

Argo-KOREA Annual Report 2021

by National Inst. of Meteorological Sciences/KMA

23th Argo Steering Team Meeting (AST-23)
Virtual, 21-25 March 2022

1. Status of Implementation

The National Institute of Meteorological Sciences of Korea Meteorological Administration (NIMS/KMA) has deployed **259** Argo floats around the Korea Peninsula and the Northwestern Pacific Ocean since 2001, including 16 active floats as of March 2022. In 2021, the NIMS/KMA deployed 6 Argo floats in the East Sea, Yellow Sea and off the coast of Jeju Island of Korea (Figure 1). Two floats were deployed in the East Sea on October 16, 2021 with 800m of parking depth and seven-day profiling scheme, and four floats were in the Yellow Sea and South Sea of Korea on November 14~15, 2021, for the shallow sea observation with two-day profiling scheme and 60m of parking depth. Especially all floats deployed at the Yellow Sea by using the GISANG1, the KMA's research vessel, could obtain the two-day cycle profile since the starting day.

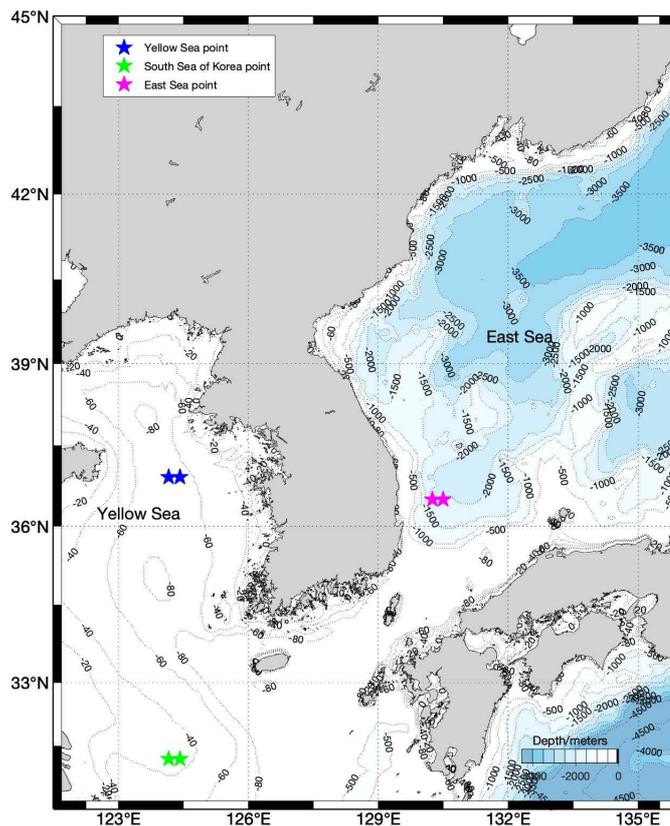


Fig. 1. Initial position of Argo floats deployed by the NIMS/KMA in 2021

- Status of contributions to Argo data management

- Development of quality control program for the shallow sea data (Yellow Sea)
 - We developed QC program for the Yellow Sea data about 1,128 profiles obtained from September 2017 to December 2021.
 - We used the OW software version 3.0.0 which was same version used for the East Sea and the Northwestern Pacific, and new reference data-base and new parameters. Since the shallow sea is prone to change its distinctive salinity characteristic every season, only shipboard CTD data collected at the similar time and location were used for OW.
 - We completed DMQC test and sent D-files of shallow sea to the GDAC.
- The RTQC procedure has been updated for MEDD test for the Pacific and Yellow Sea .(East Sea: Gradient test)
- Implementing the Argo data format check program.
- The RTQC procedure has been updated for grey-list.
- The data quality-control system was improved. (e.g. removal of the duplicated data)

- Delayed Mode QC

• We had DMQCed on most KMA Argo floats, except for the floats deployed in late 2021. Last year, we completed DMQC operation on 1,866 profiles (701 profiles from the East Sea, 37 profiles from the Northwestern Pacific, 1,128 from the Yellow Sea), which had been observed until September 2021. The profiles had been sent to the Ifremer GDAC on November 3 2021 in NetCDF format.

• We are planning to implement the DMQC operation on profiles from the East Sea and the Yellow Sea, which have been observed until early April 2022. The profiles will be DMQCed based on the KMA DMQC process and OWC 3.0.0. The D-files will be sent to the Ifremer GDAC in late April 2022 in NetCDF format(Ver.3.1).

2. Present level of (and future prospects for) national funding for Argo including summary of human resources devoted to Argo.

We purchased 6 floats in 2021 and successfully deployed all around the Korea Peninsular. In 2022, we will buy 7 Argo floats and keep same deployment strategy. Following persons contribute to the Argo-Korea program.

