-vapor (?) |  |  |
| 254 | \Atmosphere\Humidity\Object wetness duration | Object wetness duration |  | 254 | air | water-vapor (?) |  |  |
| 255 | \Atmosphere\Humidity\Water vapour pressure | Water vapour pressure |  | 255 | air | water-vapor (?) |  |  |
| 257 | \Atmosphere\Lightning\Lightning discharge energy | Lightning discharge energy |  | 257 | air |  |  |  |
| 258 | \Atmosphere\Lightning\Lightning discharge polarity | Lightning discharge polarity |  | 258 | air |  |  |  |
| 259 | \Atmosphere\Lightning\Lightning discharge rates | Lightning discharge rates |  | 259 | air |  |  |  |
| 260 | \Atmosphere\Lightning\Lightning discharge type (cloud to cloud, cloud to surface) | Lightning discharge type (cloud to cloud, cloud to surface) |  | 260 | air |  |  |  |
| 273 | \Atmosphere\Radiation\UV-B radiation | UV-B radiation |  | 273 |  |  |  |  |
| 285 | \Atmosphere\Gas\Reactive Gas\COF2 (difluoromethanal, carbonyl fluoride) | COF2 (difluoromethanal, carbonyl fluoride) |  | 285 | air | carbonyl-difluoride |  |  |
| 302 | \Atmosphere\Total Atmospheric Deposition\Sulphur (S) | Sulphur (S) |  | 302 | total\_atmospheric\_deposition | sulfur |  |  |
| 304 | \Atmosphere\Wind\Direction of cloud movement | Direction of cloud movement |  | 304 | air |  |  |  |
| 311 | \Ocean\Biology\Nitrogen species\NO2- (nitrite) | NO2- (nitrite) | nitrite concentration in sea water | 311 | sea-water | nitrite-ion |  |  |
| 312 | \Ocean\Biology\Nitrogen species\NO3- (nitrate) | NO3- (nitrate) | nitrate concentration in sea water | 312 | sea-water | nitrate-ion |  |  |
| 361 | \Atmosphere\Aerosol\Physical properties - primary\Aerosol column burden (mass density) | Aerosol column burden (mass density) | 2D field of the column burden of condensed particles in the atmosphere | 361 | aerosol | particle-phase-species |  |  |
| 399 | \Ocean\Biology\Phosporus species\PO4= (phosphate) | PO4= (phosphate) | phosphate conetration in sea water | 399 | sea-water | phosphate-ion |  |  |
| 400 | \Ocean\Biology\Phosporus species\Total organic phosphorus | Total organic phosphorus |  | 400 | sea-water | phosphorus |  |  |
| 408 | \Ocean\Transmissivity\CTD\Transmissivity | Transmissivity |  | 408 | sea-water |  |  |  |
| 429 | \Atmosphere\Gas\Reactive Gas\Sulfur containing compounds\CS2 (Carbon disulfide) | CS2 (Carbon disulfide) |  | 429 | air | carbon-disulfide |  |  |
| 432 | \Atmosphere\Lightning\Position\Lightning direction from station | Lightning direction from station |  | 432 | air |  |  |  |
| 433 | \Atmosphere\Lightning\Position\Lightning distance from station | Lightning distance from station |  | 433 | air |  |  |  |
| 440 | \Atmosphere\Gas\Reactive Gas\VOC\C3H4O (prop-2-enal, acrolein) | C3H4O (prop-2-enal, acrolein) |  | 440 | air | prop-2-enal |  |  |
| 441 | \Atmosphere\Gas\Reactive Gas\VOC\C3H4O2 (2-oxopropanal, methylglyoxal) | C3H4O2 (2-oxopropanal, methylglyoxal) |  | 441 | air | 2-oxopropanal |  |  |
| 447 | \Atmosphere\Gas\Reactive Gas\VOC\C4H6O (2-methylprop-2-enal, methacrolein) | C4H6O (2-methylprop-2-enal, methacrolein) |  | 447 | air | 2-methylprop-2-enal |  |  |
| 448 | \Atmosphere\Gas\Reactive Gas\VOC\C4H6O (but-3-en-2-one, methylvinylketone) | C4H6O (but-3-en-2-one, methylvinylketone) |  | 448 | air | butenone |  |  |
| 451 | \Atmosphere\Gas\Reactive Gas\VOC\C4H8O (butan-2-one, methylethylketone) | C4H8O (butan-2-one, methylethylketone) |  | 451 | air | butan-2-one |  |  |
| 454 | \Atmosphere\Gas\Reactive Gas\VOC\C5H10 (2-methyl-1-butene) | C5H10 (2-methyl-1-butene) |  | 454 | air | 2-methylbut-1-ene |  |  |
| 455 | \Atmosphere\Gas\Reactive Gas\VOC\C5H10 (2-methyl-2-butene) | C5H10 (2-methyl-2-butene) |  | 455 | air | 2-methylbut-2-ene |  |  |
| 456 | \Atmosphere\Gas\Reactive Gas\VOC\C5H10 (3-methyl-1-butene) | C5H10 (3-methyl-1-butene) |  | 456 | air | 3-methylbut-1-ene |  |  |
| 458 | \Atmosphere\Gas\Reactive Gas\VOC\C5H10 (sum of 1-pentene & 2-methyl-2-butene) | C5H10 (sum of 1-pentene & 2-methyl-2-butene) |  | 458 | air | pentenes |  |  |
| 461 | \Atmosphere\Gas\Reactive Gas\VOC\C5H12 & C4H8 (sum of 2,2-dimethylpropane & c-2-butene) | C5H12 & C4H8 (sum of 2,2-dimethylpropane & c-2-butene) |  | 461 | air | butenes |  |  |
| 462 | \Atmosphere\Gas\Reactive Gas\VOC\C5H12 (2,2-dimethylpropane) | C5H12 (2,2-dimethylpropane) |  | 462 | air | 2-dimethylpropane |  |  |
