Pacific Arctic Climate Ecosystem Observatory (PACEO)

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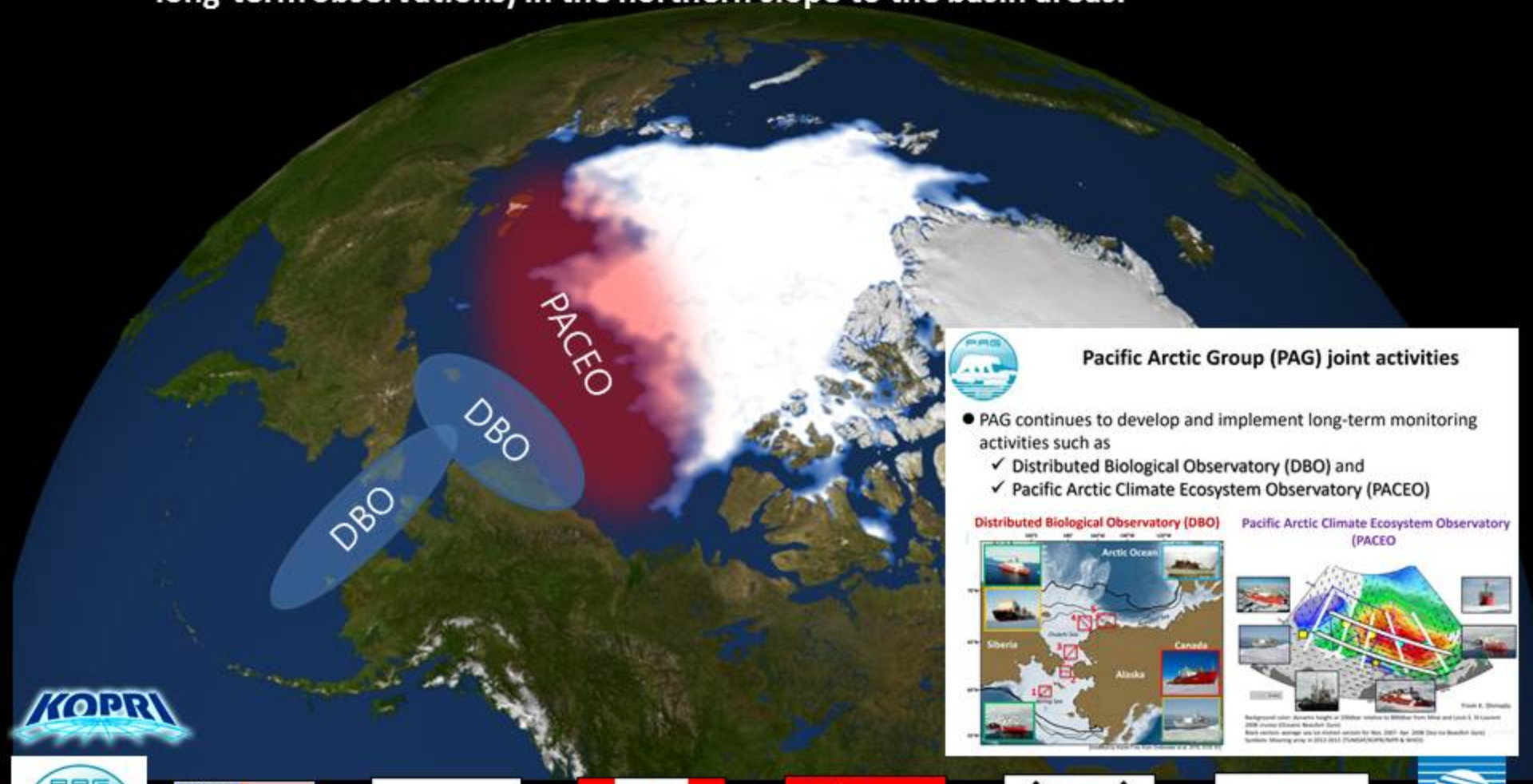
Korea Polar Research Institute

http://pag.arcticportal.org/

Pacific Arctic Climate Ecosystem Observatory (PACEO)

- A joint effort for the PAG countries to undertake synoptic observations in the high Pacific Arctic (Central Arctic Ocean, CAO) where sea-ice loss has been maximal.
- International collaboration to design and implement repeat transects (integrated long-term observations) in the northern slope to the basin areas.



