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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **VOS Report for 2017** | | | **Country =** | | | | **INDIA** | |
|  | | | | | | | | | |
|  | **a.** | **Programme description:** | | | | | | | |
| **Category** | | **No. of ships at**  **31 Dec 2017** | **Recruitments in 2017** | **De-recruitments**  **In 2017** | | **Comments** | | |
| *Selected* | |  |  |  | |  | | |
| *Selected AWS* | |  |  |  | |  | | |
| *VOSClim* | |  |  |  | |  | | |
| *VOSClim AWS* | | 35 | 3 | 1 | | One ship with AWS sunk during Cyclone. | | |
| *Supplementary* | |  |  |  | |  | | |
| *Supplementary AWS* | |  |  |  | |  | | |
| *Auxiliary* | |  |  |  | |  | | |
| *Auxiliary AWS* | |  |  |  | |  | | |
| *Real-time ship mounted wave height meter* | | 1 |  |  | |  | | |
| **National VOS Total** | | 34 |  |  | |  | | |
|  |  | |  |  |  | |  | | |
|  | **National VOS Target** | |  |  |  | |  | |  |
|  | **National VOSClim Target** | | 40 |  |  | |  | |  |
|  |  | |  |  |  | |  | |  |
|  | **b.** | **Data management:** | | | | | | | |
|  | *Total number of ship observations (BBXX) distributed on the GTS in 2017* | | | | | 26 | | | |  |
|  | *Dates when VOS data submitted to the GCCs in 2017* | | | | | Data from some ship is not allowed to put it in GTS due to security reasons. | | | |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | c. | **Shipboard Automatic Weather System** | | | | | | | |
| **Type** | | | **No. of ships at 31 Dec 2017** | | **Manual Input**  **Yes / No** | | **Method of Comms** | **Year1 Plans** |
| Indian Real-time AWS system (I-RAWS) | | | 34 | | Nil | | INSAT satellite | 5 |
|  | | |  | |  | |  |  |
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|  |  | | | | | |  | | |
|  | **d.** | **Electronic logbooks: (TurboWin, SEAS, OBSJMA)** | | | | | | | |
| **Software & version** | | **No. of ships at**  **31 Dec 2017** | | Implementation plans | | | | |
|  | |  | |  | | | | |
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| **e.** | **Standard Meteorological Equipment: (Types and Settings)** | | |
| **Equipment Type / Element** | | **Manual Instrumentation** | **AWS Instrumentation** |
| Barometer | |  | Setra - Barometer 270 |
|  |  |
|  |  |
| *Default national setting* | | *Station Level or Mean Sea Level* | *Station Level or Mean Sea Level* |
| Barograph | |  |  |
|  |  |
| *Default national setting* | | *Station Level or Mean Sea Level* | *Station Level or Mean Sea Level* |
| Thermometers | |  | Rotronic –Hygroclip |
|  | |  |  |
| Sea Surface Temperature | |  | Wetlab FLNTUS - Ecco |
|  | |  |  |
| Wind Speed | |  | Gill - Ultrasonic |
|  | |  |  |
| Wind Direction | |  | Gill - Ultrasonic |
|  | |  |  |
| Solar radiation | |  | Eppley - High Precision Solar Radiation (SW) |
|  | |  | Eppley - Solar Radiation (LW) |
| Rain gauge | |  | Weatherpak 2000 |

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| **f.** | **PMO ship visit activities: (if a visit is for dual purposes, include all purposes)** | | | | |
| **Activity** | | **Manual Ship** | | **AWS**  **Ship** | **Comment** |
| Routine VOS inspections | |  | |  |  |
| VOS recruitment visits | |  | |  |  |
| VOS de-recruitment visits | |  | |  |  |
| VOS courtesy or foreign visits | |  | |  |  |
| *Total visits to VOS* | |  | | |  |
| Routine ASAP inspections | |  | |  |  |
| ASAP recruitment visits | |  | |  |  |
| ASAP de-recruitment visits | |  | |  |  |
| ASAP courtesy visits | |  | |  |  |
| *Total visits to ASAP* | |  | |  |  |
| Routine SOOP visits | |  | |  |  |
| SOOP recruitment visits | |  | |  |  |
| SOOP de-recruitment visits | |  | |  |  |
| SOOP courtesy visits | |  | |  |  |
| *Total visits to SOOP* | |  | |  |  |
| Visits in support of DBCP (drifting buoys) | |  | |  |  |
| Visits in support of Argo (profiling floats) | |  | |  |  |
| *Total visits to other programs* | |  | |  |  |
| **Total visits by national PMOs** | |  | | *Sum of all ship visits (VOS + ASAP + SOOP) + visits to other program (DBCP + Argo)* | |
|  | |  |  | |  |

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| **g.** | **Major challenges and difficulties:** |
| Convincing the shipping companies for installations  Integrating with Geosynchronous satellite INSAT to provided high time resolution data of 15 minute interval  Maintenance of the instruments if it fails during sailing  Utilization of the data for ocean services | |
|  |  |
| **h.** | **Research / development / testing:** |
| Published the results in high impact factor Journals such as JAOT, Ocean Engineering, IEEE | |
|  |  |
| **i.** | **Other comments** |
| Water quality sensors such as SST, chlorophyll and Turbidity is intergrated with IRAWS  IRAWS is proved to reliable during Cyclones where many coastal AWs failed  I-RAWS system helps in a big way for providing reliable Ocean State Forecasts (OSF) for a wide spectrum of users. This serves as an assimilation dataset as well as an evaluation tool of various Ocean forecasting and real time data assimilation. | |