| 463 | \Atmosphere\Gas\Reactive Gas\VOC\C5H14 (2,3-dimethylbutane) | C5H14 (2,3-dimethylbutane) |  | 463 | air | 2,3-dimethylbutane |  |  |
| 466 | \Atmosphere\Gas\Reactive Gas\VOC\C5Hn (n={10, 8}; sum of 3-methyl-1-butene & cyclopentene) | C5Hn (n={10, 8}; sum of 3-methyl-1-butene & cyclopentene) |  | 466 | air |  |  |  |
| 469 | \Atmosphere\Gas\Reactive Gas\VOC\C6H12 (methylcyclopentane) | C6H12 (methylcyclopentane) |  | 469 | air |  |  |  |
| 471 | \Atmosphere\Gas\Reactive Gas\VOC\C6H14 (2,2-dimethylbutane) | C6H14 (2,2-dimethylbutane) |  | 471 | air | 2,2-dimethylbutane |  |  |
| 477 | \Atmosphere\Gas\Reactive Gas\VOC\C6Hn (n={14, 12}; sum of 3-methylpentane & cyclohexane) | C6Hn (n={14, 12}; sum of 3-methylpentane & cyclohexane) |  | 477 | air |  |  |  |
| 478 | \Atmosphere\Gas\Reactive Gas\VOC\C6Hn (n={14, 12}; sum of 2,2-dimethylbutane & methylcyclopentane | C6Hn (n={14, 12}; sum of 2,2-dimethylbutane & methylcyclopentane |  | 478 | air |  |  |  |
| 479 | \Atmosphere\Gas\Reactive Gas\VOC\C6Hn (n={14, 12}; sum of 2,3-dimethylbutane & methylcyclopentane | C6Hn (n={14, 12}; sum of 2,3-dimethylbutane & methylcyclopentane |  | 479 | air |  |  |  |
| 487 | \Atmosphere\Gas\Reactive Gas\VOC\C9H12 (1,2,4-trimethylbenzene) | C9H12 (1,2,4-trimethylbenzene) |  | 487 | air | 1-2-4-trimethylbenzene |  |  |
| 488 | \Atmosphere\Gas\Reactive Gas\VOC\C9H12 (1,3,5-trimethylbenzene) | C9H12 (1,3,5-trimethylbenzene) |  | 488 | air | 1-3-5-trimethylbenzene |  |  |
| 500 | \Atmosphere\Gas\Reactive Gas\VOC\i-C7H16 (2-methylhexane, isoheptane) | i-C7H16 (2-methylhexane, isoheptane) |  | 500 | air | 2-methyl-hexane |  |  |
| 507 | \Atmosphere\Clouds\Optical properties\Optical depth of fog | Optical depth of fog |  | 507 | clouds | liquid-and-ice-water(?) |  |  |
| 508 | \Atmosphere\Clouds\Optical properties\Optical depth within each layer | Optical depth within each layer |  | 508 | clouds | liquid-and-ice-water(?) |  |  |
| 521 | \Atmosphere\Visibility\Obscurations\Extinction coefficient | Extinction coefficient |  | 521 | air |  |  |  |
| 522 | \Atmosphere\Visibility\Obscurations\Hydrometeor radius | Hydrometeor radius |  | 522 | air |  |  |  |
| 524 | \Atmosphere\Visibility\Obscurations\Lithometeor type | Lithometeor type |  | 524 | air |  |  |  |
| 526 | \Atmosphere\Visibility\Obscurations\Obscuration type | Obscuration type |  | 526 | air |  |  |  |
| 529 | \Atmosphere\Total Atmospheric Deposition\Inorganic acid\Strong acids | Strong acids |  | 529 | total\_atmospheric\_deposition |  |  |  |
| 533 | \Atmosphere\Clouds\Position\Height of inversion | Height of inversion |  | 533 | clouds | liquid-and-ice-water(?) |  |  |
| 541 | \Atmosphere\Total Atmospheric Deposition\Inorganic anions\Iodide (I-) | Iodide (I-) |  | 541 | total\_atmospheric\_deposition | iodide-ion |  |  |
| 542 | \Atmosphere\Total Atmospheric Deposition\Inorganic anions\Phosphate (PO4---) | Phosphate (PO4---) |  | 542 | total\_atmospheric\_deposition | phosphate-ion |  |  |
| 549 | \Ocean\Other Gas\CTD\pO2 | pO2 |  | 549 | sea-water |  |  |  |
| 574 | \Atmosphere\Radiation\Solar\Global solar radiation (upwelling) | Global solar radiation (upwelling) |  | 574 |  |  |  |  |
| 576 | \Atmosphere\Total Atmospheric Deposition\Organic acid\Acetate (CH3COO-) | Acetate (CH3COO-) |  | 576 | total\_atmospheric\_deposition | acetate-ion |  |  |
| 577 | \Atmosphere\Total Atmospheric Deposition\Organic acid\Formate (HCOO-) | Formate (HCOO-) |  | 577 | total\_atmospheric\_deposition | formate-ion |  |  |
| 578 | \Atmosphere\Total Atmospheric Deposition\Organic acid\Propionate (C2H5COO-) | Propionate (C2H5COO-) |  | 578 | total\_atmospheric\_deposition | proprionate-ion |  |  |
| 644 | \Atmosphere\Aerosol\Composition\Inorganic nitrogen species\Ammonia (NH3), PM2.5 | Ammonia (NH3), PM2.5 |  | 644 | pm2.5 | ammonia |  |  |
| 672 | \Atmosphere\Aerosol\Composition\Trace elements\Titanium (Ti), total aerosol | Titanium (Ti), total aerosol |  | 672 | aerosol | titanium |  |  |
| 673 | \Atmosphere\Aerosol\Composition\Trace elements\Aluminium (Al), PM2.5 | Aluminium (Al), PM2.5 |  | 673 | pm2.5 | aluminium |  |  |
| 674 | \Atmosphere\Aerosol\Composition\Trace elements\Aluminium (Al), total aerosol | Aluminium (Al), total aerosol |  | 674 | aerosol | aluminium |  |  |
