

# An Overview of KIOST



Feel the Ocean,  
Fill the Future

**KIOST**  
KOREA INSTITUTE OF  
OCEAN SCIENCE & TECHNOLOGY

# 40 years of history



2012. 7. 1

- Renamed as KIOST

2010'S

- Placed outposts in Chuuk, PML, NOAA, Peru

- Set up the East Sea Research Inst in 2008

2000'S

- Polar research div., ramified '04

- Incorporated Maritime engineering inst . '99

1990'S

- Built a home port for R/Vs in 1997

- Independent in the name of KORDI in 1990

1980'S

- Nested in newly-built home in Ansan, 1986

1970'S

- Set up as a part of KIST in 1973



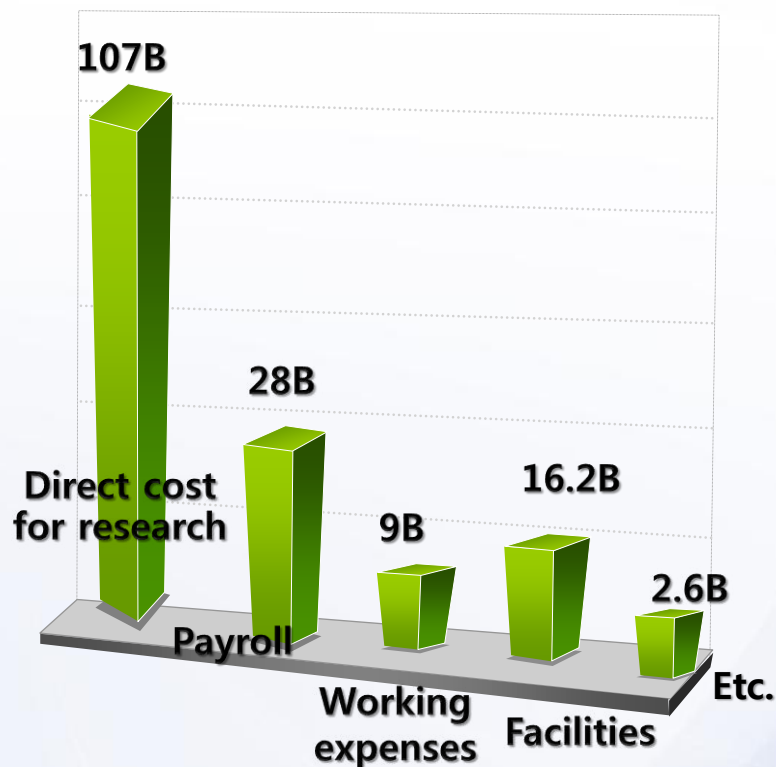
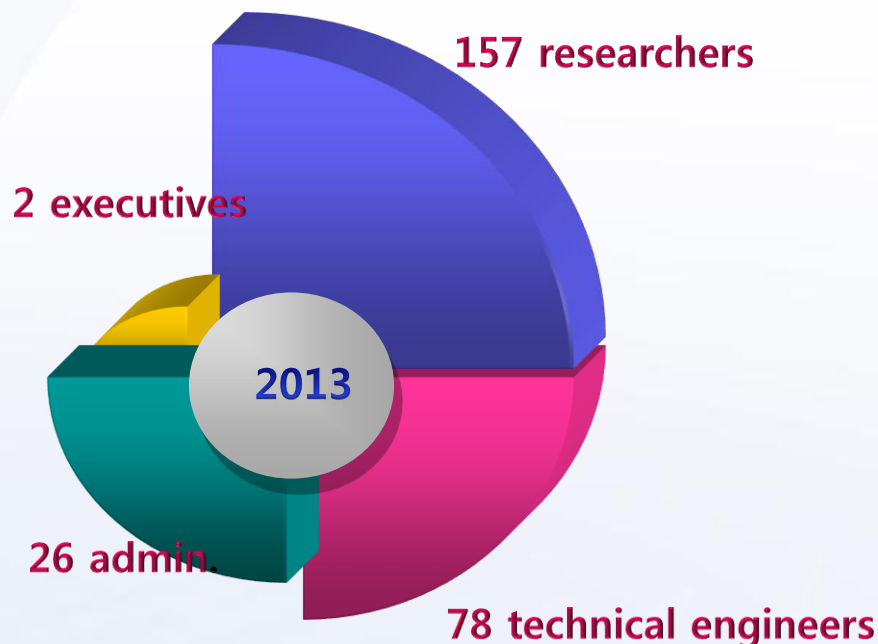
# Personnel & Budget

- KOPRI, KRISO not included

263 permanent employees  
535 full-time contractors

of which 359 are Ph.D.

