Recent outcomes of the GAW related activities in JMA

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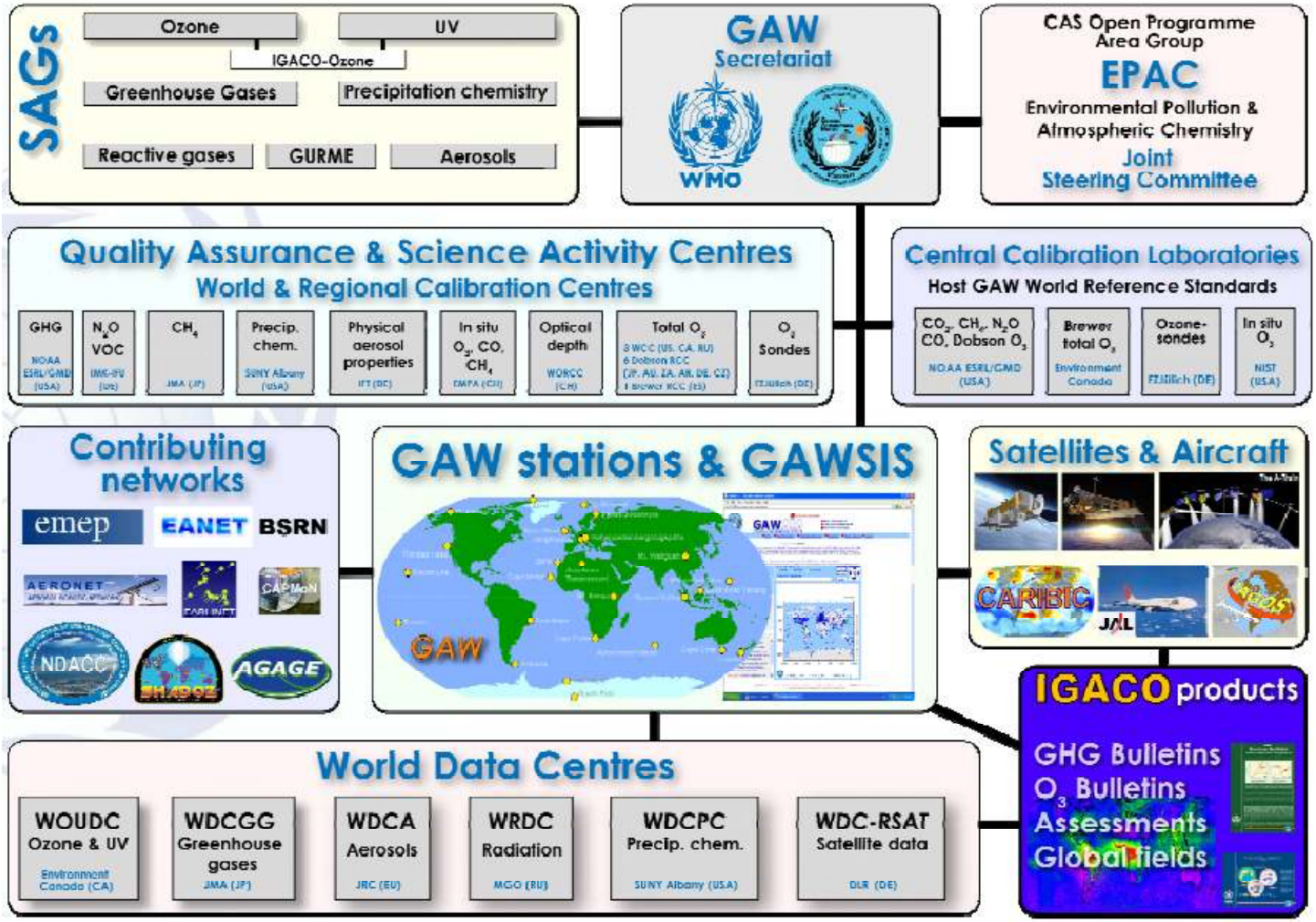
1. WDCGG started WIS/DCPC services

