



Recent outcomes of the GAW related activities in JMA

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- 2. JMA's operational Aircraft Observations**
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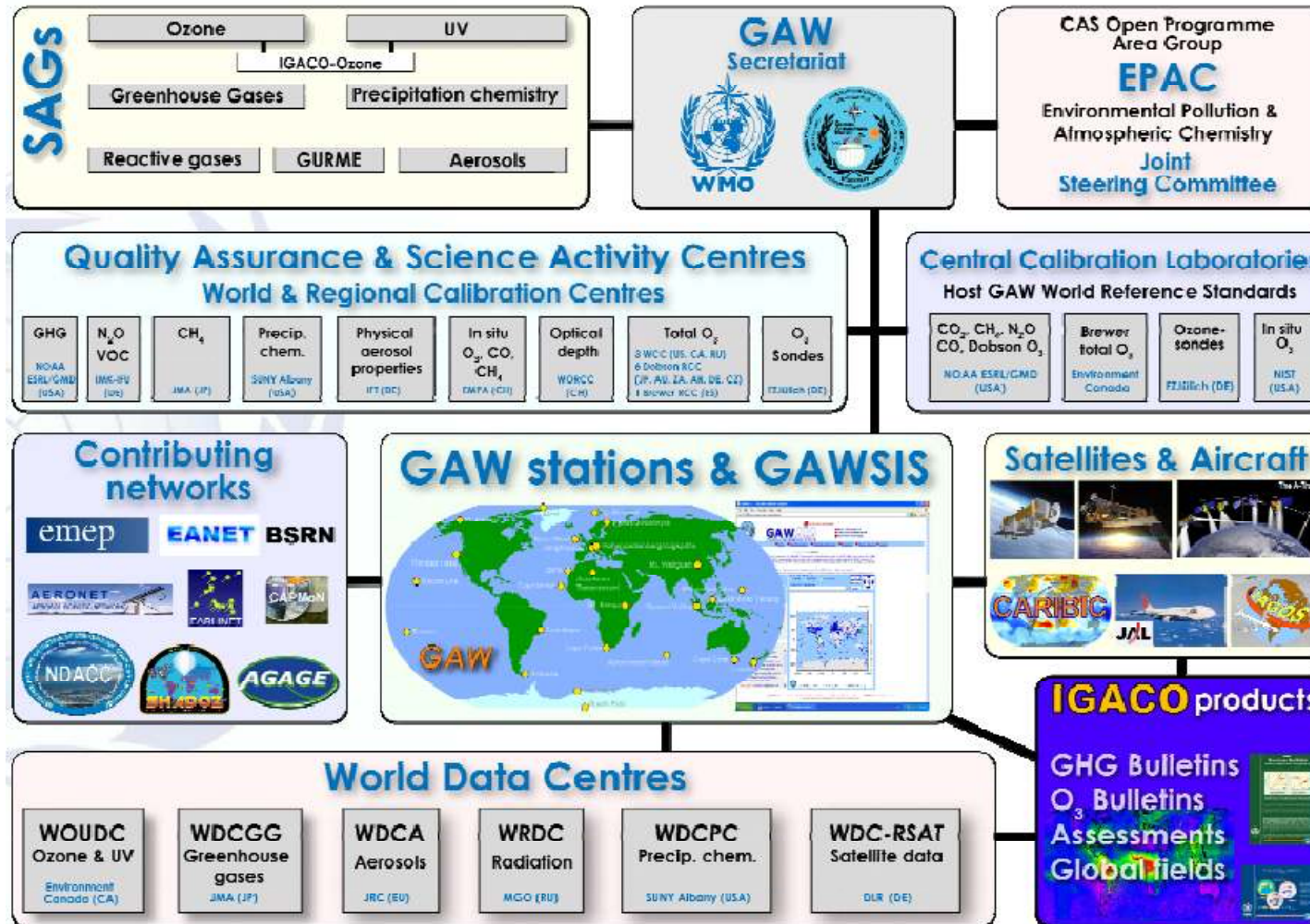
1. WDCGG started WIS/DCPC services



Structure of WMO/GAW



- GAW consists of national meteorological/hydrological services and other partners contributing to observing systems, experts groups and central facilities, and the secretariat.