~US\$160million/ 2013



(Korean won)



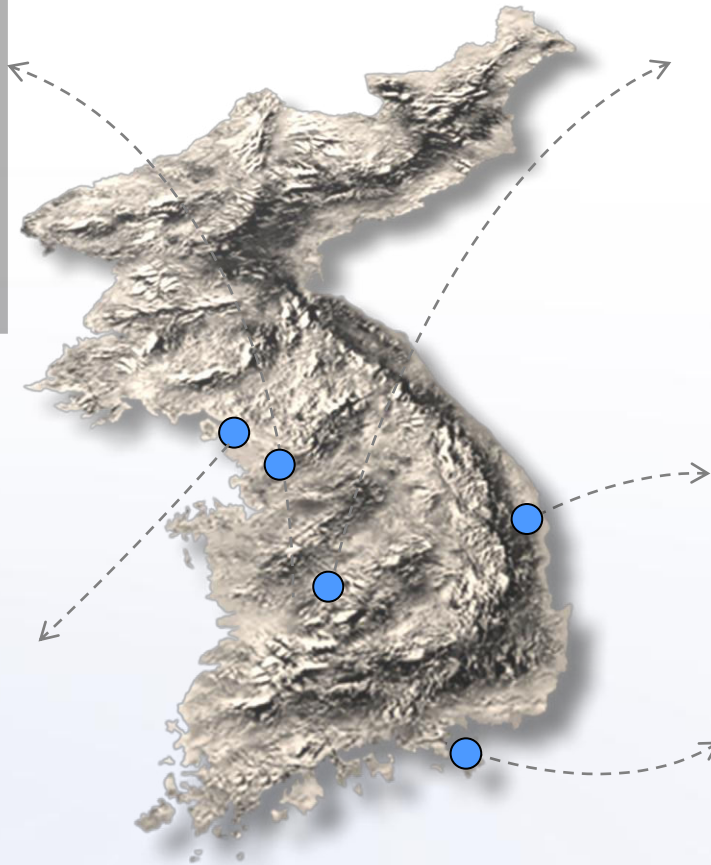
# KIOST from Coast to Coast



● HQs in Ansan



● KOPRI in Incheon



● KRISO in Daeduk



● East Sea Institute in Uljin



● South Sea Inst. in Jangmok

● Jeju Research Center  
(under construction)

# KIOST Overseas Centers



## Korea-China Joint Research Center

- since 1995
- in Qingdao China



## KIOST-NOAA Lab.

- since 2010
- in Washington DC, USA



## KIOST-PML Lab.

- since 2011
- in Plymouth, UK



## Korea-Peru Joint Ocean Research Center

- since 2012
- in Lima, Peru



## Pacific Research Center

- since 2000
- in Chuuk, Micronesia



# KIOST Fleet

**R/V Onnuri**



**Gross tonnage : 1,450 tons  
41 crew & scientists**

**R/V Eardo**



**R/V Jangmok 1**



**R/V Jangmok 2**



**Ice-breaker Araon**



**Gross tonnage: 7,487 tons  
85 crew & scientists**



# New 5400T R/V to be commissioned by 2015



60 researchers & crew  
Gross tonnage: ~5.500tons



# Ocean-Climate Change

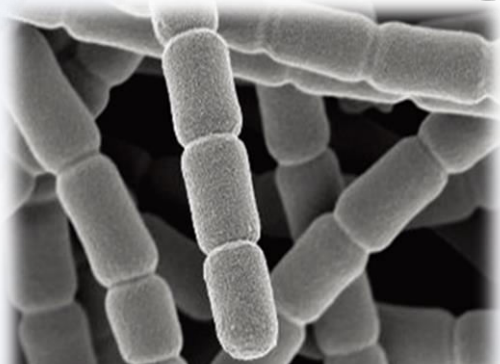
- Monitoring and numerical modeling of ocean circulation in the marginal seas around Korea, the Pacific and Southern Ocean



