

WORLD METEOROLOGICAL ORGANIZATION

COMMISSION FOR BASIC SYSTEMS
OPAG ON INTEGRATED OBSERVING SYSTEMS

**EXPERT TEAM ON
OBSERVATIONAL DATA REQUIREMENTS AND
REDESIGN OF THE GLOBAL OBSERVING SYSTEM**
Seventh Session

Geneva, Switzerland, 12-16 July 2004

Dist.: RESTRICTED

CBS/OPAG-IOS/
ODRRGOS-7/Doc. 5.6

(8.VII.2004)

Item 5.6

Original: ENGLISH

**DECISIONS, RECOMMENDATIONS AND ACTION ITEMS FROM
ATMOSPHERIC OBSERVATION PANEL FOR CLIMATE (AOPC)**

(Submitted by J. Schmetz, EUMETSAT)

Summary and Purpose of Document

The purpose of the document is to inform the Expert Team of AOPC-X decisions, recommendations and action items that are of relevance to the deliberations of this team.

ACTION PROPOSED

The meeting is invited to use this information in its deliberations.

**ATMOSPHERIC OBSERVATION PANEL FOR CLIMATE (AOPC)
INPUT TO ET-ODRRGOS-7**

(Johannes Schmetz, member of AOPC)

- The following provides the (draft) consolidated list of decisions, recommendations and action items from AOPC-X considered of interest to the meeting of ET-ODRRGOS.
- Decisions, recommendations and action items from AOPC-X are in regular fonts
- Comments and explanations from J. Schmetz appear in *italic, font 11 (smaller) and in green*

AOPC-X: CONSOLIDATED LIST OF DECISIONS, RECOMMENDATIONS & ACTION ITEMS

Statements of Guidance (SOGs)

1. The AOPC reiterated the importance of maintaining close links between the Panel and the CBS Expert Team on Observational Data Requirements and Redesign of the Global Observing System (ET-ODRRGOS). It requested the Chairman to ensure that AOPC is appropriately represented at ET-ODRRGOS sessions and to liaise with the Chairman of the ET-ODRRGOS to optimize future involvement of the Panel in the SOG and similar processes.
2. The AOPC requested that the SOG on Seasonal-to-Interannual Forecasts (SIA) reviewed at this session be provided to the CBS OPAG on Data Processing and Forecasting Systems (DPFS) for comment and subsequent presentation to the CBS ET-ODRRGOS, and that ownership of this SOG be formally retained by that OPAG.
3. The AOPC requested that the SOGs on Monitoring Climate Change and Monitoring Climate Variability reviewed at this session be provided to CCI for further review by appropriate CCI Expert Teams (ETs) and individuals, and subsequently be submitted through these ETs to the CBS ET-ODRRGOS. It noted that CCI was in the process of developing additional SOGs for climate applications and agreed that it should review these as appropriate as part of the process of submitting them to the ET-ODRRGOS. The Panel further recommended that formal ownership of these SOGs reside within the CCI structure.

Considering recent iterations on this matter I hope that ET-ODRRGOS support this recommendation and also its realization. In order to close the matter it appears prudent to share the final version with all bodies that have been involved so far; i.e. send the final version to those bodies for information and comments.

GSN and GUAN

29. The AOPC emphasized the need for highly accurate sonde measurements of water vapour in the upper troposphere and lower stratosphere. Noting that fewer measurements could be tolerated in the middle stratosphere compared with the troposphere, given the larger correlation scales in the stratosphere, the Panel endorsed the concept of selecting a subset of GUAN as a GCOS reference network for water vapour and stratospheric temperature. Sondes from this subset of stations would be required routinely to reach 5 hPa and would include water vapour instrumentation similar to that used at the Boulder reference station as appropriate. The Panel requested the Chairman, the WG-TT and the AGG to liaise with the relevant scientists and agencies to assist in the implementation of this concept.

30. The AOPC recognized the benefits of establishing a network of upper-air stations at which releases of high-quality radiosondes would be coordinated with satellite overpasses. Such a 'Satellite Upper-Air Network' (SUAN) would provide continuing opportunities to inter-compare sonde and satellite measurements for the benefit of both climate and NWP communities. The Panel recommended that such a network be established by arranging for the release of additional sondes at GUAN stations to the extent possible, where the technical skills for high-quality observations should already be available, thereby building on existing stations and infrastructure in a cost-effective manner. It nevertheless emphasized that the arrangement for additional soundings must not disturb the routine operation of those stations for GUAN purposes. The Panel encouraged the continuation of efforts toward establishing such a network.

