



International Issues and Future Systems

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The ITSC-21 Working Group on International Issues and Future Systems (IIFS) discussed the following topics:

- Items overseen by IIFS from the CGMS High Level Priority Plan (HLPP)
- WMO coordination issues
- High temporal resolution sounding (IR, MW)
- CGMS change notifications (see action from ITSC-19).
- Data usage issues, including latency
- Calibration standards (in instrument and RTMs)
- RFI and frequency management, including MW SRFs
- Commercial satellite observation providers
- Coordination of evaluation of new instruments

Led to 11 actions and 12 recommendations

HLPP: discussion points

The WG briefly reviewed some elements of the HLPP.

- HLPP is useful and a more thorough review was justified.
- Some editorial items were noted.
- Item 3.3.3 should be brought to the attention of Liam Gumley at UW (L2 intercomparisons).
- Christoforos agreed to take action on 3.4.1 (validation terminology).
- Noted a need for more work on LBL spectroscopic uncertainty and a unified model for describing the shape of the relevant atmospheric water vapour lines from the microwave (MW) to the visible. This should include the thermal (TIR) and shortwave infrared (SWIR) regions.
- Noted that for orbital configurations the synergy arising from concepts like the NASA A-train can be valuable, and for new free flyers and research satellites flying in formation may be advantageous. This was particularly noted for the Forum mission with Metop.

HLPP: resulting actions and recommendations

IIFS21-A1 Action: Mikael Rattenborg to note IIFS comments in next draft of the HLPP.

IIFS21-A2 Action: Christoforos Tsamalis to provide input to Mikael Rattenborg on item 3.4.1 (new common vocabulary and methodology for the errors associated with validation data).

IIFS21-R1 Recommendation to IRC: Development of a new unified model for describing spectroscopic and water vapour continuum absorption.

IIFS21-R2 Recommendation to ITWG members: ITWG members to familiarise with the HLPP.

IIFS21-R3 Recommendation to CGMS: To show orbital coverage and other details when orbital configuration and formation flying is under discussion for new research missions, that may benefit from synergy flying with existing operational missions.

IIFS21-A3 Action: Claude Camy-Peyret to provide more information to IIFS members on the FORUM proposal.

WMO coordination

This recommendation is still open: Action IIFS19-1 about WMO contingency plan. The old draft plan will be re-sent. There is a meeting early 2018 to agree new plan. Therefore there is an opportunity. But its urgent as the new plan will be agreed at CGMS-46 in June 2018.

Input can be sent to Mikael Rattenborg.

IIFS21-R4 Recommendation to WMO: WMO to pursue SATURN, and all agencies to actively contribute information to this portal (and two associated actions).

Please continue to provide feedback on SATURN and comments to Mikael Rattenborg.

Note also **IIFS21-R11** later (slide 9) on MW SRFs in support of RFI.

High temporal resolution observations

Science questions for next WMO OSE workshop are being assembled in 2018. It is an opportunity to highlight the need for improved latency and temporal repeat cycle. So:

IIFS21-A4 Action: IIFS members to provide science questions and undertake studies, and encourage others to do so, to WMO (Lars Peter Riishoejgaard at riishojgaard@wmo.int) to support this as a significant theme of the next OSE workshop.

The group noted the upcoming TROPICS mission with a low inclination MW constellation and so:

IIFS21-R5 Recommendation to multiple agencies: Evaluation of TROPICS mission to be undertaken by appropriate agencies in partnership with TROPICS mission (e.g. NWP centres)

IIFS21-A5 Action IIFS21-2: S. English / P. Zhang to bring this to attention of major NWP centres and TROPICS mission.

Also this recommendation from ITSC-19 (IIFS19-2) remains open but we will renamed for ease of reference:

IIFS21-R6 Recommendation: Note the growing evidence of likely benefits from hyperspectral geostationary soundings, and where possible to work towards the provision of such instruments in plans for future geo systems.

Data use issues and latency

Recommendation IIFS19-4 has led to an agenda item for CGMS in 2018. The principal of a CGMS notification procedure to guide satellite agencies may be agreed. It is important that ITWG can provide details when/if this happens. So,

IIFS21-A6 Action on IFS co-chairs: In partnership with NWP WG the IIFS WG co-chairs to devise a set of criteria for this CGMS procedure to follow.

Noting Recommendation IIFS19-5 the Co-Chairs are asked to remind Roscosmos, who are the owner of the existing software package and can modernise to modern OS (linux type), of the requirement for a DB software package to enable use of Russian data in DBNet, to lend support to WMO.

