IPWG 2012, São José dos Campos, Brazil

Application Working Group Report

Summary

The Application WG briefly reviewed recommendations from previous meetings and considered the current state of the field with a focus on specific, actionable steps and recommendations. The discussion fell into six areas:

1. Training
2. User requirements
3. Data archiving and reprocessing
4. Web page
5. Data format and access issues
6. Passive Microwave Imagers

Recommendations to CGMS and WMO:

- Recommendation to CGMS: The IPWG continues to recommend that CGMS members support reprocessing for all relevant satellite product archives as algorithms or user requirements advance. When reprocessing occurs we recommend that the existing version be kept in the archive for at least 2 years to facilitate intercomparison and graceful user transitions.
- Recommendation to CGMS: [Multi-channel satellite algorithms are in development and show marked improvement over IR alone.] The IPWG recommends to CGMS members that
  b1. for quasi-operational satellite algorithms based on multiple platforms and channels (VIS, IR, WV), CGMS members should set up the necessary archives of historical data, and the infrastructure to enable the routine access to and assembly of channels from GEO and LEO satellites. IPWG will provide expertise as necessary for channel selection, data formatting, etc.
  b2. CGMS members support projects dedicated to consistent generation of multi-channel satellite records supporting a range of applications, following the excellent examples of the CPC 4-Km Global IR Tb data set and the NCDC GridSat-B1, for example through the Sustained Coordinated Processing of Environmental Satellite Records for Climate Monitoring initiative (SCOPE-CM).
- Recommendation to WMO: IPWG recommends that WMO members act to make current and archived calibrated precipitation datasets computed from radar network data readily available to enhance scientific research and validation activities.
- Recommendation to CGMS: IPWG strongly recommends to CGMS members to continue the constellation of PMW imagers, consistent with the CGMS baseline and the WMO Vision for the Global Observing System in 2025.

IPWG 2012, São José dos Campos, Brazil

Application Working Group Report

Chair: George Huffman
Raporteur: Stephan Bojinski
Participants 2012: Kxx Aonashi, Ali Behrangi, Tufa Dinku, Adamou Garba, Volker Gärtner, Murielle Gosset, Kuolin Hsu, Misako Kachi, Vincenzo Levizzani, Zhong Liu, Daniele Melfi, Dan Qi, Ran You, Rebecah Xxx, Sebastien Xxx, several others

The discussion was structured around the practicalities of moving "data in the hands of experts" to "information in the hands of users", along four lines:

1. Getting data: What are the barriers and opportunities?
2. Creating estimates: What are the current limitations and new concepts?
3. Handing out the data: What data fields, formats, and distribution schemes do users want?
4. Training users: How do we educate users about getting, understanding, and applying precipitation data?

Notes on action items from the 2010 meeting

A number of recommendations were carried along from prior IPWG meetings without significant progress due to a lack of a "champion" who pursued the concept. Items that seemed useful to bring forward included:

1. Investigate current agreements on how the GPM science community can access real-time IR data from EUMETSAT for use in globally-merged IR datasets. ACTION: Volker Gärtner.

2. Provide consistent metadata for IPWG datasets and products following standards used by current portals and consistent with WMO WIS. ACTION: Chair and Webmaster working with dataset providers.

3. Track unique visitors to the IPWG website to enable statistics of website visibility and use. ACTION: Webmaster

Findings and Recommendations

1. Training

In general, the group felt that IPWG members mostly lack expertise in organizing training, but have considerable background in subject matter. Actions were developed to marshal a more-organized pool of subject-matter experts and training materials. The statement (f) reflects a sense that, while IPWG can serve a vital role in helping users understand precipitation and data sets in general, dataset developers must be the prime point of support

a. Action: Daniel Vila volunteered to serve as the IPWG training focal point.
b. Action (Focal Point, assisted by VLab Tech Support Officer and WMO): Develop a list of training opportunities (e.g., RS Summer School Italy, NASA, CNES, EUM, JAXA.
c. Action (Focal Point): Develop a pool of IPWG experts volunteering for training events, providing area of expertise etc.
d. Action (IPWG members): Provide links to training materials to Webmaster for the IPWG website as a resource, including COMET and NASA teaching resources.
e. Action (Zhong Liu, Webmaster): Establish a Frequently Asked Questions (FAQ) focused on Getting Started information:
    1. Basics
    2. Data
    3. Software
    4. Algorithms
    5. Differences
    6. Quality / Validation
    7. Case examples
    8. Publications [references; respecting copyright]
f. Action (Webmaster): establish special-interest e-mail lists (not wiki).
g. Statement: IPWG encourages dataset providers to provide a data user "forum" providing the opportunity for users to interact more closely with the providers and each other to improve their understanding and use of the data.

2. User requirements

The action items from prior meetings to survey user requirements were largely satisfied over the last two years by two very comprehensive studies; the important thing at this point is to ensure that these studies are captured on the IPWG web page.

a. Action (George Huffman [IGWCO contact]): Provide a link to the GEO user survey materials for use on the IPWG web page.
b. Action (Stephan Bojinski): Provide a link to the WMO Observation Requirements pages on precipitation for use on the IPWG web page.

