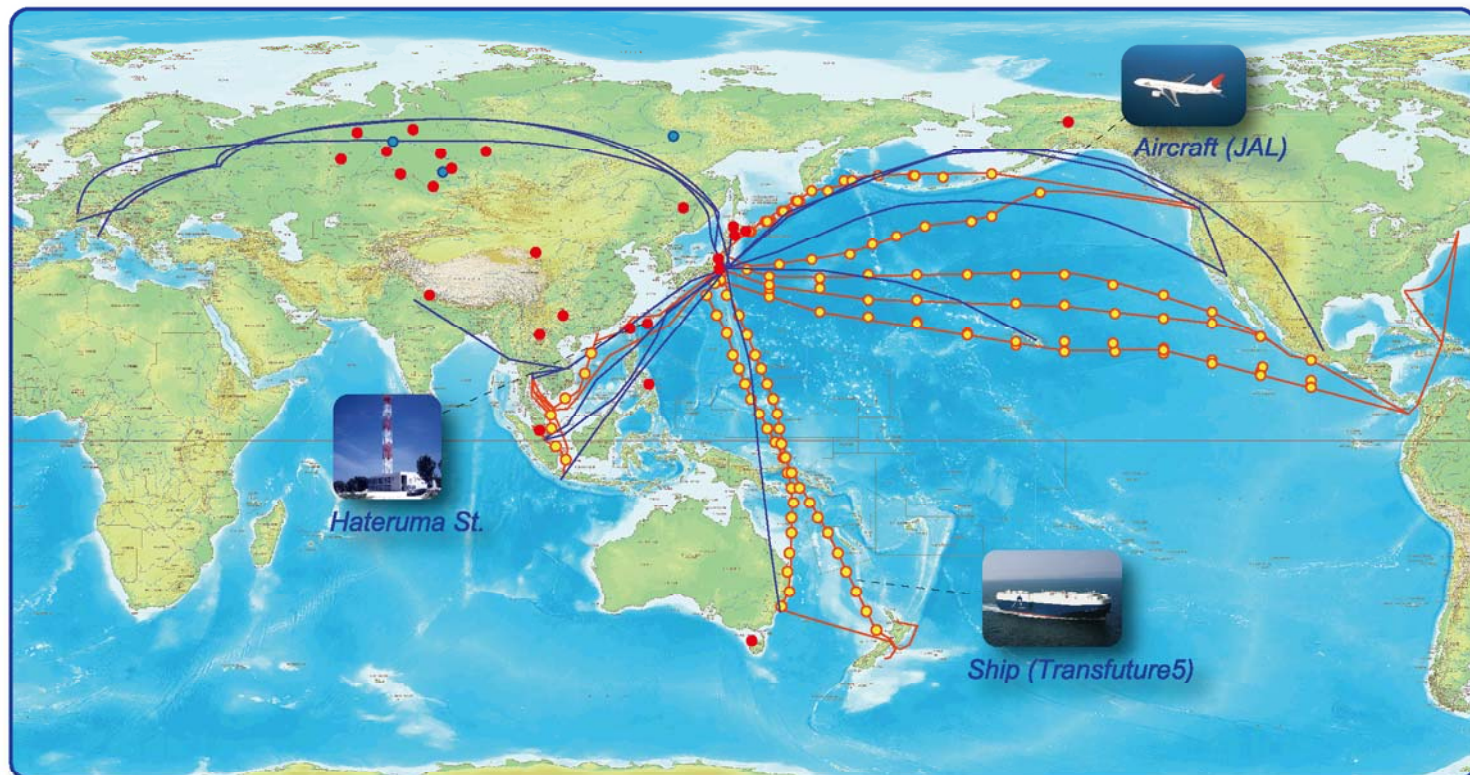


# Long-term Variations in GHGs

Long-term Variation Mechanisms of Greenhouse Gas Concentrations and their Regional Characteristics



**Aircraft Routes**



**Ship Routes**



**Observation Sites**

## Observation Sites and Routes for Monitoring GHG Concentrations in the Asia-Pacific Region

This project focuses on atmospheric observation of various GHGs in the Asia-Pacific region by airplane, ship, and at monitoring sites. Monitoring sites in Hateruma (Okinawa) and Ochi-ishi (Hokkaido) are being used for high quality measurement of many GHGs. Some influences from Asia can be detected at both stations.

Observations by cargo ships in the Pacific provide latitudinal GHG distributions, which reflect the distribution of their global source area. We use four cargo ships and conduct long-term monitoring of a variety of atmospheric constituents.

We have recently started measuring the vertical distribution of CO<sub>2</sub> over large airports around the world and concentrations at higher altitudes using five JAL aircrafts.

Measurements of CO<sub>2</sub> flux from terrestrial ecosystems are conducted at several stationary sites in Asia, including four in Japan. In particular, we focus on changes in soil respiration rates caused by climate change.

Oceanic CO<sub>2</sub> flux observation is also conducted by two cargo ships, measuring pCO<sub>2</sub> in the north and western parts of the Pacific. In the North Pacific region, the mid latitudinal area was found to be a large net sink of CO<sub>2</sub> as a result of long-term monitoring of the ocean pCO<sub>2</sub>.

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