

# JACCO's activities Facilitating Comprehensive and Cooperative Field Observations for Land-atmosphere Interaction Studies

The Office for Coordination of Climate Change Observation, Japan (MOE & JMA)

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## About JACCO

With the growing need for global cooperation on Earth observations to deal with global environmental issues and to support decision making, **GEO** (the Group on Earth Observations) was established in 2005. GEO endorsed the **GEOS (Global Earth Observation System of Systems)** 10-Year Implementation Plan to achieve comprehensive, coordinated and sustained observations of the Earth system.

In Japan, the Council for Science and Technology Policy released the *Earth Observation Promotion Strategy* in 2004, in which the establishment of a national Earth observation alliance was proposed. Following this, the Earth Observation Promotion Commission was organized, and the **Japanese Alliance for Climate Change Observation (JACCO)**, a national virtual alliance for climate change observations and its administrative office named the **Office for Coordination of Climate Change Observation, MOE & JMA (OCCCO)** were established in 2006.

## Workshops (WSs)

JACCO has contributed to raising awareness among the public about issues relating to climate change observation by organizing annual workshops since 2007.



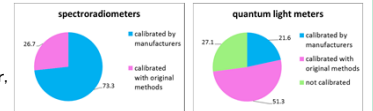
## Working Groups (WGs)

### ①WG for the calibration of atmospheric radiation measuring instruments (SOLRAD WG)

The SOLRAD WG conducted a survey on the current status of observations of solar radiation at various institutions in Japan in 2012, aiming to build a calibration scheme and to establish interagency and interdisciplinary collaborations.

The survey results show that **spectroradiometers** are calibrated mainly by manufacturers (73%), and about half of **quantum light meters** (51%) are calibrated with original methods, such as intercomparison conducted by their users.

Users of these instruments point out the lack of calibration scheme causes uncertainty in measurements. To deal with this problem, the SOLRAD WG has been preparing a technical report which will serve as a guideline on the calibration of spectroradiometers including sun photometer, sky radiometer, and quantum light meter. It is expected that the report will enable users to determine the elements influencing measurements, check the consistency of radiometric instruments, and reduce uncertainty in measurements.



Above: Calibration methods for spectroradiometer (total 15) and quantum light meter (total 37)

### ②WG for the standardization of greenhouse gases observational data (GHG WG)

The GHG WG has conducted **InterComparison Experiments for GHG Observation (iceGGO)** with standard reference gases of GHGs among related organizations in Japan. So far, iceGGO-1 for **CH<sub>4</sub>** and iceGGO-2 for **CO<sub>2</sub>** were conducted in 2012. Important results obtained by these experiments were summarized and presented at the 17<sup>th</sup> WMO/IAEA Meeting on Carbon Dioxide, Other Greenhouse Gases, and Related Measurement Techniques (GGMT-2013) in Beijing in June 2013.

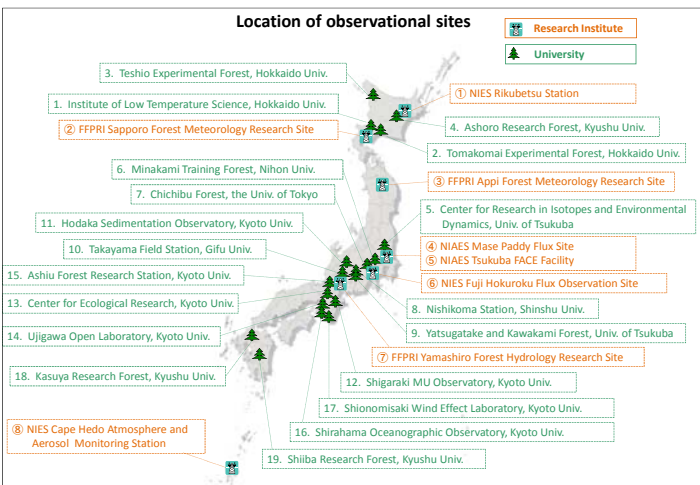
## Collaborative use of observational platforms in Japan

Based on the *Earth Observation Promotion Strategy*, OCCCO has been working on projects to promote interagency and interdisciplinary cooperation on climate change observations. In 2008, OCCCO summarized a proposal which emphasizes the importance of promotion of terrestrial observation platforms for integrated observations of the terrestrial carbon cycle and ecosystems. A part of this proposal was reflected in the *2010 Japanese Earth Observation Policy*.

As a follow-up activity of the proposal, OCCCO has conducted field surveys mainly on terrestrial observational sites, and summarized the information on the joint usage of observational sites at OCCCO's website (See Table 1). A Japanese summary report of each site is available from the website.