| 675 | \Atmosphere\Aerosol\Composition\Trace elements\Antimony (Sb), PM2.5 | Antimony (Sb), PM2.5 |  | 675 | pm2.5 | antimony |  |  |
| 676 | \Atmosphere\Aerosol\Composition\Trace elements\Antimony (Sb), total aerosol | Antimony (Sb), total aerosol |  | 676 | aerosol | antimony |  |  |
| 679 | \Atmosphere\Aerosol\Composition\Trace elements\Barium (Ba), PM2.5 | Barium (Ba), PM2.5 |  | 679 | pm2.5 | barium |  |  |
| 680 | \Atmosphere\Aerosol\Composition\Trace elements\Barium (Ba), total aerosol | Barium (Ba), total aerosol |  | 680 | aerosol | barium |  |  |
| 681 | \Atmosphere\Aerosol\Composition\Trace elements\Bismuth (Bi), PM2.5 | Bismuth (Bi), PM2.5 |  | 681 | pm2.5 | bismuth |  |  |
| 682 | \Atmosphere\Aerosol\Composition\Trace elements\Bismuth (Bi), total aerosol | Bismuth (Bi), total aerosol |  | 682 | aerosol | bismuth |  |  |
| 686 | \Atmosphere\Aerosol\Composition\Trace elements\Cadmium (Cd), PM2.5 thru PM10 | Cadmium (Cd), PM2.5 thru PM10 |  | 686 | aerosol-in-size-range | cadmium |  |  |
| 688 | \Atmosphere\Aerosol\Composition\Trace elements\Cerium (Ce), PM2.5 | Cerium (Ce), PM2.5 |  | 688 | pm2.5 | cerium |  |  |
| 689 | \Atmosphere\Aerosol\Composition\Trace elements\Cerium (Ce), total aerosol | Cerium (Ce), total aerosol |  | 689 | aerosol | cerium |  |  |
| 695 | \Atmosphere\Aerosol\Composition\Trace elements\Lanthanum (La), PM2.5 | Lanthanum (La), PM2.5 |  | 695 | pm2.5 | lanthanum |  |  |
| 696 | \Atmosphere\Aerosol\Composition\Trace elements\Lanthanum (La), total aerosol | Lanthanum (La), total aerosol |  | 696 | aerosol | lanthanum |  |  |
| 699 | \Atmosphere\Aerosol\Composition\Trace elements\Lithium (Li), PM2.5 | Lithium (Li), PM2.5 |  | 699 | pm2.5 | lithium |  |  |
| 700 | \Atmosphere\Aerosol\Composition\Trace elements\Lithium (Li), total aerosol | Lithium (Li), total aerosol |  | 700 | aerosol | lithium |  |  |
| 706 | \Atmosphere\Aerosol\Composition\Trace elements\Phosphorous (P), PM2.5 | Phosphorous (P), PM2.5 |  | 706 | pm2.5 | phosphorus |  |  |
| 707 | \Atmosphere\Aerosol\Composition\Trace elements\Phosphorous (P), total aerosol | Phosphorous (P), total aerosol |  | 707 | aerosol | phosphorus |  |  |
| 708 | \Atmosphere\Aerosol\Composition\Trace elements\Rubidium (Rb), PM2.5 | Rubidium (Rb), PM2.5 |  | 708 | pm2.5 | rubidium |  |  |
| 709 | \Atmosphere\Aerosol\Composition\Trace elements\Rubidium (Rb), total aerosol | Rubidium (Rb), total aerosol |  | 709 | aerosol | rubidium |  |  |
| 711 | \Atmosphere\Aerosol\Composition\Trace elements\Strontium (Sr), PM2.5 | Strontium (Sr), PM2.5 |  | 711 | pm2.5 | strontium |  |  |
| 712 | \Atmosphere\Aerosol\Composition\Trace elements\Strontium (Sr), total aerosol | Strontium (Sr), total aerosol |  | 712 | aerosol | strontium |  |  |
| 713 | \Atmosphere\Aerosol\Composition\Trace elements\Thallium (Tl), PM2.5 | Thallium (Tl), PM2.5 |  | 713 | pm2.5 | thallium |  |  |
| 714 | \Atmosphere\Aerosol\Composition\Trace elements\Thallium (Tl), total aerosol | Thallium (Tl), total aerosol |  | 714 | aerosol | thallium |  |  |
| 715 | \Atmosphere\Aerosol\Composition\Trace elements\Thorium (Th), PM2.5 | Thorium (Th), PM2.5 |  | 715 | pm2.5 | thorium |  |  |
| 716 | \Atmosphere\Aerosol\Composition\Trace elements\Thorium (Th), total aerosol | Thorium (Th), total aerosol |  | 716 | aerosol | thorium |  |  |
| 717 | \Atmosphere\Aerosol\Composition\Trace elements\Tin (Sn), PM2.5 | Tin (Sn), PM2.5 |  | 717 | pm2.5 | tin |  |  |
| 718 | \Atmosphere\Aerosol\Composition\Trace elements\Tin (Sn), total aerosol | Tin (Sn), total aerosol |  | 718 | aerosol | tin |  |  |
| 719 | \Atmosphere\Aerosol\Composition\Trace elements\Uranium (U), PM2.5 | Uranium (U), PM2.5 |  | 719 | pm2.5 | uranium |  |  |
| 720 | \Atmosphere\Aerosol\Composition\Trace elements\Uranium (U), total aerosol | Uranium (U), total aerosol |  | 720 | aerosol | uranium |  |  |
| 721 | \Atmosphere\Aerosol\Composition\Trace elements\Vanadium (V), PM2.5 | Vanadium (V), PM2.5 |  | 721 | pm2.5 | vanadium |  |  |
| 723 | \Atmosphere\Aerosol\Composition\Trace elements\Zinc (Zn), PM2.5 | Zinc (Zn), PM2.5 |  | 723 | pm2.5 | zinc |  |  |
| 725 | \Terrestrial\Lake\Snow / Ice / Glacier\Ice\Ice thickness | Ice thickness |  | 725 | lake | ice-water(?) |  |  |
| 726 | \Terrestrial\River\Snow / Ice / Glacier\Ice\Ice thickness | Ice thickness |  | 726 | river | ice-water(?) |  |  |