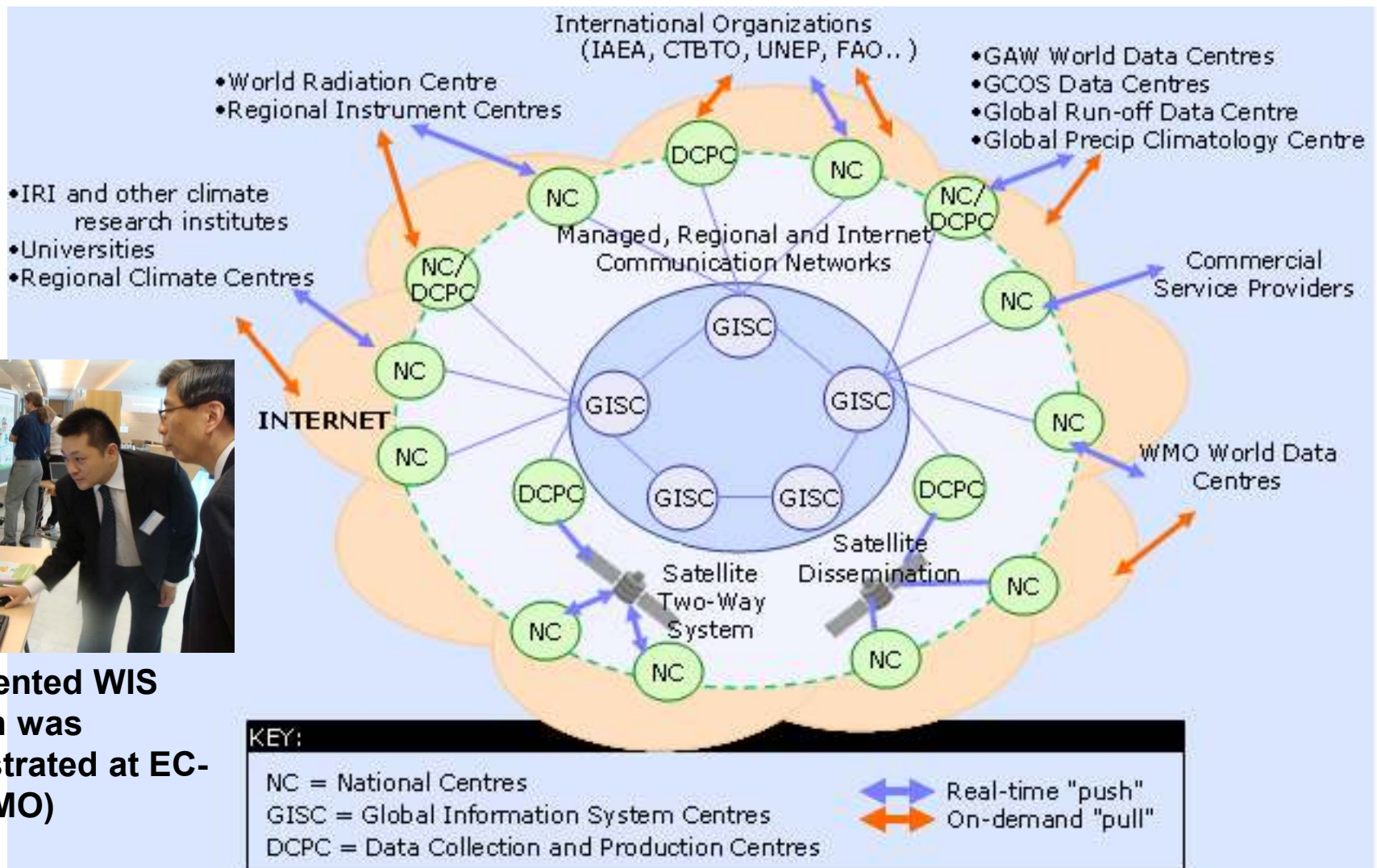




WMO Information System (WIS)



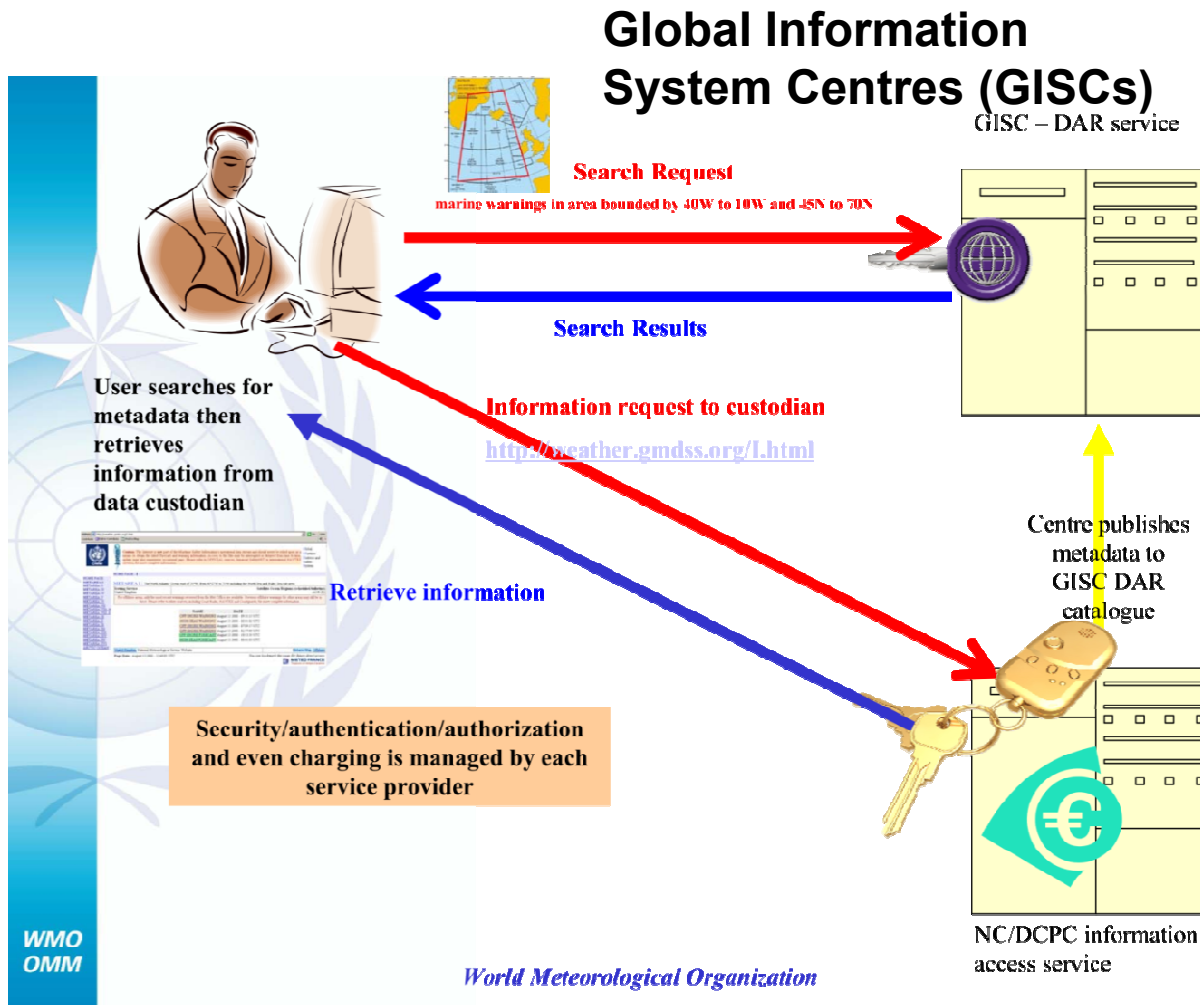
To enhance the present GTS network,
to facilitate information and data exchanges for all WMO programmes.



