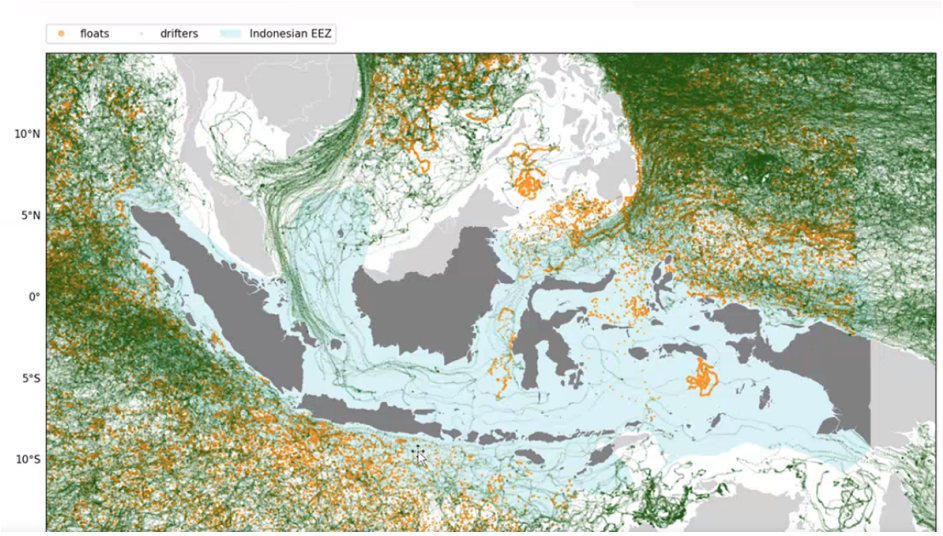
Indonesia National Reports of Floats Mission by BMKG



"The Ocean Data Unavailability around Indonesian seas motivates us to initiated the floats mission"

During the 2022 period, Indonesia deployed around 26 floats around Indonesia's seas through the BMKG (the national meteorological services bureau) by the MMS-I (Maritime Meteorological Strengthening) Project. All of the floats distributed from the west part to the east part of Indonesia's seas. Some vital part of Indonesia's seas are also covered by the float measurement i.e. Natuna Sea, Karimata Strait, Makassar Strait, and the Banda Sea. The deployment intends to improve the meteorological services of BMKG, further in marine meteorological services.

Recently, Indonesia's floats initiated by BMKG have not integrated into the ARGO global system and OceanOPS, yet. Considering several matters related to national security, BMKG has established communication with parties related to national security . Indonesia put the effort to connect our floats data to the data ARGO global system by dealing with the national security permit, administration permit, and also the executive decision levels. In the next time, Indonesia hopes to realize data sharing and participate in the floats profile data shared to the global community through the Argo global and OceanOPS soon.

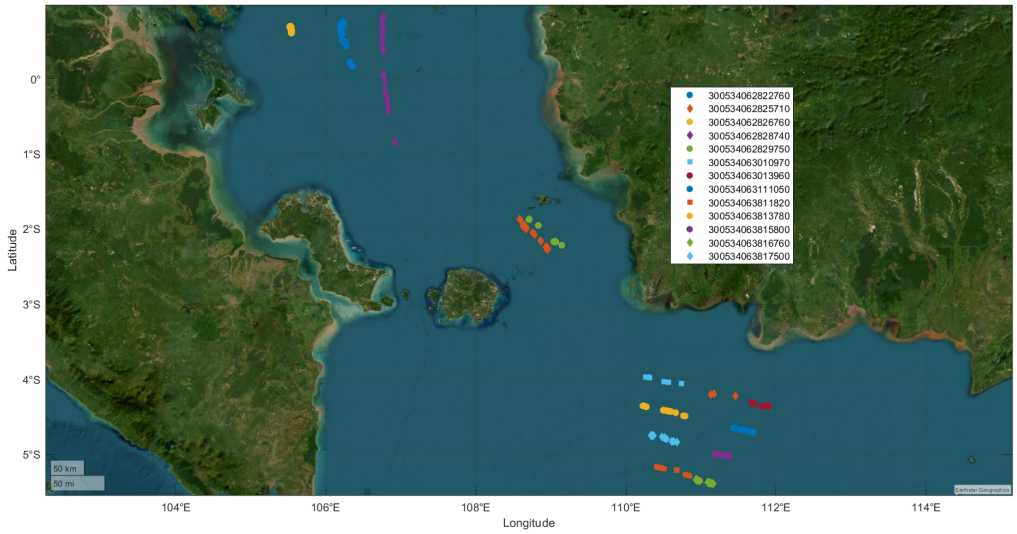


Figure 1. ARVOR-C tracks and distributions around Natuna Sea, Karimata Strait, and Java Sea. Every colored symbol represents one ARVOR-C device based on the legend description above.