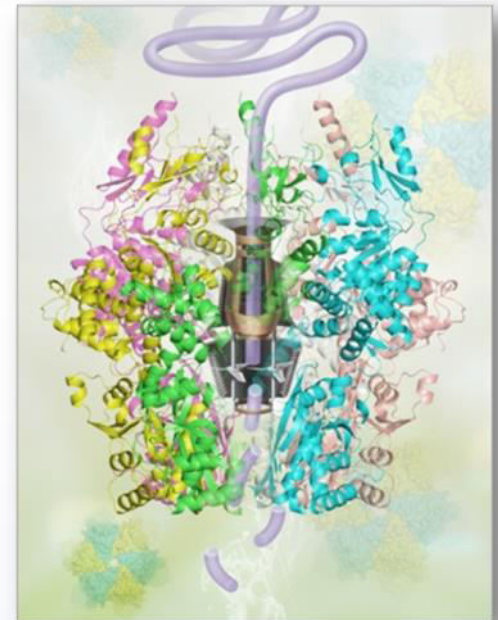


# Marine Biotechnology

- Bioresources and bioinformatics
- Extracting new biomaterials and bioenergy



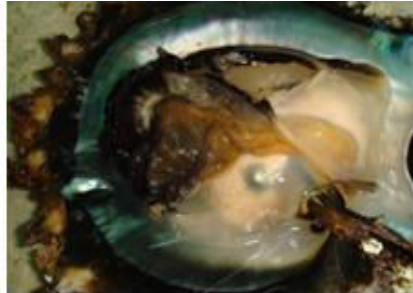
◀바이오테탄올 생산에 적합한 남조류 산종▶



- Microalgae for Biodiesel



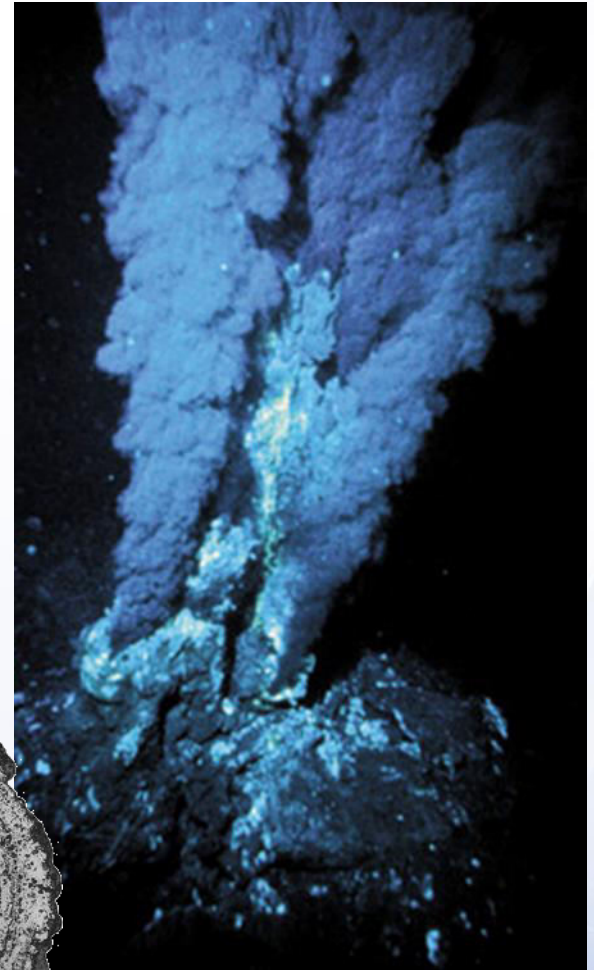
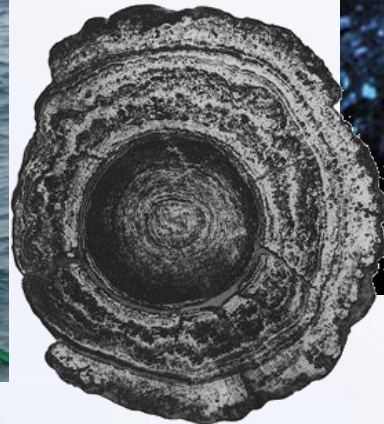
# Pacific Research Center in Chuuk, Micronesia





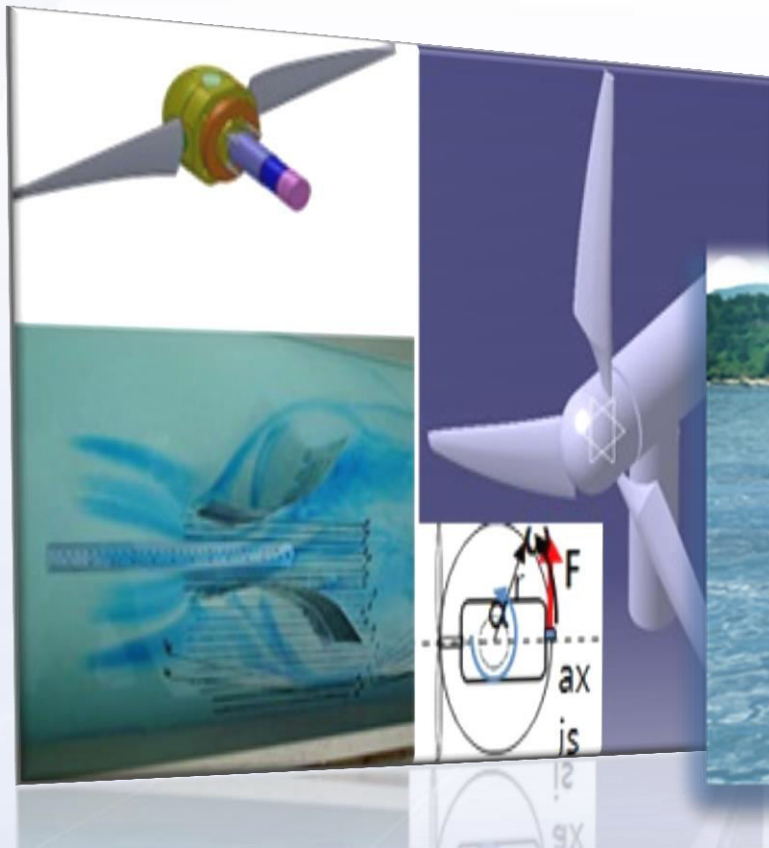
# Deep-sea and Seabed Resources

Exploration and Development of hydrothermal deposits, manganese nodules and crusts in the Indian Ocean, the middle of the Pacific (C-C Zone) and EEZs of Tonga and Fiji