Implemented WIS function was demonstrated at EC-LXII (WMO)



Discovery Access and Retrieval Services in WIS



ISO compliant Meta Data format and contents

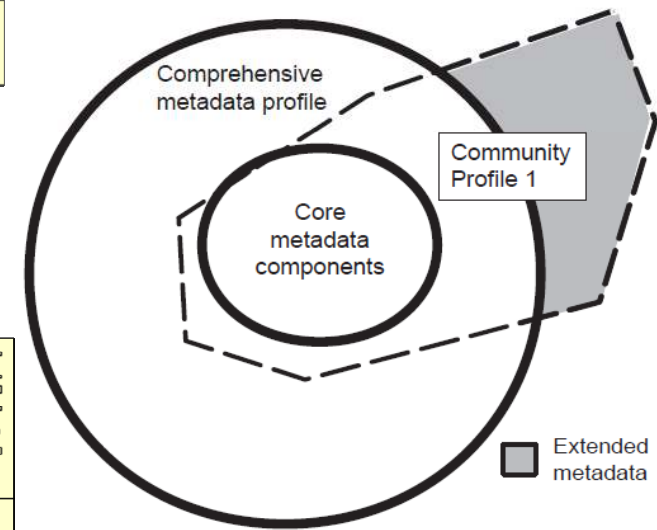


Figure C.1 — Metadata community profile

WDCGG and Other GAW Data Centers Data Collection or Production Centres (DCPCs)



GISC Tokyo Web site

<http://www.wis-jma.go.jp/cms/>



**ISO compliant
Meta Data format
and contents**

WIS Portal - GISC Tokyo
Welcome to Tokyo Global Information System Centre!

Home About WIS Warning KML WMO format Metadata Help Desk News

Home

Welcome to Tokyo Global Information System Centre!

This is portal web site, operated by GISC (Global Information System Centre) of WMO Information System (WIS), offered by Japan Meteorological Agency (JMA).

Please proceed to:

- [Overview of WIS](#);
- [List of JMA's WIS services](#) as GISC and DCPC's;
- [Tutorial Slides](#) of GISC's DAR service; or
- directly to data in [text \(warnings\)](#), [raw WMO Codes](#), or [KML](#).

Recent Posts

Centres of WMO Information System (WIS) come into operation on 1 August 2011
—Posted on 8/1/2011

WMO Designated GISC/DCPC Tokyo!
—Posted on 6/6/2011

WIS Portal - GISC Tokyo
Welcome to Tokyo Global Information System Centre!

Home About WIS Warning KML WMO format Metadata Help Desk News

Metadata urn:x-wmo:md:jp.go.jma.wis.dcp-wdogg::p.AMY236N00.CO2

WDCGG - CO2 observation at Anmyeon-do

metadata detail

file identifier: urn:x-wmo:md:jp.go.jma.wis.dcp-wdogg::p.AMY236N00.CO2
language: eng
character set: utf8
hierarchy level: dataset
hierarchy level name: archive of point observation data for a parameter

contact

date stamp: 2011-01-07T00:00:00Z
metadata standard name: ISO 19115-2 Geographic information — Metadata — Part 2: Extensions for imagery and gridded data
metadata standard version: ISO 19115-2:2009-02-15

reference system info

reference system identifier
code: WGS 84
code space: The World Geodetic System 1984

metadata extension info

extension on line resource
linkage
URL: http://www.wmo.int/pages/prog/wis/2010/metadata/version_1-2
name: WMO Core Profile version 1.2

identification info

distribution info

**WMO Global Atmosphere Watch
World Data Centre
for Greenhouse Gases**

Welcome to the WDCGG Web Site

The World Data Centre for Greenhouse Gases (WDCGG) is one of the WDCs under the GAW programme. It serves to gather, archive and provide data on greenhouse gases (CO₂, CH₄, CFCs, N₂O, surface ozone, etc.) and related gases (CO, NO_x, SO₂, VOC, etc.) in the atmosphere and ocean, as observed under GAW and other programmes.

This web site provides information on greenhouse gases, including WDCGG publications and measurement data contributed by organizations and individual researchers around the world.

If you would like to submit data for the first time, please refer to the WDCGG Data Submission and Dissemination Guide.

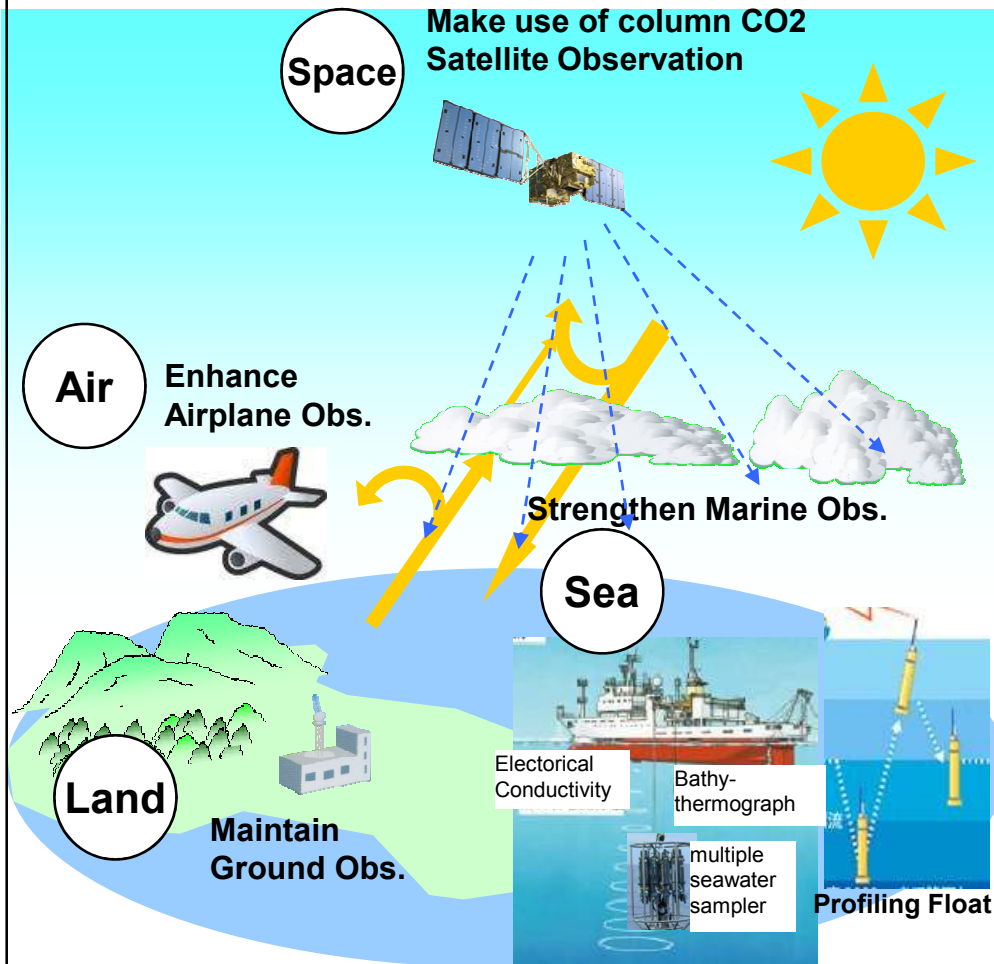
The WDCGG starts operation as [DCPC \(Data Collection or Production Centre\)](#) of WMO Information System.