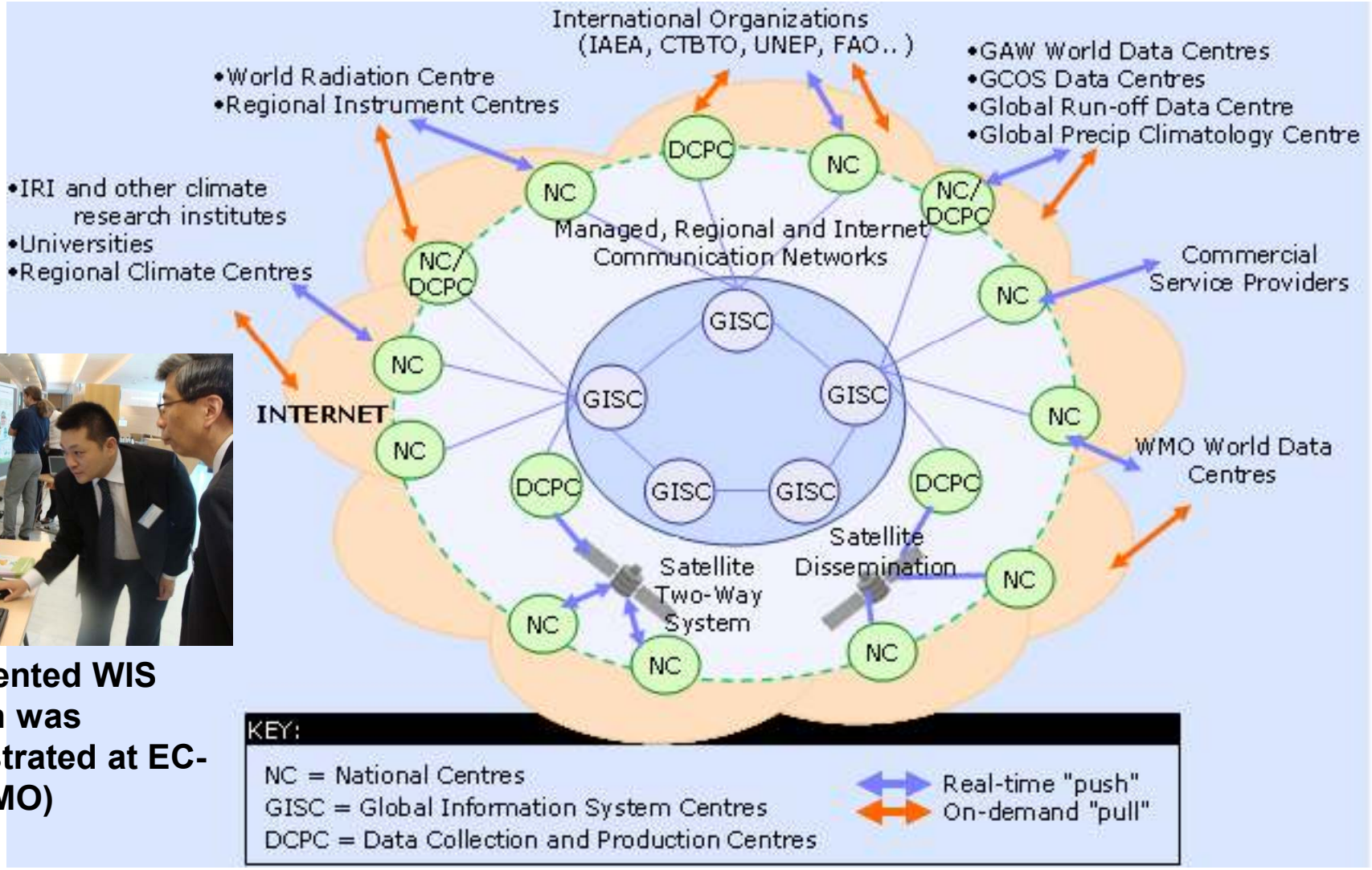
Structure of WMO/GAW

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



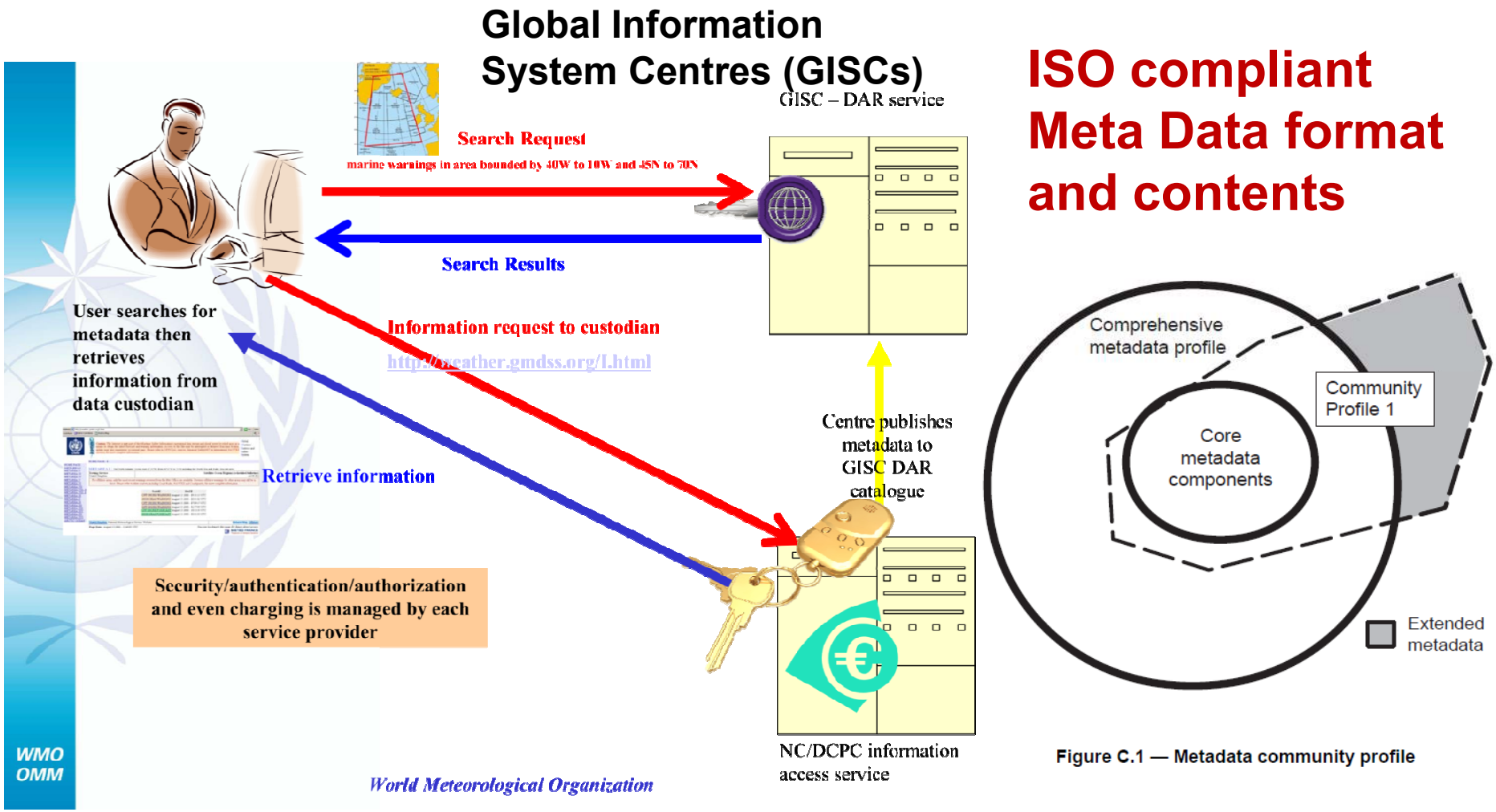
WMO Information System (WIS)

