ITWG Climate Working Group

Recommendations and actions

ITSC-19

Compiled by Thierry Phulpin and Viju John

Members: Robert Knuteson, Jacola Roman, Jonathan Gero, Lihang Zhou, Jun Li, Eun-Bin Park, Gerrit Holl, Hank Revercomb, Martin Stengel

Topics from ITSC-19

Planned and ongoing analysis

- Level 1
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- Level 3
- Level 4 , reanalysis
- Maturity index

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- Cal / Val Activities
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- CGMS-41 Recommandations

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ACTIONS OF ITSC 18

Recommendation climate 13: To agencies involved in GRUAN to provide and sustain high quality in-situ observations through programs such as GRUAN. It is recommended to consider radiosonde launches matching overpass times of IASI, AIRS, etc. at least four times a month at each station under favorable conditions (clear sky).

Action climate 5: Martin Stengel to communicate recommendation of the climate WG to the GRUAN workshop in June 2012 and report the outcome to the Climate WG.
Status: This recommendation was presented at the GRUAN workshop by M. Schröder (DWD). Response/outcome of the GRUAN meeting wrt this is currently checked and will be soon reported to the WG chairs. Action is closed

Recommendation 16: CM-SAF to assess if their plans could be adapted to a

complete cloud property data record from TOVS to IASI.
Action 7: Martin Stengel to provide information on the CM-SAF plan to the WG.
Status: The assessment has not been done yet. This action is postponed to the next ITWG meeting. Until then CM SAF will have generated a HIRS –based cloud property dataset, thus gained experiences with using IR Sounders for cloud property datasets. The assessment will then be done and the outcome reported to the WG. Action open

The group needs to improve the presentation of the activities on the ITWG web pages.

Action climate 11: Martin Stengel to assess the status and update the Climate Group web pages.
Status: Martin has tried to get in touch with the web admin several times without success. Action reconducted (see later).

Planned and ongoing analysis

- Level 1

  Some work has been started to directly use IASI radiances in climate monitoring, as well as AIRS and CrIS. The data series is unfortunately incomplete because of change in the data processing on one side and on the other side the continuation with IASI-B is hampered by small differences in calibration. To extend the series to include AIRS and CrIS hyperspctral radiances, work needs to be done to spectrally convolute the AIRS and IASI radiances to CrIS.

  Recommendation 19-1: Eumetsat to reprocess Level 1c IASI products in the shorter timeframe

  Recommendation 19-2: Eumetsat to deliver inter-calibration results

and a method to recalibrate one instrument to the other.

More generally when some scientific results show a deficiency in Level 1 processing of any instrument a mechanism has to be found to allow the scientists to propose a method and ask for quick reprocessing.

Recommendation 19-3: Agencies to see how scientific assessment can be taken into account at exploitation reviews and set-up procedures for quick reprocessing

Recommendation 18-15: To agencies to assess the availability of data records and to make an effort to provide available data records and associated meta data, in particular spectral response functions, to users.

Action 19-0: NESDIS (Lihang) to provide a focus day of AIRS, and IASI data that are spectral convoluted to CrIS data.

- Level 2

  CEOS is making available an information system (ECV inventory) to identify the existing climate data sets of in situ and satellite data.

  This will allow to know the existing products and producers. This can be very useful for intercomparison exercises and identify gaps where priority must be put.

  - Recommendation 19-4: Fill and update questionnaires (ECV-inventory.com) to let the community know the available products and their maturity

  A reference data set of level 2 products is deemed to be very useful to the community to validate climate models and contribute to climate monitoring and research. The ECV inventory should be useful

to select it.

Level 3:

It is recognized that Level 3 products are necessary to the Climate Community. The appropriate scales and the time steps for each product are to be defined. Uncertainties of Level 3 products (combined uncertainties from calibration, retrieval, aggregation etc.) are also required even if difficult to quantify and more studies remain needed to evaluate them. It is felt important to have a 'best product', reflecting the state-of-the-art for some ECVS which are obtained from the sounding instruments: e.g Temperature, humidity profiles. The ITWG Climate WG proposes to undertake an intercomparison exercise, based on the Level 2 algorithms proposed by the Products WG. Level 3 products

appropriate for climates studies will be compared at various temporal and spatial scales.

