

## 2025年度 03)国際ワークショップ 目次詳細

### 2025 03)ISEE / CICR International Workshop List

3 件

\*所属・職名は2026年3月現在

\*Affiliation and Department displayed are current as of March 2026.

研究代表者 Principal Investigator	所属機関* Affiliation	所属部局* Department	職名* Job title	研究課題名 Project Title	頁 Page	備考 Remarks
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## **BepiColombo Cruise Science Workshop: Structure and Evolution of Coronal Mass Ejections**

Emilia Kilpua (University of Helsinki)

This workshop took place 2-6.2.2206 at the University of Nagoya. The primary purpose of the workshop was two-fold:

- 1) Enhance our understanding of interplanetary coronal mass ejections (ICMEs), which are the most prominent forms of solar activity and can significantly harm technology both on space and on ground, as well as danger astronaut health.
- 2) Augment the use of ESA /JAXA BepiColombo observations during its cruise phase (2018 - 2026)

In the workshop, we focused on the events when multiple spacecraft, well separated in heliospheric longitude and/or radial distance, detected the same ICME. We also analyzed the Solar Energetic Particles (SEPs) accelerated by these events. Recent years have provided unprecedented opportunities for such observations, including BepiColombo, Akatsuki, Solar Orbiter, Parker Solar Probe, STEREO-A, and near-Earth observatories (e.g. Wind, ACE, MMS, Cluster, THEMIS).

The used methodologies cover the analysis of wide range of in-situ and remote sensing observations to probe the structure and characteristics of ICMEs and SEPs, and their sources at the Sun, Heliospheric modelling with a global magnetohydrodynamic model SUSAANO-CME and benefitting from techniques such as interplanetary scintillations and white-light Heliospheric imaging.

The workshop began on Monday and Tuesday with presentations and discussions on selected topics related to the workshop themes and data. Before the workshop, we had prepared an initial list of the best multi-spacecraft ICME observations. We then selected three events from the list for a more detailed analysis, during which multi-spacecraft observations of the ICME and associated SEPs were available, with BepiColombo among the observing spacecraft.

- 9 – 14 November 2025
- 24 – 26 August 2024
- 23 – 24 March 2024

On Wednesday and Thursday, the workshop participants divided into three groups, each focusing on one of the selected events. The aim was to examine them in greater detail, check and gather the available data, and identify the most interesting aspects. All events proved highly interesting and have the potential to result in peer-reviewed scientific publications. On Friday there was a wrap-up and parallel meetings.

The tentative titles for the planned papers are

- **November 2025:** Geo-effectiveness of substructures from the merging of three strong CMEs
- **August 2024:** Multi-spacecraft analysis of a structure and internal properties of a magnetic cloud detected by four well-separated spacecraft
- **March 2024:** Connection between energetic particle observations and large-scale interplanetary structures (HPS/HCS, shock, sheath, magnetic cloud).

We selected the responsible leader for each of these papers who coordinates the analysis and agreed a telecon for March to discuss the overall progress.

In addition, we discussed additional paper regarding interesting Forbush decrease observed during the November 2025 event, a paper focusing on turbulence properties in these events and a review paper covering all scientific papers from the BepiColombo cruise phase, including multi-spacecraft observations.

## **Workshop for Ionosphere-Thermosphere Coupling with SDI-3D and EISCAT\_3D**

Anita Aikio (University of Oulu, Finland)

Date of the report: 30 April 2026

### **Arrangements and participation**

The workshop for "Ionosphere-Thermosphere Coupling with SDI-3D and EISCAT\_3D" was held at Nagoya University Higashiyama campus (Science South building) during 16-21 November 2025. The workshop was attended in-person by 13 scientists from Japan, Finland and the United States, and in addition 2 persons took part remotely via Zoom. Five of the participants were early-career researchers (PhD students or postdocs).

### **Purpose and scientific program**

The purpose of the workshop was to promote the scientific utilization of two novel and cutting-edge research infrastructures: The three Scanning Doppler Imagers (SDI) installed in northern Europe forming the SDI-3D project and the forthcoming international EISCAT\_3D radar system located in the same area. In addition, synergies between existing research infrastructures, including optical instruments operated by the Nagoya university and located in this area were discussed.

The meeting was organized around several themes:

- Sunday (16 Nov): Preparations
- Monday (17 Nov): Current status of instruments
- Tuesday (18 Nov): Data analysis and Ionosphere-Thermosphere science
- Wednesday (19 Nov): Data analysis and Ionosphere-Thermosphere science (cont.)
- Thursday (20 Nov): Future directions and next steps
- Friday (21 Nov): Wrap-up and additional science discussions

During each day, several presentations on ongoing work and recent results were given by scientists working on the theme (see list of presentations in Form03-1), followed by discussions. The central idea of the workshop was to reserve a lot of time for discussions, which worked very well and led to fruitful exchange of ideas.

