



Missions SC Meeting

John Curtin School of Medical Research, Canberra
5.30 pm, 6 Nov 2018

Toshimichi Otsubo

and

Scott Wetzel



Missions SC Meeting 2018 Agenda



(1) Opening/Welcome

(2) Membership

(3) New webpage layout for GNSS LRAs

(4) MSC+NESC collaboration in ILRS NESC Forum

(5) Ongoing/Future Missions (5 min each)

- ICESat-2 (Hoffman)
- Tiangong-2 (Zhang)
- H-IIA R/B (Matsumoto)
- GRACE-FO, QZS, RANGE, ELT, LightSail, S-NET, GPS-III and BLITS-M (presented in Session 3 & 6)

(6) New criteria for future mission approvals (discussion; with CB)

(7) Other issues?

(8) Closure

(2) MSC Members



- **(New)** Dr. James Bennett/Space Environment Research Centre
- Dr. Giuseppe Bianco/Agenzia Spaziale Italiana (ASI)
- Dr. John J. Degnan/Sigma Space Corporation
- Julie E. Horvath/KBRwyle/SLR
- Dr. Georg Kirchner/Space Res. Inst., Austrian Acad. of Sci.
- Jan F. McGarry/NASA GSFC
- **(New)** Shinichi Nakamura/Japan Aerospace Exploration Agency
- Carey E. Noll/NASA GSFC
- Ron Noomen/Delft University of Technology
- **(Chair)** Toshimichi Otsubo/Hitotsubashi University
- Dr. Erricos C. Pavlis/JCET/UMBC
- Dr. Michael R. Pearlman/CfA
- Luca Porcelli/Istituto Nazionale di Fisica Nucleare
- Dr. Ulrich Schreiber/BKG/Geodätisches Observatorium Wettzell
- **(New)** Robert Sherwood/NERC Space Geodesy Facility
- Andrey Sokolov/SRI for Precision Instrument Engineering
- **(Cochair)** Scott L. Wetzel/KBRwyle/SLR
- Zhongping Zhang/Shanghai Data Center

Updated: 27-Oct-2018 00:00:11

All members are requested to respond when we ask a vote for a mission etc.

Chair and cochair to be named in GB Meeting on Thurs.

(3) ILRS GNSS webpages

- **Thanks to C Noll and ILRS CB.**
- **To synchronize with newly submitted MSRFs.**
New LRA? Submit an MSRF with an incremental option.
Done: Beidou, Galileo, and QZSS.
- **To Do: Ask Russia for GLONASS and India for IRNSS. USA for GPS-III.**

Current

Future

Past/Other

Spacecraft Parameters

Mission Support

Mission Operations

Missions Standing
Committee

Quick Links

- > [List of Missions](#)
- > [Mission News](#)
- > [Mission Campaigns](#)
- > [Mission Support Request](#)
- > [Predictions](#)
- > [Priorities](#)

COMPASS/BeiDou: Reflector Information

RetroReflector Array (RRA) Characteristics:

