Earth observation

EORC's Earth Science Challenge

and Addressing Social Issues

JAXA
Explore to Realize
**Daichi (ALOS) Series**
The Advanced Land-Observing Satellite 2 (Daichi-2/ALOS-2) extends the technologies and results of the earlier Advanced Land-Observing Satellite (Daichi/ALOS) to deliver more rapid acquisition of observation data across a wide area, with improved resolution. The data obtained from ALOS-2 find applications in a wide range of fields, including disaster assessment, national land management, agriculture, forestry and oceanography.

**GPM Core Satellite**
Global Precipitation Measurement (GPM) is an international joint mission to measure worldwide precipitation. A core satellite incorporating Dual-frequency Precipitation Radar (DPR), a radar technology developed in Japan, with multiple constellation satellites, works in sync to measure worldwide precipitation once every 3 hours. The accurate estimates of global precipitation provided through GPM support analysis of water circulation on the Earth.

**EarthCARE**
The Earth Clouds, Aerosols and Radiation Explorer (EarthCARE) is a satellite developed jointly by Japan and the European Union (EU). Its four sensors elucidate the movement of clouds and actions of aerosols, improving the accuracy of climate-change forecasting.

**Shikisai (GCOM-C)**
The Global Change Observation Mission (GCOM) observes climate change worldwide over extended periods. Shikisai (GCOM-C), one of the family of GCOM satellites, is equipped with the Second Generation Global Imager (SGLI), which observes clouds, aerosols, ocean color, vegetation, and snow and ice by multiband imaging from near-ultraviolet to thermal infrared wavelengths.

**Shizuku (GCOM-W)**
Another satellite of the GCOM family, Shizuku (GCOM-W) is carrying the Advanced Microwave Scanning Radiometer 2 (AMSR2). AMSR2 can observe the Earth’s surface through clouds to measure global changes in a variety of water-related parameters, including water vapor and rain in the atmosphere, sea surface temperature and wind speed, sea ice, soil moisture at the land surface, and snow depth.

**Ibuki (GOSAT) Series**
Ibuki, the Greenhouse Gases Observing Satellite (GOSAT/Ibuki), which is the world’s first satellite designed for greenhouse-gas monitoring from space, measures global distribution of carbon dioxide (CO2) and methane (CH4) with more than 10,000 spectral channels. In cooperation with Japan’s National Institute for Environmental Studies and Ministry of the Environment, EORC processes data and provides the analytical results to the general public.

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Note: In addition to data from the satellites listed above, EORC processes and publishes data from other countries’ satellites and data from Himawari, a synchronous (geostationary) meteorological satellite operated by the Japan Meteorological Agency.
Assessing Behavior of the Atmosphere, Rain and Clouds

Monitoring Ocean Environment

Ocean Environment Monitoring

The ocean plays an increasingly important role in global atmospheric processes. It is a part of what the global climate system, which includes the ocean, is responsible for. The ocean's role in this system is to remove heat from the atmosphere, cool it, and then use the heat to warm the atmosphere again. This process is a key factor in regulating the earth's climate. To understand this process better, researchers are studying the ocean's role in this system. They are looking at how the ocean absorbs and releases heat to the atmosphere, and how this affects the climate. They are also studying the role of the ocean in the carbon cycle, which is important for understanding the earth's climate. The ocean is a key player in the carbon cycle, and it plays a role in the production of CO2 and the consumption of CO2. The ocean's role in the carbon cycle is important for understanding the earth's climate, as it affects the amount of CO2 in the atmosphere. To study the ocean's role in this system, researchers are using satellite data to monitor the ocean's temperature, salinity, and other properties. They are also using models to simulate the ocean's behavior. These models help to understand how the ocean responds to changes in temperature and other factors, and they can be used to predict how the ocean will respond in the future. To improve the models, researchers are using high-resolution data from satellites to improve the models. They are also using models to simulate the ocean's behavior under different conditions, and they are using these models to predict how the ocean will respond to changes in the future. The ocean's role in the carbon cycle is important for understanding the earth's climate, as it affects the amount of CO2 in the atmosphere. To study the ocean's role in this system, researchers are using satellite data to monitor the ocean's temperature, salinity, and other properties. They are also using models to simulate the ocean's behavior. These models help to understand how the ocean responds to changes in temperature and other factors, and they can be used to predict how the ocean will respond in the future. To improve the models, researchers are using high-resolution data from satellites to improve the models. They are also using models to simulate the ocean's behavior under different conditions, and they are using these models to predict how the ocean will respond to changes in the future.

Ocean-Color Monitoring

In recent years, satellite data has been used to study ocean productivity. This is done by measuring the amount of chlorophyll a in the ocean, which is a measure of the number of phytoplankton in the water. Phytoplankton are the base of the ocean food chain, and they play a key role in the carbon cycle. They take up CO2 from the atmosphere, and they release it when they die. This process helps to regulate the earth's climate. To study the ocean's productivity, researchers are using satellite data to monitor the amount of chlorophyll a in the ocean. They are also using models to simulate the ocean's behavior, and they are using these models to predict how the ocean's productivity will change in the future. This information is important for understanding the earth's climate, as it affects the amount of CO2 in the atmosphere. To study the ocean's productivity, researchers are using satellite data to monitor the amount of chlorophyll a in the ocean. They are also using models to simulate the ocean's behavior, and they are using these models to predict how the ocean's productivity will change in the future. This information is important for understanding the earth's climate, as it affects the amount of CO2 in the atmosphere. To study the ocean's productivity, researchers are using satellite data to monitor the amount of chlorophyll a in the ocean. They are also using models to simulate the ocean's behavior, and they are using these models to predict how the ocean's productivity will change in the future. This information is important for understanding the earth's climate, as it affects the amount of CO2 in the atmosphere. To study the ocean's productivity, researchers are using satellite data to monitor the amount of chlorophyll a in the ocean. They are also using models to simulate the ocean's behavior, and they are using these models to predict how the ocean's productivity will change in the future. This information is important for understanding the earth's climate, as it affects the amount of CO2 in the atmosphere. To study the ocean's productivity, researchers are using satellite data to monitor the amount of chlorophyll a in the ocean. They are also using models to simulate the ocean's behavior, and they are using these models to predict how the ocean's productivity will change in the future. This information is important for understanding the earth's climate, as it affects the amount of CO2 in the atmosphere. To study the ocean's productivity, researchers are using satellite data to monitor the amount of chlorophyll a in the ocean. They are also using models to simulate the ocean's behavior, and they are using these models to predict how the ocean's productivity will change in the future.
The data acquired by the Earth observation satellites and instruments developed by JAXA are received by ground stations in Japan and overseas and are mainly archived at the JAXA’s Tsukuba Space Center. The major activities of Earth Observation Research Center (EORC) are analysis of observation data, development of algorithms to retrieve geophysical parameters, calibration and validation of satellite data, and data dissemination to users. Analysis includes researches on satellite data utilization in fields, such as global environmental change in ocean, water cycle, atmosphere and climate, resource managements in agriculture, forestry and fisheries, and disaster prevention and land use. EORC also conducts projects to distribute data sets of related satellite and ground data collecting from worldwide under international collaboration.