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

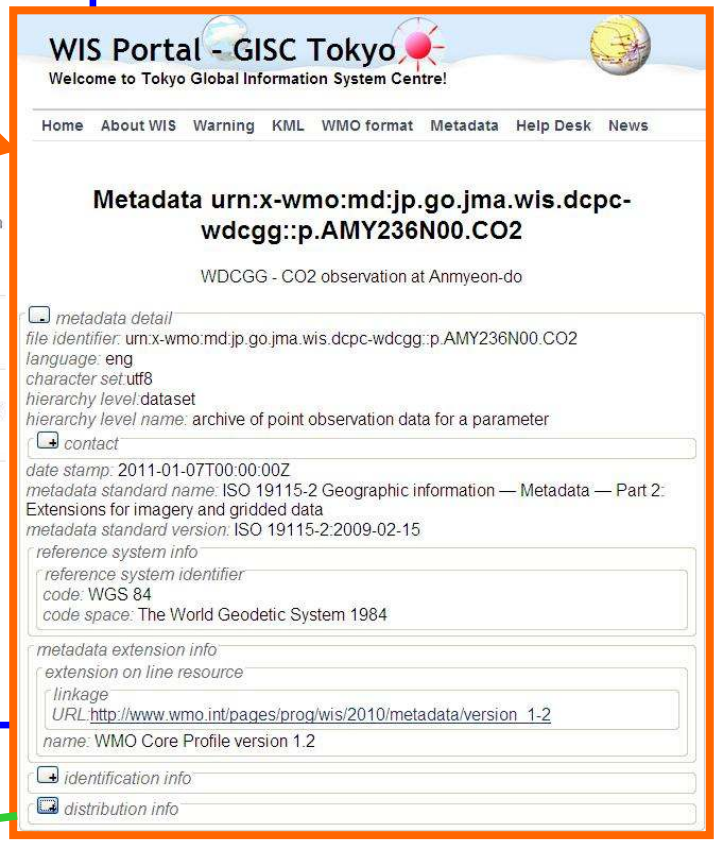
Figure C.1 — Metadata community profile

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

GISC Tokyo Web site

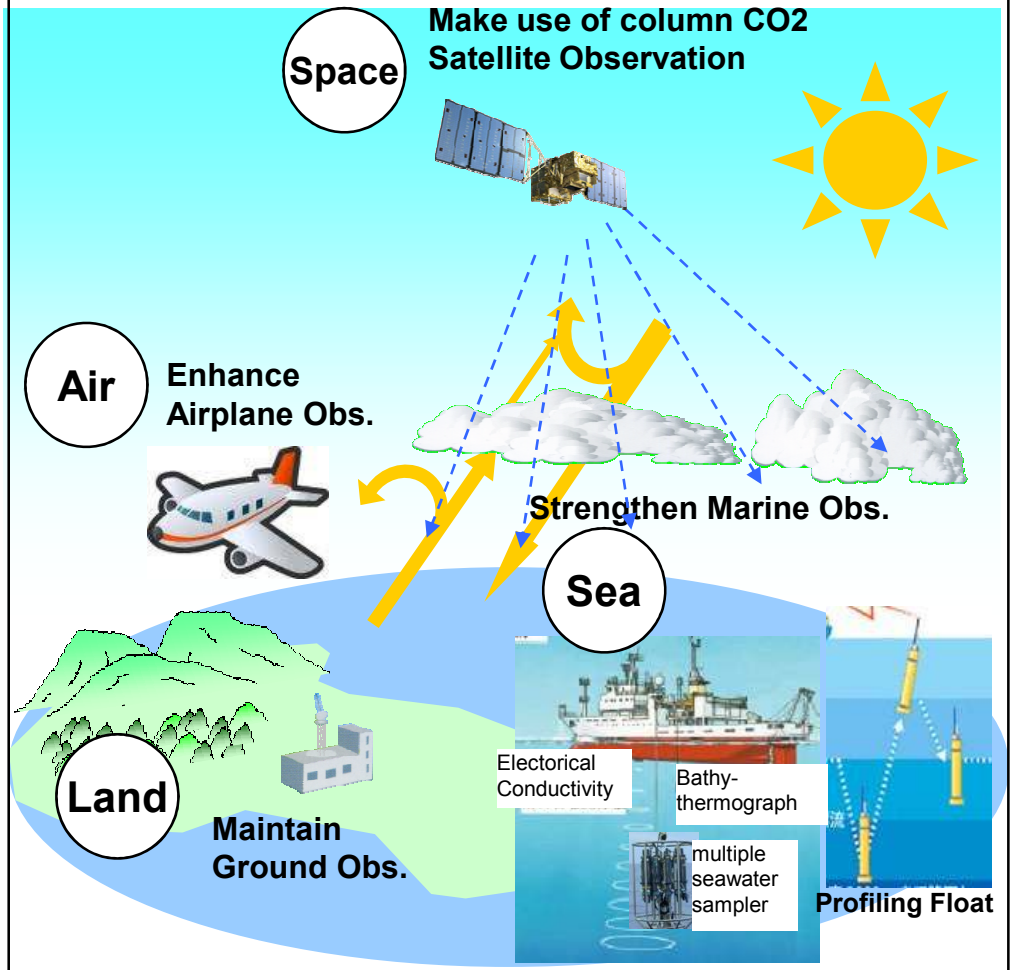
http://www.wis-jma.go.jp/cms/

ISO compliant Meta Data format and contents



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

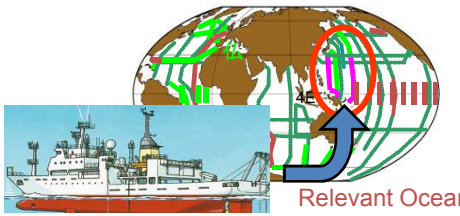
Estimation of the data quality