The ARVOR-C floats are distributed around the shallow water seas around the western part of Indonesia. Then, the ARVOR-I floats are spreaded out around the eastern part of Indonesia's seas. The ARVOR-C floats are specified to study the ocean dynamics around North Natuna Sea, Natuna Sea, Karimata Strait, and the Java Sea which consist of shallow depth levels. On the other hand, ARVOR-I floats are deployed around the Makassar Strait and Banda Sea to investigate the complexity of ocean dynamics in the eastern seas which are dominated by the Pacific Ocean and also the Indonesian Throughflow. Figure 1 expresses the distribution and the movement of ARVOR-C floats and Figure 2 represents the ARVOR-I's in eastern seas.

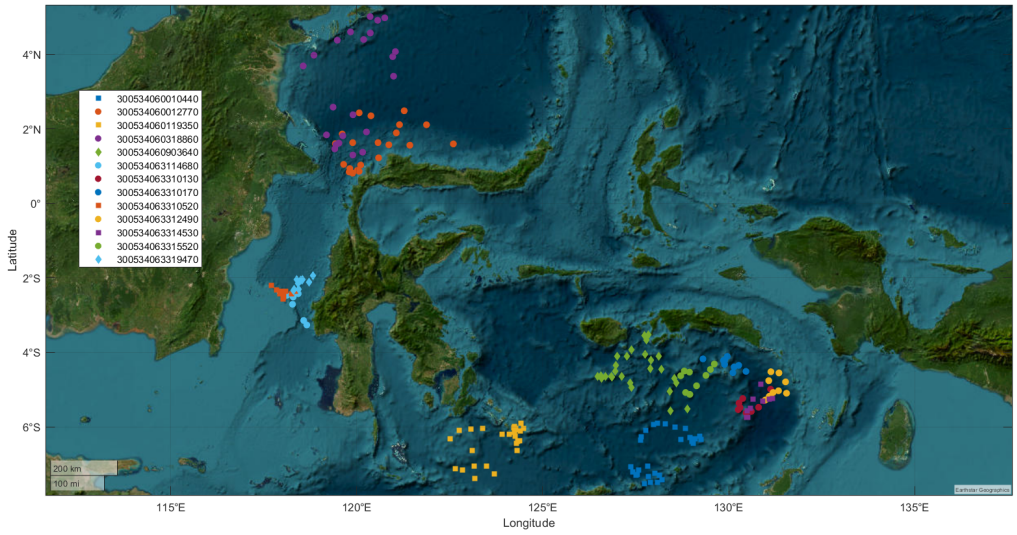


Figure 2. ARVOR-I positions tracks and distributions around Flores Sea, Banda Sea, and Makassar Strait. Every colored symbol represents one ARVOR-I device based on the legend description above.

Our floats mission brings successful data transmission without experiencing any harmful sabotage or vandalism which become our past impressions and concerns back in the day. Temporarily, we assume the satisfying performance of float devices safety is due to the float mechanism which describes how it works to profile the ocean. It prevents any person with bad intentions to harm and destroy the devices by appearing on the surface just to transmit the data and prepare to dive again.