# Marine Renewable Energy

Offshore wind farm,  
tidal/current power,  
wave power, OTEC, etc





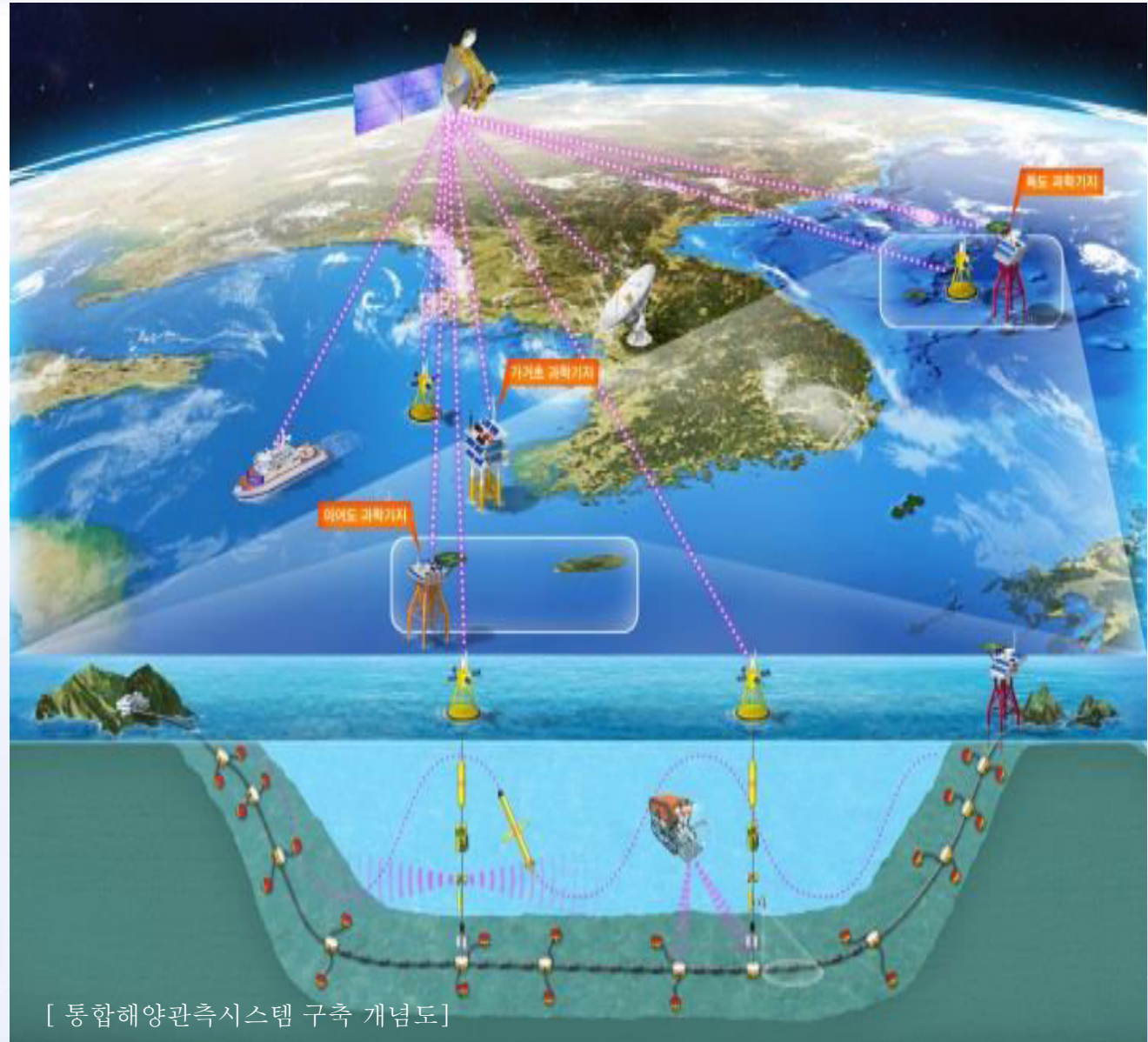
# Costal Development

- Smart harbor and artificial island
- Marine spatial planning
- Safe waterfront and coastal erosion
- Prediction of coastal hazards



# Korea Ocean Observation System

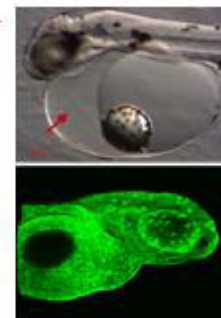
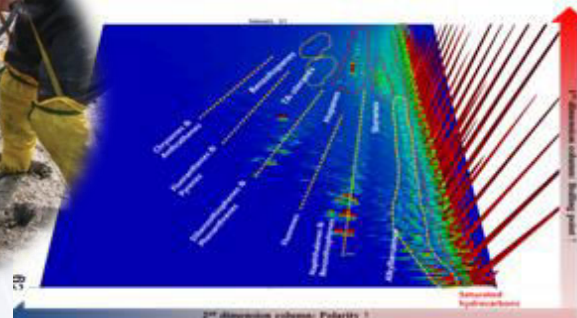
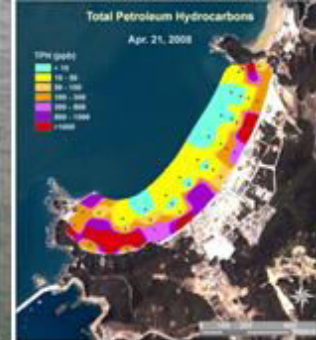
KOOS is  
nowcasting,  
forecasting  
sea status  
against  
coastal  
hazards  
and coastal  
disasters.





