



The status of ocean monitoring in Korea

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Outline

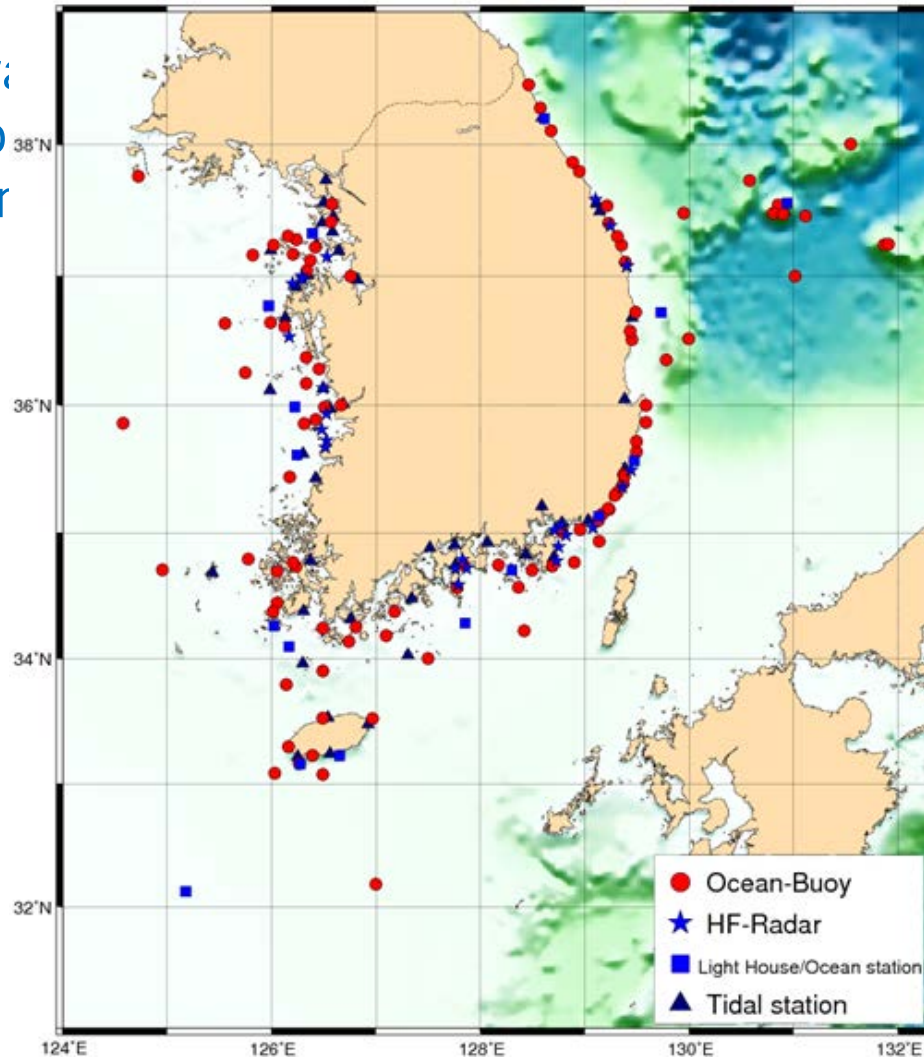
- Introduction
- Real time ocean monitoring
- International program
- New technology

- Mid latitude
- Land-ocean interface
- Shallow and deep
- Rapid changing seas
(2~3 times of global ocean mean)



Real time ocean monitoring sites

- Korea Hydrographic and Oceanographic Agency (KHOA)
- Korea Meteorological Administration (KMA)
- National Fisheries Research and Development Institute (NFRDI)
- Korea Institute of Ocean Science and Technology (KIOST)
- Universities



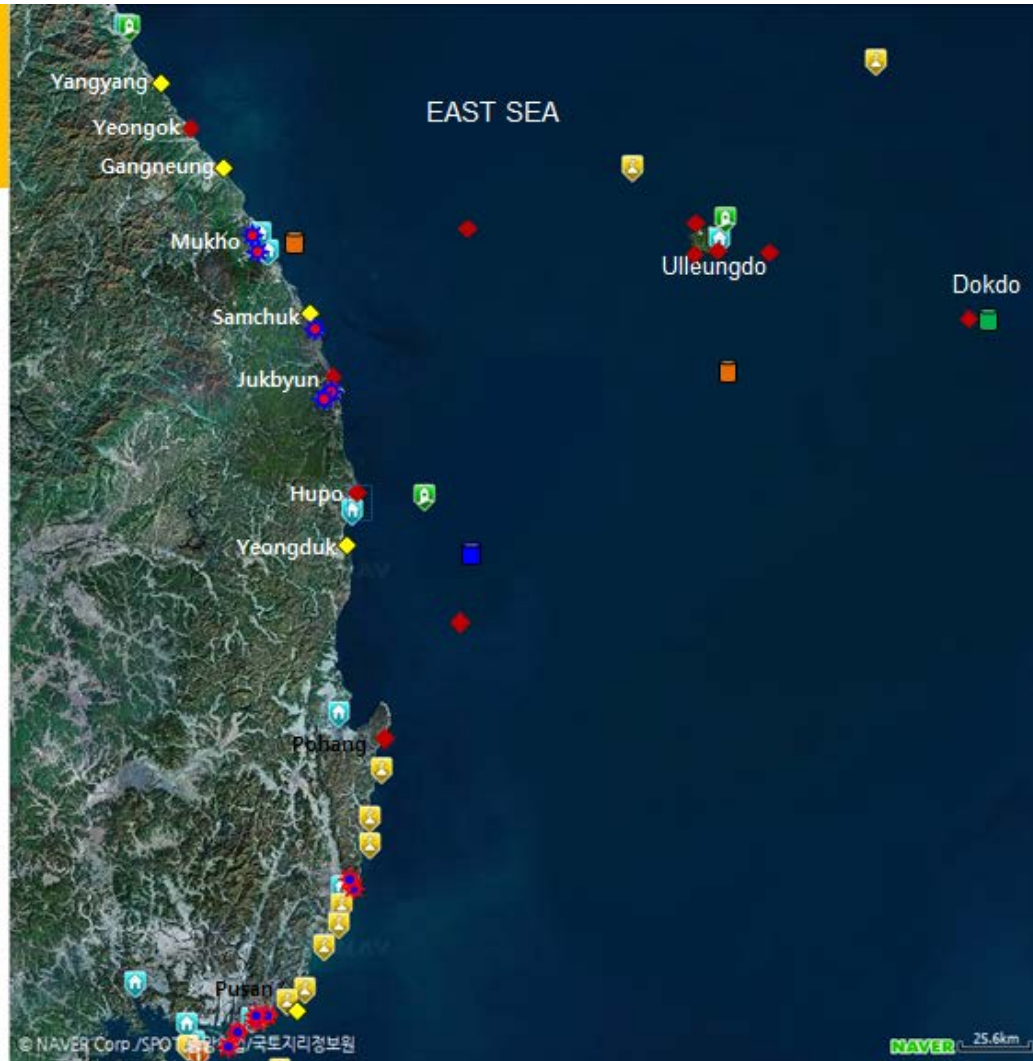
(KHOA)

(NFRDI)