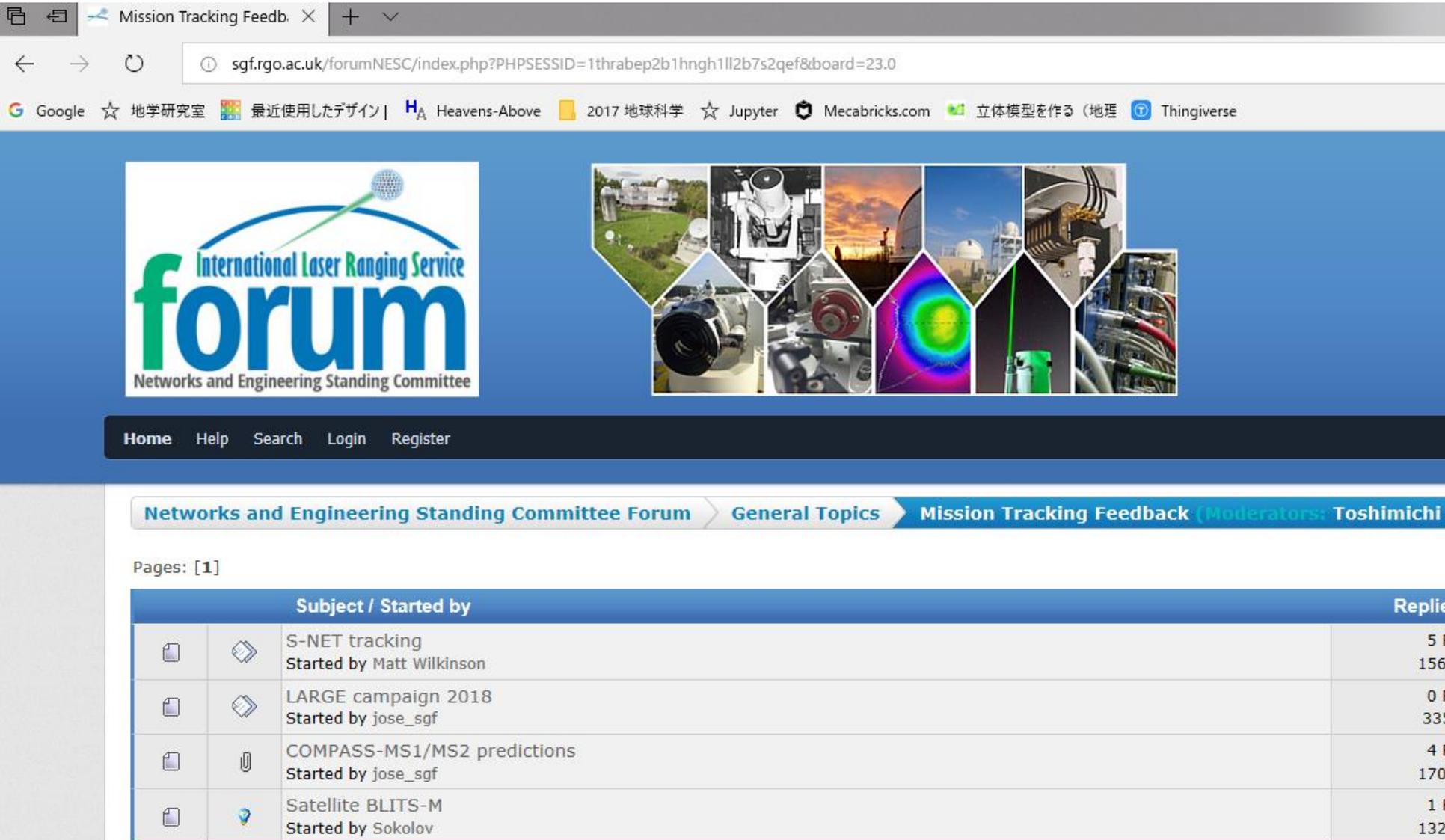


Courtesy of Chinese Academy of Sciences

Satellite	LRA
COMPASS-M1	identical to M3
COMPASS-M3	LRA information from MSR
COMPASS-MS1	LRA information from MSR
COMPASS-MS2	identical to MS1
COMPASS-MS3	identical to MS1
COMPASS-I3	LRA information from MSR
COMPASS-I5	identical to I3
COMPASS-I6B	identical to I3
COMPASS-IS1	identical to I3
COMPASS-IS2	identical to I3
COMPASS-G1	LRA information from MSR
BeiDou-3M1	identical to MS1
BeiDou-3M2	identical to MS1
BeiDou-3M9	identical to M3
BeiDou-3M10	identical to M3

(4) MSC+NESC collaboration in “Forum”

- Thanks to M Wilkinson, NESC colleagues and mission providers.



