IPWG 2012, São José dos Campos, Brazil

Validation Working Group Report

One page summary

The validation working group reviewed the previous 7 actions and found good progress on several items as well as some actions that were still active. Several of the previous actions were not achieved, but were no longer felt to be necessary. The following 7 recommendations/actions were accepted by the validation working group. The title of these recommendations/actions are:

1. Foster improved availability of validation data from data sparse regions: Africa
2. Expand validation techniques webpage
3. Prepare guidance document for precipitation validation techniques and issues
4. Expand daily validation to include other countries
5. Synthesize of results from daily validation sites on a 3-monthly basis
6. Encourage validation of precipitation datasets in hydrological models
7. Collect datasets for snow validation

The validation working group had one recommendation for CGMS:

CGMS1. The provision of in situ precipitation validation data is a critical in facilitating improvements to satellite estimates of precipitation, particularly over data sparse regions where validation has been particularly challenging. We recommend that critical sites/networks should be sustained and encouraged to share data with IPWG members for validation purposes. IPWG members will provide a listing of the most critical sites/networks for CGMS.

IPWG 2012, São José dos Campos, Brazil

Validation Working Group Report

Chair: Matt Sapiano
Raporteur: Estelle de Coning
Participants 2012: Matias Alcoba, Stephane Bojinski, Volker Gaertner, Marielle Gosset, Rafal Iwanski, Christian Klepp, Paul Kucera, Bozena Lapeta, Vincenzo Levizzani, Audrey Martini, Yan Shen, Shoichi Shige, Yudong Tian, Ali Tokay, Nicholas Viltard, Ran You.

Notes on action items from the 2010 meeting

1. IPWG high resolution precipitation inter-comparison

This item called for a validation exercise to be initiated, with Matt Sapiano and Bob Adler tasked with developing a plan for this activity. No progress has been made. Sapiano explained that there were several reasons for the lack of progress, principally that the action was somewhat vague. It was not clear as to what kind of validation effort was required (if any at all) – what do we need to know and who needs the information?

2. Validation of satellite data in hydrological models

Yudong Tian reported on some work that has been done on this topic (using TMPA to drive model etc); Bozena Lapeta reported that hydrological validation is ongoing at H-SAF. There has been some progress on validation of precipitation products using hydrological models at H-SAF, but this has not used a wide range of products. It was mentioned that closer collaboration between H-SAF and IPWG members would be beneficial for feedback purposes. This activity was felt to be important and will be continued (as new item 6).

3. Listing of data available for validation

This was completed by Bob Kuligowski and placed on the IPWG website: http://www.isac.cnr.it/~ipwg/validation-links.html

4. Make collection of code to convert datasets to ascii for validation.

No progress has been made on this action item. Chris Kidd explained implementation of this action was problematic due to difficulties in standardizing and supporting such a collection of code for a potentially diverse set of users. There was wide recognition that users exist who might have difficulty reading data, but it was felt that this was not a validation issue and that users can already receive help from data developers (including read code).

5. Validation techniques

Paul Kucera has made some progress on this action and is still working on this. This activity was felt to be important and will be continued (as new item 7).

6. Encourage validation activities over Africa
This action very much relied on the contacts and expertise of David Grimes, who very sadly and untimely passed away. The group spent considerable time reconsidering this issue and a new recommendation was made (as new item 1).

7. Improve collection of validation data over data sparse areas of the oceans.
Christian Klepp has made excellent progress on this point. He presented work at this meeting based on observations made using dysdrometers mounted on ships and has made this data available to the wider community upon request. We also note that ocean buoy data collections are included on the validation data webpage. Domingos Urbano presented data from the Saint Peter and Saint Paul Archipelago which would also be a useful ocean resource, although there are QC issues with these data.

Recommendations

1. Foster improved availability of validation data from data sparse regions: Africa

There was discussion on how to improve our validation efforts over Africa, which is a traditionally data sparse region. Issues and barriers to obtaining useful data were discussed and it was felt that IPWG researchers could greatly contribute to improvements in data available for countries. We would like WMO to encourage holders of data (particularly at the national level/National Met Service) to make precipitation validation data available (with relevant QC information/documentation) for the validation of precipitation information. The group feels that provision of validation data is critical to validation over data sparse areas. The group heard about several interesting datasets that would be hugely beneficial for validation over Africa such as AMMA sites (Benin, Niger); weather modification data in West Africa (Manitali, Mopti, Bimako); radars and new surface reference sites in Mali, Kenya & Rwanda; African array (radar in East Africa); as well as non-traditional sources of data such as the Agency for Aerial Navigation Safety in Africa and Madagascar (ASECNA). An additional future resource is the Lake Victoria field campaign in East Africa, which is planned for 2014/5.