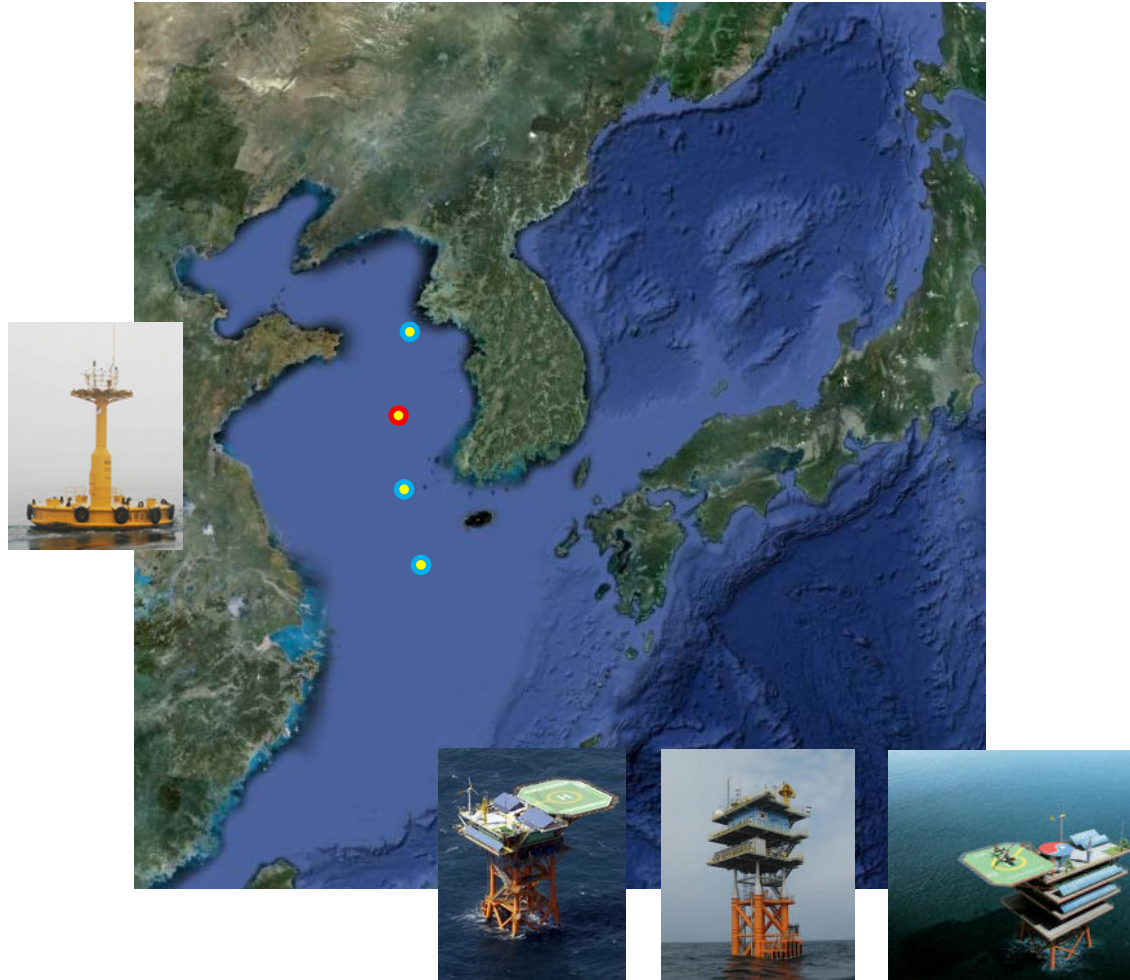
(KIOST)

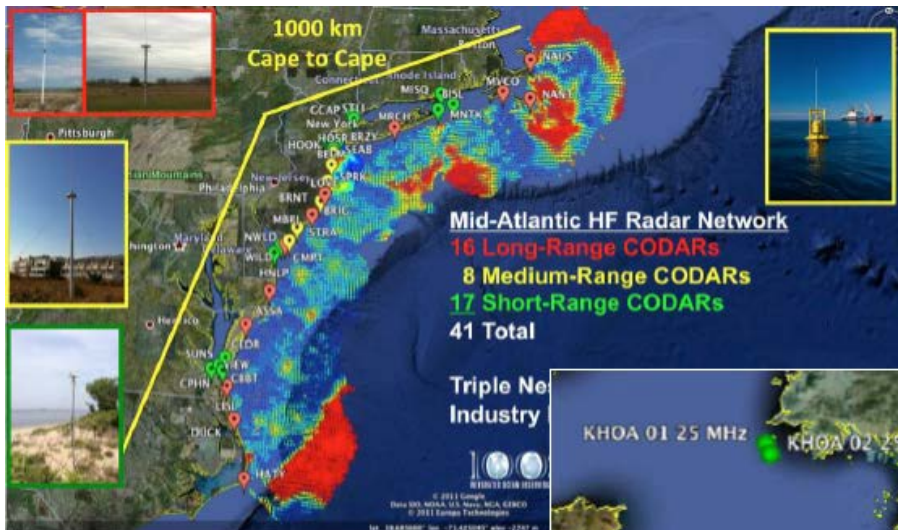
EAST SEA REAL-TIME MONITORING

- ◆ NFRDI
Real-time ocean buoy (5)
- ◆ KMA – ocean buoy (11)
- ⓘ KHOA
Tidal station (7)
- Ⓜ KHOA
Ocean station(4)
- Ⓜ KHOA
Ocean buoy (10)
- Ⓜ SNU - ocean buoy (2)
- Ⓜ SNU – HF radar (5)
- Ⓜ KHOA – HF radar (6)
- Ⓜ KIOST
Real-time ocean buoy (1)
- Ⓜ GIST
Real-time ocean buoy (1)



Marine platforms





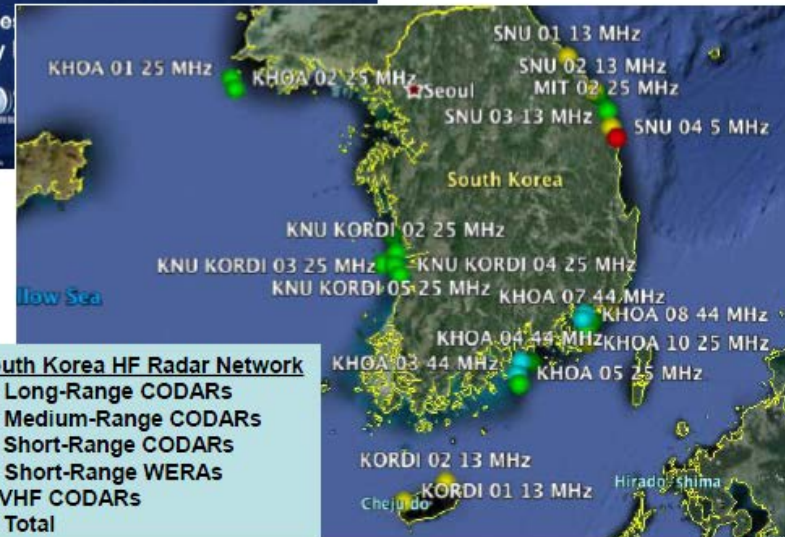
U.S. & Korea National HF Radar Networks –

- World's largest networks
- MAB & Korea similar in scale

Korea – U.S. Collaborations in:

- Network Operations
- Data Quality Control
- Product Development
- Science

South Korea HF Radar Network
 1 Long-Range CODARs
 7 Medium-Range CODARs
 11 Short-Range CODARs
 2 Short-Range WERAs
 4 VHF CODARs
 25 Total



