KOREA Argo National Data Management Report
ADMT-24
Hobart, Australia, Oct 23 – Oct 27, 2023

1. Status

1.1. Data acquired from floats

In 2023, the National Institute of Meteorological Sciences of Korea Meteorological Administration (NIMS/KMA) deployed five floats around Korea: two in the Yellow Sea and three in the East China Sea. Two additional floats will be deployed in November.

Since 2001, NIMS/KMA has deployed 264 Argo floats in various locations around Korea, including the East Sea, Yellow Sea, and the North Pacific Ocean. As of October 10, 2023, eight floats are active(Fig. 1). As one of the regional DACs, NIMS/KMA is acquires ARGOS messages and Iridium messages in real-time via a web service from CLS. All profile data obtained undergo a real-time quality control preocess within the operational system before being transmitted to GDAC in NetCDF format using BUFR data.
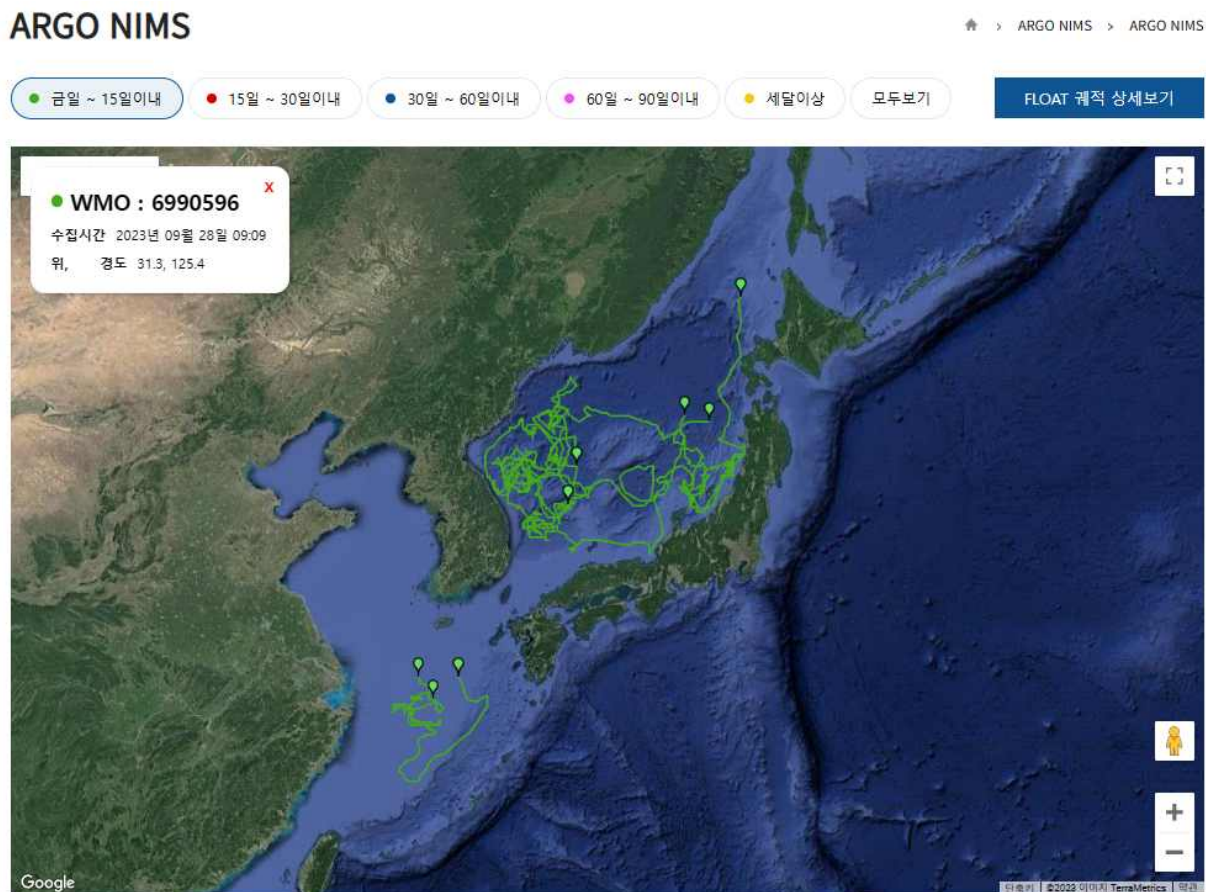

Fig. 1. Location and trajectory active Argo floats deployed by NIMS (October 11)

1.2. Data issued to GDAC

A total of 581 profiles were acquired from January through October in 2023 and sent to the GDAC after undergoing real-time QC processes.

· Data reproduction and resubmission to GDAC was conducted by applying the Warning Objective Analysis Report.

· The RTQC procedure for shallow profiles and greylisted ones has been updated.

· The RTQC procedure has been updated for the global range test for the Pacific and East Sea.