[Introduction](#)
[Contributors](#)
[Data/Quick Plot](#)
[Publications](#)
[Related Links](#)
[Update Note](#)
[Home](#)
[Site Map](#)
[日本語版](#)

WDCGG Data Submission and Dissemination Guide PDF

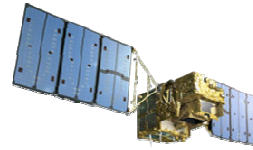
JMA's Comprehensive Approach to GHG Monitoring

Enhance GHG Monitoring



Observe and monitor from various aspects

Improvement of Satellite Performance **Space**



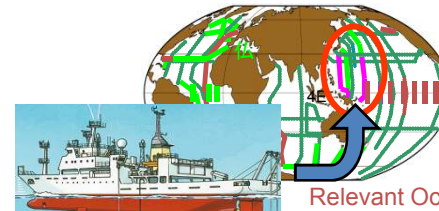
Planning to utilize satellite base column CO2 estimation
Estimation of the data quality

Airplane Observation **Air**



2010
Newly started Airplane Observations between Tokyo and Minamitorishima

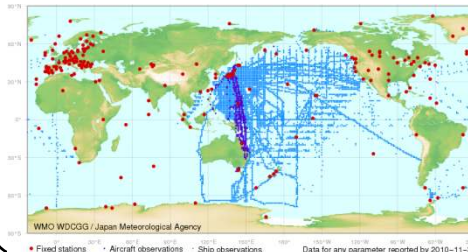
Strengthening Marine Observation **Sea**



2010
High-quality and high spatiotemporal resolution observations of CO2 and relevant parameters

Relevant Ocean Area

Enhance data collection at WDCGG **Land**



Enhance data collection particularly from gap areas and mobile platforms

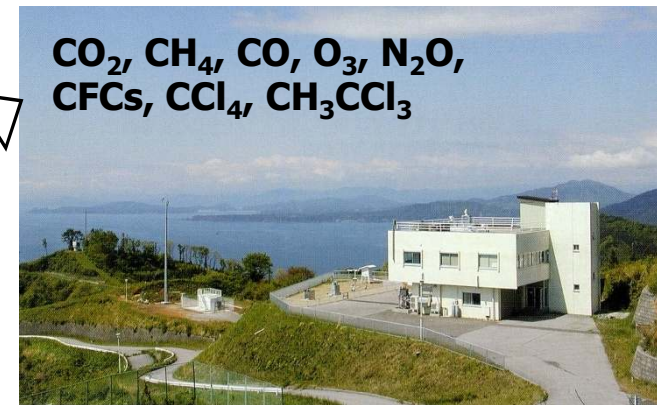
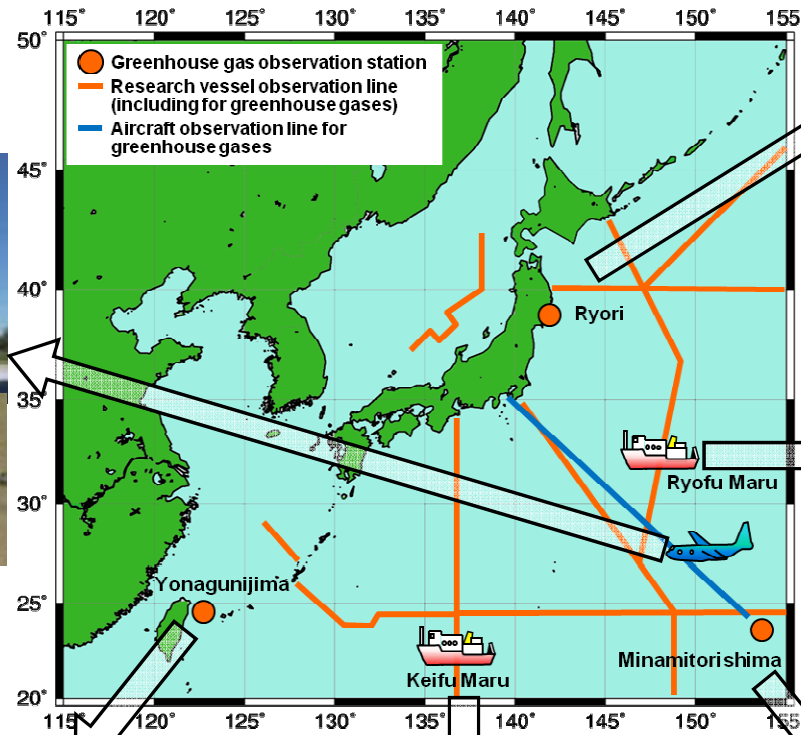