Airplane Observation (Air)

2010

Newly started Airplane Observations between Tokyo and Minamitorishima

Strengthening Marine Observation (Sea)

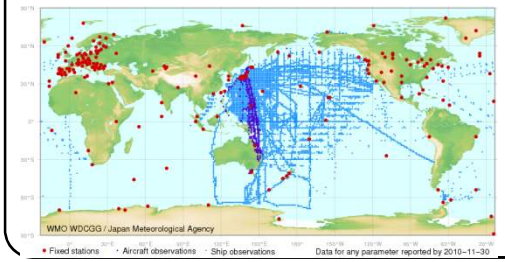


2010

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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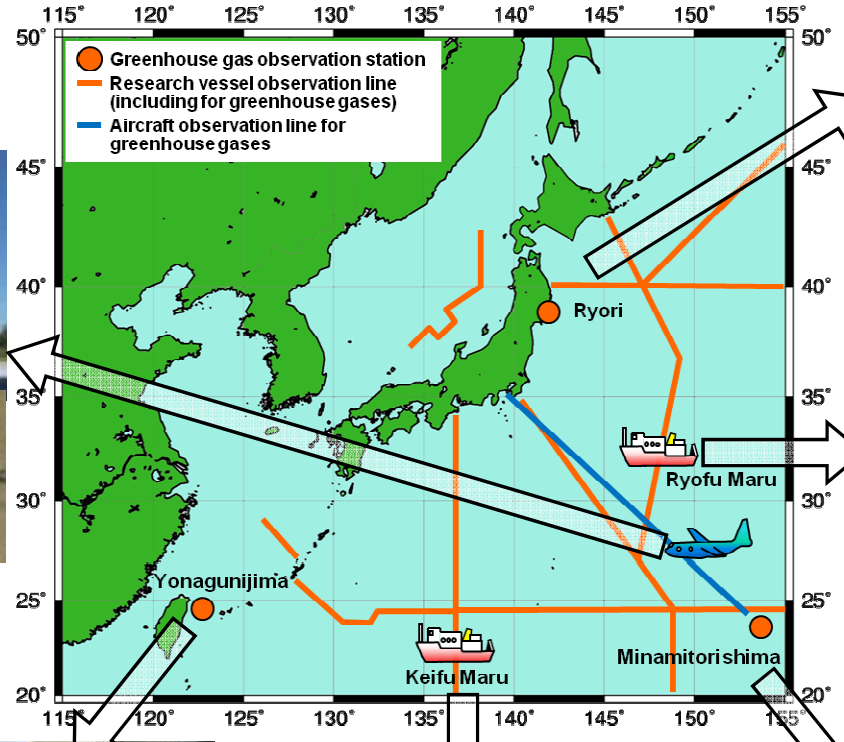
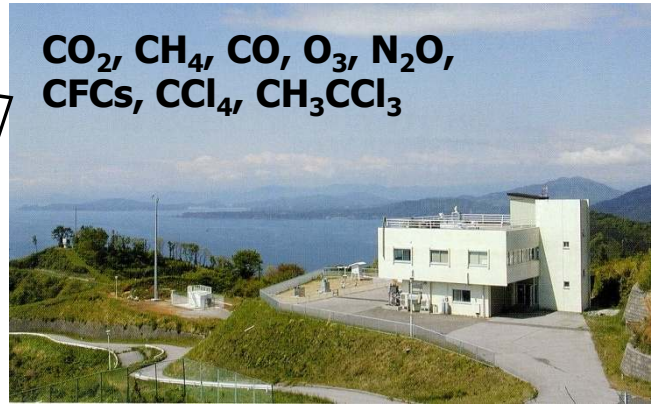
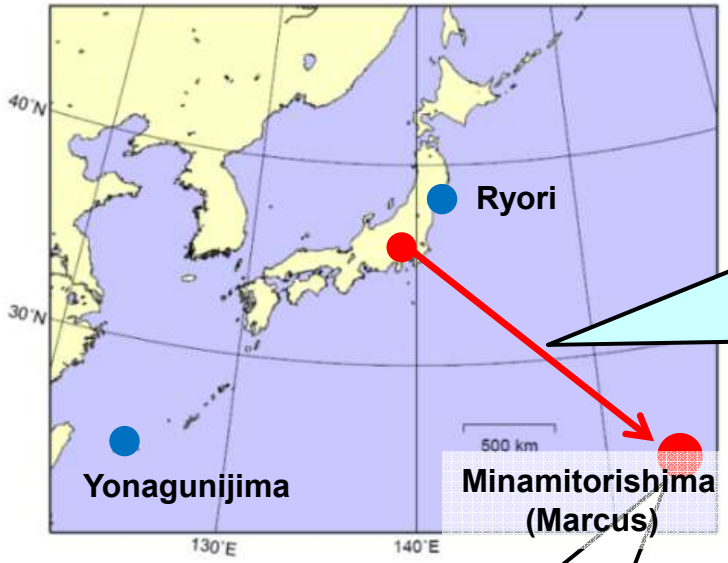
GHG observation network of JMA