Recommendation to CGMS:
The provision of in situ precipitation validation data is a critical in facilitating improvements to satellite estimates of precipitation, particularly over data sparse regions where validation has been particularly challenging. We recommend that critical sites/networks should be sustained and encouraged to share data with IPWG members for validation purposes. IPWG members will provide a listing of the most critical sites/networks for CGMS.

Action: Paul, Marielle, Estelle

Develop a table/matrix of possible datasets, solicit wide input from IPWG and obtain advice from the Validation WG on (i) sites/networks that should share existing data and (ii) sites/networks that should be sustained.
[*Report list to CGMS by February 2013*]

2. Expand validation techniques webpage
This is a continuing action item. The intent is to improve the information we provide on validation techniques on the IPWG website for those new to validation. Paul Kucera has made good progress on this action and is still working towards completing this task. The group felt it was a worthwhile endeavor and it should be completed.

Action: Paul Kucera
Share current versions with Validation WG and continue with help as needed.
[*Report to group by December 2012*]

3. Prepare guidance document for precipitation validation techniques and issues
The group discussed the need for a standardized, simple document outlining best practice for validation across IPWG. The document should draw on well-established techniques from the literature that could be considered essential for precipitation validation. There are several areas where IPWG can provide guidance and standardization based on our recent work and expertise:
a. Techniques for creating gridded precipitation analyses with simple error estimates.
b. Error models for satellite datasets
c. Reduced list of statistics that are considered essential for precipitation validation.

Action: Matias Alcoba, Marielle Gosset, Yudong Tian, Matt Sapiano.
Produce outline of elements required including the gridded gauge analyses (Matias, Marielle), error models for satellite datasets (Yudong) and commonly used statistics (Matt).
[*Outline by December 2012*]

4. Expand daily validation to include other countries
It was noted that several countries maintain excellent gauge networks that should be used as part of the daily validation exercise. In particular, China and South Africa were considered to be important locations where a daily validation sites should be established and local liaisons have been identified. In addition, the group noted that South Korea and India have good networks that could be used for daily validation, although it was unclear that a local liaison exists to establish and maintain such sites.

Action: Yan Shen (China), Chris Kidd and Estelle de Coning (South Africa)
[*Report on progress by March 2013*]

5. Synthesize of results from daily validation sites on a 3-monthly basis
There is a need to better synthesize and digest information from the daily validation sites. Several of the sites already provide time series statistics and these should be gathered together and paced in a coordinated location. Furthermore, some standardized commentary of these statistics was recommended, although it was recognized that a standard/arbitrary format was required to ensure impartiality. Such a report could be generated quarterly and distributed to the IPWG membership and others.

Action Matt Sapiano, Shoichi Shige
Create page with time series of statistics from each daily validation site; create template for quarterly routine validation and report to Validation working group and Daily Validation site owners.
[*Report by March 2013*]

6. Encourage validation of precipitation datasets in hydrological models
The group heard that the both the H-SAF and Yudong Tian/Bob Adler had studied the effect of different precipitation products on their hydrological models and that this is an ongoing topic of research. We discussed the need to use more products and to expand to areas without gauges (i.e. catchment as a rain gauge).

Action:
The Validation WG continues to encourage H-SAF, NOAA and others to validate/document sensitivity of hydrological models to precipitation products and to feed this back to IPWG/developers where appropriate.

7. Collect datasets for snow validation
There was some discussion regarding the validation of snow. Volker Gaertner mentioned a conference in California that may be relevant to IPWG members; other campaigns were also discussed such as SPICE/CSPICE and other GV campaigns (C3VP etc). Christian Klepp noted that he has a large number of observations of snow from dysdrometers. There was some discussion about whether the validation data was available to validate snow estimates, as well as what should be validated (it was noted that the requirement for GPM is a simple snowing/not snowing estimate). When this issue was raised during the reporting session it was felt that the addition of snow validation datasets to the validation datasets webpage would be useful.

Action: Paul Kucera.

Add datasets that might be useful for the validation of snow to the IPWG Validation datasets page. Email the rest of the IPWG group and request required information on other sources of available snow data.
[*Update page by December 2012*]

Notes from discussions

Validation of precipitation retrievals

The group talked at length regarding validation of Level 2 data (ie: precipitation retrievals). It was generally agreed that validation of L2 data was very important, but it was unclear that the WG could make a meaningful contribution that could provide actionable information for retrieval developers. The group noted that validation results are most useful to algorithm developers when they are quite specific (ie: "you need to have a better DSD"), but it is difficult for us to provide such information through IPWG. The idea of a validation exercise/project along the lines of PEHRPP to validate retrievals, identify problems and conduct case studies was suggested, but was not thought to be useful at this time particularly given the validation work of groups like GPM-GV and MT-GV. This may be a topic the Validation WG would choose to reconsider in the future.