Clearly the above two recommendations can be seen in a context. For climate monitoring it is necessary to measure the upper tropospheric and lower stratospheric water vapour in an adequately accurate manner. Current operational radiosondes do not measure this with adequate accuracy whereas satellite radiances are in principle accurate enough. It is important to confirm satellite observations with relevant in-situ data. The proposal also follows the recent notion of an 11th climate-monitoring principle (CMP) augmenting the ten previous CMPs. The 11th CMP calls for monitoring key climate variables with multiple, independent observing systems for measuring the variable (in addition, it calls for multiple, independent groups analyzing the data (e.g. Seidel et al., 2004, J. Climate, 17, pp. 2225 – 2240).

ET-ODRRGOS is reminded that AOPC did not follow the 'original' SUAN proposal. AOPC clearly sees this so-called (still called) SUAN as amendment to the current GUAN with some additional satellite launches (with adequately accurate measuring techniques for upper water vapour) during the satellite over-passes. The actual 'delta' in terms of launch sites, number of launches and the instruments (e.g. frost point hygrometers) to be flown would need to be discussed and defined.

AOPC was not aware of the fact that the original SUAN proposal was not supported earlier, e.g. at ITSC. So neither M. Goldberg nor myself did raise this reservation (mea culpa).

Pertinent discussions at CGMS, in response to a report from AOPC-X, seemed to refer (at least initially) to the SUAN paper presented to ITSC, i.e. a SUAN for NWP (i.e. for so-called satellite calibration). Obviously this initial CGMS response was somewhat misled as the AOPC recommendation is quite different from the SUAN proposal discussed e.g. at ITSC.

Satellite Issues

44. The AOPC noted the plans for a workshop (Hamburg, Germany, 19-21 July 2004) being organized by the Satellite Application Facility on Climate Monitoring (CM-SAF), focused on developing global homogeneous climate products from satellite data. It confirmed its designation of P. Arkin as the AOPC representative at the meeting.
45. The AOPC noted with appreciation the action items agreed at CGMS-XXXI aimed specifically at supporting GCOS needs. It welcomed in particular CGMS efforts to develop globally-consistent, homogeneous data products (such as surface albedo) from satellite and related *in situ* data and encouraged the continuation of these efforts for other products.
46. The AOPC strongly endorsed the re-processing of Atmospheric Motion Vectors (AMVs) with common state-of-the-art algorithms to provide homogeneous data in support of re-analyses at NWP centres and for other climate analyses. It recognized that each satellite operator was performing its own reprocessing of AMVs, and stressed the need for the AMV products be globally consistent and homogeneous. The Panel noted that

developments over previous years carried out by the International Winds Working Group under the auspices of CGMS had made considerable progress in that regard.

ET-ODRRGOS may wish to support this notion in view of the positive impact of re-processed AMVs on ECMWF re-analyses.

47. The AOPC supported the selection of surface albedo as a parameter for developing a prototype climate data set from geostationary satellite observations. It welcomed the considerable progress being made by members of CGMS toward this end and requested an update on developments at its next session. The Panel noted that the reprocessing involved began with Level-1 data and thus provided an improved Level-1b data set that was useful for other applications.
48. The AOPC noted that while the surface albedo product from geostationary satellites necessitated the reprocessing of visible channel data, it would be useful also to develop selected products requiring the reprocessing of thermal infrared data. Convective indices were suggested for that purpose because they are uniquely observed from geostationary orbit, scientifically interesting, and simple enough in terms of retrieval algorithms; they also present the necessary challenges that need to be considered in reprocessing image data from the archive.
49. The AOPC noted the ongoing activities in NESDIS for developing and distributing products based on satellite data and encouraged continuation. It endorsed the proposal to produce globally-consistent homogeneous Aerosol Optical Depth products through reprocessing of AVHRR data.

ET-ODRRGOS may wish to support the above (surface albedo and aerosol optical depth) for use in future re-analyses. Other products may be useful for comparison with and validation of re-analyses.