Pacific Arctic Group (PAG) joint activities

- PAG continues to develop and implement long-term monitoring activities such as
  - ✓ Distributed Biological Observatory (DBO) and
  - ✓ Pacific Arctic Climate Ecosystem Observatory (PACEO)

Distributed Biological Observatory (DBO)

Pacific Arctic Climate Ecosystem Observatory (PACEO

Arctic Marine Food Web

DECEMBER 3, 2017

New Agreement to prohibit commercial fishing in the Central Arctic Ocean (CAO) for the next 16 year, at least

We need to make sure CAO's marine ecology and the potential impacts of climate change is understood enough before fishing takes place.

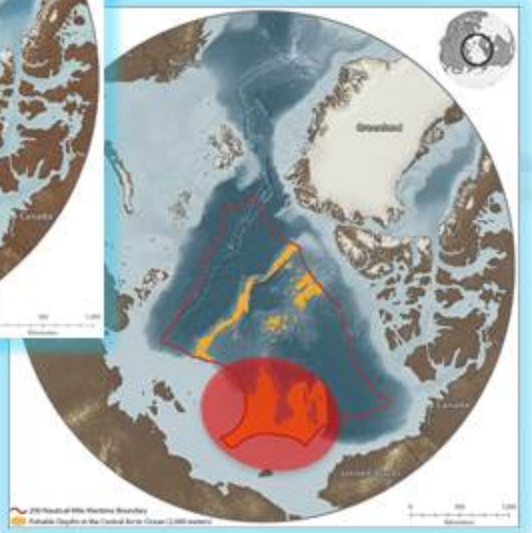
Canada, Denmark/Greenland, Norway, Russia, the United States + China, Iceland, Japan, South Korea, the European Union

- Arctic fisheries and ecosystem studies in the Central Arctic Ocean (CAO) is an emerging issue for developing an integrated ecosystem assessment for the High Arctic specifically related to fisheries and ecosystem structure.
- PACEO is a research plan for science in the CAO for ecosystem-based management.
- PACEO in this poorly known region is a key PAG joint activity for developing best management practices with the opening of the Arctic to increased transportation and resource extraction.

Recent Arctic summer sea ice distribution

THE PEW CHARITABLE TRUSTS

Increased fishable area



JOINT STATEMENT
The Second Trilateral High-Level Dialogue on the Arctic
Tokyo, June 8, 2017

The three HoDs reconfirmed that scientific research presents the most promising area for their joint activities and trilateral cooperative activities. The three HoDs requested their experts to identify specific cooperative projects on scientific research, such as cooperative research for environmental changes in the Pacific side of the Arctic Ocean as a major contribution to the Pacific Arctic Group (PAG), and Pan-Arctic Ocean observation project in the international coordinated cruises in summer 2020 under Synoptic Arctic Survey (SAS), while taking note of the importance of continually exploring trilateral cooperative activities with the uniqueness and strength of each country in mind. The three HoDs pledged their support and cooperation for the implementation of the aforementioned activities on Arctic science, and confirmed the importance of following up on these activities on a regular basis. The three HoDs also reaffirmed to keep identifying cooperative projects in the other areas.

NIKKEI ASIAN REVIEW

June 8, 2017 11:49 pm JST

Japan, China, South Korea to pursue joint Arctic research

Opportunities in shipping, resources discussed at high-level dialogue

TOKYO -- China, South Korea and Japan agreed in high-level talks here Thursday to work together on scientific research in the Arctic Ocean with an eye toward future shipping routes and resource development.