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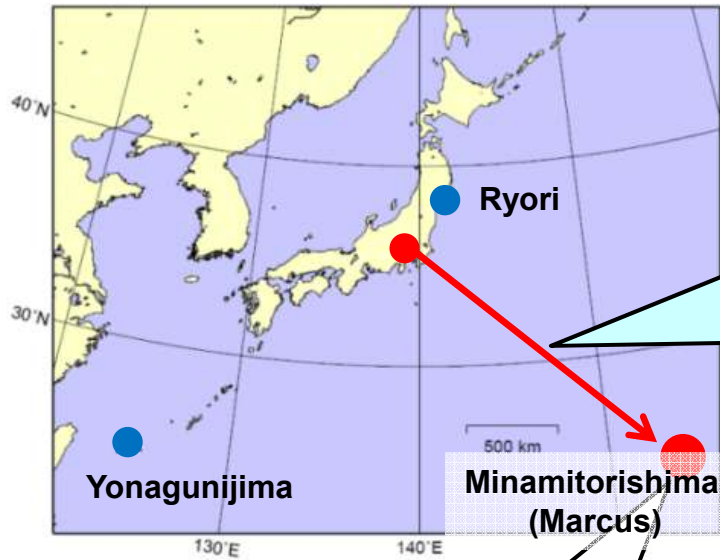


GHG observation network of JMA





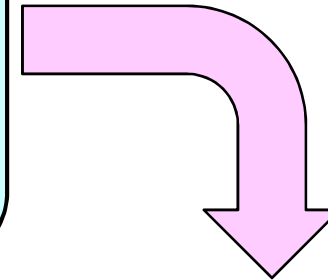
JMA started aircraft observation



Aircraft



Flask Sampling
(1.7 L)



JMA headquarters (Tokyo)



Measurement of CO₂, CH₄, CO, N₂O concentrations

Titanium
Flask(1.7L)

VURF (Aero-
Laser AL5002)
for CO

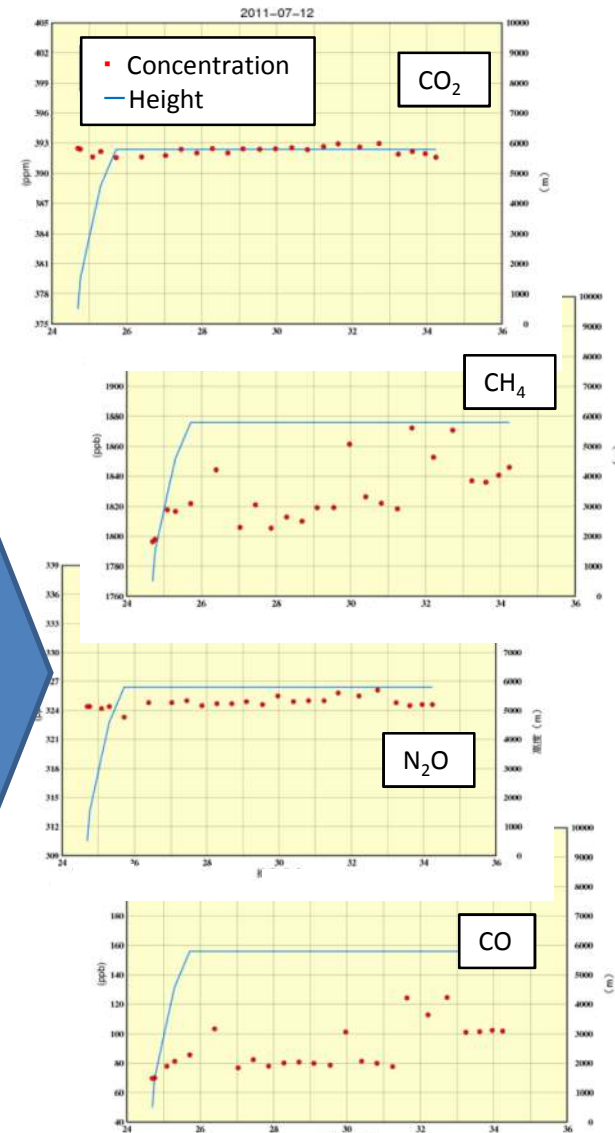
WS-CRDS
(Picarro G2301)
for CH₄



Off-axis ICOS
(Los Gatos
DLT100) for N₂O

NDIR
(Licor Li7000)
for CO₂

JMA/MRI newly developed a automated high-precision measuring system by using recently advanced spectroscopy instruments such as Picarro WS-CRDS and Los Gatos off-axis ICOS analyzers.



release in JMA and
WDCGG web page

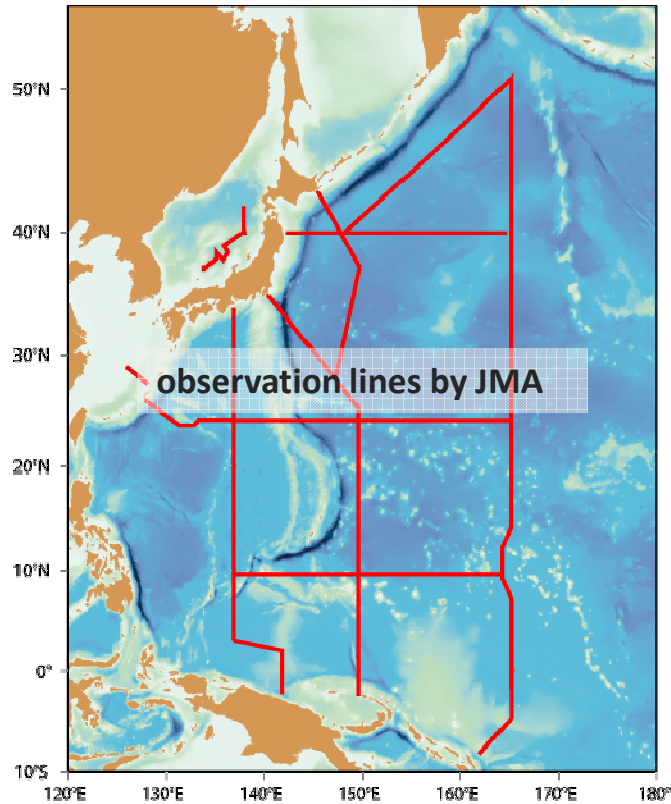


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Ship-based CO₂ observations



cooperate with the international programs



Ryofu Maru (1,380t)