| 731 | \Ocean\Basic Physical Properties\Conductivity | Conductivity | Conductivity measured by CTD or MicroCAT | 731 | sea-water |  |  |  |
| 732 | \Ocean\Basic Physical Properties\Density | Density | Density measured by CTD | 732 | sea-water |  |  |  |
| 733 | \Ocean\Biology\Zooplankton (size and/or development stage) | Zooplankton (size and/or development stage) | the aggregate of animal or animal-like organisms in plankton, as protozoans | 733 | sea-water |  |  |  |
| 736 | \Ocean\Greenhouse Gas\pCO2 air-sea flux | pCO2 air-sea flux | Flux of CO2 from the ocean into the atmosphere | 736 | sea-water | carbon-dioxide |  |  |
| 740 | \Ocean\Topography\Mean dynamic topography (MDT) | Mean dynamic topography (MDT) |  | 740 | sea-water |  |  |  |
| 741 | \Ocean\Topography\Mean sea surface (MSS) | Mean sea surface (MSS) |  | 741 | sea-water |  |  |  |
| 742 | \Ocean\Topography\Sea surface height (SSH, OST) | Sea surface height (SSH, OST) |  | 742 | sea-water |  |  |  |
| 745 | \Ocean\Waves\Directional waves | Directional waves | Waves measured in X,Y,Z directions | 745 | sea-water |  |  |  |
| 10000 | \Atmosphere | Atmosphere |  | 10000 |  |  |  |  |
| 10001 | \Atmosphere\Aerosol | Aerosol |  | 10001 |  | particle-phase-species |  |  |
| 10002 | \Atmosphere\Aerosol\Composition | Composition |  | 10002 |  |  |  |  |
| 10003 | \Atmosphere\Aerosol\Composition\Inorganic anions | Inorganic anions |  | 10003 | aerosol | anion |  |  |
| 10004 | \Atmosphere\Aerosol\Composition\Inorganic carbonaceous | Inorganic carbonaceous |  | 10004 | aerosol | inorganic-carbon-species |  |  |
| 10005 | \Atmosphere\Aerosol\Composition\Inorganic cations | Inorganic cations |  | 10005 | aerosol | cation |  |  |
| 10006 | \Atmosphere\Aerosol\Composition\Inorganic nitrogen species | Inorganic nitrogen species |  | 10006 | aerosol | inorganic-nitrogen-species |  |  |
| 10007 | \Atmosphere\Aerosol\Composition\Major inorganic components | Major inorganic components |  | 10007 | aerosol | inorganic-species |  |  |
| 10008 | \Atmosphere\Aerosol\Composition\Organic anions | Organic anions |  | 10008 | aerosol | anion |  |  |
| 10009 | \Atmosphere\Aerosol\Composition\Organic carbonaceous | Organic carbonaceous |  | 10009 | aerosol | organic-carbon |  |  |
| 10010 | \Atmosphere\Aerosol\Composition\Trace elements | Trace elements |  | 10010 | aerosol | trace-metal |  |  |
| 10011 | \Atmosphere\Aerosol\Optical properties | Optical properties |  | 10011 | aerosol | particle-phase-species |  |  |
| 10012 | \Atmosphere\Aerosol\Physical properties - primary | Physical properties - primary |  | 10012 | aerosol | particle-phase-species |  |  |
| 10013 | \Atmosphere\Aerosol\Physical properties - primary\Dust | Dust |  | 10013 | aerosol | dust |  |  |
| 10014 | \Atmosphere\Aerosol\Physical properties - primary\Volcanic ash | Volcanic ash |  | 10014 | aerosol | volcanic-ash |  |  |
| 10015 | \Atmosphere\Aerosol\Physical properties - secondary | Physical properties - secondary |  | 10015 | aerosol | particle-phase-species |  |  |
| 10016 | \Atmosphere\Clouds | Clouds |  | 10016 | clouds | liquid-and-ice-water(?) |  |  |
| 10017 | \Atmosphere\Clouds\Ice | Ice |  | 10017 | clouds | liquid-and-ice-water(?) |  |  |
| 10018 | \Atmosphere\Clouds\Liquid water | Liquid water |  | 10018 | clouds | liquid-and-ice-water(?) |  |  |
| 10019 | \Atmosphere\Clouds\Optical properties | Optical properties |  | 10019 | clouds | liquid-and-ice-water(?) |  |  |
| 10020 | \Atmosphere\Clouds\Position | Position |  | 10020 | clouds | liquid-and-ice-water(?) |  |  |
| 10021 | \Atmosphere\Clouds\Type | Type |  | 10021 | clouds | liquid-and-ice-water(?) |  |  |
| 10022 | \Atmosphere\Dynamics | Dynamics |  | 10022 | clouds |  |  |  |
| 10023 | \Atmosphere\Gas\Greenhouse Gas | Greenhouse Gas |  | 10023 | air | gas-phase-species |  |  |
| 10024 | \Atmosphere\Gas\Greenhouse Gas\CFCs | CFCs |  | 10024 | air | chlorofluorocarbon |  |  |
| 10025 | \Atmosphere\Gas\Greenhouse Gas\Halocarbons | Halocarbons |  | 10025 | air | halogenated-hydrocarbon |  |  |
| 10026 | \Atmosphere\Gas\Greenhouse Gas\Halon | Halon |  | 10026 | air |  |  |  |
| 10027 | \Atmosphere\Gas\Greenhouse Gas\HCFCs | HCFCs |  | 10027 | air | chlorofluorocarbon |  |  |
