

# Earth System Division

- Director, Deputy Director
- Biogeochemical Cycle Observation Section
- Global Atmospheric Chemistry Section
- Atmospheric Remote Sensing Section
- Satellite Remote Sensing Section
- Biogeochemical Cycle Modeling and Analysis Section
- Climate Modeling and Analysis Section
- Earth System Risk Analysis Section

- Center for Global Environmental Research
  - Research Coordination Unit
  - Observation Management Unit
  - Office for Atmospheric and Oceanic Monitoring
  - Office for Terrestrial Monitoring
  - Office for Global Environmental Data Integration and Analytics
  - Global Carbon Project Tsukuba International Office
  - Greenhouse Gas Inventory Office of Japan
  - Collaborative Research Group on GHG-SLCF Emission Inventories
- Satellite Observation Center

## Satellite Observation Center

We are promoting three satellite projects (GOSAT series) in cooperation with the Ministry of the Environment and the Japan Aerospace Exploration Agency to observe major GHGs such as carbon dioxide (CO<sub>2</sub>) and methane (CH<sub>4</sub>) from space and conduct research to provide the international community with data that is indispensable for achieving the goals of the Paris Agreement.

### Global use of GOSAT data

More than 14 years have passed since the first satellite in the GOSAT series started observation of GHGs. To provide users around the world with valuable data that GOSAT and GOSAT-2 have so far accumulated, as well as new observational data by GOSAT-GW, we are constantly flying around the globe (even in cyberspace) every day.



Director  
**Dr. Tsuneo Matsunaga**



Explaining the GOSAT series at an international conference

### World-wide release of GHG data measured from space

We are preparing to obtain and accumulate observational data from the third satellite (GOSAT-GW) which is planned to be launched, and to calculate GHG concentrations at various locations on the Earth. The data will be provided to users all over the world and will be useful for understanding the distribution of emissions and absorption of GHGs.



Senior Researcher  
**Dr. Hisashi Yashiro**



Data processing and operation system for GOSAT

## Satellite Observation Center



Greenhouse gases Observing SATellite 2 (GOSAT-2) ©JAXA

### Ground-based observation of GHGs and validation of the GOSAT series

To conduct scientific research using GHG data from the GOSAT series, it is important to evaluate the quality of the data obtained. Therefore, we are continuously verifying the GOSAT series data using data from ground-based observation instruments installed around the world.

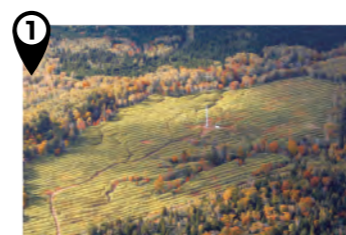


Head  
**Dr. Isamu Morino**



Above-ground observation instrument for sunlight absorbed by GHGs

## External Facilities



Teshio CC-LaG Experiment Site



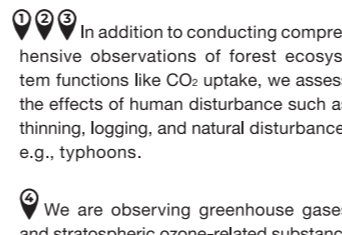
Tomakomai Flux Research Site



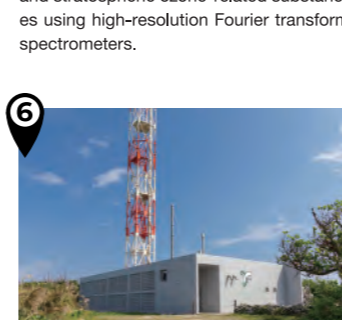
Fuji Hokuroku Flux Observation Site



Rikubetsu Integrated Stratospheric Observatory



Atmospheric Monitoring Station Ochiishi



Atmospheric Monitoring Station Hateruma



From Director Hiroshi Tanimoto  
Earth System Division



Director  
**Dr. Hiroshi Tanimoto**

## Passion to Advance Knowledge for Global Environmental Research



The surface of the Earth is covered with the atmosphere, oceans, and land, and preserving this surface environment of the Earth is indispensable for creating a sustainable human society. However, human activity has caused changes in the climate, including not only rising average temperatures but also an increase in extreme weather events, rising sea levels, and damage to ecosystems and food production.

We, the Earth System Division, as a group of professional researchers in the field of global environmental conservation, will contribute with the latest scientific knowledge to overcome the climate emergency and realize a sustainable global environment.

The Earth System Division was established in April 2021 in line with the start of NIES' 5th Medium- to Long-Term Plan. By implementing research programs such as the newly launched strategic research program "Climate Change and Air Quality Research Program", our researchers will, in collaboration with scientists in Japan and overseas, work on a variety of research issues such as prediction of future changes in the global environment, assessment of risks, and development of advanced measurement technologies and models necessary for their research. Furthermore, the intellectual research infrastructure (long-term monitoring, databases, etc.) will continue to be maintained by the Center for Global Environmental Research (CGER) established in 1990. We will also work closely with the Satellite Observation Center that is responsible for the "IBUKI" (GOSAT) series of greenhouse gas observation satellites.

We will share our research activities and results more promptly and more widely than ever before. Our scientific findings and data will be actively disseminated to international frameworks such as the United Nations Framework Convention on Climate Change (UNFCCC) and the Intergovernmental Panel on Climate Change (IPCC). Through the above activities, we will keep contributing to the realization of a sustainable global environment and human society.

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2025.4

Time to make a bright future for the next couple of 100 years!

