



International Issues and Future Systems

[ITSC-22 Actions and Recommendations](#)

ITSC-22 Members: Peng Zhang (co-chair), Stephen English (co-chair), Alan Beaulne, Nancy Baker, Niels Bormann, Pascal Brunel, Philippe Chambon, Keyi Chen, Yong Chen, Chu-Yong Chung, Louis Garand, Ben Johnson, Masahiro Kazumori, Richard Kelley, Dieter Klaes, Heather Lawrence, Heikki Pohjola, Ben Ruston, Joe Taylor, Christoforos Tsamalis.

All past actions now closed. `

One outstanding one at start of ITSC-22 was:

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). OPEN (*Christoforos awaiting input from Mikael, following CGMS*). **Now closed.**

New Action:

Action IIFS22-A1: Stephen English to obtain copy of the White Paper from the NPL meeting on traceable calibration and circulate for comment, then feed back comments to White Paper authors.



First part done thanks to Fabien Carminati

IIFS22: 25 new actions, 15 recommendations, many important statements.

Actions arising from ITSC-21 Recommendations not covered elsewhere

- From ITSC-21: IIFS21-R9 Recommendation to AOPC GCOS: Maintain and where possible expand GRUAN and ARM sites. CLOSE: Brought to attention of Kenneth Holmlund, current chair of GCOS AOPC. (Peng Zhang also a member of AOPC).

Action IIFS22-A2: Peng Zhang to discuss with Ken Holmlund if further action or comment is needed from ITWG on this topic (Link to Rec IIFS21-R9).

Spectrum management (1) **CGMS WG I**

- Statement: We will know outcome of WRC in Dec or Jan, but are anticipating a poor outcome. This will necessitate action to try to detect and report disruption and also to try to minimise negative impact. This would be helped by RFI detection and possible action on L0 at source.

Recommendation IIFS22-R1 to CGMS WG 1: Space Agencies to consider building in as much RFI screening and mitigation into their ground segment processing as possible, noting efforts already starting at ESA and in research groups in US, Japan and China.

Action IIFS22-A3: IIFS members to provide a summary of known activities, such as ESA initiative (Link to Rec IIFS22-R1).

Action IIFS22-A4: Rich Kelley to contact Chris Kummerow about efforts in his team and report to ITWG (Link to Rec IIFS22-R1).

- Statement: The IIFS recognises the high value of the ECMWF RFI workshop report.

Action IIFS22-A5: Stephen English to bring ECMWF RFI workshop report to attention of all space agencies, and CGMS.

Spectrum management (2) **CGMS WG I**

- Statement: The Radio Astronomy community is better organised in living with RFI than the weather community, as increasingly is the L-band community. They organise a regular “Living with RFI” workshop. In order to engage with weather community they have agreed to hold the next meeting at ECMWF. This may be followed immediately by a repeat of the ECMWF RFI workshop, which has different goals (about communicating value of spectrum to society through meteorology, whereas the Living with RFI is about how to minimise the impact of RFI).

Recommendation IIFS22-R2 to ITWG members: ITWG members to plan to participate as actively as possible in consecutive RFI-related workshops at ECMWF in 2021.

Action IIFS22-A6: Stephen English to send information to ITWG mailing list about RFI Workshops once dates known (Link to Rec IIFS22-R2).

- Statement: There is a possible threat to frequencies above 95 GHz, from UK and USA.

Recommendation IIFS22-R3 to ITWG members: ITWG to begin to assemble evidence of the value to society of bands above 95 GHz through their use in meteorology.

Action IIFS22-A7: Stephen English to ensure specific requests are made for studies of this in preparation for workshops in 2021 (Link to Rec IIFS22-R3).

Data Timeliness (1) CGMS WG I

- Statement: Independently IPWG and ITWG sent letters to Roscosmos and Roshydromet concerning Russian satellite data, albeit on different topics. ITWG and IPWG have a common interest in the Russian programme and face similar challenges.

Action: IIFS22-A8: Stephen English and Philippe Chambon (Co-Chair IPWG) to discuss joint ITWG-IPWG efforts on DBNet and science issues with respect to the Meteor-M programme.

- Statement: EUMETSAT are working to try and improve timeliness of Russian global data. This is strongly supported by IIFS.

Action IIFS22-A9: Stephen English to thank EUMETSAT for their efforts regarding Russian data and to confirm ITWG's on-going requirement for observations with good timeliness.

- Statement: IIFS recognises the outstanding progress in delivering MW sounder data quickly via DBNet. There is a requirement for hyperspectral IR data with equally good timeliness.