| 10028 | \Atmosphere\Gas\Greenhouse Gas\HFCs | HFCs |  | 10028 | air | hcfc |  |  |
| 10029 | \Atmosphere\Gas\Greenhouse Gas\PFCs | PFCs |  | 10029 | air | perfluorinated-species |  |  |
| 10030 | \Atmosphere\Humidity | Humidity |  | 10030 | air | water-vapor (?) |  |  |
| 10031 | \Atmosphere\Lightning | Lightning |  | 10031 |  |  |  |  |
| 10032 | \Atmosphere\Lightning\Position | Position |  | 10032 |  |  |  |  |
| 10033 | \Atmosphere\Gas\Other Gas | Other Gas |  | 10033 | air | gas-phase-species |  |  |
| 10034 | \Atmosphere\Gas\Ozone | Ozone |  | 10034 | air | ozone |  |  |
| 10035 | \Atmosphere\Past weather | Past weather |  | 10035 |  |  |  |  |
| 10036 | \Atmosphere\POPs | POPs |  | 10036 | air-and-aerosol |  |  |  |
| 10037 | \Atmosphere\POPs\PAH | PAH |  | 10037 | air-and-aerosol | polycyclic-aromatic-hydrocarbon |  |  |
| 10038 | \Atmosphere\POPs\POP | POP |  | 10038 | air-and-aerosol |  |  |  |
| 10039 | \Atmosphere\Precipitation | Precipitation |  | 10039 |  | liquid-and-ice-water(?) |  |  |
| 10040 | \Atmosphere\Present weather | Present weather |  | 10040 |  |  |  |  |
| 10041 | \Atmosphere\Pressure | Pressure |  | 10041 |  |  |  |  |
| 10042 | \Atmosphere\Radiation | Radiation | >Atmosphere>Radiation>UV [category] | 10042 |  |  |  |  |
| 10043 | \Atmosphere\Radiation\IR | IR |  | 10043 |  |  |  |  |
| 10044 | \Atmosphere\Radiation\Solar | Solar |  | 10044 |  |  |  |  |
| 10045 | \Atmosphere\Radiation\UV | UV |  | 10045 |  |  |  |  |
| 10046 | \Atmosphere\Radionuclide | Radionuclide |  | 10046 | air | radionuclide |  |  |
| 10047 | \Atmosphere\Gas\Reactive Gas | Reactive Gas |  | 10047 | air | gas-phase-species |  |  |
| 10048 | \Atmosphere\Gas\Reactive Gas\Nitrogen containing compounds | Nitrogen containing compounds |  | 10048 | air | gas-phase-species |  |  |
| 10049 | \Atmosphere\Gas\Reactive Gas\Sulfur containing compounds | Sulfur containing compounds |  | 10049 | air | sulfur |  |  |
| 10050 | \Atmosphere\Gas\Reactive Gas\VOC | VOC |  | 10050 | air | volatile-organic-species |  |  |
| 10051 | \Atmosphere\Temperature | Temperature |  | 10051 | air |  |  |  |
| 10052 | \Atmosphere\Total Atmospheric Deposition | Total Atmospheric Deposition |  | 10052 | total\_atmospheric\_deposition |  |  |  |
| 10053 | \Atmosphere\Total Atmospheric Deposition\Inorganic acid | Inorganic acid |  | 10053 | total\_atmospheric\_deposition | inorganic-acid |  |  |
| 10054 | \Atmosphere\Total Atmospheric Deposition\Inorganic anions | Inorganic anions |  | 10054 | total\_atmospheric\_deposition | anion |  |  |
| 10055 | \Atmosphere\Total Atmospheric Deposition\Inorganic cations | Inorganic cations |  | 10055 | total\_atmospheric\_deposition | cation |  |  |
| 10056 | \Atmosphere\Total Atmospheric Deposition\Inorganic nitrogen species | Inorganic nitrogen species |  | 10056 | total\_atmospheric\_deposition | inorganic-nitrogen-species |  |  |
| 10057 | \Atmosphere\Total Atmospheric Deposition\Organic acid | Organic acid |  | 10057 | total\_atmospheric\_deposition | organic-acid |  |  |
| 10058 | \Atmosphere\Total Atmospheric Deposition\Trace elements | Trace elements |  | 10058 | total\_atmospheric\_deposition | trace-metal |  |  |
| 10059 | \Atmosphere\Visibility | Visibility |  | 10059 |  |  |  |  |
| 10060 | \Atmosphere\Visibility\Obscurations | Obscurations |  | 10060 |  |  |  |  |
| 10061 | \Atmosphere\Wind | Wind |  | 10061 |  |  |  |  |
| 10062 | \Earth | Earth |  | 10062 | earth |  |  |  |
| 10063 | \Ocean | Ocean |  | 10063 | sea-water |  |  |  |
| 10064 | \Ocean\Topography | Topography |  | 10064 | sea-water |  |  |  |
| 10065 | \Ocean\Currents | Currents |  | 10065 | sea-water |  |  |  |
| 10066 | \Ocean\Miscellaneous | Miscellaneous |  | 10066 | sea-water |  |  |  |
| 10067 | \Ocean\Biology | Biology |  | 10067 | sea-water |  |  |  |
| 10068 | \Ocean\Biology\Nitrogen species | Nitrogen species |  | 10068 | sea-water |  |  |  |
| 10069 | \Ocean\Biology\Phosporus species | Phosporus species |  | 10069 | sea-water |  |  |  |
| 10070 | \Ocean\Other Gas | Other Gas |  | 10070 | sea-water |  |  |  |
| 10071 | \Ocean\Other Gas\CTD | CTD |  | 10071 | sea-water |  |  |  |
| 10074 | \Ocean\Radiation | Radiation |  | 10074 | sea-water |  |  |  |
| 10075 | \Ocean\Reactive Gas | Reactive Gas |  | 10075 | sea-water |  |  |  |