· Some missing files, such as "Tech.nc" and "Meta.nc", were found on the KMA Data Center server. This issue may be related to an unexpected failure of FTP data transmission to GDAC. A fix is currently in progress and will be implemented soon.

1.3. Shallow Argo

Shallow sea observations with shallow Argo floats were conducted in the Yellow Sea and East China Sea on July 13, 2023. Three floats were successfully deployed and have been opeational since the start, showing that the trajectory of Argo floats and daily (1 day cycle) variations in temperature and salinity(Fig. 2). NIMS/KMA plans to maintain this shallow Argo observation network in the vicinity of the Korean peninsula.
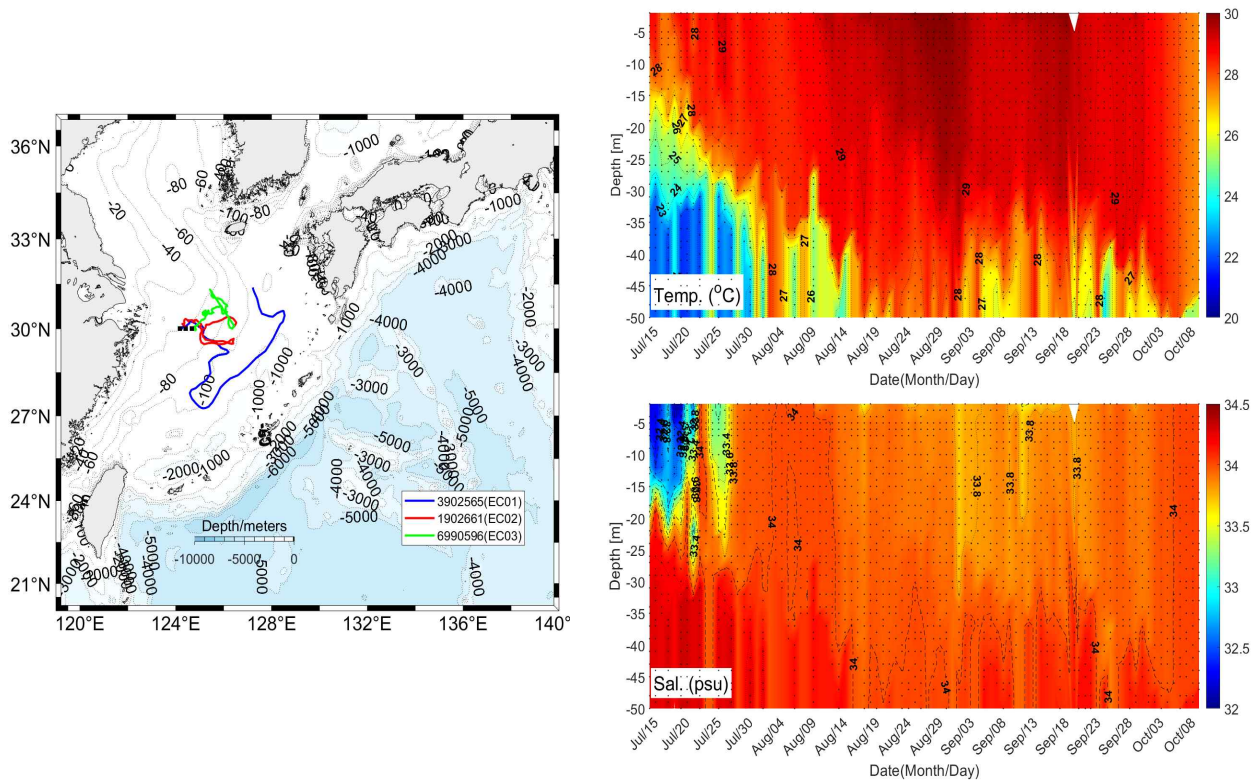

Fig 2. Trajectory (three floats) and time-series of shallow Argo floats (WMO ID: 1902661)