Table 1: List of collaborative observational sites

Observational sites	Location	Main observation items/ Research topics	Collaborative use		
			Facilities/ Equipments	Observational sites	Collaborative research (by application)
<b>1. Independent Administrative Institution (Research Institute)</b>					
① NIES Rikubetsu station	Rikubetsu, Hokkaido	UV, Radiation	△	△	—
② FFPRI Sapporo forest meteorology research site	Sapporo, Hokkaido	Weather, CO <sub>2</sub> flux, Energy flux, Biomass	—	△	△
③ FFPRI Appi forest meteorology research site	Yachimantai, Iwate	CO <sub>2</sub> flux, Carbon balance in forest ecosystems	—	—	△
④ NIAES Mase paddy flux site	Tsukuba, Ibaraki	Micro meteorology in cultivated field, CO <sub>2</sub> flux, CH <sub>4</sub> flux, Biomass	○	○	△
⑤ NIAES Tsukuba FACE(Free-Air CO <sub>2</sub> Enrichment) Facility	Tsukubamirai, Ibaraki	Effects of high CO <sub>2</sub> concentration on ecosystem in paddy field	△	△	△
⑥ NIES Fuji Hokuroku Flux Observation Site	Fujiyoshida, Yamanashi	Weather, CO <sub>2</sub> flux, Water vapour flux, Heat flux, Soil environment, Biomass	○	○	△
⑦ FFPRI Yamashiro forest hydrology research site	Kizugawa, Kyoto	CO <sub>2</sub> flux, Carbon balance in forest ecosystems	—	△	—
⑧ NIES Cape Hedo Atmosphere and Aerosol Monitoring Station	Kunigami, Okinawa	Radiation, Clouds, Aerosol	—	○	—
<b>2. University</b>					
1 Institute of Low Temperature Science, Hokkaido Univ.	Sapporo, Hokkaido	Weather, Drift ice	○	—	○
2 Tomakomai Experimental Forest, Hokkaido Univ.	Tomakomai, Hokkaido	CO <sub>2</sub> flux, Carbon balance in forest ecosystems	○	○	—
3 Teshio Experimental Forest, Hokkaido Univ.	Horonobe, Hokkaido	CO <sub>2</sub> flux, Carbon balance in forest ecosystems	○	○	—
4 Ashoro Research Forest, Kyushu Univ.	Ashoro, Hokkaido	Weather, Forest dynamics	○	○	—
5 Center for Research in Isotopes and Environmental Dynamics, Univ. of Tsukuba	Tsukuba, Ibaraki	Weather, Water flux, Heat flux	○	○	△
6 Minakami Training Forest, Nihon Univ.	Minakami, Gunma	CO <sub>2</sub> flux, Carbon balance in forest ecosystems	○	○	—
7 Chichibu Forest, the Univ. of Tokyo	Chichibu, Saitama	Weather, Tree measurement, Leaf and branch litter, Hydrological observation	○	○	—
8 Nishikoma Station, Shinshu Univ.	Ina, Nagano	Weather, Forest dynamics	○	○	—
9 Yatsugatake and Kawakami Forest, Univ. of Tsukuba	Minamisaku, Nagano	Weather, Forest dynamics, Hydrological observation	○	○	—
10 Takayama Field Station, Gifu Univ.	Takayama, Gifu	CO <sub>2</sub> flux, Carbon balance in forest ecosystems	—	△	—
11 Hodaka Sedimentation Observatory, Kyoto Univ.	Takayama, Gifu	Weather, Ground temperature, Water flow	○	○	○
12 Shigaraki MU Observatory, Kyoto Univ.	Koga, Shiga	Lower-upper atmosphere	○	○	○
13 Center for Ecological Research, Kyoto Univ.	Otsu, Shiga	Comprehensive ecological research	○	△	○
14 Ujigawa Open Laboratory, Kyoto Univ.	Kyoto, Kyoto	Weather, Soil temperature	○	○	○
15 Ashiu Forest Research Station, Kyoto Univ.	Nantan, Kyoto	Weather, Forest monitoring	△	△	—
16 Shirahama Oceanographic Observatory, Kyoto Univ.	Shirahama, Wakayama	Weather, Sea surface temperature, Sea level, Surface waves	○	○	○
17 Shionomisaki Wind Effect Laboratory, Kyoto Univ.	Kushimoto, Wakayama	Meteorology, Wind engineering	○	○	○
18 Kasuya Research Forest, Kyushu Univ.	Sasaguri, Fukuoka	Weather, Forest dynamics	○	○	—
19 Shiba Research Forest, Kyushu Univ.	Shiba, Miyazaki	Weather, Forest dynamics	○	○	—



## Summary

Through our activities, especially WGs and WSs above, JACCO has contributed to the coordination of climate change observation among Japanese organizations. We would like to enhance interagency and interdisciplinary cooperation, and promotion of collaborative use of observational sites.

**We appreciate your kind support and cooperation.** Please contact us if you have any opinion or suggestions about our activities, especially our project to promote collaborative use of observational sites.