| 10076 | \Ocean\Basic Physical Properties | Basic Physical Properties |  | 10076 | sea-water |  |  |  |
| 10077 | \Ocean\Snow / Ice / Glacier | Snow / Ice / Glacier |  | 10077 | sea-water |  |  |  |
| 10078 | \Ocean\Snow / Ice / Glacier\Ice | Ice |  | 10078 | sea-water | ice-water(?) |  |  |
| 10080 | \Ocean\Tides | Tides |  | 10080 | sea-water |  |  |  |
| 10081 | \Ocean\Transmissivity | Transmissivity |  | 10081 | sea-water |  |  |  |
| 10082 | \Ocean\Transmissivity\CTD | CTD |  | 10082 | sea-water |  |  |  |
| 10083 | \Ocean\Waves | Waves |  | 10083 | sea-water |  |  |  |
| 10084 | \Ocean\Wind | Wind |  | 10084 | sea-water |  |  |  |
| 10085 | \Outer Space | Outer Space |  | 10085 | outer\_space |  |  |  |
| 10086 | \Outer Space\Energetic particles / solar wind | Energetic particles / solar wind |  | 10086 | outer\_space |  |  |  |
| 10087 | \Outer Space\Energetic particles / solar wind \Particle density | Particle density |  | 10087 | outer\_space |  |  |  |
| 10088 | \Outer Space\Energetic particles / solar wind \Particle flux | Particle flux |  | 10088 | outer\_space |  |  |  |
| 10089 | \Outer Space\Ionospheric disturbances | Ionospheric disturbances |  | 10089 | outer\_space |  |  |  |
| 10090 | \Outer Space\Solar monitoring | Solar monitoring |  | 10090 | outer\_space |  |  |  |
| 10091 | \Terrestrial | Terrestrial |  | 10091 |  |  |  |  |
| 10092 | \Terrestrial\Ground water | Ground water |  | 10092 | ground\_water | liquid-and-ice-water(?) |  |  |
| 10093 | \Terrestrial\Lake | Lake |  | 10093 |  | liquid-and-ice-water(?) |  |  |
| 10094 | \Terrestrial\Lake\Snow / Ice / Glacier | Snow / Ice / Glacier |  | 10094 |  | ice-water(?) |  |  |
| 10095 | \Terrestrial\Lake\Snow / Ice / Glacier\Ice | Ice |  | 10095 | lake | ice-water(?) |  |  |
| 10096 | \Terrestrial\Lake\Temperature | Temperature |  | 10096 | lake |  |  |  |
| 10097 | \Terrestrial\Land surface | Land surface |  | 10097 |  |  |  |  |
| 10098 | \Terrestrial\Land surface\Fire | Fire |  | 10098 |  |  |  |  |
| 10099 | \Terrestrial\Land surface\Greenhouse Gas | Greenhouse Gas |  | 10099 |  |  |  |  |
| 10100 | \Terrestrial\Land surface\Humidity | Humidity |  | 10100 | land\_surface | water-vapour |  |  |
| 10101 | \Terrestrial\Land surface\Radiation | Radiation |  | 10101 |  |  |  |  |
| 10102 | \Terrestrial\Land surface\Snow / Ice / Glacier | Snow / Ice / Glacier |  | 10102 |  | ice-water(?) |  |  |
| 10103 | \Terrestrial\Land surface\Snow / Ice / Glacier\Glacier | Glacier |  | 10103 |  | ice-water(?) |  |  |
| 10104 | \Terrestrial\Land surface\Snow / Ice / Glacier\Ice | Ice |  | 10104 |  | ice-water(?) |  |  |
| 10105 | \Terrestrial\Land surface\Snow / Ice / Glacier\Snow | Snow |  | 10105 |  | ice-water(?) |  |  |
| 10106 | \Terrestrial\Land surface\Temperature | Temperature |  | 10106 | land\_surface |  |  |  |
| 10107 | \Terrestrial\Land surface\Vegetation | Vegetation |  | 10107 | land\_surface |  |  |  |
| 10108 | \Terrestrial\River | River |  | 10108 |  | liquid-and-ice-water(?) |  |  |
| 10109 | \Terrestrial\River\Snow / Ice / Glacier | Snow / Ice / Glacier |  | 10109 |  | ice-water(?) |  |  |
| 10110 | \Terrestrial\River\Snow / Ice / Glacier\Ice | Ice |  | 10110 | river | ice-water(?) |  |  |
| 10111 | \Terrestrial\Soil | Soil |  | 10111 |  |  |  |  |
| 10112 | \Terrestrial\Soil\Humidity | Humidity |  | 10112 | soil | liquid-water(?) |  |  |
| 10113 | \Terrestrial\Soil\Temperature | Temperature |  | 10113 |  |  |  |  |
| 10114 | \Terrestrial\Well | Well |  | 10114 |  |  |  |  |
| 10115 | \Ocean\Greenhouse Gas | Greenhouse Gas |  | 10115 | sea-water |  |  |  |
| 10116 | \Ocean\Miscellaneous\Carbon species | Carbon species |  | 10116 | sea-water |  |  |  |
| 10117 | \Ocean\Miscellaneous\Nitrogen species | Nitrogen species |  | 10117 | sea-water |  |  |  |
| 12003 | \Atmosphere\Gas | Gas |  | 12003 | air | gas-phase-species |  |  |
| 743 | \Ocean\Waves\Wave height | Wave height1,3 | average of height (trough to crest) of the waves collected through a specified time | 743 | sea-water |  |  |  |
| 744 | \Ocean\Waves\Wave period | Wave period2,3 | The time required for two successive wave crests to pass a fixed point, or the time for a single wave crest to travel a distance equal to the length of the wave. This is averaged over a specified period of time. | 744 | sea-water |  |  |  |

