

Center for International Collaborative Research (CICR)



- Internationally coordinated programs
- Ground-based observation networks and satellite projects
- Hosting international workshops
- International exchange of foreign and Japanese researchers and students
- Capacity building in developing countries through training courses and schools
- Observatories

To promote international collaborative studies for understanding physical mechanisms of the phenomena occurring in the space–Sun–Earth environmental system and their interactions with each other, the Center for International Collaborative Research (CICR) was established in October 2015 under ISEE. CICR provides leadership to encourage and promote internationally coordinated programs, such as those carried out by the Scientific Committee On Solar-Terrestrial Physics (SCOSTEP) and Future Earth, ground-based observation networks, international satellite projects, hosting of international workshops and conferences, international exchange of foreign and Japanese researchers and students, and capacity building in developing countries through training courses and schools. CICR has taken over from the Geospace Research Center of the former Solar-Terrestrial Environment Laboratory, Nagoya University.

In the 11-year solar cycle of past 100 years, cycle 24 has the smallest maximum. World scientists have a strong interest in this anomaly and its consequences for Earth’s environment. SCOSTEP under the International Science Council commenced a 5-year international program entitled “Variability of the Sun and Its Terrestrial Impact (VarSITI)” in 2014. One of the co-chairs of the VarSITI program is a member of CICR and responsible for taking lead in this program. CICR publishes a VarSITI Newsletter every three months, operates a VarSITI mailing list that currently contains ~1000 VarSITI members from ~70 countries, and coordinates international symposiums related to VarSITI. CICR also contributes to other international programs related to the space–Sun–Earth environment, such as Future Earth and Integrated Land Ecosystem-atmosphere Processes Study (iLEAPS). In relation to these international programs, CICR also participates in/operates ground-based observation projects, i.e., the EISCAT radar project, OMTIs, ISEE magnetometer network, SuperDARN radar network including the Hokkaido HF radars, ISEE VLF/ELF network, and ArCS operation office.

CICR has been operating the international collaborative research programs since 2016. It also holds four domestic observatories at Moshiri, Rikubetsu, Fuji, and Kagoshima, which conduct observations of the solar wind, geomagnetic field, and upper atmosphere. Some of these observations have been conducted for more than 30 years.



Observation sites and foreign collaborative institutions of ISEE.

Main Activities in FY2018

In FY2018, CICR conducted the following international collaborative research programs: 1) Joint Research Program (International, 31 projects), 2) ISEE International Joint Research Program to invite 12 foreign researchers, and 3) three ISEE/CICR International Workshops, inviting 6 foreign designated professors and associate professors. Two newly designated professors were hired through a 5-year cross appointment with US universities and institutions. The ISEE/CICR International Workshop aimed to facilitate comprehensive discussions on a focused topic with 10–15 attendees over one week, and summarize the results into international journal papers and/or books.

Twelve CICR colloquiums were held with senior foreign scientists from seven countries including the US, UK, Germany and Brazil. For the SCOSTEP/VarSITI program, we published four VarSITI newsletters in FY2018, in April, July, October and December. We also organized the 14th Solar-Terrestrial Physics Symposium in Toronto, Canada, in June 2018. We continue to operate the VarSITI mailing list, which contains ~1000 scientists from ~70 countries, and support selection of 18 international symposiums and 6 database constructions by VarSITI. In relation to the VarSITI project, we organized an international school on the equatorial atmosphere in Indonesia in March 2019. Two young scientists from India and Ukraine were invited to ISEE under the SCOSTEP Visiting Scholar (SVS) program for collaborative research on thermospheric and ionospheric dynamics.

Under the ICCON Project, 29 scientists from the US, UK, China, Korea, Russia, Germany, Switzerland, Belgium, and Japan joined the operation of the Nobeyama Radioheliograph. The data are openly available at NAOJ and CIDAS/ISEE. The EISCAT radar project was carried out under collaborations with an NIPR group: 12 EISCAT special experiments proposed by Japanese colleagues were conducted. Discussion about the EISCAT_3D radar has been made with other foreign EISCAT associate members. The PWING projects continued running 8 stations around the north pole at magnetic latitudes of ~60°, in relation with the OMTIs, ISEE magnetometer and ELF/VLF network projects.

The four domestic observatories continued to operate in FY2018. Moshiri Observatory became an unmanned observatory in FY2018, but continued running electromagnetic instruments, i.e., an auroral photometer, magnetometers, and VLF receivers. Rikubetsu Observatory operates several spectrometers for comprehensive measurements of ozone and other minor constituents in the atmosphere, all-sky imagers and photometers for aurora and airglow, and SuperDARN Hokkaido radars for ionospheric disturbances as well as a new ELF atmospheric receiver. A new induction magnetometer was also installed at Rikubetsu in October 2018. Multi-station interplanetary scintillation (IPS) observations using the Fuji, Kiso, and Toyokawa antennas were conducted in FY2018. IPS observations at Fuji were interrupted by serious damages by two big typhoons that occurred in September 2018. The Kiso Observatory was opened to the public on August 4–5, 2018. Kagoshima Observatory and Sata Station operated instruments for electromagnetic wave detection and an all-sky camera and a photometer for airglow.



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Induction magnetometer sensor at Rikubetsu Observatory.