- KiRyong KANG, Hyeong-Jun JO (KMA)
- Sung-Dae KIM, Hyuk-Min PARK (KIOST)
- Jong-Jin PARK, Gyu-ri Lee (Kyungpook National University)

3. Summary of deployment plans

The NIMS/KMA has a deployment plan for 7 floats in 2022: three floats will be deployed at the East Sea to keep the observation network and two floats at the Yellow Sea to continue the shallow sea observation scheme in the regional ocean. Continuing the observation in the Yellow Sea, observation program using the Argo float will be preformed to investigate the ocean environment variation in west sea of Korea. In addition, two floats will be deployed at off the coast of JeJu island for law-salinity water monitoring (Figure 2).

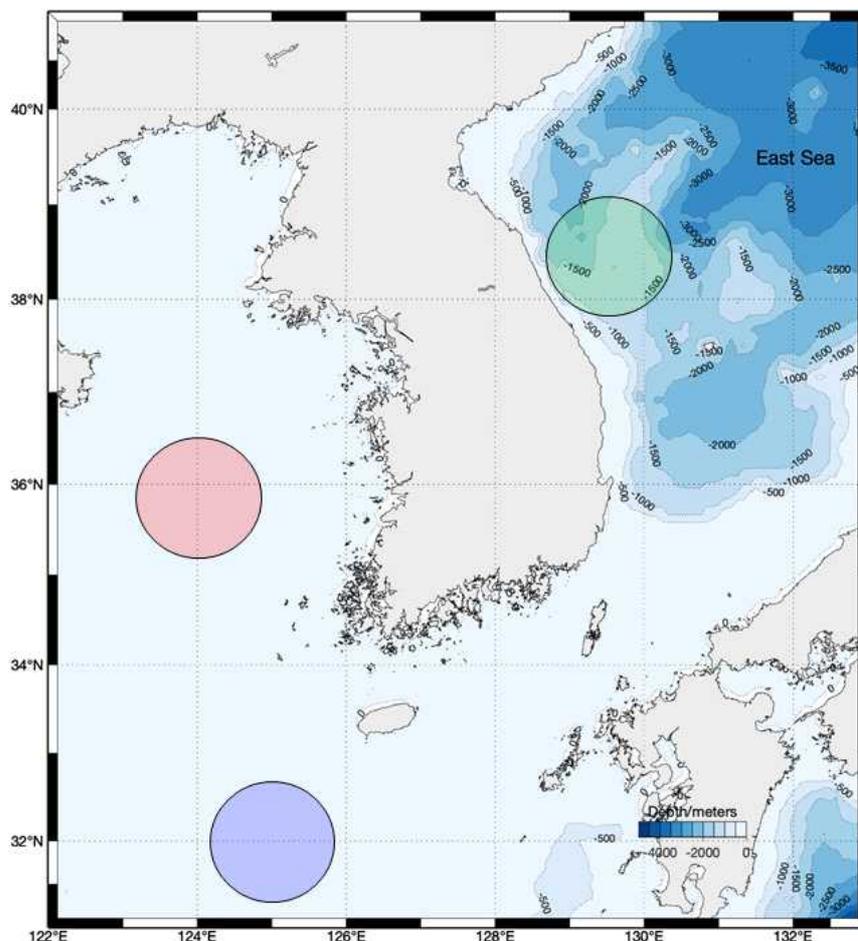


Fig. 2 Location of Argo float deployment in 2022.

4. Summary of National Research and Operational Uses of Argo data as well as contributions to Argo Regional Centers.

In 2021, it was successfully observed through Argo deployed in the shallow sea, for example four floats deployment at the Yellow Sea and off the coast of Jeju Island. In particular, Argo float 2901799 has been operated for more than 360 days from November 11, 2020 to December 5, 2021. It is good observation performance with two-day cycle in the shallow sea area. The NIMS/KMA will try to keep this kind of shallow Argo observation network in around Korean peninsular area.

5. Issues that your country wishes to be considered (and resolved) by AST regarding the international operation of Argo.

- None.

6. CTD data uploaded to CCHDO

- No CTD data are uploaded to the CCHDO website.

7. Bibliography

- KiRyong Kang and Il-Ju Moon, 2022; Sea Surface Height Changes due to the Tropical Cyclone-Induced Water Mixing in the Yellow Sea, Korea, Front. Earth Sci. 10:826582. doi: 10.3389/feart.2022.826582
- Choo et al. 2021; Assessment of Assimilation Impact of Argo Float Observation in Marginal Seas around Korean Peninsula through Observing System Experiments. Vol. 31, No. 3. pp.283-294 doi:10.14191/Atmos.2021.31.3.283

8. Effects of COVID-19

- We experienced some delays related to float procurements and deployments but the impact was not too strong.

9. RBR CTD piloting and deployment plans

- Not planned yet

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