JMA started aircraft observation



Aircraft

Flask Sampling
(1.7 L)

JMA headquarters (Tokyo)

Measurement of CO_2, CH_4, CO, N_2O concentrations

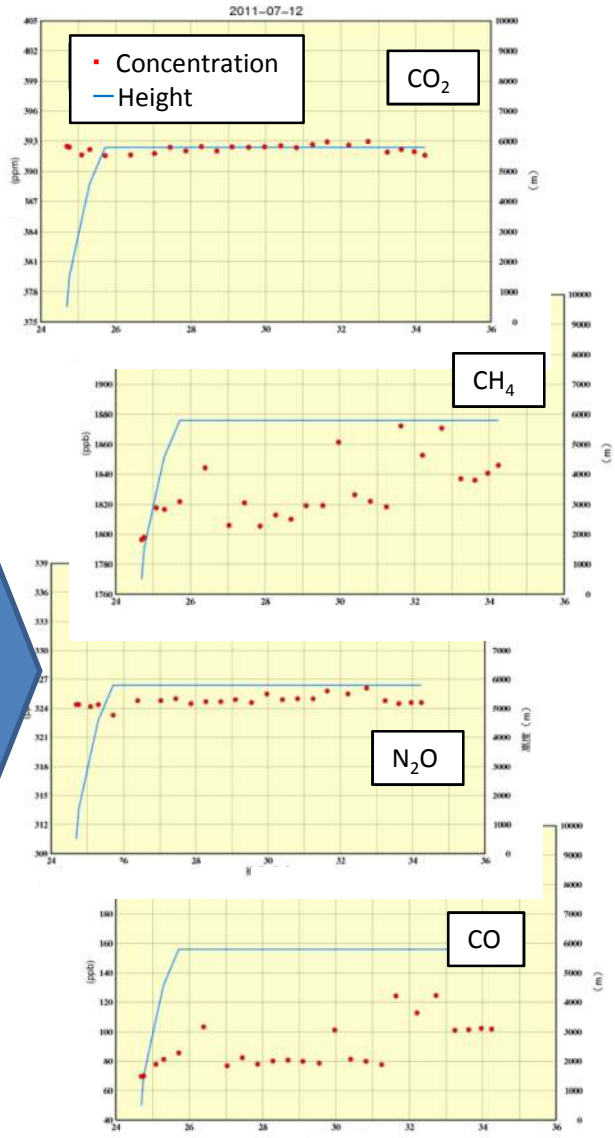
Titanium Flask(1.7L)

VURF (Aero-Laser AL5002) for CO

WS-CRDS (Picarro G2301) for CH_4

Off-axis ICOS (Los Gatos DLT100) for N_2O

NDIR (Licor Li7000) for CO_2



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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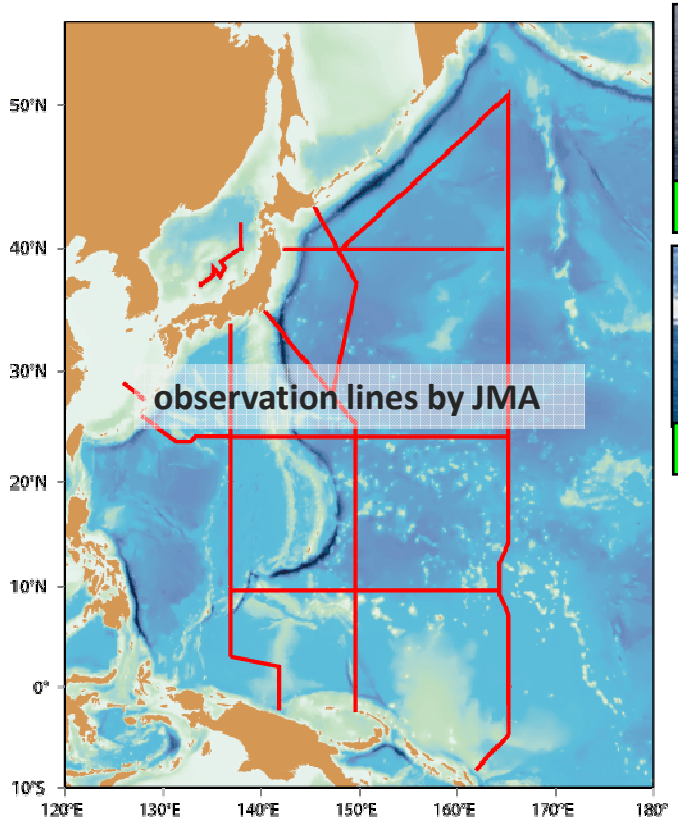
Ship-based CO_2 observations



Ryofu Maru (1,380t)

Keifu Maru (1,483t)