# Marine Environment Conservation

- Assessment of the impact of marine pollutants and debris
- Response to oil and HNS (Hazardous & Noxious Substance) spills
- Marine Ecosystem Health Index

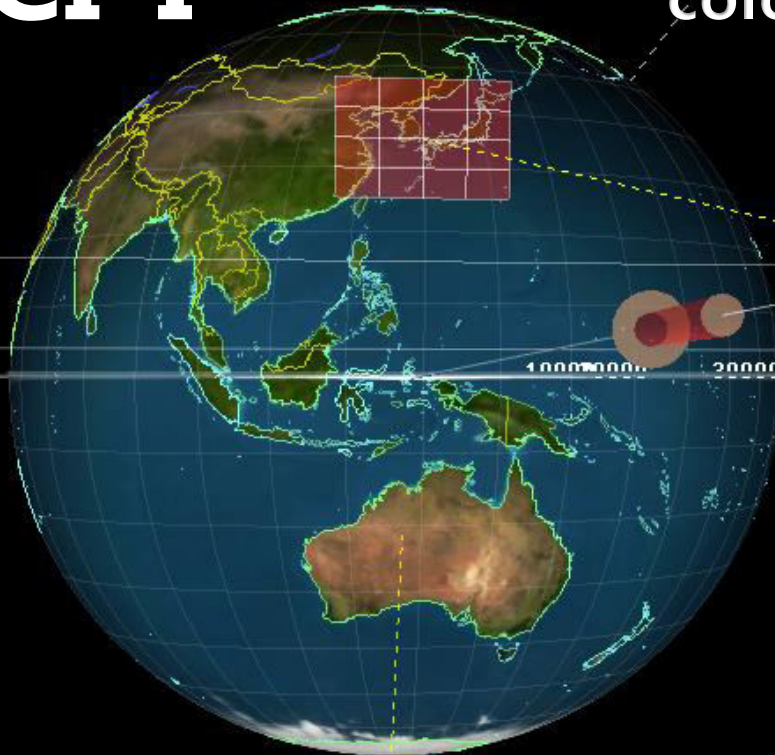


# Korea Ocean Satellite Center

## GOCI-I

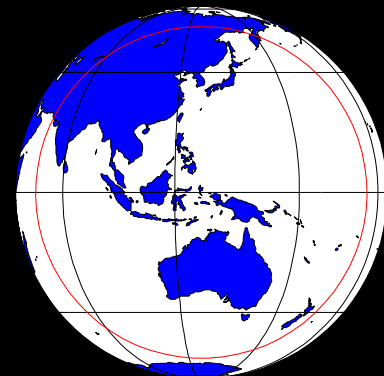
Monitoring of Coastal  
waters by observing ocean  
color from a geostationary  
orbit