1.4. Web Page

NIMS operates the Argo web page (http://argo.nims.go.kr) as a regional data assembly center, providing profile data, temporal and spatial distributions of T and S, and the status of Argo float activities to the public. On average, it receives 165,025 monthly hits from visitors.
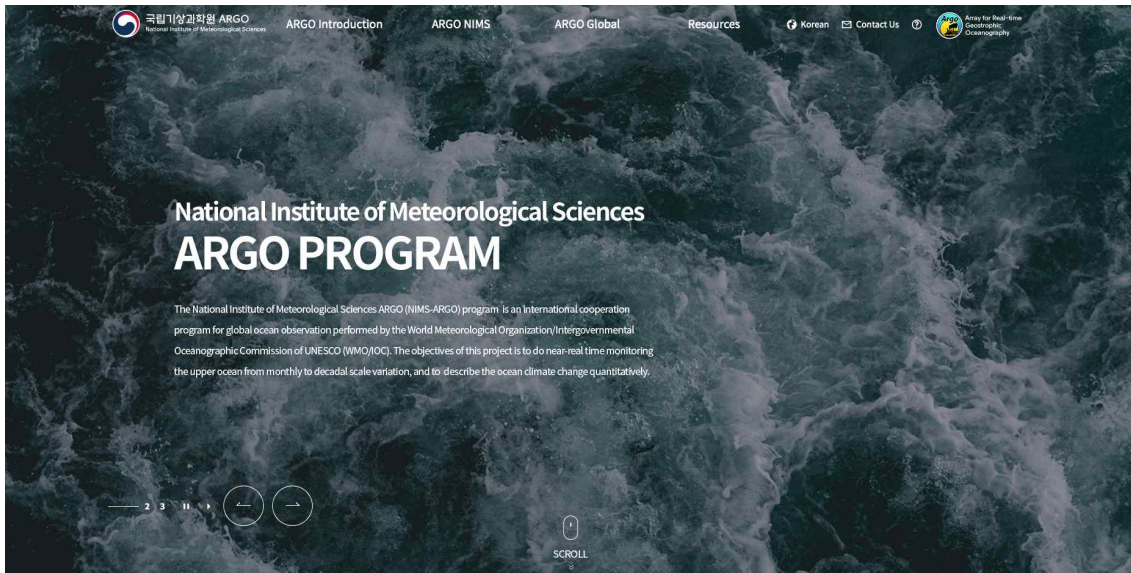

Fig. 3. Argo homepage of NIMS/KMA (http://argo.nims.go.kr)

1.5. Deployment Plan for 2024

In 2024, a total of seven Argo floats will be deployed around the Korea peninsula in July and November (Fig. 4). The red indicate show the potential deployment area for next year, with the aim of covering the regional seas of Korea.
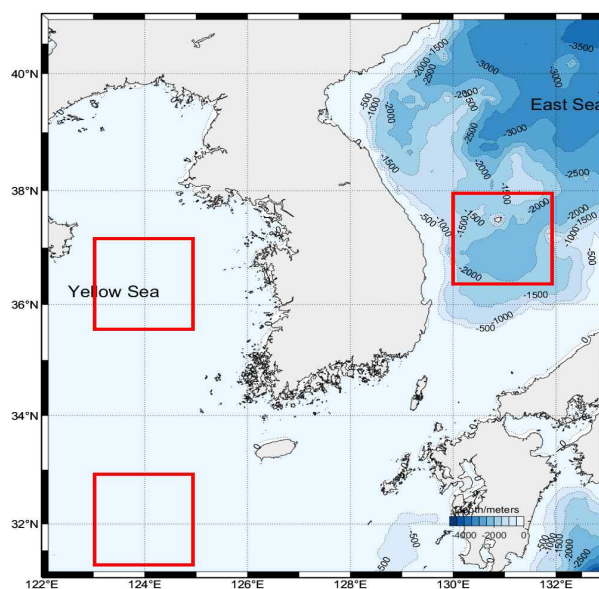

Fig. 4. NIMS/KMA's deployment area for 2024

2. Delayed Mode QC

We have completed the Delayed Mode QC (DMQC) operation on 652 profiles, with 446 profiles from the East Sea, and 206 from the Yellow Sea. These profiles were from early September 2022 to early September 2023. The OWC version 3.0.0 was used for the DMQC in the East Sea with new parameters, including spatio-temporal correlation scales, etc. The D-files were successfully sent to the Ifremer GDAC on June 29 and October 20, 2023, in NetCDF format and their updates in GDAC were checked.

We are in ongoing communication with Euro-Argo to dffectively address the CTD duplicated S/N issue, and it is expected to be resolved by the end of this year. All the data listed in the 2023 Delayed Mode T/S Audit Report are currently under full review and will be updated, including feedback, in early November.

For some of the newly deployed shallow Argo floats in July, due to a lack of shipboard CTD reference data, we have conducted spike checks. The DMQC for those floats will be completed next year, although the other QC procedures, apart from salinity drift correction, will be finished by the end of October.

Constant salinity offsets were identified in several shallow ARGO floats right after their deployment in the Yellow Sea by using shipboard CTD data. Since these floats in the Yellow Sea observed for a relatively short period of time (due to shallow parking depths of less than 100m and short cycle times for about a day), they usually have initial salinity offsets rather than salinity drift. Additionally, given that the Yellow Sea is a wide continental shelf area, its temporal and spatial scale of salinity variability are much smaller than those in the open ocean. Therefore, the only available shipboard CTD data collected at similar times and locations to the Argo floats were utilized as a reference for OW.

The identified offset for PSAL, evaluated based on the shipboard CTD data is adjusted by using "LAUNCH_OFFSET" in the "MAIN_write_dmqc_files"(matlab code). We have plans to further enhance the DMQC process for the shallow Argo floats by collecting more precise CTD data in the future.