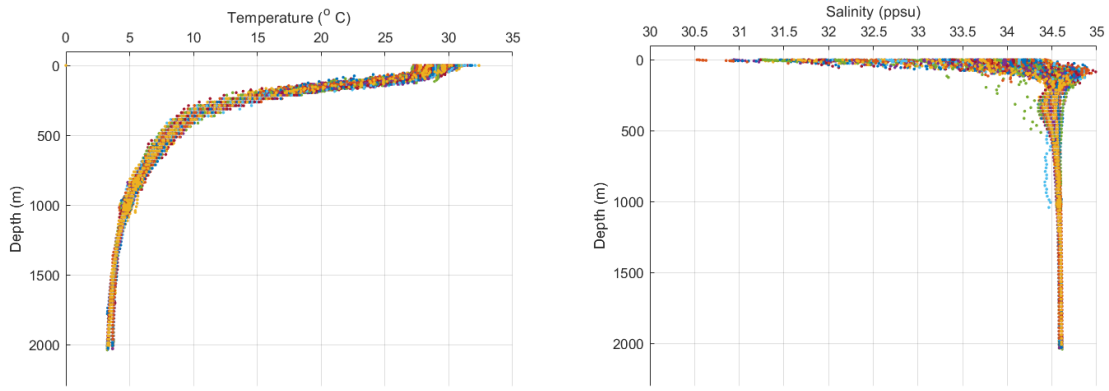


Figure 3. Temperature (left) and Salinity (right) profile from all of the deployed flotas since 2022.

Figure 3 shows all of the data transmitted from the devices through the IRIDIUM satellite. It represents the shallow water and deep water profile from Indonesia's seas. In general, it acquires three (3) datasets of profile each month by doing 10 days profiling for each cycle. Up to now for almost one year, we haven't experienced any technical issues with the profiling missions. We also want to notify that Indonesia initiated the SVP Drifter missions alongside the profiling floats missions. The SVP Drifter which

afloat and appears on the surface experienced misunderstood rescue sabotage by fishermen or persons on boat.

BMKG managed to monitor and maintain the quality control of the profiling floats data through a specific web portal. For now, the public web portal of the BMKG floats profile is not available. The effort of integrating the data to the global system and making the data publicly available is going side by side.

As a float initiator and party in charge of the floats mission, there are personnels involved and dedicated to being responsible for the status and sustainability of float deployments in the Indonesian seas in BMKG. The funding to begin the floats initiation, delivered to BMKG from AFD in the MMS-I project with the aim of increasing maritime meteorology capacity.

In the future, the float's initiation will increase and be funded by the independent national fund involving related institutions and further researchers, which consider the principles of national security. Furthermore, BMKG is on the track to advance our human resources personnel capacity by holding a further education overseas funding program. It is a great opportunity for BMKG to increase personeel capacity as the party in charge of the Argo floats in local communities.

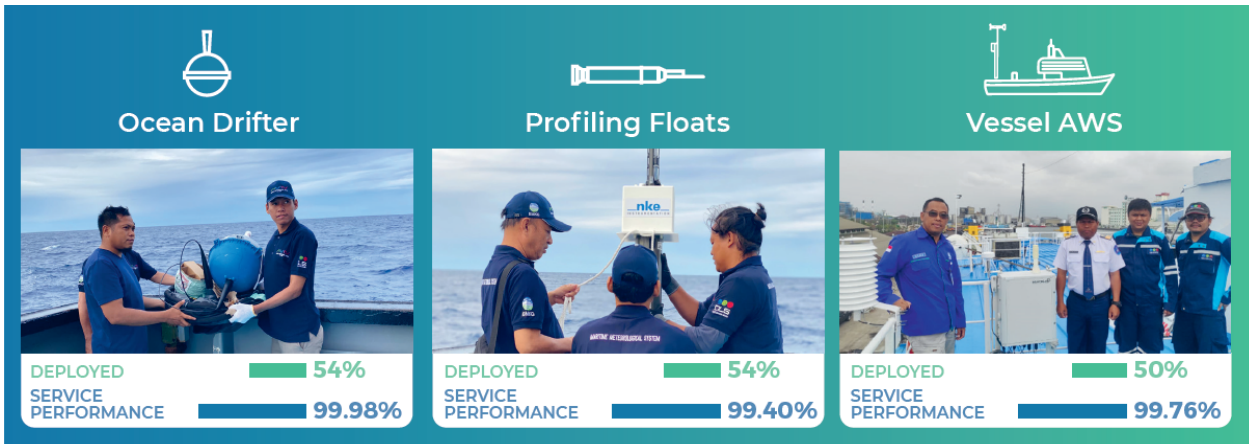


Figure 4. The deployment of ARVOR floats by BMKG personnels.

Through the MMS-I Project of BMKG, Indonesia, which was funded by AFD (Agence Française de Développement), Indonesia began the project in 2019. It projected the five-years term of work on several parts including the floats missions. The term was crossed with the COVID-19 event. The deployment should be launched around 2020 - 2021, but COVID-19 impacted its schedules and procurement process. The deployment of our floats started during the 2022 period.

This year, Indonesia plans to deploy more floats into the eastern Indonesia's seas.