128.0



MOON

## GOCI-II



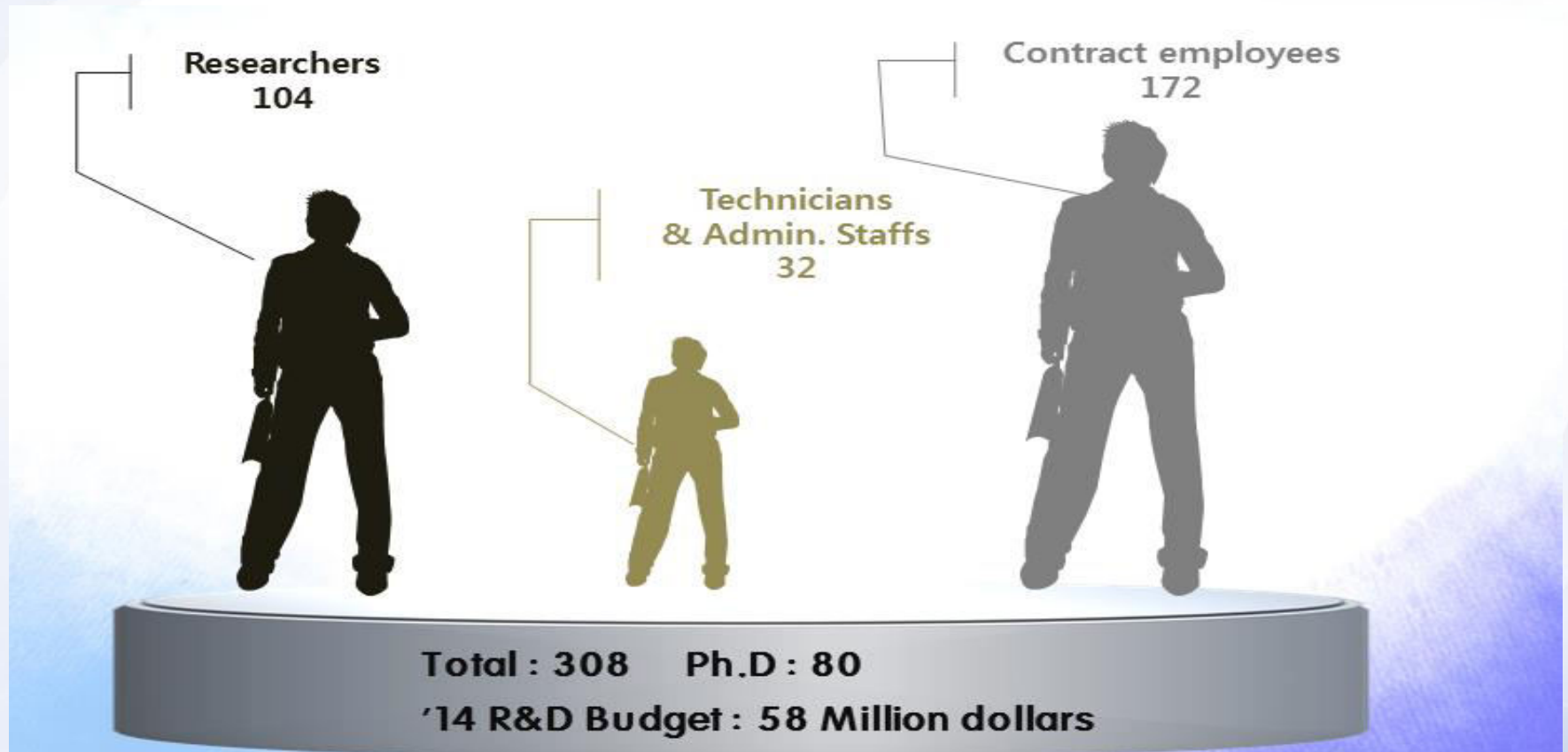
By 2018



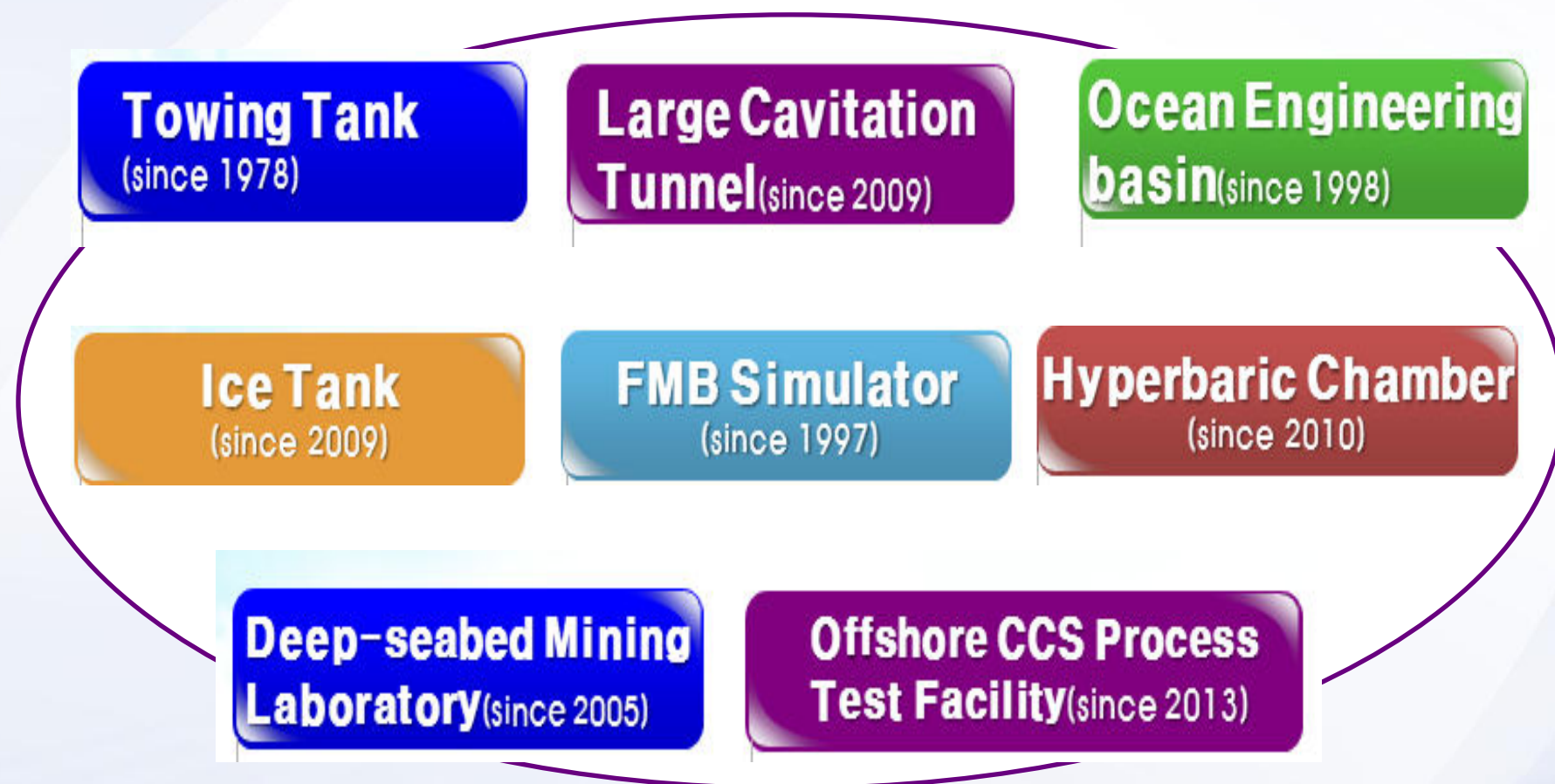
# KIOST Subsidiary: KRISO

\*KRISO: Korea Research Institute of Ships and Oceans

## ● Personnel & Budget



## Major Research Facilities





# Ships, Offshore Plants, Robots...

- Smart ships
- Offshore plants
- Unmanned-manned deep-sea submersible vehicles
- Underwater robots