Mission Tracking Feedb. x + v

sgf.rgo.ac.uk/forumNESC/index.php?PHPSESSID=1thrabep2b1hng11l2b7s2qef&board=23.0

Google ☆ 地学研究室 最近使用したデザイン | H_A Heavens-Above 2017 地球科学 ☆ Jupyter Mecabricks.com 立体模型を作る (地理) Thingiverse

International Laser Ranging Service
forum
Networks and Engineering Standing Committee

Home Help Search Login Register

Networks and Engineering Standing Committee Forum > General Topics > Mission Tracking Feedback (Moderators: Toshimichi)

Pages: [1]

Subject / Started by		Replies
	 S-NET tracking Started by Matt Wilkinson	5 156
	 LARGE campaign 2018 Started by jose_sgf	0 33
	 COMPASS-MS1/MS2 predictions Started by jose_sgf	4 170
	 Satellite BLITS-M Started by Sokolov	1 132

(6) New criteria for future mission approvals (discussion; with CB)

- **Triggered by ILRS CB (M Pearlman).**

Our stations are getting busier monotonically. We should not ask them impossible missions.

We sometimes see CCR+LRA not well designed for SLR observations, or the value of our (ILRS) tracking data is doubtful or seemingly not very significant.

→ CB proposed a preliminary MSRF scheme.

- **Reviewing our mission approval procedure.**

Collected SC members' opinions.

No one seems happy with the current scheme.

Long-term-established conventions should be changed very carefully.

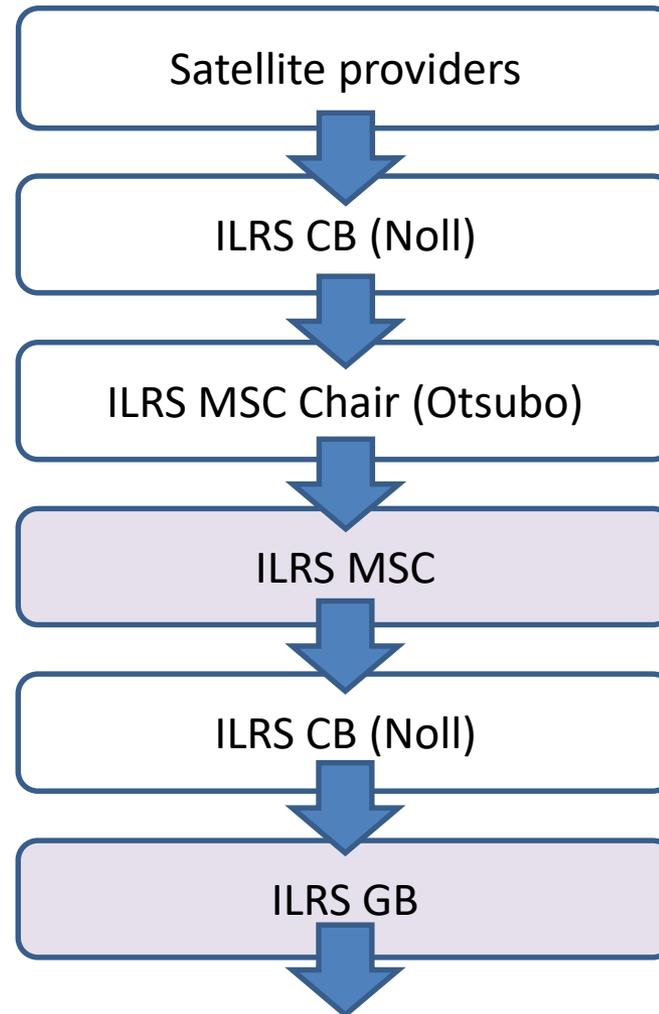
- **Conflicting points**

Openness vs Station capacity

Effectiveness & Feasibility vs Completeness

(6) New criteria for future mission approvals

MSRF flow



ILRS-supporting mission

[Approval scheme]

- We should say 'no' to a poorly designed/organised mission.
- First 'no' will impact positively.
- We have to give a careful explanation when saying 'no'.
- We should say 'yes' to (almost) all requests just for a limited time support. By having a 'true' review process during the supported time only high-scored one can get a continuous or long-time support.
- We should allow 'risky' missions. A few failures would show that the ILRS is open to taking risks.
- We should re-review the tracking support after 45 (or ?) days.
- We should request a quick-look report from satellite providers.
- We should give scores to each MSRF from some different aspects.
- A priority scheme should be established and we should give a level of priority when approving.