1 JE170920: Duplicate of #100?

2 JE170920: Duplicate of #99?

3 These two comments have been added here to facilitate the reading of the above table.

##### In use in OSCAR/Requirements but not in use in OSCAR/Surface

Suggestion: The below entries are not measured from the surface and then it is proposed to not add to the OSCAR/Surface variable list.

Code table 1-01

Code table title: Observed Variable – measurand

| **#** | **NAME** | **DEFINITION** | **WMO306\_CD = OSCAR\_ID** | **COMMENTS** |
| --- | --- | --- | --- | --- |
|  | Cloud top temperature | Temperature of the upper surface of the cloud |  | Satellite measurement. |
|  | Downward short-wave irradiance at TOA | Flux density of the solar radiation at the top of the atmosphere |  | Cannot be absorbed by the surface. |
|  | Height of the top of PBL | Height of the surface separating the PBL from the free atmosphere |  |  |
|  | Height of the tropopause | Height of the surface separating the troposphere from the stratosphere |  |  |
|  | Upward short-wave irradiance at TOA | Flux density of solar radiation, reflected by the Earth surface and atmosphere, emitted to space at the top of the atmosphere |  | Not at the level of the TOA in OSCAR/Surface I think. |
|  | Upward spectral radiance at TOA | Upward radiant power measured at the top of the atmosphere per area unit, per solid angle, and per wavelength interval. Spectral range 0.2-200 µm. Resolving power ?/??= 1000. Accuracy quoted as SNR (Signal-to-Noise-Ratio), actually SNR^-1 so that smaller figure means better performance, as usual. |  | Not at the level of the TOA in OSCAR/Surface I think. |
|  | Upward long-wave irradiance at TOA | Flux density of terrestrial radiation emitted by the Earth surface and the gases, aerosols and clouds ot the atmosphere at the top of the atmosphere |  | Not at the level of the TOA in OSCAR/Surface I think. |
|  | Energetic Neutral Atom (ENA) | Neutral atoms resulting from the capture of free electrons by positively ionized nuclei of the solar wind. Once neutralised, the particles are no longer deviated by the interplanetary magnetic field, and still move very fast, travelling in an exact straight line. |  | Related to the OSCAR/Surface variable: 513 \Outer Space\Energetic particles/solar wind \Particle flux\Cosmic ray neutron flux spectrum ?? |
|  | UV flux spectrum | Energy spectrum of diffuse UV flux measured in space. |  |  |

### 5.4.2.5 Control standard type *[pending]*

Suggestion: The addition of the two red entries, which are in used in the OSCAR DB.