RUTGERS

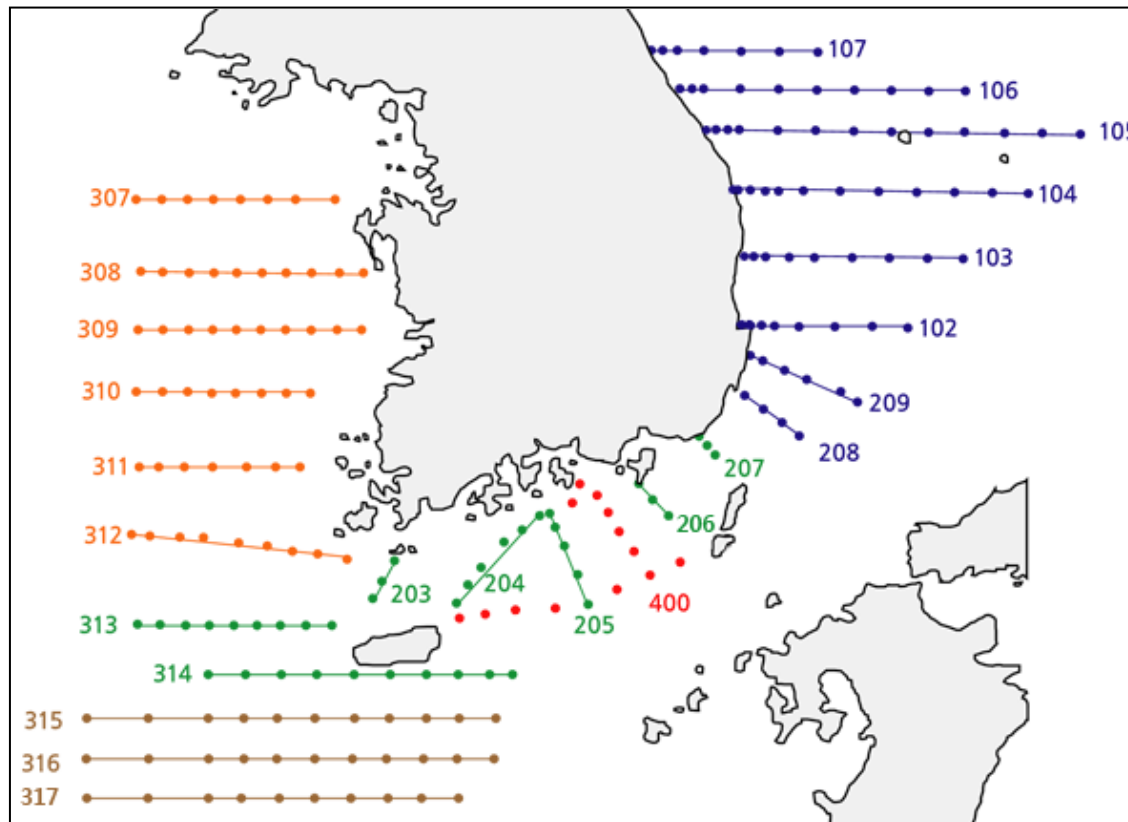
JERSEY ROOTS, GLOBAL REACH

Coastal Ocean
Observation Lab

S Glenn (2014)

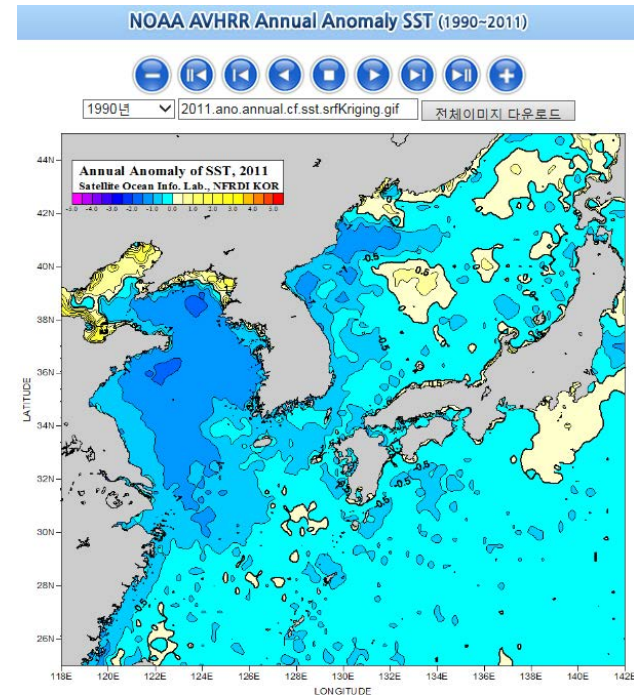
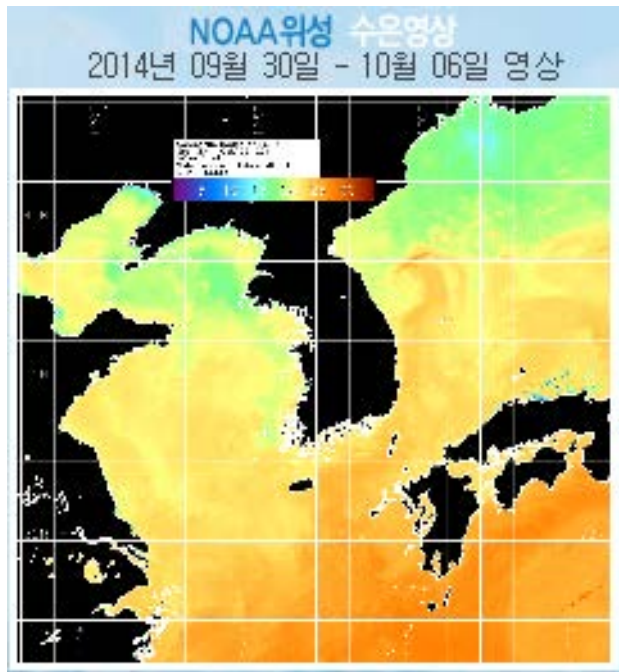
Serial Oceanographic Observation