Recommendation IIFS22-R4 to WMO: WMO to continue to work with PRs in countries with DBNet ground stations to encourage provision of sufficient bandwidth to redistribute the hyperspectral IR sounder observations in addition to the MW sounder observations.

Action IIFS-A10: Heikki Pohjola to raise Rec IIFS22-R4 at WMO.

Data Timeliness (2) **CGMS WG I**

- Statement: IIFS note that the benefits of timely observations in NWP has increased, thanks to improved DA methods (e.g. continuous DA) and convective scale NWP whose requirements are close to nowcasting requirements. Therefore more than ever initiatives such as DBNet and efforts to provide timely global data increase value of satellite programmes.

Recommendation IIFS22-R5 to WMO: WMO to note increasing importance of timely observations and, with CGMS and Space Agencies, to continue to explore innovative methods, such as used by GPM, to provide global data with excellent timeliness for next generation satellite programmes.

Action IIFS22-A11: Heikki Pohjola to raise Rec IIFS22-R5 at WMO.

- Statement: IIFS recognises that it is often difficult to use core ground segment processing software to support DBNet. However if planned from day-1 software could be developed flexibly to support both applications.

Recommendation IIFS22-R6 to CGMS WG I: Space Agencies to consider DBNet requirements when designing core ground segment software, and then to make software available to DBNet operators.

Action IIFS22-A12: Peng Zhang to ensure Rec IIFS22-R6 communicated to Space Agencies via CGMS

Small satellites **CGMS WG III**

- From ITSC-21: IIFS21-R4 Recommendation to multiple agencies: Evaluation of TROPICS mission to be undertaken by appropriate agencies in partnership with TROPICS mission (e.g. NWP centres). Still valid, awaiting launch.

Action IIFS22-A13: Philippe Chambon and Niels Bormann to inform TROPICS team of continued ITWG interest in TROPICS but stressing that to ensure engagement from the ITWG community delivery of a large proportion of TROPICS data in NRT is mandatory.

- Statement: TEMPEST-D data has already been evaluated at some centres. It would be ideal to share experience with Cubesats, and to explore quality and timeliness issues.

Recommendation IIFS22-R7 to ITWG Co-Chairs: ITWG Co-chairs to actively invite contributions from users and providers on experiences with Cubesats and Small Sats to ITSC-23.

Action IIFS22-A14: IIFS Co-Chairs to assist ITWG Co-Chairs with Rec IIFS22-R7.

- Statement: It is noted that TROPICS and other Cubesat missions have difficulties in meeting NRT requirements due to budget constraints.

Recommendation IIFS22-R8 to CGMS: If a mission needs engagement from application areas with a NRT data requirement, budget should be allocated to provide this.

Action IIFS22-A15: Co-Chairs to report Rec IIFS22-R8 to CGMS WG III.

Small satellites, commercial aspects **CGMS WG III**

- Statement: IIFS noted that issues for Small Sats can fall into three areas: 1) General issues related to the small platform size; 2) constraints when operated by commercial entities, 3) non-compliance with best practise. The latter ought to be possible to improve. The extent of issues arising from the first two need to be better understood.

Action IIFS22-A16: Stephen English and Heikki Pojhola to circulate Critical Satellite Data Paper and papers on CGMS and WMO best practise to IIFS members, who will provide feedback to what extent these are being adhered to by Small Satellite operators.

Statement: If observations from commercial satellites can't be licensed for free-exchange then this will reduce their uptake. IIFS consider that CGMS is best placed to coordinate global access to observations from commercial satellite operators, but recognise that this is challenging.

Statement: IIFS recognises that there is a bandwidth issue for command and control with very large constellations of Cubesats. This may in future bring them into conflict with EESS bands including bands used for command and control of weather satellites.

No Action or Recommendation from these two important statements.

Traceable calibration and RTM (1) IRC, GSICS and CGMS WG III

- Statement: A traceable calibration for core satellite observations is essential to both climate and NWP application areas. The latter needs to be stressed as it is often assumed not to be an issue for NWP. This means pre-flight calibration, and in-flight calibration both need to be performed to very high standards for reference quality observations, which will form the core of WIGOS.

Recommendation IIFS22-R9 to CGMS: Space Agencies to note that strong requirement for traceable calibration comes from NWP as well as climate application area.

Action IIFS22-A17: Co-Chairs to ensure Rec IIFS22-R9 is communicated to CGMS.

- Statement: Several Space Agencies are considering missions to perform reference quality calibration in flight. From ITSC-21: 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. **This recommendation remains valid and needs to be recommunicated until there is a firm commitment to such a mission.**

Action IIFS22-A18: Co-Chairs to ensure Rec IIFS21-R8 is again communicated to CGMS.