3. Data archiving and reprocessing

Data archiving reprocessing activities are key to users' ability to carry out studies and applications based on consistent, long precipitation time series. The discussion of multi-spectral algorithms revealed that such algorithms are promising, but for operational use will require a major step forward in data infrastructure. Both comprehensive archives for and routine networked provision of full-resolution, multi-spectral data from geosynchronous and low-Earth-orbit satellites. The concept for the recommendation in (b) is that it only makes sense to take multi-sensor algorithms to operational status if the infrastructure for the data exist. Some very practical issues of the exact channels and mis-matches between sensors were also noted. For the first time, the Applications WG discussed regional radar networks and considers that these are a sufficiently valuable resource to the

community that the IPWG should start working to make them accessible to the user community (item c).

a. Recommendation to CGMS: The IPWG continues to recommend that CGMS members support reprocessing for all relevant satellite product archives as algorithms or user requirements advance. When reprocessing occurs we recommend that the existing version be kept in the archive for at least 2 years to facilitate intercomparison and graceful user transitions.
b. Recommendation to CGMS: [Multi-channel satellite algorithms are in development and show marked improvement over IR alone.] The IPWG recommends to CGMS members that
   b1. for quasi-operational satellite algorithms based on multiple platforms and channels (VIS, IR, WV), CGMS members should set up the necessary archives of historical data, and the infrastructure to enable the routine access to and assembly of channels from GEO and LEO satellites. IPWG will provide expertise as necessary for channel selection, data formatting, etc.
   b2. CGMS members support projects dedicated to consistent generation of multi-channel satellite records supporting a range of applications, following the excellent examples of the CPC 4-Km Global IR Tb data set and the NCDC GridSat-B1, for example through the Sustained Coordinated Processing of Environmental Satellite Records for Climate Monitoring initiative (SCOPE-CM).
c. Recommendation to WMO: IPWG recommends that WMO members act to make current and archived calibrated precipitation datasets computed from radar network data readily available to enhance scientific research and validation activities.

4. Web page

The practical actions in this section are intended to support and extend the training and user information activities in the Training section. Item f will be most successful if we make progress on item c in Section 3.

a. Action (George Huffman): Update the product tables.
b. Action (ask Chris Kidd): Add an introduction on appropriate use of products.
c. Action (Webmaster): Lead updating of algorithm descriptions. This should include native data format in dataset descriptions, and link to portal page.
d. Action (George Huffman): Link algorithm descriptions to product table entries.
e. Statement: A compilation of studies using and validating the various products would facilitate understanding and use of the various products.
f. Action (Paul Kucera): Assemble a table of regional long-term radar products, which includes soliciting the equivalent of "algorithm descriptions" for the products.
g. Action (ask Chris Kidd or Frank Tapiadore): Update sample algorithm section, including its purpose and suggesting contact with algorithm developers for more-advanced algorithms.
h. Action (Rebekah, Vincenzo): Establish a Wikipedia page for IPWG – short introduction and link to IPWG web page. This effort can use the "Getting started" material once available.

i. Action (Paul Kucera to recruit a lead): Explore revising the Wikipedia page for precipitation, and perhaps other precipitation-related pages. It is possible that content from the "introduction to products" document can be adapted.
j. Action (coordinate with Stephan Bojinski; IPWG members): Investigate the utility of linking to the IPWG web site from OSCAR and other precipitation-related sites.

5. Data format and access issues

The focus in this section is "how can we make the products more accessible?" For item b, many potential users need data as shapefile-averages, of countries, other political subdivisions, stream basins, etc. The infrastructure to do this is now appearing in non-proprietary forms, and it is desirable for the tools to accomplish such averages to be shared, accelerating progress and establishing consistent approaches.

a. Action (Webmaster): Establish a listing of links to relevant data portals, including GIOVANNI/TOVAS, IRI, NCAR, CEOS portal, and the GEO portal.
b. Action (George Huffman): Establish an ad-hoc Area-Average Special Interest Group (Tufa Dinku and Kuolin Hsu are interested) to share information, processing concepts, and best practices; and and establish a section on the IPWG web page to host information and links related to this activity.
c. Action (data portals and developers): Provide data products in GIS-standard format.

6. Passive Microwave Imagers

a. Statement: We consider that conical-scan imagers providing both window and non-window channels (such as SSMIS and GMI) provide the key advantages of collocation, consistent spatial resolution, and channel selection for estimating precipitation. We concur with the CEOS-PC white paper on the on-going need for such instruments as a key element in delivering expected scientific progress and societal benefits. Therefore IPWG strongly supports actions to refresh and strengthen the international constellation of passive microwave imagers. We applaud the recent launch of Megha Tropiques and GCOM-W1, the development of GPM, and the announced plans for the EPS-SG series and future GCOM-W satellites. At the same time, we are concerned about on-going uncertainty in plans for the future provision of such sensors by some agencies.
b. Recommendation to CGMS: IPWG strongly recommends to CGMS members to continue the constellation of PMW imagers, consistent with the CGMS baseline and the WMO Vision for the Global Observing System in 2025.