- NFRDI
- Bi-monthly
- T, S, biochemical factors
- Korea Ocean Data Center



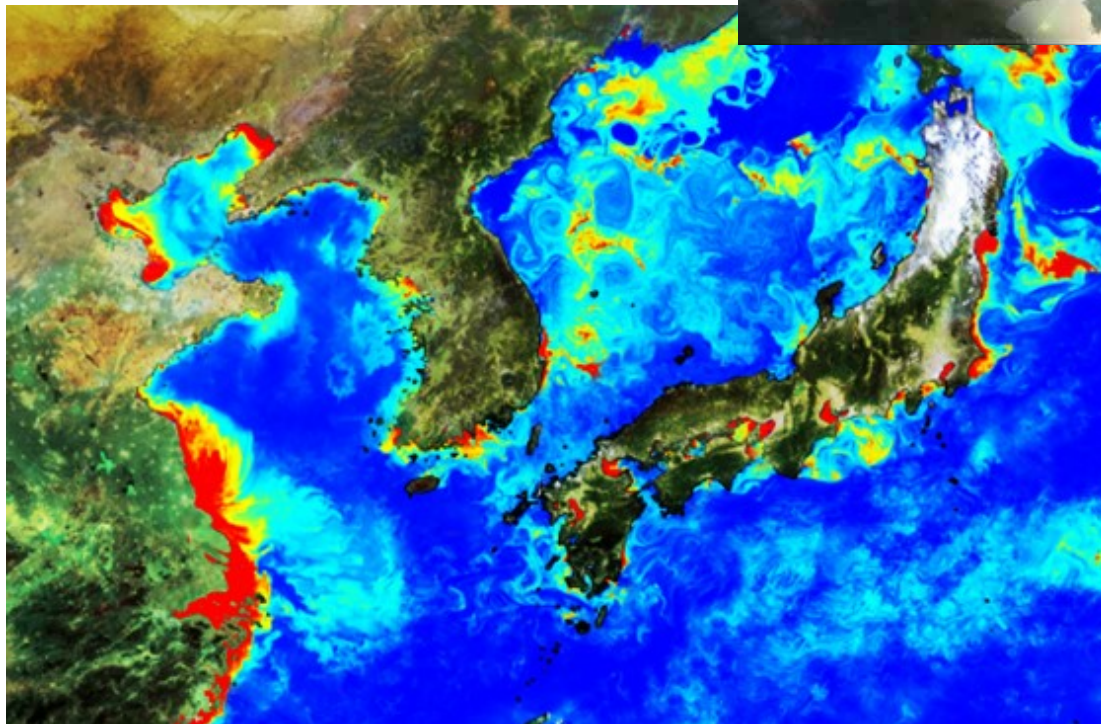
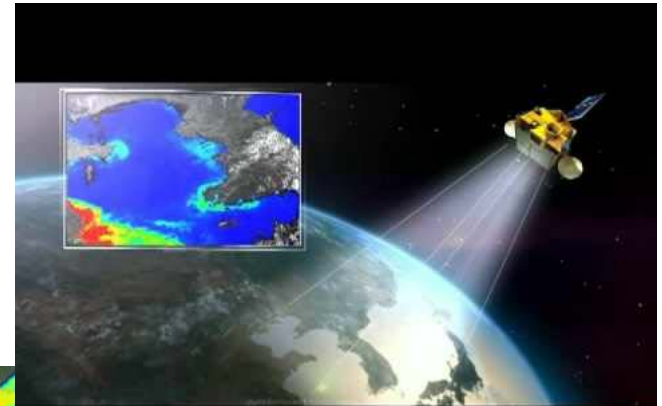
Satellite Ocean Information System

- NFRDI
- NOAA SST, MODIS, GOCI, ...
- SST(Daily, weekly, re-analysis), Red tide, Jellyfish

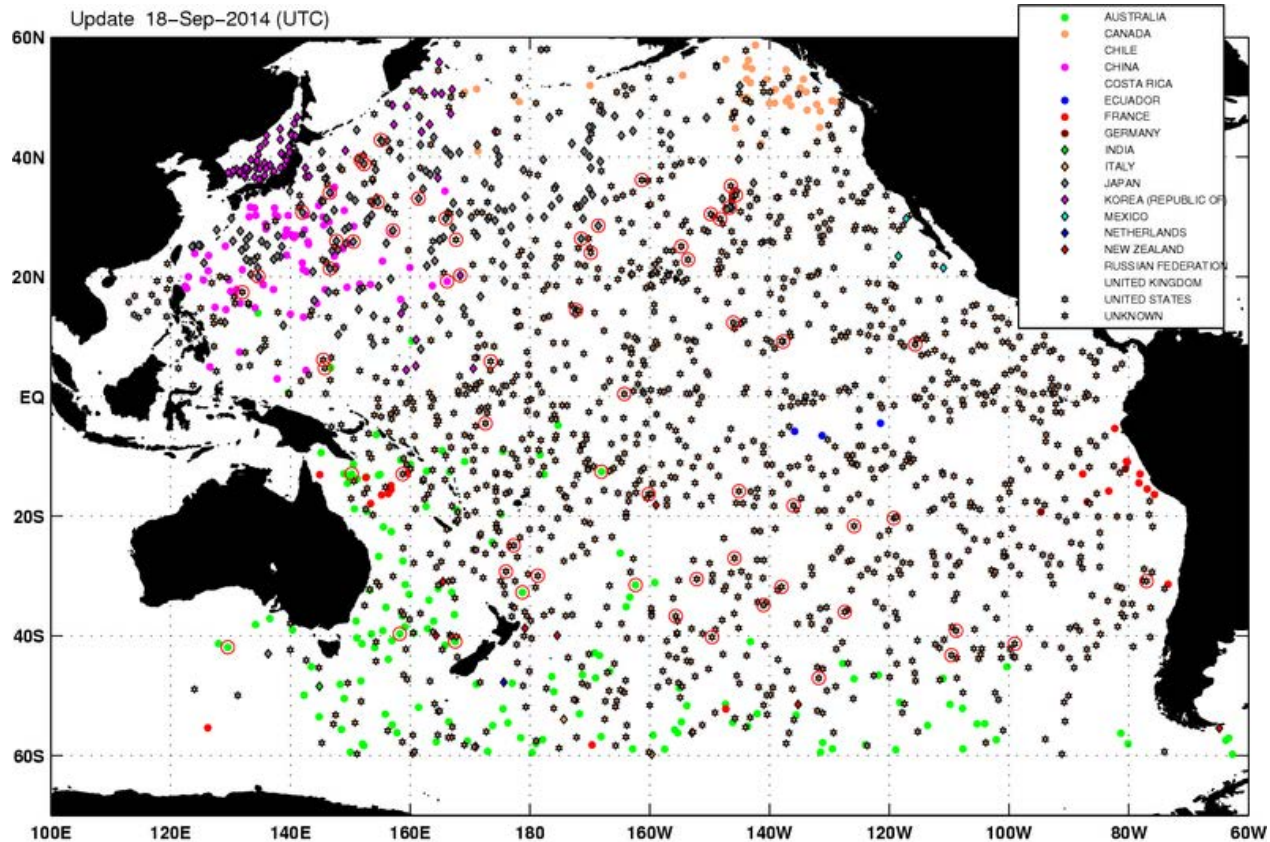


Geostationary Ocean Color Imager

- KIOST
- 2010 ~
- Hourly, 8 times/day
- Area: 2500 km x 2500 km
- Resolution: 500 m x 500 m



ARGO




1880 (o Greylisted:65) floats : Active.

171 (o Greylisted:14) floats : Not communicating (more than 30 days and less than 180 days.)

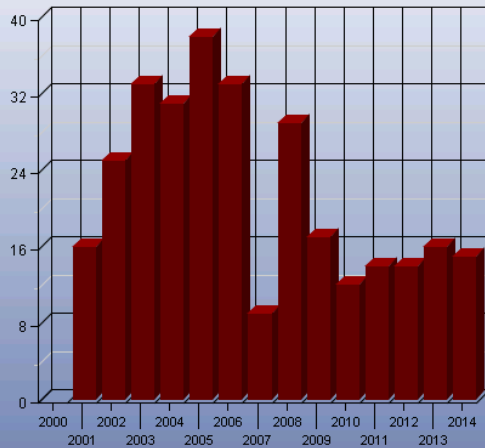
2964 (o Greylisted:153) floats : Probably dead (Communication stopped more than 180 days.)