[Preliminary MSRF] (proposed by ILRS CB)

- Not supportive (from many). Nothing to gain from early notification if they cannot change the design.
- Reduce paper work.
- Good. We should/like to know what are coming in advance.
- Build-up procedure should be established.

[Involvement in/before the design phase]

- Early introduction/communication is important.
- A technical consultative group should be formed.
- “About” brochure/webpage to be seen to satellite providers.
- National/regional preliminary check should be introduced.
- A technical consultative group: Unlikely that enough volunteers could be found.
- Not realistic & beyond what we can/should do.
- Do not try to be prepared for everything. Not efficient.

[Issues in the current MSRF]

- Should be reviewed more critically.
- Yes/no borderline to be clarified.
- Does not fit the large variety of today's missions.

Impossible to realise everything...

Further comments esp from satellite providers?

(6) New criteria for future mission approvals

- **Voice of the majority**

Preliminary MSRF will not work.

Current approval criteria are too loose. We should say 'no' for very poorly designed or not-important missions.

- **Otsubo's proposal** (to be discussed possibly with new chair?)

Even in the 'yes' case:

- **To specify the ILRS-supporting period: lifetime or XXX years/months. and/or**

- **To specify the priority (HIGH or LOW). ← Effective?**

Can the chair ask/Can the members reply more than a yes/no vote?

- **New guideline proposal (by ILRS CB; commented by Otsubo)**

- **at least 3-6 months in advance → at least 6 months in advance**

- **"Very low priority" can be given.**

Next page: to be placed on the ILRS Website.

Guidelines for submitting a new mission support request for ILRS SLR tracking ↵

↵

↵

The ILRS was established to support applications and programs in geodesy, geodynamics, and space science; the Service's primary emphasis is placed on tasks that support the IAG's Global Geodetic Observing System (GGOS). ↵

↵

As of 2018, the ILRS network ranges to about 100 satellites and missions continue to submit additional requests for tracking support. The ILRS reviews new Mission Support Requests (MSRs) on the basis of laser tracking need and the likelihood of mission success. Although the ILRS tries to accommodate all new tracking requests, the submission of a request does not guarantee ILRS support. ↵

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The ILRS will consider the following points when reviewing the submitted MSR form:↵

↵

1. Does SLR provide a unique capability that other tracking systems cannot? Is SLR the primary or secondary tracking technique? Can the tracking requirement be met by another technique?↵
2. What added value will SLR data provide to the data products? |↵
3. Has the mission sufficiently quantified its tracking requirement (accuracy, data volume, coverage, etc.)? A request for “Everything you can get” and “do the best you can do” would result in a **very low priority** for the ILRS.↵
4. Does the mission have a vulnerable payload aboard that will require special tracking procedures?↵
5. What is the procurement source of the retroreflector array(s)? Does the design include accommodation for the velocity aberration?
(<https://ilrs.cddis.eosdis.nasa.gov/technology/spaceSegment/>)↵
6. Has the signal link budget been estimated either through comparison with spacecraft already tracked by SLR or through the link equation? ↵
7. Have provisions been made to provide reliable predictions in CPF format? Has this source tested their CPF files or are there plans to do such testing?
(https://ilrs.cddis.eosdis.nasa.gov/data_and_products/predictions/index.html) and
(https://ilrs.cddis.eosdis.nasa.gov/data_and_products/formats/cpf.html)↵

↵

The ILRS expects missions to submit their official MSR form at least 6 months prior to launch or from when missions expect tracking support to begin. ↵

(6) New criteria for future mission approvals (discussion; with CB)

- **Should we apply the new procedure soon?**

Announcement: Jan-Mar 2019 → Effective from Jul-Sep 2019?

(7) Other issues



- **“Mission” session in the workshop (like Session 3)**
 - To continue in the future workshops?
 - To merge with Session 6?
- **Station-dependent satellite priority?**

(8) Closure

- **Chair and cochair to be named on Thursday.**
- **Hear of a new mission?**
 - Submit an MSRF & present at an MSC Meeting (or a workshop session).
- **Next meeting**
 - Likely: in conjunction with Kunming workshop, 2020.