The East Asian nations seek to avoid falling behind countries bordering the Arctic, including Russia and the U.S. Tokyo, Seoul and Beijing will increase their contributions to international frameworks related to the region, a joint statement issued after the meeting said.

The U.S., Russia and European nations plan to conduct a major Arctic survey in summer 2020. China, South Korea and Japan will furnish research vessels and icebreaker ships, looking to have businesses from the three countries get involved in the future.

서울경제 한중일 손잡고 북극 조사한다

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과학분야 협력 사업 발굴하기로

민병권 기자 | 2017-06-08 17:47:51 | 정치일반

새 정부가 북극 개척을 위한 국제협력에 가속을 내고 있다. 최근 러시아 정부와 북극항로 개척사업 재개의 뜻을 모은 데 이어 이번에는 중국 및 일본과 손잡고 북극 지역을 함께 조사하기로 했다.

외교부는 8일 일본 도쿄에서 열린 한중일 고위급 북극협력대화에서 3국이 북극 과학 분야에서 구체적인 협력사업을 발굴하기로 했다고 밝혔다. 해당 합의사항은 이날 공동성명에 담겨 채택됐다.

성명에 따르면 한중일은 오는 2020년 하계 국제공동크루즈의 한북극 해양관측 프로젝트를 비롯한 구체적인 3국 협력사업을 각국 연구자를 통해 발굴하기로 했다. 해당 프로젝트는 북극해 및 태평양 지역의 환경변화에 대한 공동연구와 북극해 동시조사(SAS)의 일환이다.

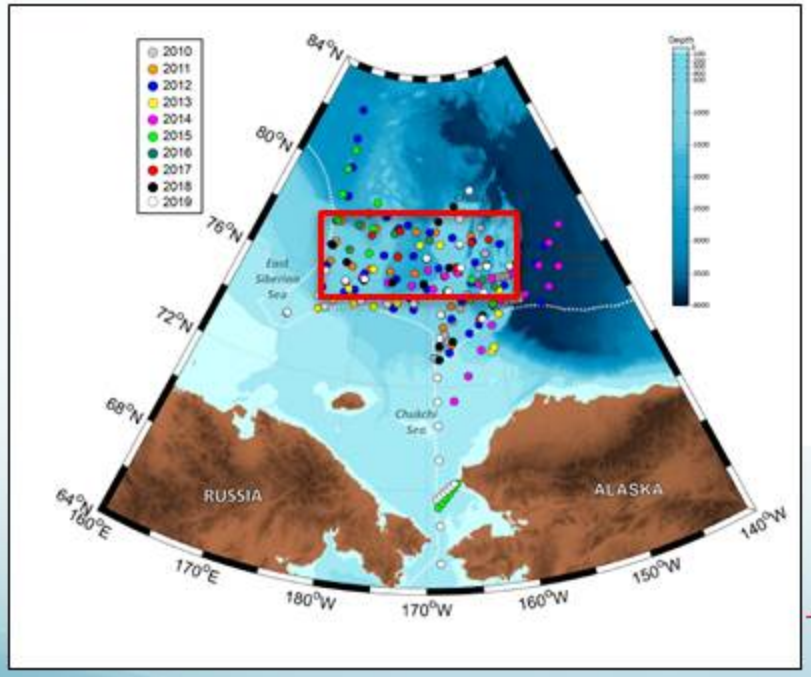
3국은 2018년 중국에서 제3차 북극협력대화도 열 예정이다. 한중일은 이번 북극협력대화가 북극 분야에서의 협력 및 기존 협력 기제를 확대·강화하기 위한 유용한 플랫폼이 된 것으로 평가했다고 외교부는 전했다. 이번 북극협력대화 회의에는 김영준 외교부 북극협력대표가 참석했다. 일본에선 시라이즈 가즈코 외무성 북극담당 대사, 중국에서는 가오펑 외교부 북극특별대표가 회의에 참석했다.