Korea Argo

- Argo NIMR/KMA & Argo KIOST

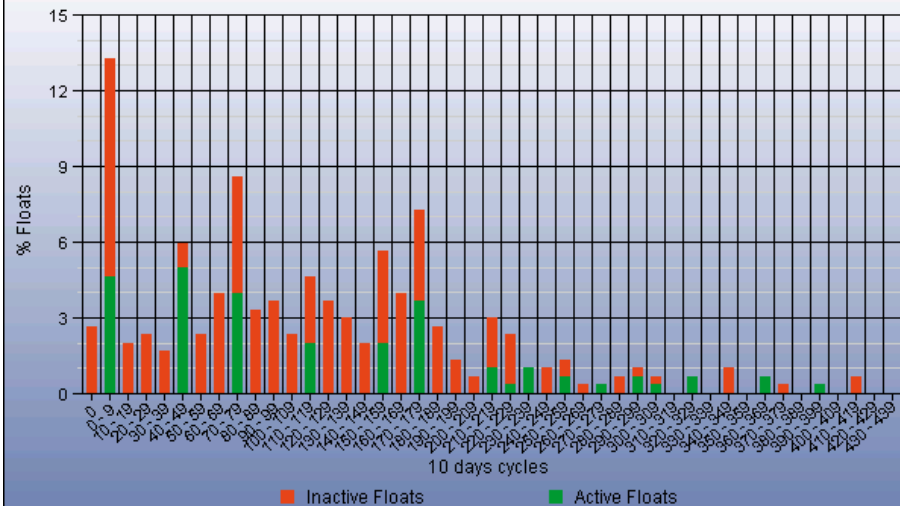
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Total
Argo KORDI	0	6	10	18	16	23	18	9	14	5	0	0	0	0	0	119
Argo NIMR/KMA	0	10	15	15	15	15	15	0	15	12	12	14	14	16	15	183
Total	0	16	25	33	31	38	33	9	29	17	12	14	14	16	15	302

Argo Yearly Deployments, KOREA (REPUBLIC OF)



AIC, <http://argo.jcommops.org>, 22/9/2014

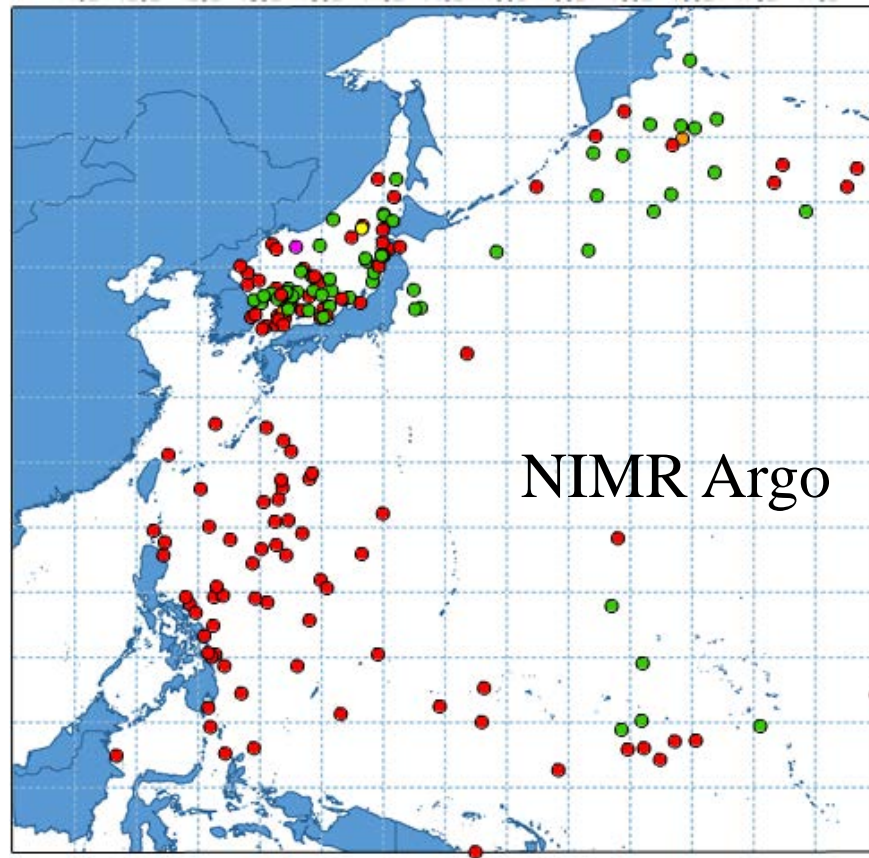
Floats Age Distribution, KOREA (REPUBLIC OF)



AIC, <http://argo.jcommops.org>, 22/9/2014

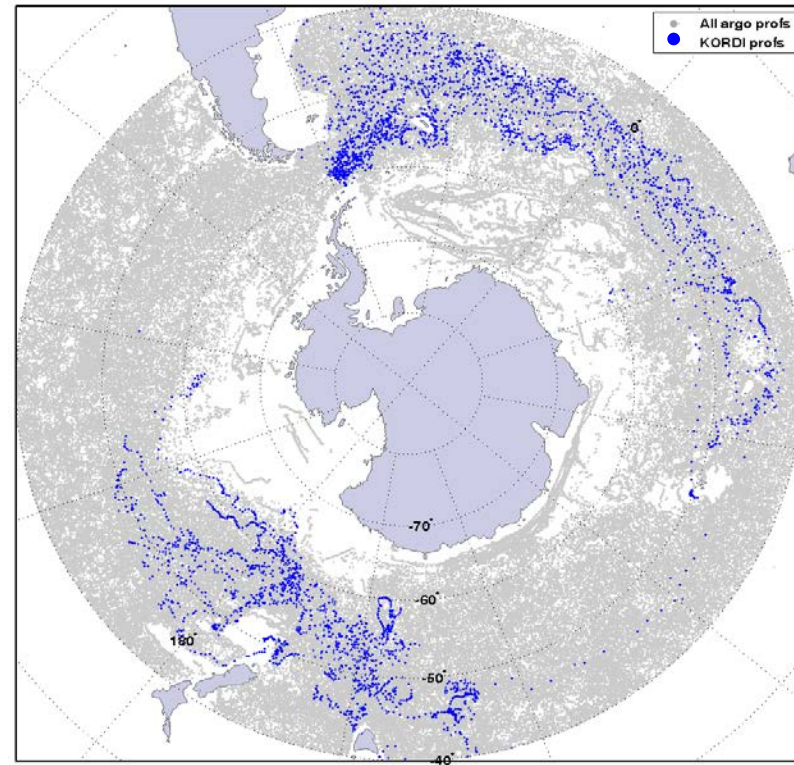
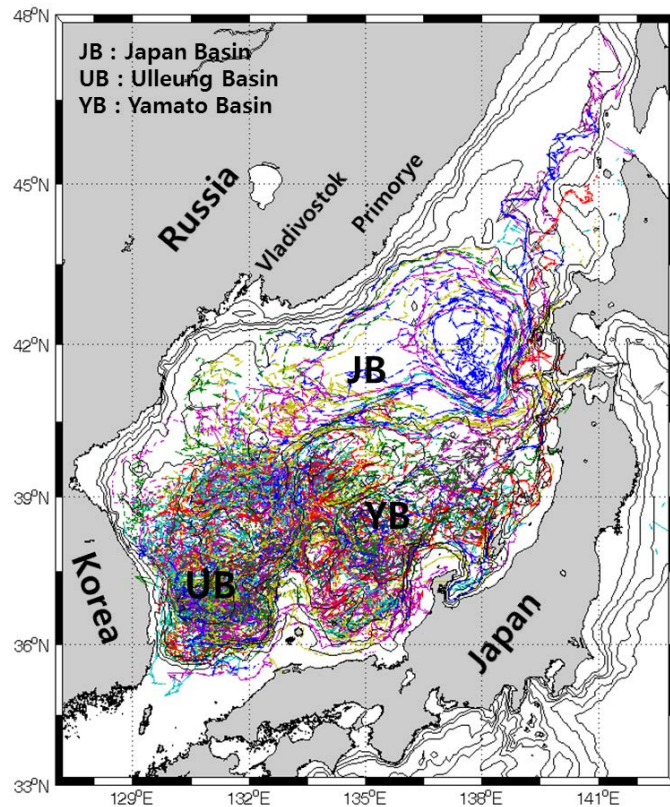
Argo NIMR/KMA