Keifu Maru (1,483t)

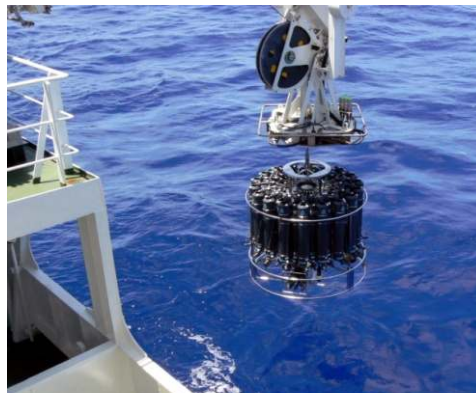
Sampling and Measurements

[Profile at stations]

- Dissolved inorganic carbon, alkalinity and pH
- Temperature, salinity, dissolved oxygen and nutrients

[Underway]

- Partial pressure of CO₂ in air and surface seawater
- Temperature, salinity and chlorophyll



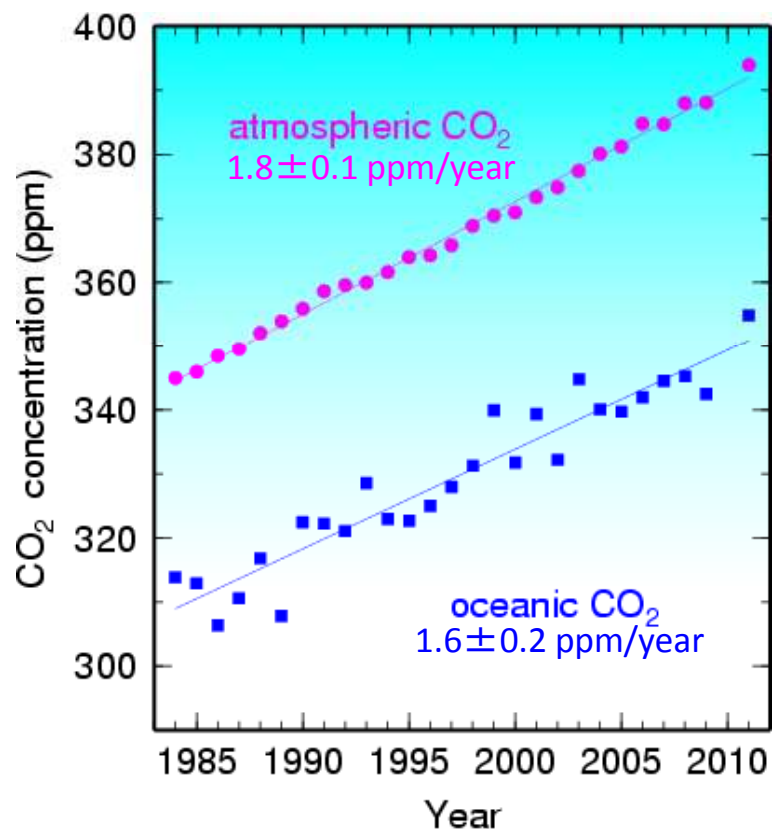
CTD with 36-position water sampler (10L)



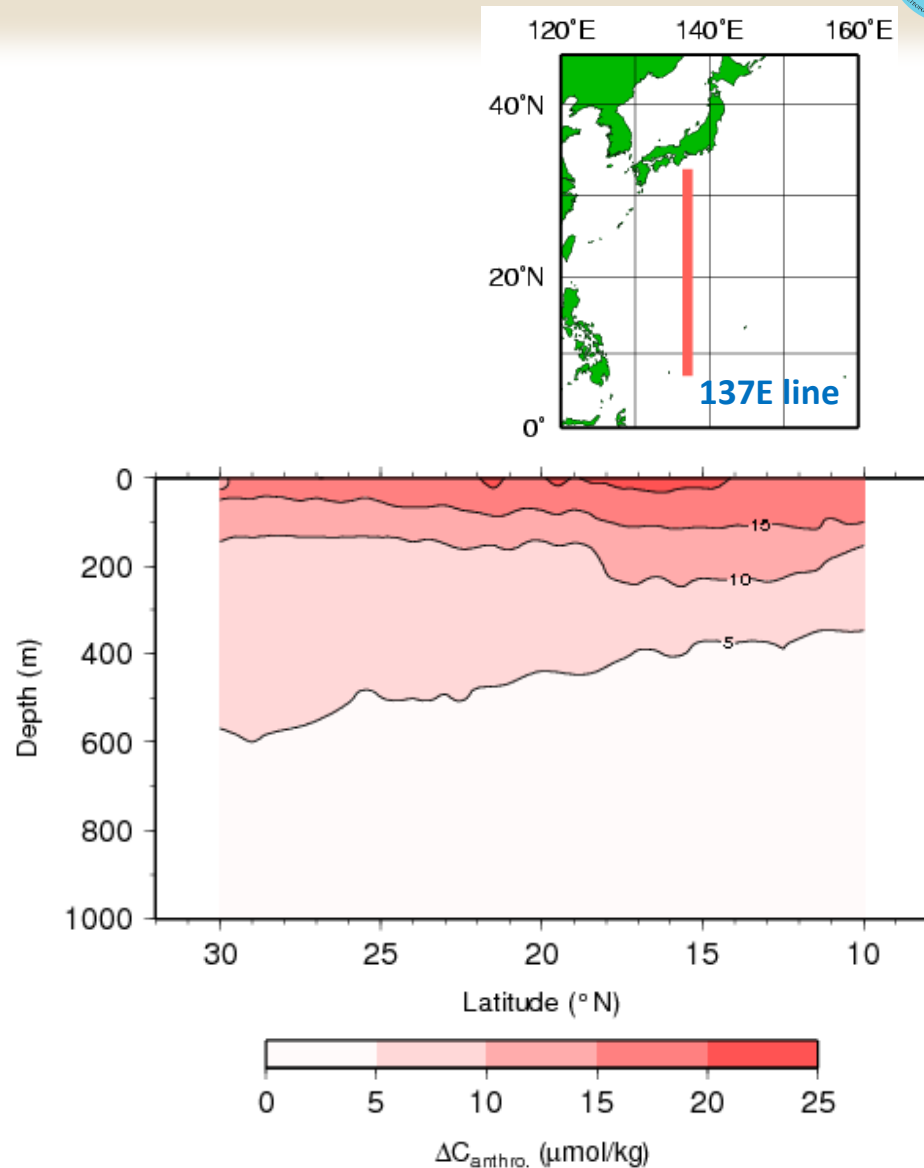
High-precision total inorganic carbon measuring system