<만 수중공사용 무인다목적 장비>



<인공지능 기반 수중로봇>

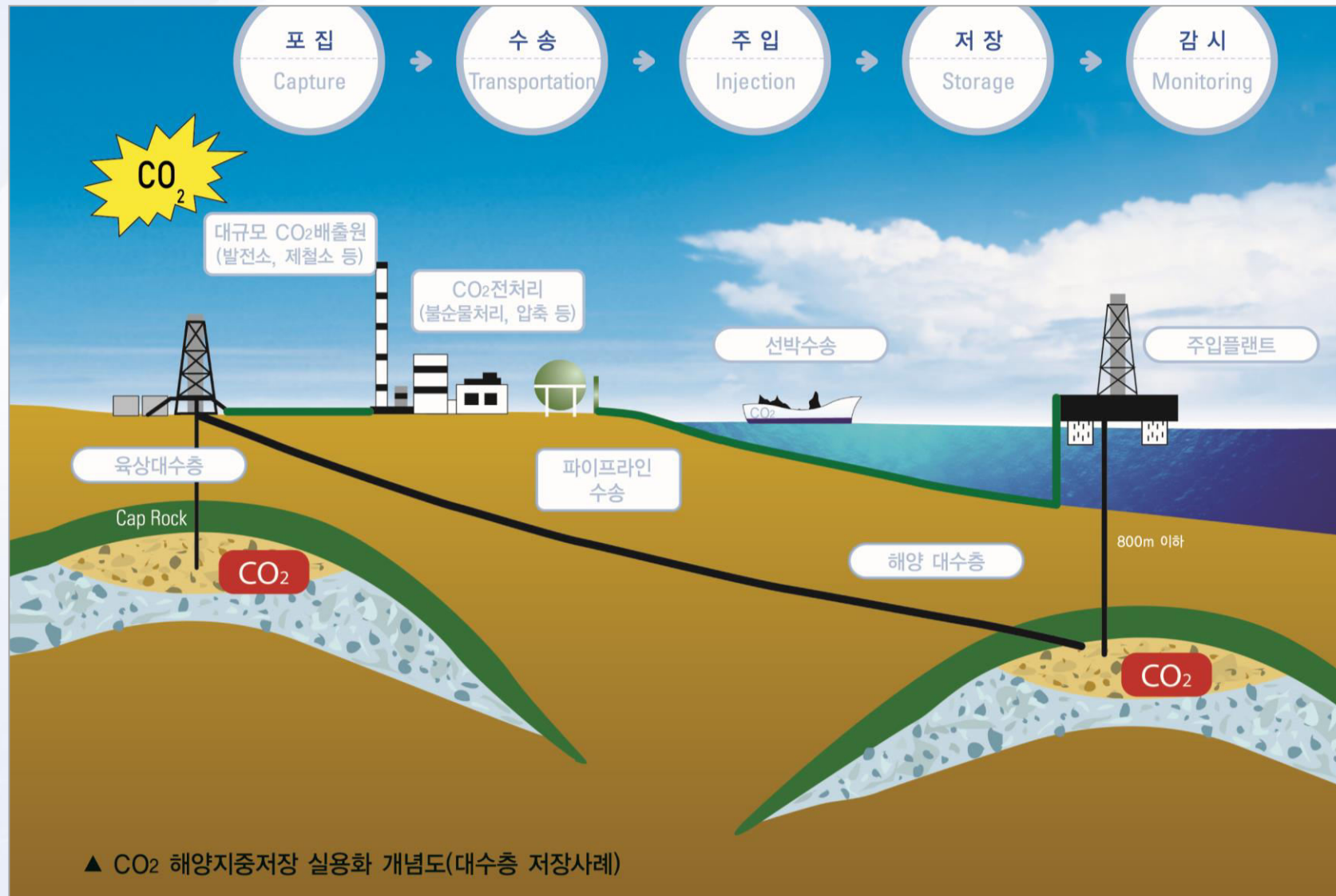


<수중무선통신개념도>



<천해용 다관절 해저로봇>

# Carbon Capture and Storage





# KIOST

## Subsidiary: Korea Polar Research Institute (KOPRI)



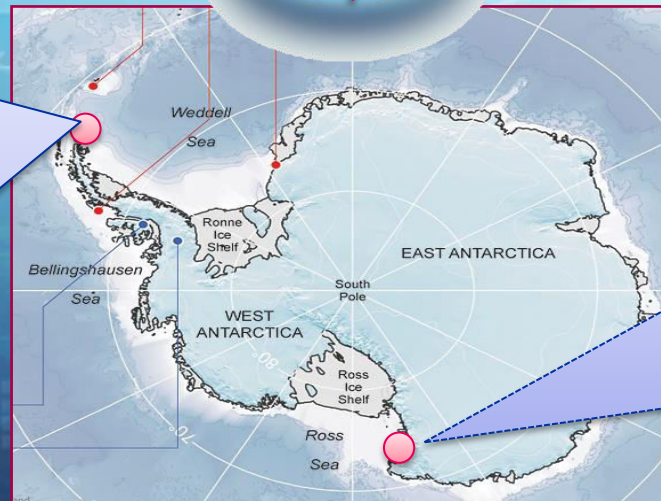
**Dasan Station**



**Total: 222 (2013)**  
**-127 Permanent employees**  
**-95 Contact employees**



**King Sejong Station**



**Jang Bogo Station**

# Planned research from Jang Bogo Station

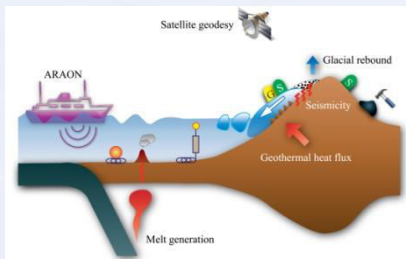


## Purpose

- Year-round monitoring of environment and ecosystem in Terra Nova Bay region
- West Antarctic Observatory Network (WAON)  
→ King Sejong – Jangbogo Stations (Araon Route)
- East and West Antarctica comparative studies on climate change