- <http://argo.metri.re.kr>
- Deployment (2001-2014): East Sea - 87, Northwest Pacific - 97
- Active: 61



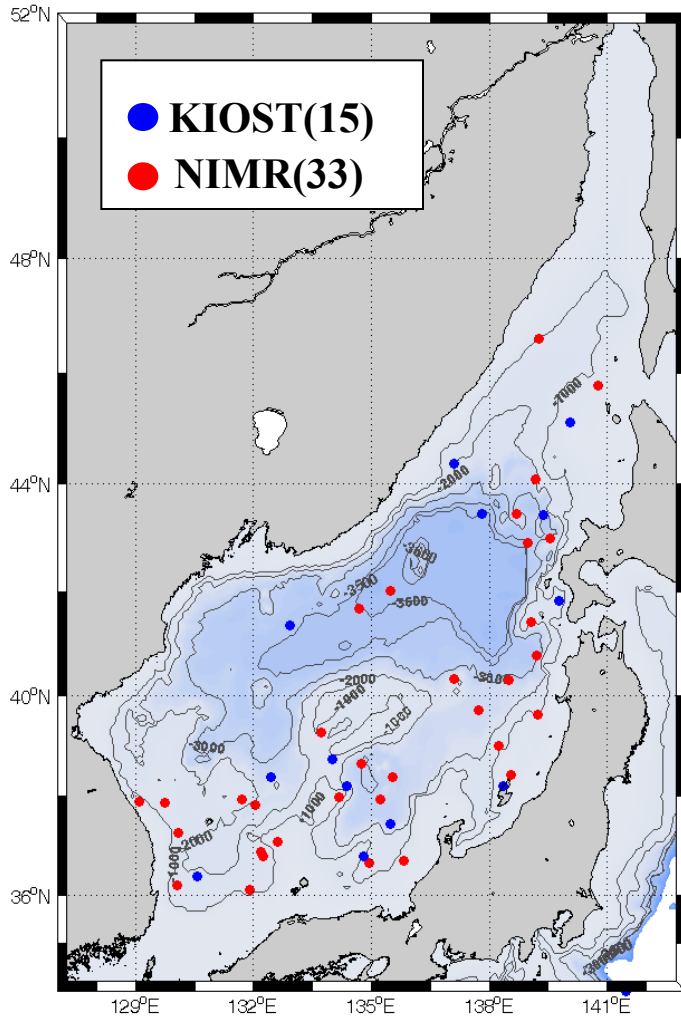
Argo KIOST (KORDI)

- 2001 ~
- Deployment (2001~2009): East Sea - 75, Southern Ocean - 44
- Active: 15 (East Sea)

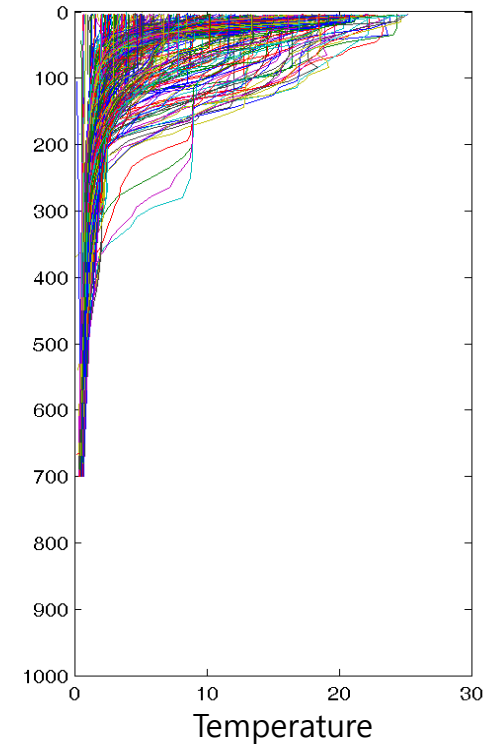
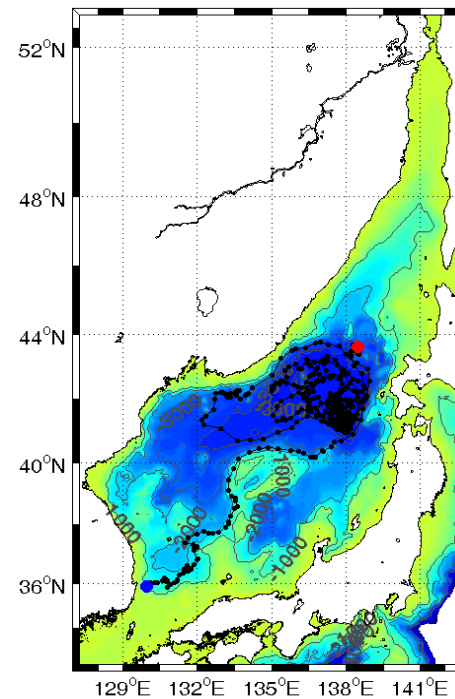


Active floats in the East Sea (on Apr. 14, 2014)

- Active float for 12 years in the East Sea
- 4400 days, 440 cycles, 436 profiles