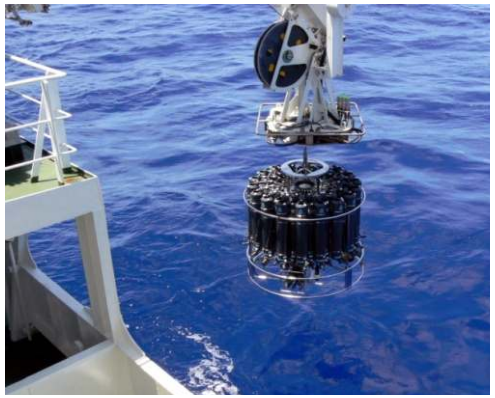
Sampling and Measurements

[Profile at stations]

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

[Underway]

- Partial pressure of CO_2 in air and surface seawater
- Temperature, salinity and chlorophyll

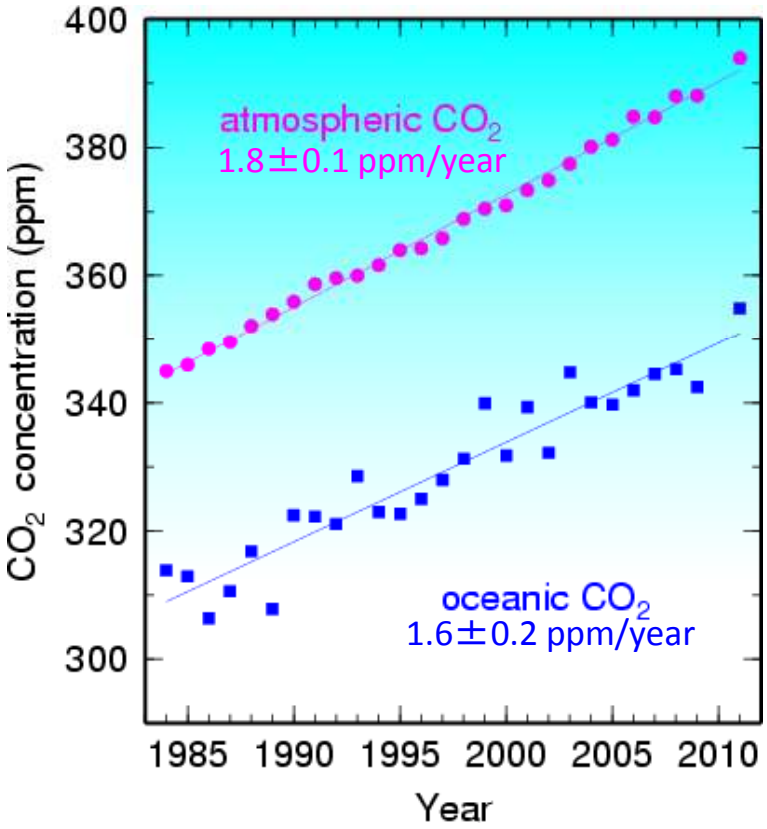


CTD with 36-position water sampler (10L)

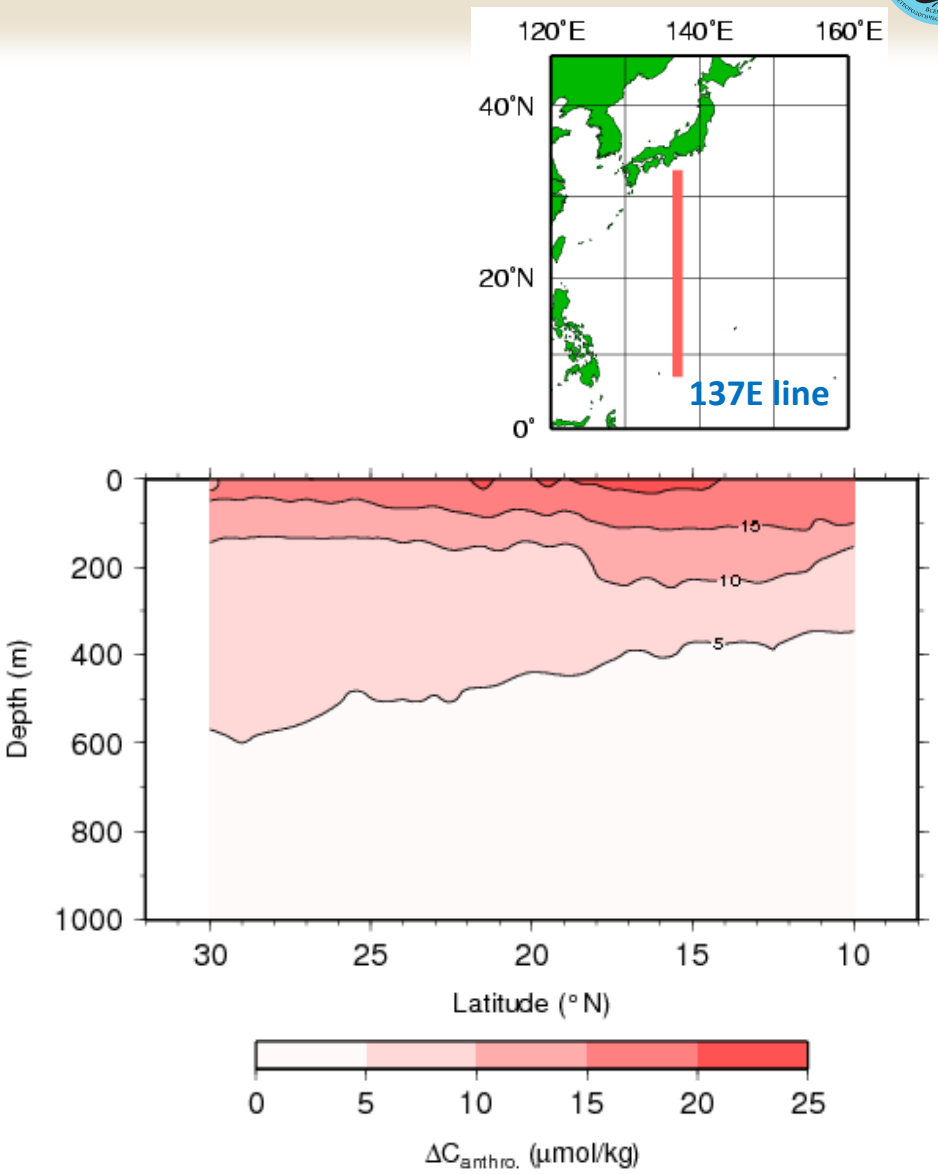
High-precision total inorganic carbon measuring system

