

Report for the year 2017 and future activities

SOLAS 'Korea'

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PART 1 - Activities from January 2017 to Jan/Feb 2018

1. Scientific highlight

leodo Ocean Research Station in the East China Sea:

leodo Ocean Research Station is an ocean platform constructed by the Republic of Korea and placed on the submerged leodo Rock (known as Socotra Rock) in the East China Sea (32°N and 125°E). The leodo platform has foundations fixed 40 m below the sea surface on the northeastern part of Socotra Rock and rises approximately 36 m above the sea surface (see photo). In June 2003, the leodo platform officially opened as a research station. It has a helipad and two lower decks for equipment and workspaces. The platform also includes short-term residential facilities that accommodate a maximum of 8 people for 15 days;



it is intermittently occupied between April and November and operated remotely over the winter period.

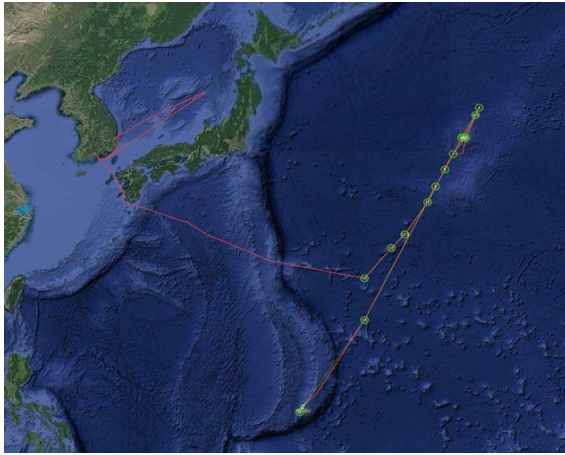
Initially, this platform in the remote ocean was used for limited activities, including meteorological data collection, maritime safety, and fisheries. However, the activities conducted at the leodo platform have been rapidly expanding, largely because of its geographic location. In particular, the leodo platform and East China Sea are located downwind of the area downstream from the populated and industrialized Asian continent, and hence have received increasing loads of anthropogenic nitrogen. Enhanced nitrogen input has potential ramifications in marine nitrogen and carbon cycles. Most notably, the ocean region surrounding the leodo Ocean Research Station has been recognized as a strong sink of atmospheric CO₂. This ocean C sink will further strengthen as long as anthropogenic nitrogen input increases.

As a consequence of the growing influence of human activities on the East China Sea, the leodo Station is an excellent site for investigating how human-induced changes influence ocean biogeochemistry of key elements such as C and N.

In response to growing awareness of the importance of this platform as a key ocean and atmospheric observatory, in 2015 the Korea Hydrographic and Oceanographic Agency (KHOA) initiated multidisciplinary research projects on a range of topics, including the ocean carbon cycle, remote sensing, pollutant transport, and ocean currents and climate. The KHOA encourages international collaborations.

2. Activities/main accomplishments in 2017 (projects, field campaigns, events, model and data intercomparisons, capacity building, international collaborations, contributions to int. assessments such as IPCC, interactions with policy makers or socio-economics circles, social sciences, and media).

1. Study on the interaction between carbon and nitrogen in the western North Pacific Ocean:



Between the 17th of October and 13th of November 2017, a cruise was conducted on the R/V Isabu in the western North Pacific Ocean with the aim of investigating how atmospheric input of N, P and Fe influence ocean nitrogen and carbon dynamics. Surface and subsurface seawaters were sampled at three hydrographic stations. We deliberately added nutrients and atmospheric dust samples to these seawater samples. The samples were then incubated under conditions mimicking the surface ocean layer, and the response of the seawater C and N to such added dusts was measured.

3. Top 5 publications in 2017 (only PUBLISHED articles) and if any, weblinks to models, datasets, products, etc.

Park, KT; Jang, S; Lee, K; Yoon, YJ; Kim, MS; Park, K; Cho, HJ; Kang, JH; Udisti, R; Lee, BY, 2017, Observational evidence for the formation of DMS-derived aerosols during Arctic phytoplankton blooms, Atmospheric Chemistry And Physics, 17(15), 9665-9675, DOI: 10.5194/acp-17-9665-2017

Kim, D; Jeong, JH; Kim, TW; Noh, JH; Kim, HJ; Choi, DH; Kim, E; Jeon, D, 2017, The reduction in the biomass of cyanobacterial N₂ fixer and the biological pump in the Northwestern Pacific Ocean, Scientific Reports, 7, 41810, DOI: 10.1038/srep41810

T. H. Kim; G. Kim; Y. Shen; R. Benner, 2017, Strong linkages between surface and deep-water dissolved organic matter in the East/Japan Sea, Biogeosciences, 14, 2561-2570, DOI: 10.5194/bg-14-2561-2017

4. Did you engage any stakeholders/societal partners/external research users in order to co-produce knowledge in 2017? If yes, who? How did you engage?

PART 2 - Planned activities for 2018/2019 and 2020

1. Planned major field studies and collaborative laboratory and modelling studies, national and international (incl. all information possible, dates, locations, teams, work, etc.).

Study on atmospheric DMS dynamics in Iceland:

2. Events like conferences, workshops, meetings, schools, capacity building etc. (incl. all information possible).

3. Funded national and international projects / activities underway.

4. Plans / ideas for future projects, programmes, proposals national or international etc. (please indicate the funding agencies and potential submission dates).

5. Engagements with other international projects, organisations, programmes etc.

Comments