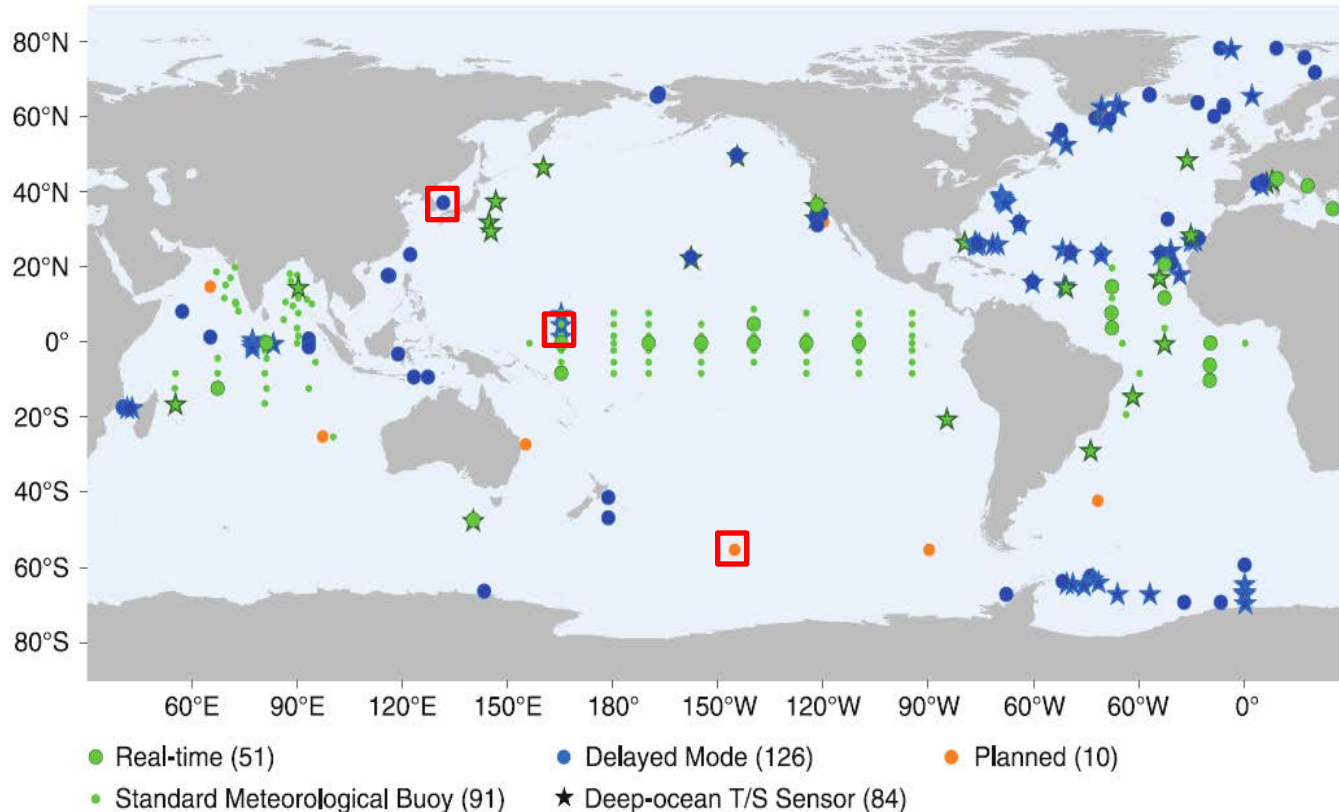


argo : 2900205
start time : 22-Sep-2002 11:01:42
end time : 21-Feb-2014 10:23:09



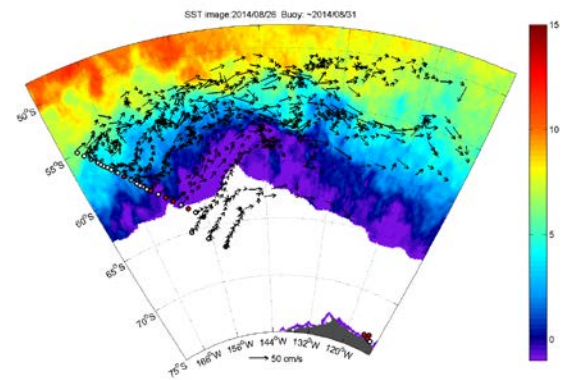
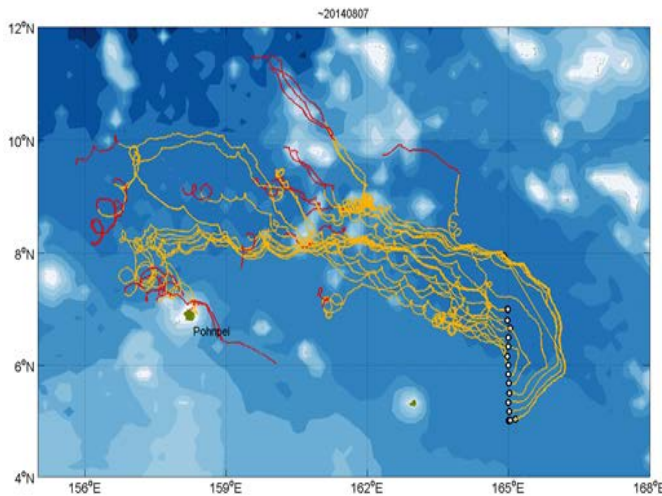
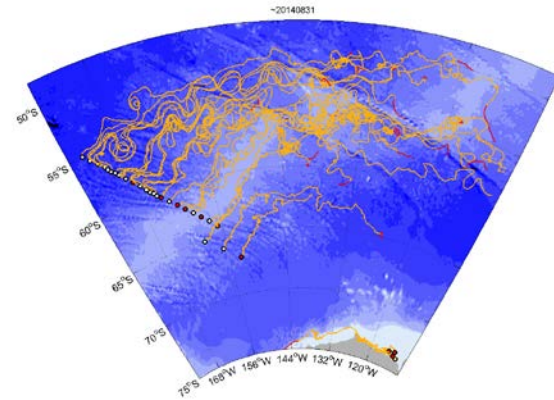
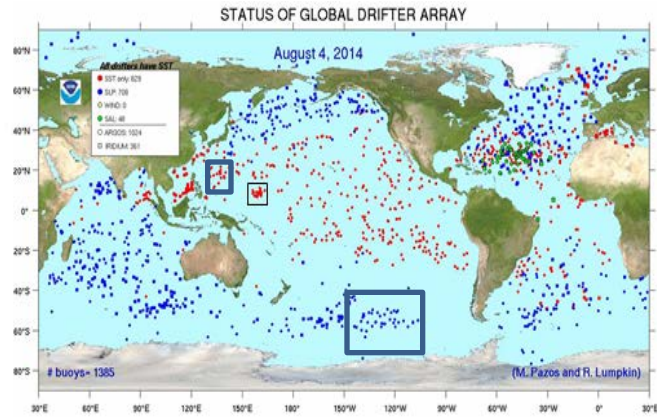
OceanSITES

- KIOST, Seoul National Univ.
- 1 site (East Sea)
- 2 sites (deep T/S, equatorial western Pacific)
- 1 planned site (Southern Ocean / Udintsev Fracture Zone, 2016)



