

REPORT ON THE INTERNATIONAL PRECIPITATION WORKING GROUP

In response to Recommendation 34.18

The paper informs CGMS Members on the status of activities related to International Precipitation Working Group (IPWG).

The following issues are highlighted:

- Interactions between CGMS working groups are described including the potential for organizing joint meetings;
- The availability of the IPWG algorithm inventory on the IPWG web site is mentioned;
- The status of validation studies is described including the IPWG validation website and progress with the Proposed Evaluation of High Resolution Precipitation Products (PEHRPP) initiative;
- Activities are recalled addressing the assimilation of precipitation information into NWP models;
- Progress with new sensor technology is briefly covered;
- The establishment of a small working group to consider passive microwave sensor inter-calibration is described;
- The first meeting of the CEOS Precipitation Constellation (PC) is reported.

CGMS Members are requested to:

- Continue to provide and update the inventory of routinely produced precipitation estimates, either operational or experimental/research, to the IPWG Co-chairs;
- Note and support the ongoing satellite based Precipitation Estimation Validation activities and support and participate in the first PEHRPP workshop scheduled to take place 3-5 December 2007 at the WMO in Geneva;
- Help develop and actively support the 4th IPWG Workshop planned for fall 2008 in Beijing, China;
- Provide information to the IPWG Rapporteur on areas for future consideration by the IPWG.

REPORT ON THE INTERNATIONAL PRECIPITATION WORKING GROUP

1. BACKGROUND

CGMS-28 initiated the establishment of a Working Group on Precipitation, with co-sponsorship from WMO and CGMS.

CGMS-29 noted the successful organizational session of the International Precipitation Working Group (IPWG) and approved its Terms of Reference.

CGMS-30 received the report of the "First International Precipitation Working Group (IPWG) Workshop" with enthusiasm and noted the establishment of three working groups: Operational Applications, Research Activities and Validation Activities.

CGMS-31 was updated on algorithm activities and raised Action 31.29 requesting CGMS members to provide and update the inventory of routinely produced precipitation estimates, either operational or experimental/research, along with training information for the IPWG web page.

CGMS-33 noted the success of the "Second IPWG Workshop" which was held in Monterey, USA, in October 2004. CGMS was pleased that the workshop addressed the following science issues that were posed by CGMS-32: 1) GPCP assessment; 2) solid precipitation; 3) precipitation over complex terrain; and, 4) ongoing validation studies.

CGMS-34 noted the success of the "Third IPWG Workshop" which was hosted by the Australian Bureau of Meteorology Research Centre (BMRC) in Melbourne, Australia and was held in conjunction with the Asian Pacific Satellite Training (APSATS-2006) event. It further noted that the goals for the third IPWG meeting were met. CGMS-34 also confirmed Ralph Ferraro from NOAA/NESDIS and Chris Kidd of the University of Birmingham (United Kingdom) as the new IPWG Co-chairs and thanked the outgoing Co-chairs Joe Turk, NRL and Peter Bauer, ECMWF. Furthermore, CGMS-34 also recorded Recommendation 34.18: *Co-Chairs of the ITWG, IWWG and IPWG to consider common topics for future joint sessions during potential parallel conduct of future workshops. Deadline: CGMS-35 (See section 2.1 below)*

2. ACTIVITIES SINCE CGMS-34

2.1 INTERACTION WITH ITWG

The IPWG has two members who act as liaisons with the ITWG and attend both workshops. Prior to the Third IPWG Workshop, preliminary discussions had been undertaken to decide if an upcoming meeting should be held jointly between the IPWG, ITWG, and IWWG. At the September 2007 joint EUMETSAT Meteorological Satellite Users Conference and 15th AMS Satellite Meteorology and Oceanography Conference, there was an oral session dedicated to the three CGMS working groups. Further discussions are underway with the current Co-chairs to determine future joint workshops. One area in which all working groups interact is in the area of frequency protection, since it is an issue for all users of environmental satellite data, and members of each working group are routinely consulted for CGMS related actions on this topic.

2.2 ALGORITHM INVENTORY

The IPWG algorithm inventory is available from the IPWG web site and contains information to associated links for products, datasets, and relevant publications. The website contains all latest reports and documents prepared with relevant IPWG participation. CGMS Members are reminded to keep this web site up-to-date.

2.3 VALIDATION STUDIES

IPWG Validation Website

As was reported to CGMS-34, the IPWG validation project aims to validate and intercompare operational and semi-operational satellite rainfall estimates and validation studies continue. The main IPWG Validation website is at:

<http://www.bom.gov.au/bmrc/SatRainVal/validation-intercomparison.html>.

As was also reported at CGMS-34, the final "Assessment of Global Precipitation" is available at <http://cics.umd.edu/~yin/GPCP//ASSESSMENT/assessment.html>.