Results and Products



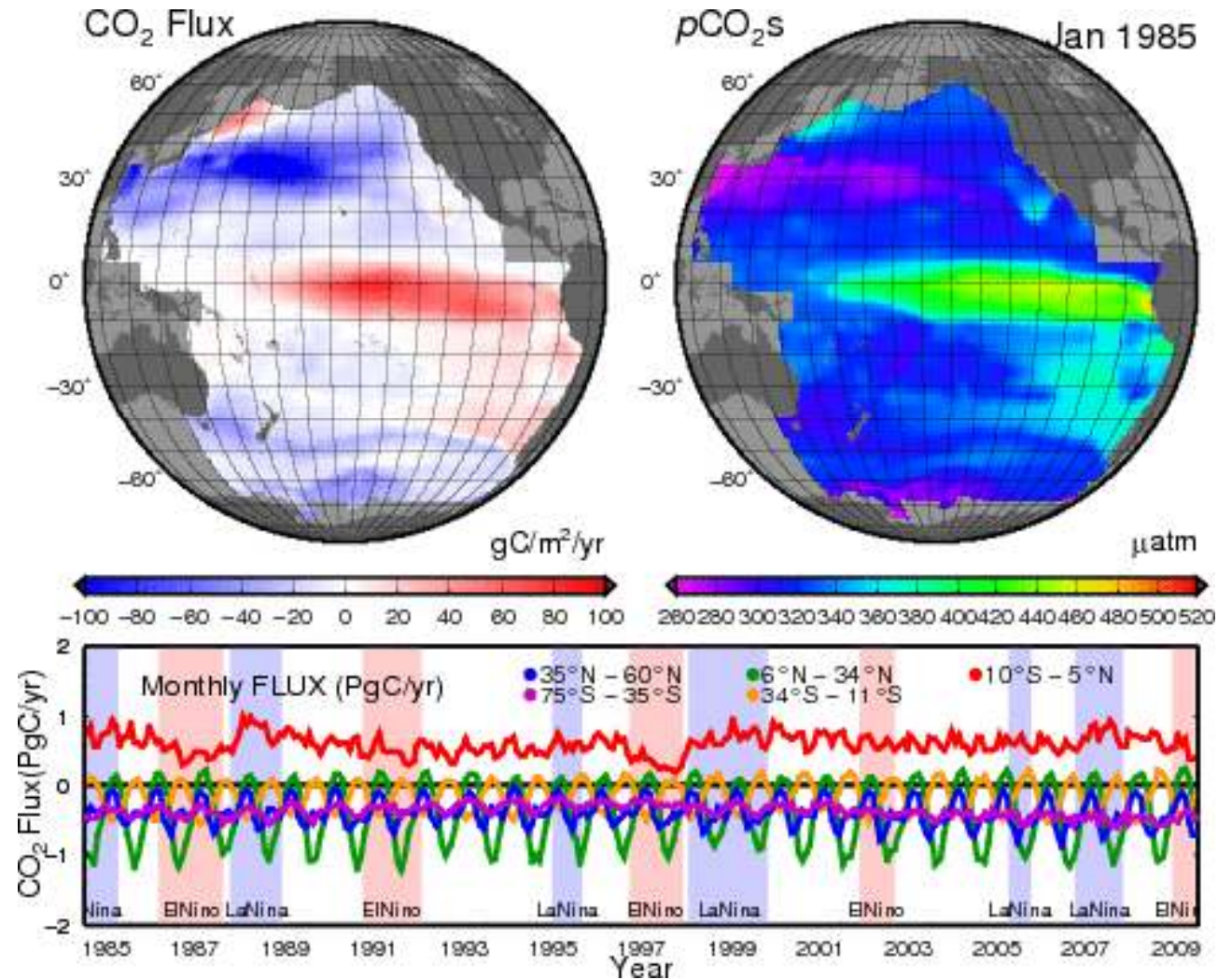
Oceanic and atmospheric CO₂ concentrations averaged along the 137E meridian (winter)



Change in anthropogenic carbon along 137E between 1994 and 2010.



Estimation of air-sea CO₂ flux in the Pacific (1985-2009)





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Summary of Methane Reference Gas Intercomparison

Regions	Periods of intercomparison	Participating Laboratory and Location
Asia	Jul 2005 – Aug 2006	JMA, Tokyo; CMA, Mt. Waliguan, KMA, Anmyeondo; KRISS, Daejeon; JMA, Tokyo
South-West Pacific	Dec 2006 – Aug 2008	JMA, Tokyo; CSIRO, Aspendale; NIWA, Wellington; JMA, Tokyo
Asia	May 2008 – Jul 2009	JMA, Tokyo; KRISS, Daejeon; KMA, Anmyeondo; CMA, Mt. Waliguan; CMA, Beijing, JMA, Tokyo
South-West Pacific	Apr 2010 – Feb 2011	JMA, Tokyo; CSIRO, Aspendale; NIWA, Wellington; JMA, Tokyo
Asia	Aug 2011 –	JMA, Tokyo; CMA, Beijing; CMA, Mt. Waliguan, KMA, Anmyeondo; JMA, Tokyo