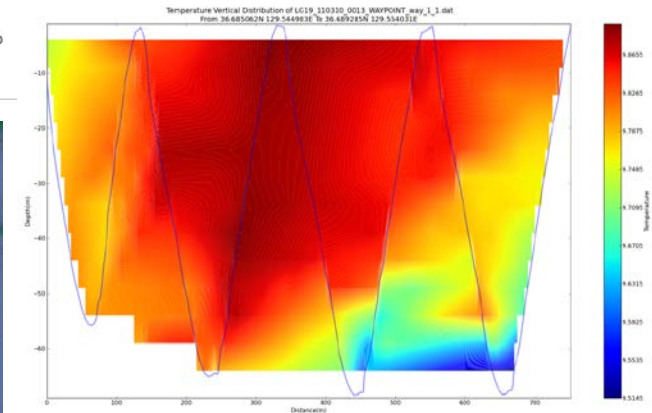
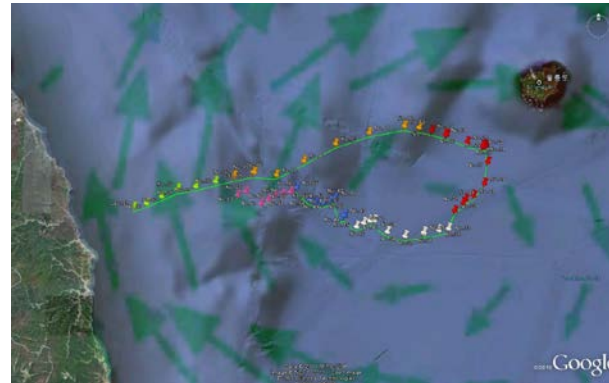
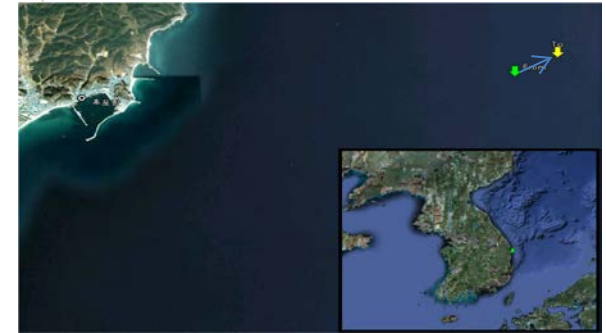
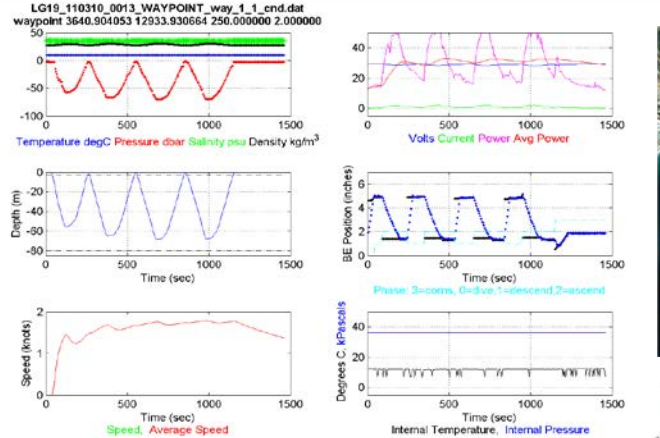
Global Drifters Program

- AOML/NOAA
- KIOST: Philippine Sea, equatorial Pacific (20~50/yr)
- KIOST, KOPRI: Southern Ocean (30/yr)



Underwater Glider

- KIOST
 - A pilot experiment in the East Sea



Provided by YS Park

Underwater Glider

- KIOST
 - Collaboration with Rutgers Univ. (Challenger Glider Mission)

**The Challenger Glider Mission:
Enhancing Korea's Global
Autonomous Underwater Glider Fleet**



Dr. Sik Huh
KIOST-NOAA Lab

Scott Glenn,
Oscar Schofield &
Josh Kohut
Rutgers University

KIOST
Korea Institute of Ocean Science & Technology

NOAA

NOAA-MOF JPA 2014

RUTGERS JERSEY ROOTS, GLOBAL REACH Coastal Ocean Observation Lab

THE OCEAN IS OUR FUTURE
The cradle of life, and the treasure of Natural resources!

Multidisciplinary Green & Smart Research Vessel
KNRV5000

Global KNRV5000 Mission



New Paradigm
Experiment of Last Frontier Ocean

Korean EEZ Exploration

Climate Change in the Indian Ocean

Hydrothermal Deposits

Exploration Crossing Earth's Oceans

Manganese Crust Exploration

Manganese Nodule Exploration

Biotechnology in the Extreme Poles

Hydrothermal Deposits

Exploration Crossing Western Pacific

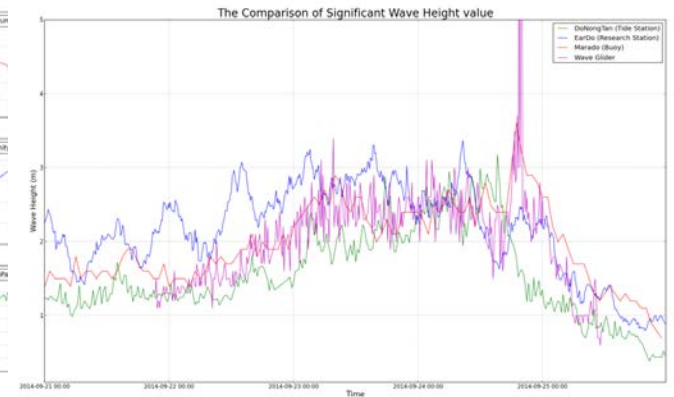
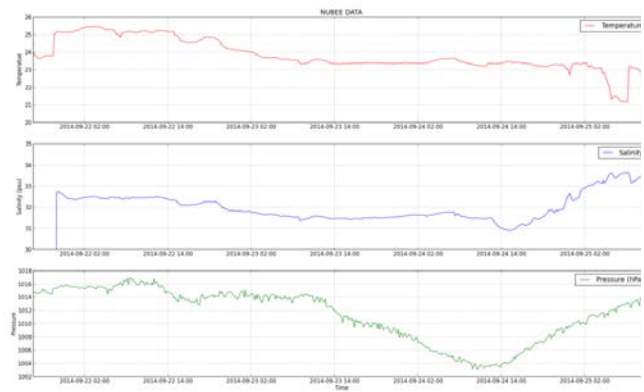
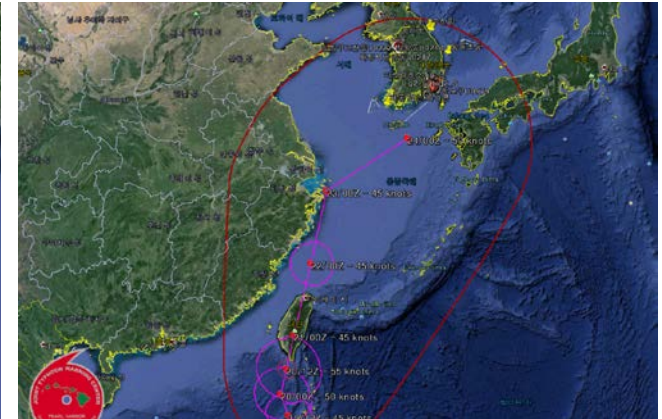
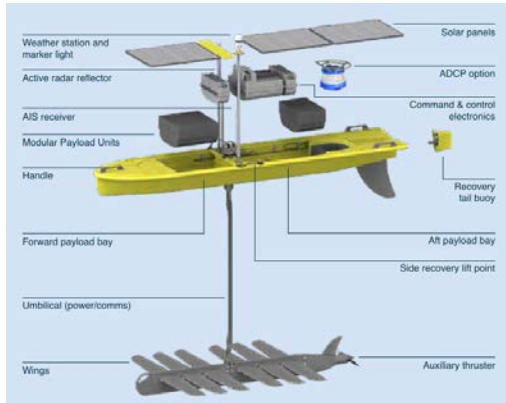
Ocean Tracer Research

RUTGERS JERSEY ROOTS, GLOBAL REACH Coastal Ocean Observation Lab

S Glenn (2014)

Wave glider

- KIOST
- Experimental stage



YS Park (2014. 9)

Summary

- Focused more on coastal monitoring
- Trends
 - Observation of biogeochemical factors
 - Contribution to international community
(Monitoring open ocean, international programs)
 - New technology
(GOCI II satellite, Gliders, Deep & Bio Argo, New RV)

Slides providers: YB Kim, YS Park, SK Kang, S Glenn



Благодарю вас
ありがとうございます
Thank you
谢谢
Vielen Dank
감사합니다