cooperate with the international programs

Results and Products

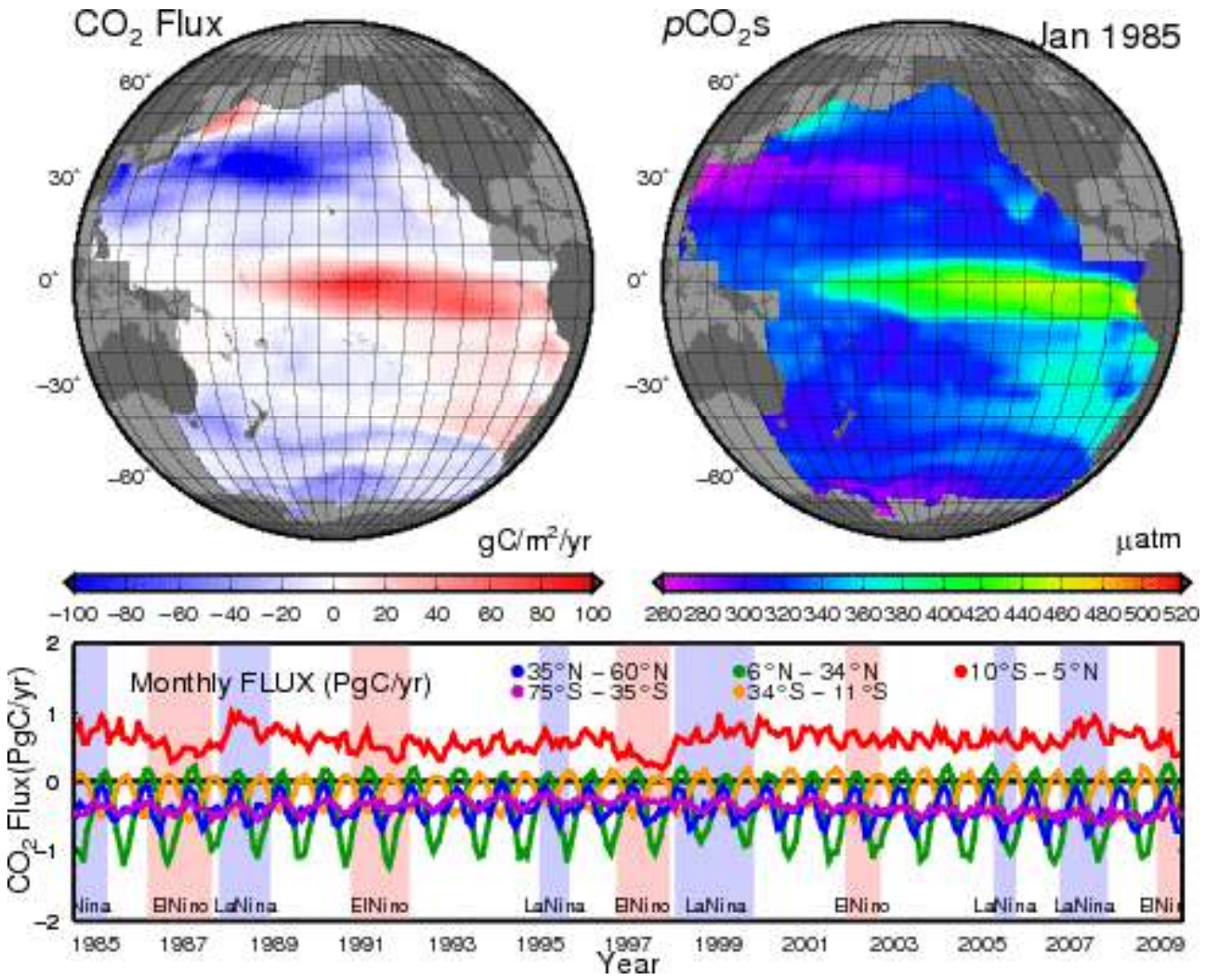


Oceanic and atmospheric CO_2 concentrations averaged along the 137E meridian (winter)



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

Estimation of air-sea CO_2 flux in the Pacific (1985-2009)