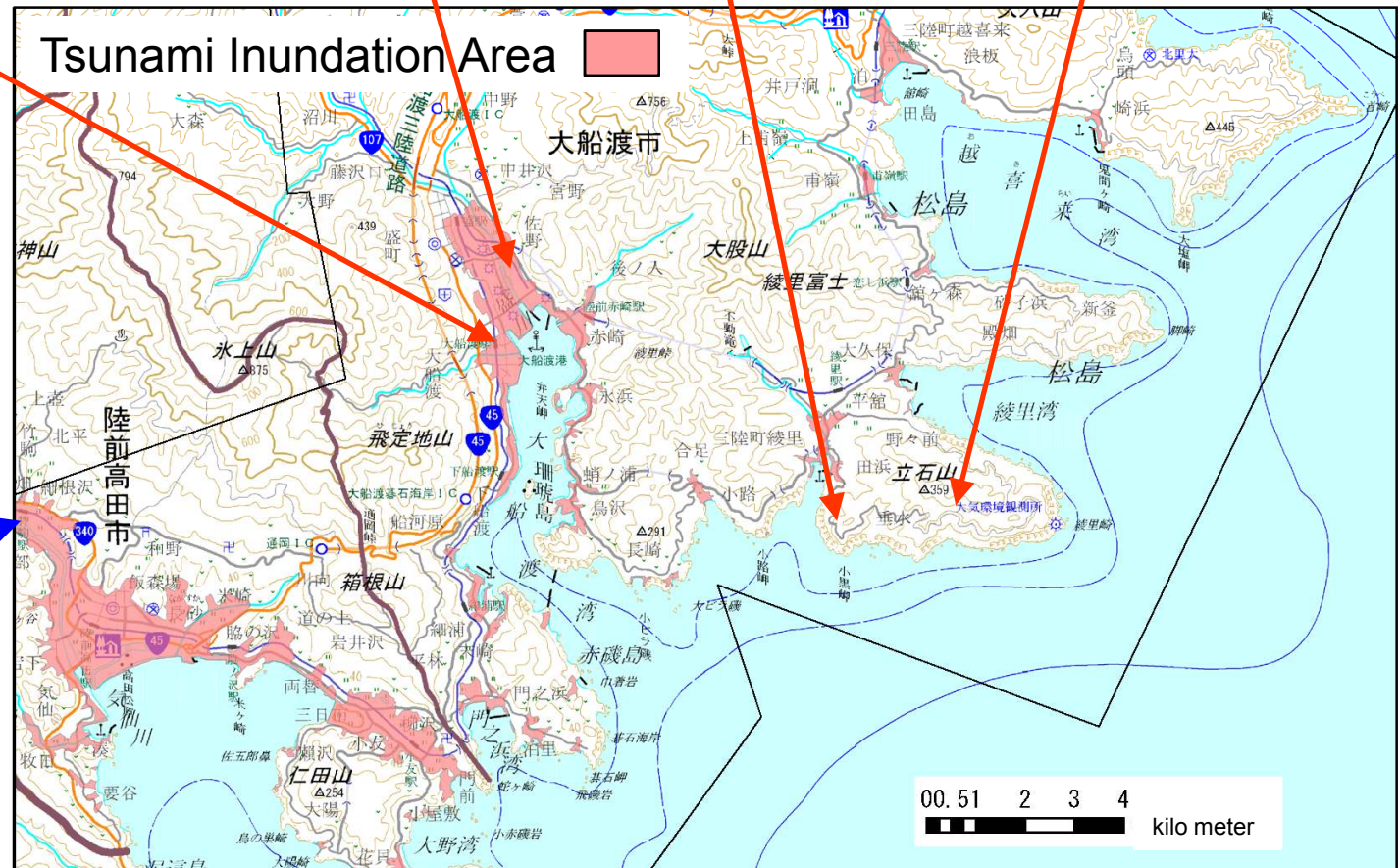
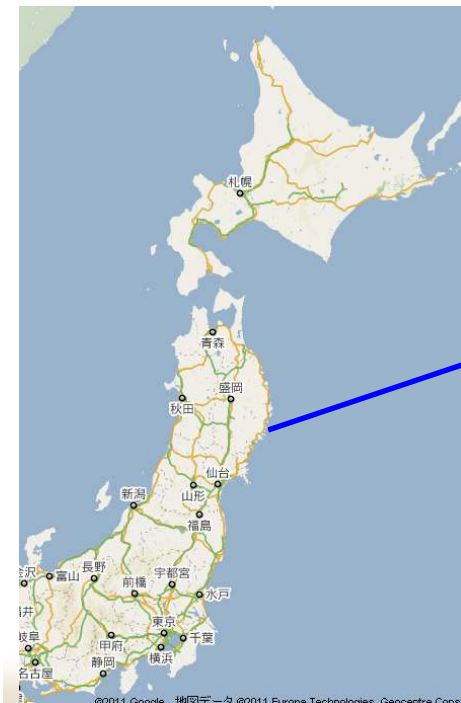
Recent Activities in QA/SAC



Date	Technical Cooperation
May 2009	Two experts from KMA visited JMA and the GAW regional station at Ryori.
Oct 2009	Two experts from the Hong Kong Observatory visited JMA and the GAW regional station at Ryori.
April 2010	JMA expert on ozone layer observations visited the ozone observatory in Manila. He calibrated the Dobson spectrophotometer of the observatory and trained Philippine experts on measurements and maintenance of instruments for ozone layer observations.
May 2010	Three experts from KMA and one expert from KRISS visited JMA and the GAW regional station at Ryori.



Tsunami Damages around the GAW Regional Station at Ryori





- **JMA served and continues to serve as GAW central facilities, i.e., WDCGG, WCC for Methane and QA/SAC for CO₂, CH₄, total O₃. Recently WDCGG started WIS/DCPC service on 1st Aug. 2011 onward.**
- **JMA maintains and enhances GAW related greenhouse gas observations, i.e., the operational observations using the cargo aircrafts and high quality marine observations with higher spatiotemporal resolution.**
- **GAW regional station at Ryori was damaged and recovered from the Great East Japan Earthquake on 11th March 2011.**



Thank you for your attention!

경청해 주셔서 감사합니다.

Спасибо за ваше внимание.

感谢您的关注

Terima kasih atas perhatian Anda.

ご静聴ありがとうございました。





Reference





pCO₂ measurement system