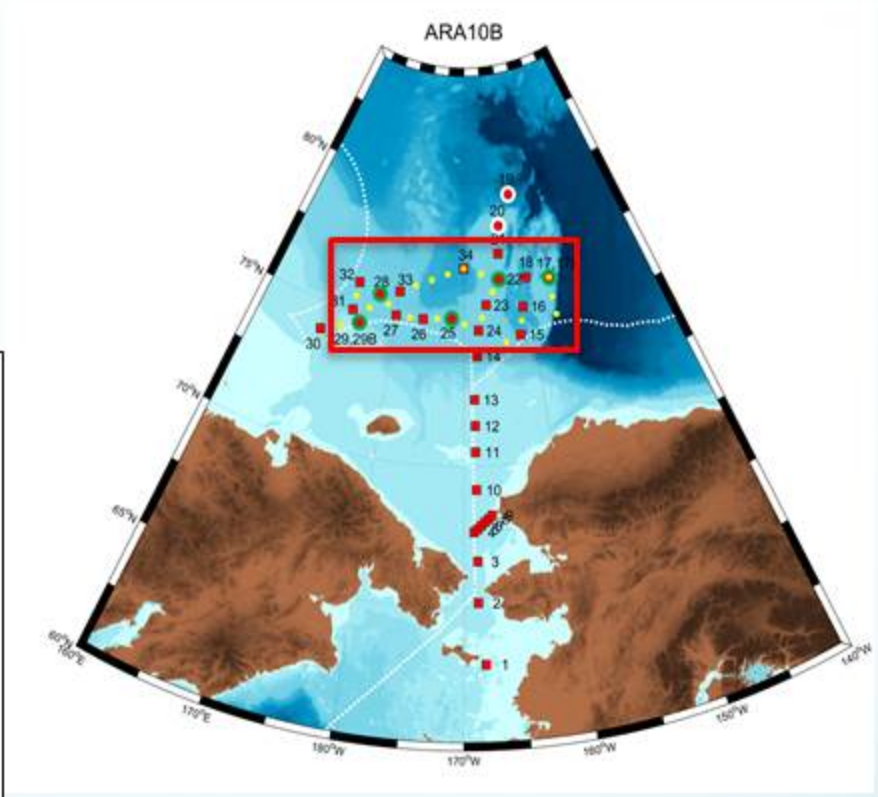
Pacific Arctic Climate Ecosystem Observatory (PACEO)

- PACEO is a developing long-term monitoring PAG activity in the high Pacific Arctic (Central Arctic Ocean, CAO).
- PACEO includes a set of climate-ecosystem lines extending from west of the Chukchi Borderlands into the Canada Basin in the CAO.
- PACEO is a developing international initiative for coordinated multi-ship operation in the Pacific Arctic Ocean that could include standard physical, biochemical and biological measurement as with the DBO.
- The PACEO sites are occupied by international entities in the Central Arctic Ocean (CAO) with a shared data plan.
- Key fisheries measurements are also planned to understand the Pacific CAO's marine ecology and the potential impacts of climate change before fishing becomes widespread and to prevent unregulated high seas fisheries in the CAO.

IB R/V ARAON PACEO Activity (2019)

- CTD: 34 stations
- XCTD: 20 stations
- Ocean Mooring:
  - Recovery: 5
  - Deployment: 5
- Sea ice camp: 2