### **Results**

Based on the presentations and discussions during the workshop, we identified several possible research topics, each of which is planned to result in a peer-review publication:

- Instrumentation: Description of SDI, FPI, ASI, GNSS receiver, and induction magnetometer at the three SDI-3D stations in northern Europe.
- Method development: Tesfaw et al. (2026), "Reconstructing the neutral wind velocity based on measurements by a network of scanning Doppler imagers at high latitudes". Manuscript in preparation, J. Geophys. Res.
- Event study: Thermospheric and ionospheric responses to the 2025 January storm at high latitudes.

These collaborative studies initiated during the workshop have continued and will continue by means of regular Zoom video meetings.

### Additional research visits and workshops

In order to continue and expand this fruitful collaboration, several other research visits and meetings were planned during the workshop held at Nagoya:

- **Visit by Dr. Oyama to University of Oulu.** To continue the work started during the meeting at Nagoya, Dr. Oyama, who was the corresponding ISEE researcher for organizing the workshop, visited the University of Oulu during February-March 2026. The purpose of the visit is to collaborate with Prof. Aikio and Drs. Vanhamäki, Tefaw, Virtanen and Cai on joint analysis of radar and optical observations.
- **Visit by Drs. Tesfaw and Cai to ISEE.** During summer 2026 Dr. Tesfaw and winter 2026-2027 Dr. Cai, who are the participants in the Nagoya workshop, will make 1-month research visits to ISEE to work with Dr. Oyama on analysis of SDI-3D neutral wind and temperature measurements.
- **Workshop in autumn 2026 at Oulu university, Finland.** We are going to hold a similar workshop about 1 year after the workshop at ISEE. Professor Aikio has been awarded a grant by the University of Oulu to support travel expenses of foreign scientists attending the workshop at Oulu. We foresee that this could be the starting of a regular series of workshops involving Finnish, Japanese, American and other scientists working on ionosphere-thermosphere coupling at high latitudes.
- **ISSI team proposal.** We submitted a proposal for an International Space Science Institute (ISSI) team in March 2026 with the goal of internationally advancing research on the thermosphere-ionosphere coupling with the SDI-3D and EISCAT\_3D. This team comprises researchers from Japan, Finland, US, UK, and Canada.

We thank ISEE and the Nagoya University for supporting our research.

(Form03-2)

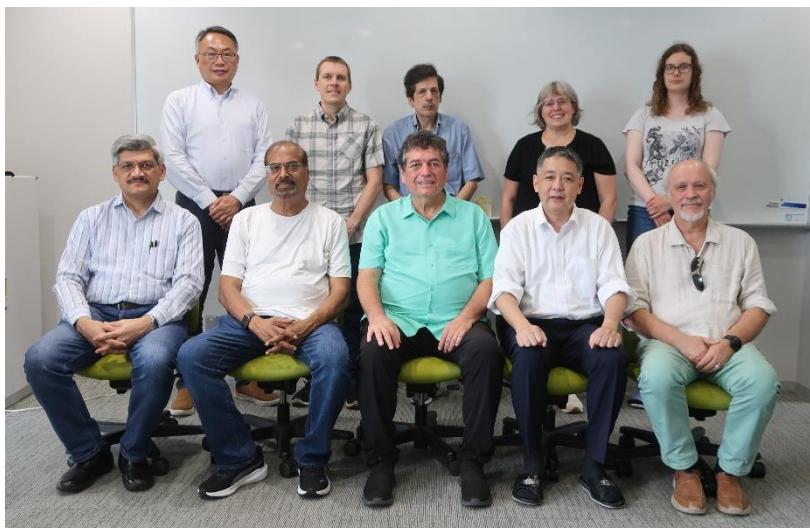
## **PRESTO Summarizing Workshop**

Ramon Lopez (University of Texas at Arlington, USA)

Kazuo Shiokawa (ISEE, Nagoya University, Japan)

PRESTO Summarizing Workshop was held as an ISEE international workshop in the Institute for Space-Earth Environmental Research (ISEE), Nagoya University, Japan, on June 16-19, 2025. This workshop was designed to summarize the 5-year scientific achievements of the SCOSTEP's PRESTO (Predictability of the variable solar-terrestrial coupling) program (<https://scostep.org/presto/>) of 2020-2024. Ten scientists (chair, co-chairs of the program, Pillar co-leaders, and invited writers of PRESTO) were joined from Finland, Greece, India, Japan, Switzerland, and USA, and draft of four review papers were written. These review papers will be submitted to Progress in Earth and Planetary Science (PEPS) for the special issue of PRESTO.

During this workshop, Ramon Lopez, the PRESTO chair, presented a glass plaque to Ms. Mai Asakura, SCOSTEP newsletter secretary in ISEE for recognition of 5-year editorial support of SCOSTEP/PRESTO Newsletter. Nat Gopalswamy, the Past President of SCOSTEP, presented a glass plaque to Dr. Claudia Martinez-Calderon of ISEE, for recognition of 5-year organization of the SCOSTEP online capacity building seminar series since 2020.



Participants of the PRESTO Summarizing Workshop