PEHRPP (Proposed Evaluation of High Resolution Precipitation Products)

This activity was proposed and initiated at the second IPWG workshop and is well underway and was reported on at CGMS-34. The activities of PEHRPP are closely aligned with proposed validation requirements of the planned Global Precipitation Mission (GPM) and presentations have been made at GPM and related meetings. Up-to-date information on PEHRPP can be obtained from <http://essic.umd.edu/~msapiano/PEHRPP/>. The final report from the first IPWG/GPM/GRP Workshop on Modelling of Snowfall" can be obtained from the IPWG web site (<http://www.isac.cnr.it/~ipwg/IPWG.html>). The first PEHRPP workshop will take place 3-5 December 2007 at WMO in Geneva.

2.4 PRECIPITATION ASSIMILATION IN NUMERICAL WEATHER PREDICTION MODELS

It is recalled that at IPWG-2, in October 2004, the research group discussed the efforts that are underway in the assimilation of both passive microwave satellite-measured radiance and retrievals and related presentations were given by representatives from NASA, ECMWF and the UKMO.

Subsequently, the outgoing IPWG Co-chairs (Drs. Turk and Bauer) represented the IPWG at the Joint Center for Satellite Data Assimilation (JCSDA) Workshop on the Assimilation of Clouds and Precipitation held during May 2005. The workshop was aimed at providing an up-to-date summary of satellite observations of clouds and precipitation, modelling of these constituents in NWP along with data assimilation of satellite observations of clouds and precipitation, identification of the key impediments to progress in these areas and the preparation of a list of recommendations to accelerate progress. A special issue of *J. Atmos. Sci.* is planned as well as a workshop summary for *BAMS*.

The European Centre for Medium-Range Weather Forecasts (ECMWF) activated the assimilation of cloud and rain affected SSM/I radiances in their operational model on 28 June 2005. This assimilation of rain affected observations combined with an increase in model spatial resolution is expected to produce better forecasts of tropical cyclones.

2.5 NEW SENSOR TECHNOLOGY

The fourth session of the IGeoLab Geostationary Microwave Focus Group took place in Beijing, China, 12-13 April 2007. Approximately 40 persons representing 25 institutes in Europe, the USA and China attended, there were 32 presentations representing data, modelling, retrieval algorithms, and application to NWP.

A workshop entitled "Towards a Future Snow Hydrology Mission", organized by Paul Joe (Environment Canada) and Eastwood Im (NASA/JPL), was held in Montreal, Canada on 26-28 June 2007. Approximately 50 persons representing 25 institutes from Europe, Canada, and Japan attended. Details can be found at: http://cloudsat.atmos.colostate.edu/science_team/snow_meeting.

2.6 PASSIVE MICROWAVE SENSOR INTERCALIBRATION

A small working group, organized under the auspices of the Global Precipitation Measurement (GPM) mission, convened on 20 March 2007 in Greenbelt, USA, to discuss the way forward to develop an internationally recognized method to intercalibrate passive microwave radiometers. An intercomparison between at least five different methods was devised and should be completed by the end of 2007. IPWG endorsed the plan and offered to be a facilitator in promoting the use of such a method throughout the IPWG community.

2.7 COMMITTEE ON EARTH OBSERVATION SATELLITES (CEOS)

The first meeting of the CEOS Precipitation Constellation (PC) was held in Washington, DC on 14-15 June 2007. IPWG was invited to present its view on the PC, which is envisaged as an international framework to guide, facilitate, and coordinate the continued advancement of multi-satellite global precipitation products building in particular the joint NASA/JAXA Tropical Rainfall Measurement Mission (TRMM) and Global Precipitation Measurement (GPM) missions. The working group, consisting of approximately 20 representatives from approximately 10 space agencies, drafted an implementation plan. Progress of the PC can be tracked at <http://ceospc.gsfc.nasa.gov/>.

3. UPCOMING MEETINGS

The following meetings and workshops are planned:

- First PEHRPP workshop scheduled to take place 3-5 December 2007 at the WMO in Geneva;
- Fourth IPWG Workshop planned for fall 2008 in Beijing, China;
- Second "IPWG/GPM/GRP Workshop on Modelling of Snowfall" to occur in 2008.

4. CONCLUSIONS

CGMS Members are requested to:

- Continue to provide and update the inventory of routinely produced precipitation estimates, either operational or experimental/research, to the IPWG Co-chairs;
- Note and support the ongoing Satellite based Precipitation Estimation Validation activities and support and participate in first PEHRPP workshop scheduled to take place 3-5 December 2007 at the WMO in Geneva;
- Help develop and actively support the 4th IPWG Workshop planned for fall 2008 in Beijing, China;
- Provide information to the IPWG Rapporteur on areas for future consideration by the IPWG.