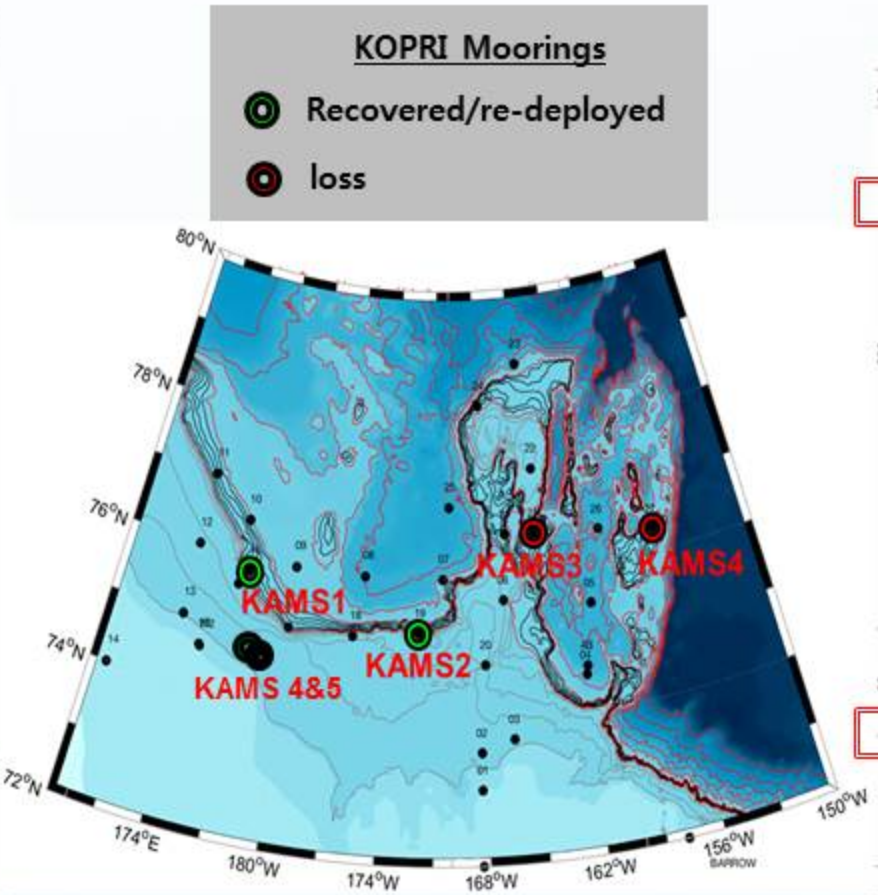




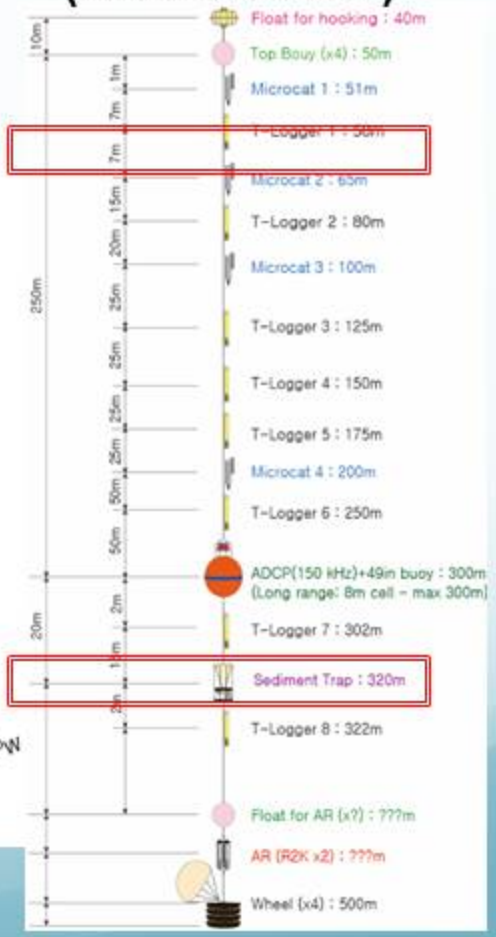
KOPRI Ocean Mooring system (2017-2019)

- Equipment: ADCP (150, 300 kHz), microCAT CTD, temperature logger, sediment trap, AZFP, UV nitrate sensor (SUNA V2), Fluorescence & PAR sensors, etc.

KAMS1 (East Siberian Sea)



KAMS2 (Chukchi Sea)



PACEO Session Speakers

- Biological survey (Hyoung Sul La)
- Observation-based estimate of recent CO2 flux (Keyhong Park)
- Sea Ice and Climate Change related efforts (Joo-Hong Kim)
- Satellite observations (Hyun-cheol Kim)