Code table 5-08-01

Code table title:Control standard type

|  |  |  |
| --- | --- | --- |
| **#** | **Name** | **WMO306\_CD** |
| 1 | International | internationalStandard |
| 2 | Primary | primaryStandard |
| 3 | Secondary | secondaryStandard |
| 4 | Reference | referenceStandard |
| 6 | Transfer | transferStandard |
| 8 | Collective | collectiveStandard |
| 5 | Working | workingStandard |
| 7 | Travelling | travellingStandard |
| 8 | Field | fieldStandard |
| 9 | Laboratory | laboratoryStandard |

# 5.4.4 Annexes

### 5.4.4.1 Program function – long name

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| # | ID | Long name | Short name | WMO306\_CD |
|  | 1 | GAW SSC OPAG EPAC | GAW SSC | gawSSC |
|  | 2 | GAW SAG Ozone | SAG O3 | gawSAGO3 |
|  | 3 | GAW SAG Greenhouse Gases | SAG GG | gawSAGGG |
|  | 4 | GAW SAG Reactive Gases | SAG RG | gawSAGRG |
|  | 5 | GAW SAG Aerosols | SAG Aerosols | gawSAGAer |
|  | 6 | GAW SAG Total Atmospheric Deposition | SAG TAD | gawSAGTAD |
|  | 7 | GAW SAG UV | SAG UV | gawSAGUV |
|  | 8 | GAW SAG GURME | SAG GURME | gawSAGGURME |
|  | 9 | GAW Expert Team on World Data Centres | ET-WDC | gawETWDC |
|  | 10 | GAW QA/SAC | QA/SAC | gawQASAC |
|  | 11 | GAW World Calibration Centre | WCC | gawWCC |
|  | 12 | GAW Regional Calibration Centre | RCC | gawRCC |
|  | 13 | GAW CCL (Central Calibration Laboratory) | CCL | gawCCL |
|  | 14 | GAW World Data Centre | WDC | gawWDC |
|  | 15 | GAW Contributing Data Centre | CDC | gawCDC |
|  | 16 | JCOMM Member | MBR | member |
|  | 17 | JCOMM Chairperson | CHAIR | chair |
|  | 18 | JCOMM Principal Investigator | PI | principalInvestigator |
|  | 19 | JCOMM G/DAC Manager | DACM | gdacMgr |
|  | 20 | JCOMM Program Manager | PM | progMgr |
|  | 21 | JCOMM Technical Expert | TE | techExpert |
|  | 22 | JCOMM Program GTS Coordinator | PGC | progGTSCoord |
|  | 23 | JCOMM Manufacturer | MANUF | manuf |
|  | 24 | JCOMM Delayed-Mode Operator | DM | delayedModeOpr |
|  | 25 | JCOMM Operations Manager | OP | operMgr |
|  | 26 | JCOMM (other) | OT | other |
|  | 27 | JCOMM Vice Chairperson | VCHAIR | viceChair |
|  | 28 | JCOMM Technical Coordinator | TC | techCoord |
|  | 29 | JCOMM Secretariat (IOC) | SIOC | iocSecretariat |
|  | 30 | JCOMM Secretariat (WMO) | SWMO | wmoSecretariat |
|  | 31 | JCOMM Coordinator, Science & Communication | CSC | coordSciComm |

### 5.4.4.2 List of participants to the group working on observed variables.

|  |
| --- |
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### 5.4.4.3 Status and actions

Below is a summary of the items discussed during the TT-WMD-6 meeting and their respective status with the corresponding actions, if needed.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Table** | **WMDS** | **CBS** | **Status** | **Comments** | **Actions** |
| **Program function** |  |  | **pending** |  | Approval from TT needed |
| **Station classes** |  |  | **pending** | TT suggests to remove this table | Review the table and concept of the station class |
| **Geometry features** |  |  | **approved** |  |  |
| **Direction of view for picture** |  |  | **approved but incomplete** | The table is not exhaustive e.g. panoramic view, from top, unknown… | Expand table with other possibilities and review name of the table |
| **Programs/networks** | 2-02 | 2-02 | **pending** | New definitions added to the table based on info provided by JCOMMOPS. New WMO306 code based on rules discussed with Steve Forman/Jörg Klausen and Lucia Cappelletti. | TT should review the table by email and approve it. Code registry should be updated accordingly. |
| **Local topography** | 4-03 | 4-03-01 | **approved** |  |  |
| **Relative elevation** | 4-03 | 4-03-02 | **approved** |  |  |
| **Topographic context** | 4-03 | 4-03-03 | **approved** |  |  |
| **Altitude/depth** | 4-03 | 4-03-04 | **approved** |  |  |
| **Measurement unit** | 1-02 | 1-02 | **approved** | In the CBS document, the table is listed in the code tables list but the table 1-02 itself is not provided in the document. |  |
| **Observed variable – measurand** | 1-01 | 1-01 | **pending** | There are two types of entries: "Non-controversial" variables and "Under discussion" variables | TT should quickly review the table by email and approved it. The goal here is to have a temporary code table for the observed variables, but there is still pending work on the variables list in the ad hoc group. |
| **Control standard type** | 5-08-01 | 5-08-01 | **pending** |  | Approval from TT needed. This table was not in the version 3 discussed during te meeting. |

1. These comments come from the ad hoc group on the observed variables. It starts with the commentator’s initial letters followed by the date of the comments. [↑](#footnote-ref-1)