Action 19-1 : Distribute to the WG the requirements defined by the Climate community

Action 19-2 : to the group: the WG to agree by mail exchange on the scales and other aspects.

Action 19-3 : Nadia Smith and others to perform the comparisons.

Action 19-4 : show the results at the next conference.

Level 4, reanalysis

The term L4 is used when products are obtained through multisensor analysis in a given space-time grid. This is typically the products

resulting of assimilation or reanalysis. These products are often considered as the best data for climate studies. Projects of reanalysis including all the sounding data have started or are starting. All information is welcome and must be distributed.

- Action 19-5 : to everyone communicate information about current reanalyses for use in climate studies

Maturity index.

A maturity index to qualify the product accuracy but also to assess the system aspects of the data generation (e.g., robust and maintainable software, meta data, documentation, uncertainty characterization, access, archive, user feedback, and usage)has been proposed by Bates and Privett (2012) and has been updated by EUMETSAT and discussed

with ESA (CCI). It is important that user community willing to access to existing data sets is informed of the maturity index. The way it is defined and how to use it has thus to be known.

- Action : Viju John to circulate information about maturity index and let it put on the ITWG Climate WG website

Strategy for data compression

The point was not discussed in depth. However it was pointed out that data compression could create vertical correlation. Also monitoring of PC scores is

needed to check stability. The impact of instability and correlation on climate products has not been assessed. Therefore the Climate WG asks that no decision is taken without an agreement of the Climate community. Some studies have to be carried out to study if statistics of PC scores are fully adequate for climate monitoring and how they could be used by climate community.

- Recommendation 19-5 : start analysis of PCs statistics.
- Recommendation 19-6 : Agencies shall continue to archive full definition L0 and L1.

CGMS-41 Recommendations

"Actionee"	Rec	#	Description	Action feedback/closing document	Deadline	Status	HLP ref
Joint CEOS/CGMS climate WG	Plen G.1.2 R	41,01	Space-based climate architecture: To extend the ECV product inventory to FCDRs	The recommendation was made at CGMS-41 plenary when plenary item G.1.2 was discussed.		**OPEN**	HLP

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Joint CEOS/CGMS climate WG	Plen G.1.2 R	41,02	Space-based climate architecture: the design phase of new sensors should include an analysis of compatibility with heritage instruments.	The recommendation was made at CGMS-41 plenary when plenary item G.1.2 was discussed.		**OPEN**	HLP

ITWG Climate WG strongly supports these two recommandations.

Cal / Val Activities

CLARREO type missions

- Truth from space is urgently needed for generating climate quality datasets. Access to absolute calibration (wrt SI) in the IR (Vis?) is possible thanks to the state of the art technology like the one developed for CLARREO mission. With the postponement of the CLARREO absolute calibration mission it remains now some potential opportunities to fly CLARREO type instruments on the ISS. The group

supports strongly such missions also including solar and RO.

Recommendation 19-7: The realization of absolute calibration missions (such as CLARREO) is further supported including flight opportunities on the ISS.

Action 19-6: ITWG co-chairs to communicate recommendations 11 to CGMS.

GPS RO delivers very accurate profiles and is very valuable supplement to passive sounding**.** More highlight should be given to results obtained with this technique.

Recommendation 19-8 to the co-chairs: to invite RO experts at the next meeting and study possibility of a dedicated WG.

Comparison of IASI-A and IASI-B are made possible thanks of the overlap of

the two satellites. The intercalibration shows very little difference. This can generate a jump in long term trends. Moreover this difference is not constant and cannot be easily corrected.

If absolute calibration of the order of magnitude of 0.02 K which would be necessary to estimate interannual variations is very difficult to obtain a requirement of intercalibration between two instruments is a specification which should be valuable to give to industry.

Recommendation 19-9 : Give a specification of I/C between two instruments to industry

Climate Group Administration

ITWG Climate Group

The number of participants in the Climate Working Group was rather small but all participants agree that the group is useful and needed. The next ITSC shall see more dedicated climate talks which should be assured by inviting key presentations early enough. The group needs to improve the presentation of the activities on the ITWG web pages.

Action climate : Martin Stengel to update the Climate Group web pages.

Action : the group shall try to summarize the current usage of TVS/ATOVS data for Climate studies to give more visibility on the benefits of such sounding data

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