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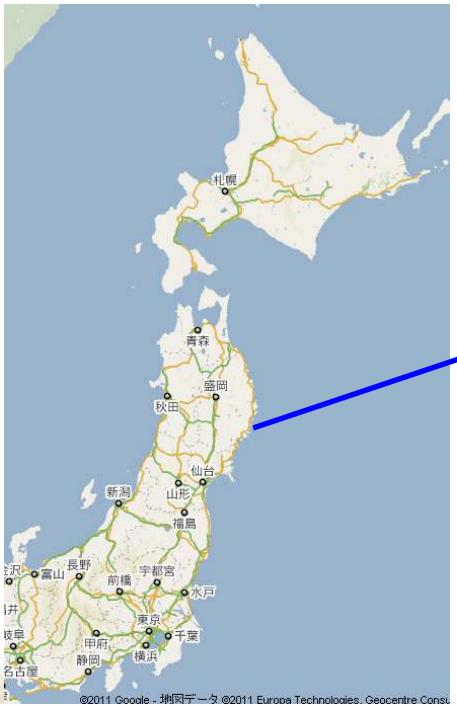
Summary of Methane Reference Gas Intercomparison

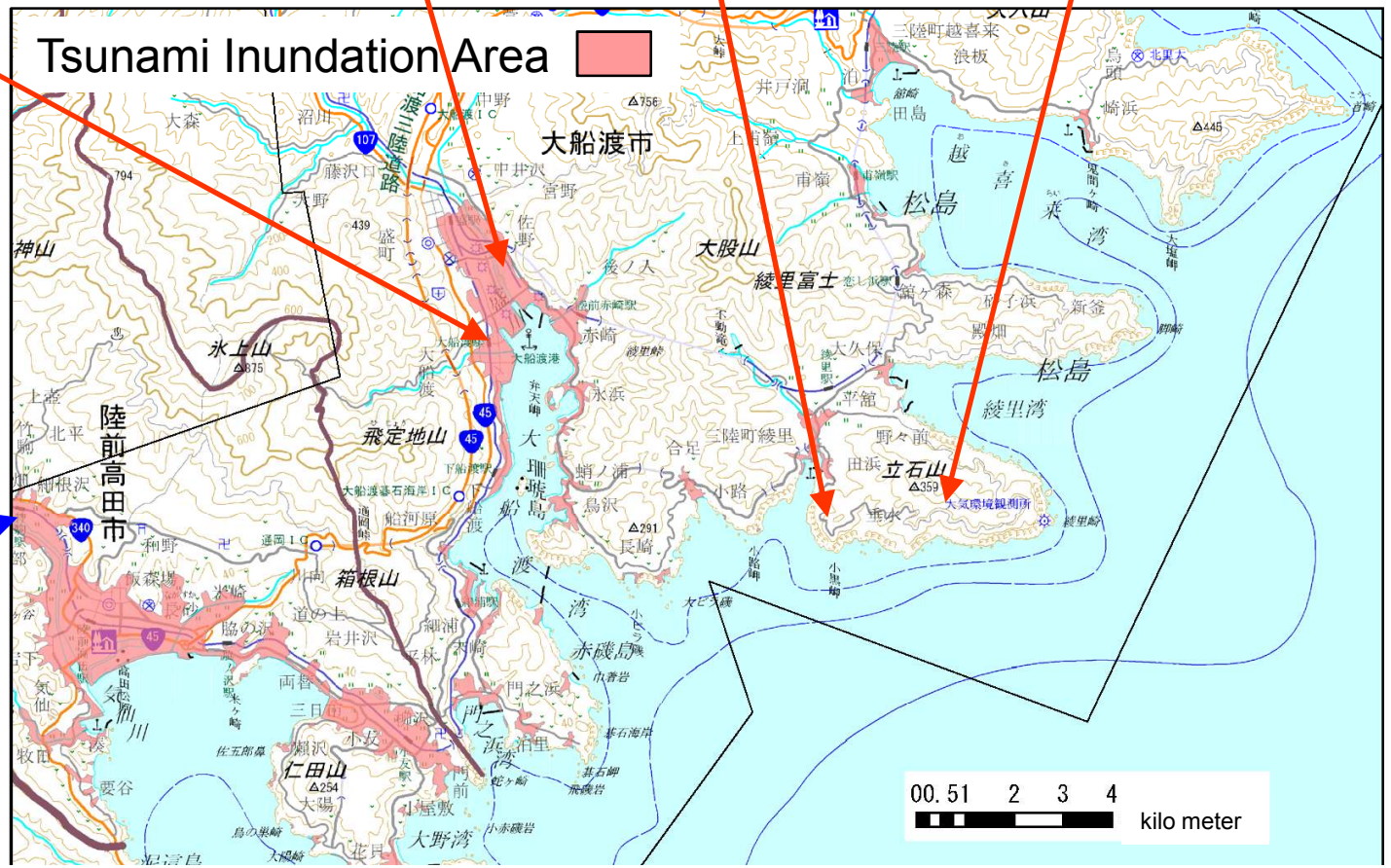
Regions	Periods of intercomparison	Participating Laboratory and Location
Asia	Jul 2005 – Aug 2006	JMA, Tokyo; CMA, Mt. Waliguan, KMA,Anmyeondo; KRISS,Daejeon; JMA, Tokyo
South-West Pacific	Dec 2006 – Aug 2008	JMA, Tokyo; CSIRO, Aspendale; NIWA,Wellington; JMA, Tokyo
Asia	May 2008 – Jul 2009	JMA, Tokyo;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





Summary

- JMA served and continues to serve as GAW central facilities, i.e., WDCGG, WCC for Methane and QA/SAC for CO_2, CH_4, total O_3. Recently WDCGG started WIS/DCPC service on 1st Aug. 2011 onward.
- JMA maintains and enhances GAW related greenhouse gase 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

pCO_2 measurement system