IIFS21-A7 Action Mikael Rattenborg and the IIFS co-chairs to draft a letter for ITWG co-chairs to send to Roscosmos and Roshydromet explaining the importance of access through DB-Net and processing of real time MTVZA-GY and MSU-MR data (Alexander Uspensky to advise full postal address of whom to send to)

The WG noted that latency of CYGNSS does not meet requirements, despite strong real time interest in this mission. This remains typical of research missions.

IIFS20-R7 Recommendation to CGMS: Re-emphasize best practise is to consider latency requirements early in the planning stage of new missions, including research and pre-operational.

This should take into account that the latency requirement will depend on the user applications, and there is not a fixed latency that must always be met. There needs to be discussion on a mission by mission basis.

Uncertainty characterisation

Noting that whilst pre-flight characterisation is important, instruments are sometimes stored for a long time on the ground, and in any case in-orbit characterisation is needed, the WG made the following recommendation:

IIFS21-R8 Recommendation to CGMS: Recognizing the growing need for assessment and on-orbit optimization of the accuracy of operational hyperspectral IR sounders, the traditional approaches for pre-flight SI traceability and post-flight validation should be enhanced by flying a CLARREO-like on-orbit reference standard capability (featuring on-orbit SI verification) with orbits designed to provide inter-calibration capability for refining the calibration of the international fleet of operational sounders.

The WG noted the value of the GAIA-CLIM activity and the GRUAN and ARM sites. Such sites are important and should be maintained, and expanded where possible.

IIFS21-A8 Action: Peng Zhang to check status of reference sites in China and their availability.

IIFS21-R9 Recommendation to AOPC GCOS: Maintain and where possible expand GRUAN and ARM sites.

RFI issues

The WG noted the challenges posed by RFI and the need to, where possible, detect RFI. Some suggested techniques were noted in the presentation by Rich Kelley.

IIFS21-R10 Recommendation to CGMS: Space agencies to develop, where possible, improved capability to detect RFI in level-0 data.

When RFI is detected MW SRFs are essential to prove its illegal emissions in protected bands. So the need for SRFs is reiterated. The WG noted this is also important for climate and for radiative transfer.

IIFS21-R11 Recommendation to CGMS: Space agencies to ensure that provision of SRFs for MW instruments is routine practise for future instruments and published on the SATURN portal. Furthermore to obtain wherever possible and practical the SRFs for existing and old instruments, and also to provide on the SATURN portal.

Furthermore the WG noted that the two recommendations to update the current use of MW bands and their economic and social value. Therefore Recommendations IIFS20-14 and IIFS20-15 remain open and in addition there is a new action to try and actively acquire and update this information via a Workshop.

IIFS21-A9 Action: Steve English to ask ECMWF if it is willing to host a short workshop (1-2 days) to present updated information with respect to Recommendations IIFS20-14 and IIFS20-15.

Commercial satellite observation providers

The WG had a lively discussion on the growing role of commercial satellite observation providers, especially in the US.

At present there is no single coherent policy within the meteorological community. There are many discussion papers (in agencies, international agencies, WMO)

However WMO are attempting to create a policy document. This has key principles. The group agreed with the principles and noted potential additional points:

1. Data continuity and long-term planning is critical to operational centres
2. The new notification procedures will need to be respected if adopted by CGMS
3. New data needs to undergo a thorough scientific evaluation to demonstrate quality and impact for operational users prior to commercial sale

IIFS21-A10 Action: Steve English and Peng Zhang to bring these suggested changes to WMO teams considering these questions (CGMS, IPETSUP, ICT-IOS...)

Evaluation of new satellite observations

The WG noted that new observations that can be considered “core” will be evaluated by all centres as soon as they become available.

However more innovative observations, or observations whose quality is uncertain, could be evaluated collaboratively by a group of centres, sharing the workload.

Also adopt GAIA-CLIM standards for comparison.

This team could be organised under the existing GODEX group.

IIFS21-R12 Recommendation to GODEX-NWP: For GODEX-NWP to organise and oversee agreed sharing of the evaluation of instruments not considered to be “core” by NWP centres.

IIFS21-A11 Action: Mikael Rattenborg to discuss with GODEX-NWP members how this initiative could be implemented (next meeting Autumn 2018).



Together
For Better

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- Great efforts from **Stephen English** to make this presentation
- Appreciate all the member of IIFS and do enjoy the discussion with you