Traceable calibration and RTM (2) GSICS and CGMS WG III

- Statement: IFS strongly supports the GSICS effort and was grateful for the thorough presentations given on GSICS in the GSICS Workshop at ITSC-22.

Action IFS22-A19: Peng Zhang to report to GSICS the appreciation of the IFS WG for the GSICS effort and the presentations at ITSC-22.

WMO CGMS plenary

- Statement: The IIFS noted the availability of an updated HLPP.

Action IIFS22-A20: Stephen English to circulate HLPP to IIFS members, then pass all comments received within one month to CGMS via Mitch Goldberg

- Statement: IIFS noted anecdotal evidence that uptake of SATURN has been slow. This is disappointing given how long SATURN has now been available. The reasons need to be understood. IIFS members reported that they have no difficulty finding the information they need directly on Space Agency web pages. Therefore a question arises if SATURN is needed.

Recommendation IIFS22-R10 To WMO: Link SATURN pages from relevant OSCAR pages to encourage uptake of SATURN as OSCAR is an indispensable tool and is therefore widely used. If uptake remains low carry out a survey to establish if there is a requirement for SATURN, and if so what is preventing uptake. If there is no requirement for SATURN, to discontinue and concentrate resources on OSCAR.

Action IIFS22-A21: Heikki Pohjola to bring Rec IIFS22-R10 to attention of WMO Space Secretariat.

Preparation for new instruments **CGMS WG III**

- Statement: IIFS noted that on several occasions observations have been accessible to a small number of users (sometimes only one) during a long evaluation phase, while other users have had no access until a very long period after launch. There are diverse reasons for this, it is often not because the originating Space Agency was slow to release data. IIFS noted that the benefits of missions are maximised when early evaluation is undertaken by many centres.
- **Recommendation IIFS22-R11 To Space Agencies via CGMS: Space Agencies to note that the benefits of Satellite Missions to the ITWG community are increased when early evaluation is undertaken by many independent centres.**
- **Action IIFS22-A22: Co-Chairs to ensure Rec IIFS22-R11 is brought to attention of CGMS.**

Orbital configuration **CGMS WG III**

- Statement: From ITSC-21 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. Still valid, no evidence yet of take up.

Action IIFS22-A23: Stephen English and Peng Zhang to ask for feedback from CGMS on CGMS response to this recommendation.

- Statement: Most centres in the ITWG community have confirmed they will be able to commit to a fast evaluation of observations in new orbital planes if/when requested to ensure continuity in these orbital planes if results are encouraging: This is most likely to apply in the near future to FY-3E E-AM by CMA and WMO and Meteor-M N2 (mid pm) by Roshydromet and WMO.
- Statement: The populating of multiple orbital planes with different ECTs provided by different agencies is extremely valuable.
- **No Action or Recommendation associated with these two important statements.**

Coordination with other CGMS sub-groups, CGMS and IRC

- Statement: ITWG has tended to operate in isolation from other groups, with little or no communication. This has led to missed opportunities (e.g. Roshydromet letter)

Recommendation IIFS22-R13 to ITWG Co-Chairs: ITWG co-chairs to share actions and recommendations from ITWG with co-chairs of other groups, and to consider the actions and recommendations from all groups prior to CGMS and identify actions and recommendations that are common to more than one group. These could be presented to CGMS as joint recommendations, given them stronger visibility.

Recommendation IIFS22-R14 to ITWG Co-Chairs: To continue to pursue very actively the IRC/IAMAS relationship, to gain more support for ITWG initiatives regarding Radiative Transfer.

Action IIFS22-A24: IIFS Co-Chairs to assist ITWG Co-Chairs with Recommendations IIFS22-R13 and IIFS22-R14.

20 years of the SAFs!

- Statement: The IIFS recognises the remarkable achievement of the EUMETSAT SAFs, in particular 20 years of the NWP and Climate SAFs. EUMETSAT is warmly congratulated on the success of the SAF innovation. ITWG considers the SAFS to be excellent value for money for EUMETSAT.

Recommendation IIFS22-R15: Other Space Agencies to consider if the SAF concept would be beneficial for them, as it has been for EUMETSAT.

Action IIFS22-A25: ITWG Co-Chairs to ensure Rec IIFS22-R15 brought to attention of CGMS and to pass on ITWG congratulations on 20 years of the NWP and Climate SAFs to EUMETSAT.

Change of IIFS co-chair for ITSC-23 and beyond

- Steve English is stepping down as co-chair of IIFS
- Niels Bormann will take over from ITSC-23, with Peng Zhang continuing