### *Geodesy*

Permanent geodetic observation  
- gravity-meter, GPS, and tide gauge



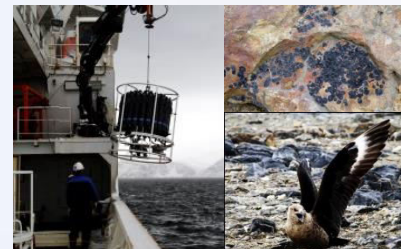
### *Meteorology & Atmospheric Chemistry*

WMO/GAW global station



### *Long-term marine monitoring*

Seasonal variation of physiochemical factors, productivity, and ecosystem



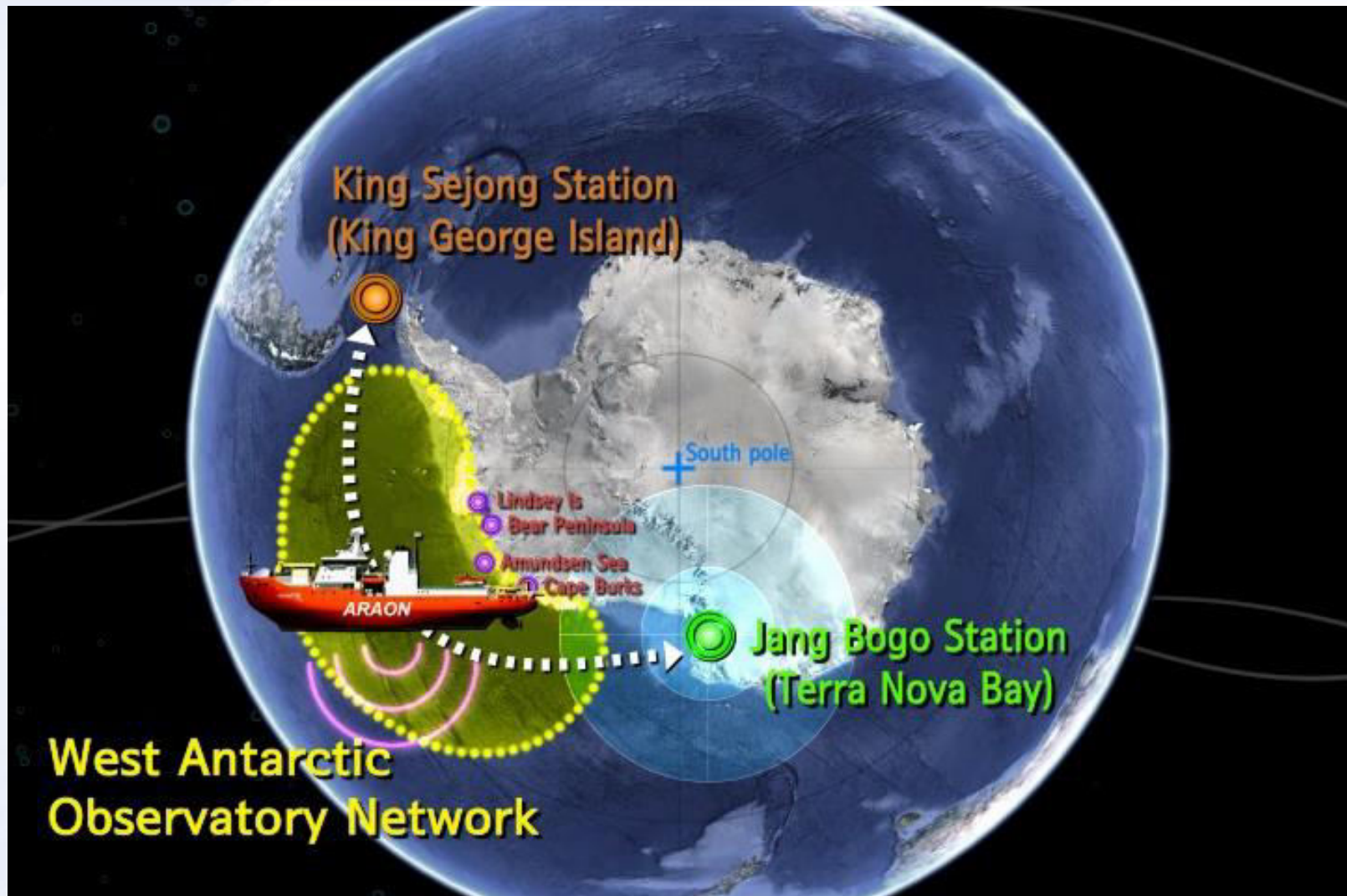
### *International Collaboration*

Contribution to international effort on global climate research





# West Antarctic Observatory Network (WAON)



Thank you

감사합니다

(kamsahapnida)

