# MOCCA
MONITORING THE OCEANS AND CLIMATE CHANGE WITH ARGO

In 2015, the Executive Agency for Small and Medium-sized Enterprises (EASME) funded the MOCCA project for **5 years**. With **5 M€** (20% co-funded by Euro-Argo members) this allows Euro-Argo to buy **150 new floats** measuring temperature and salinity, to ensure their deployments and to organise the real-time and delayed-mode processing of the data.
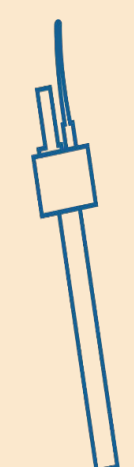
150 T&S FLOATS
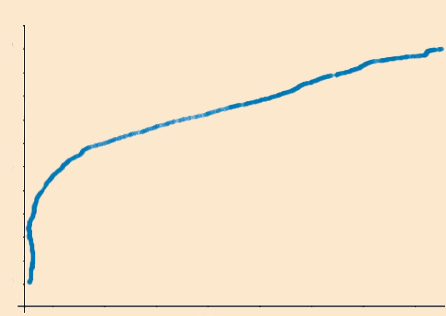
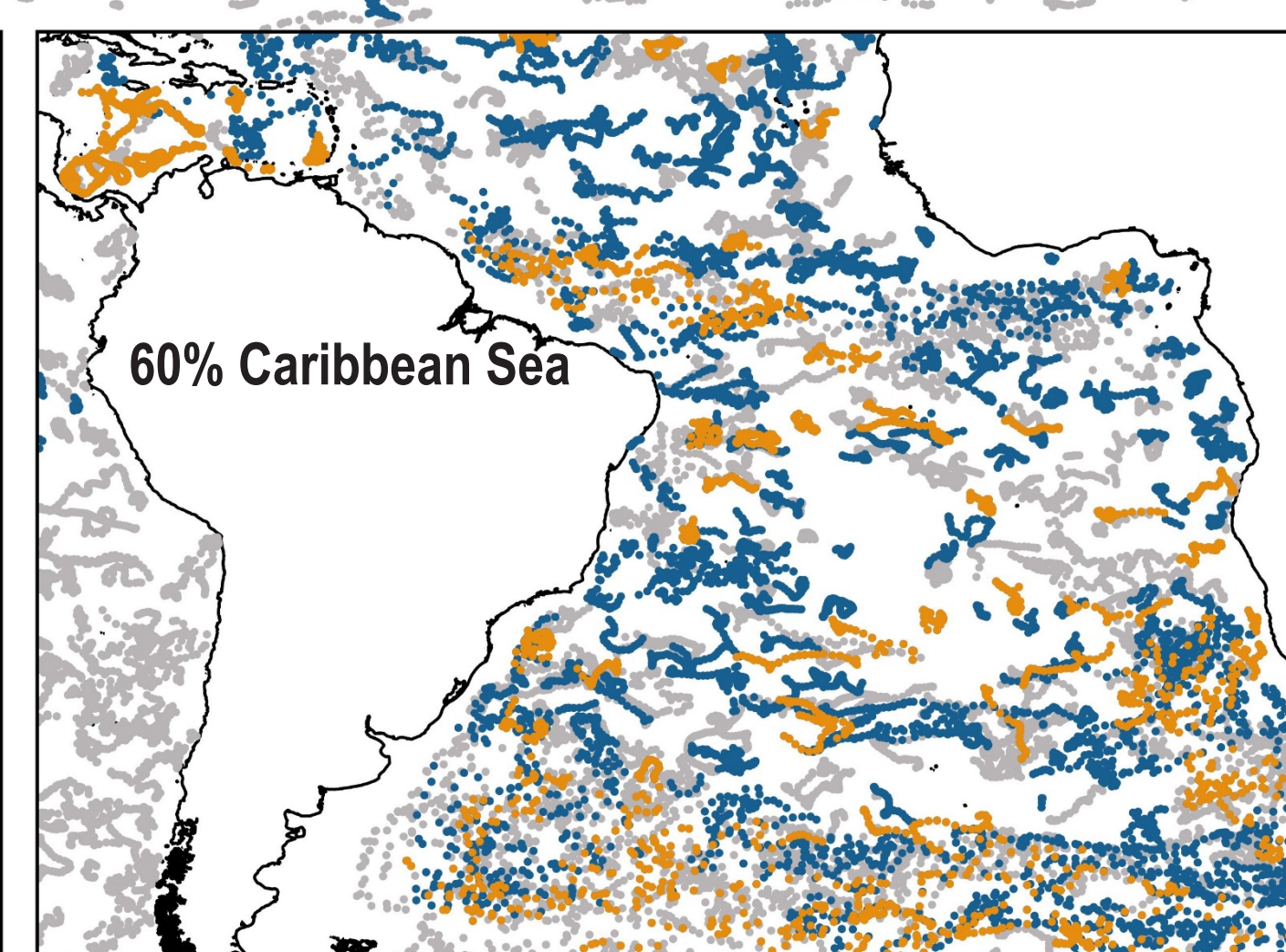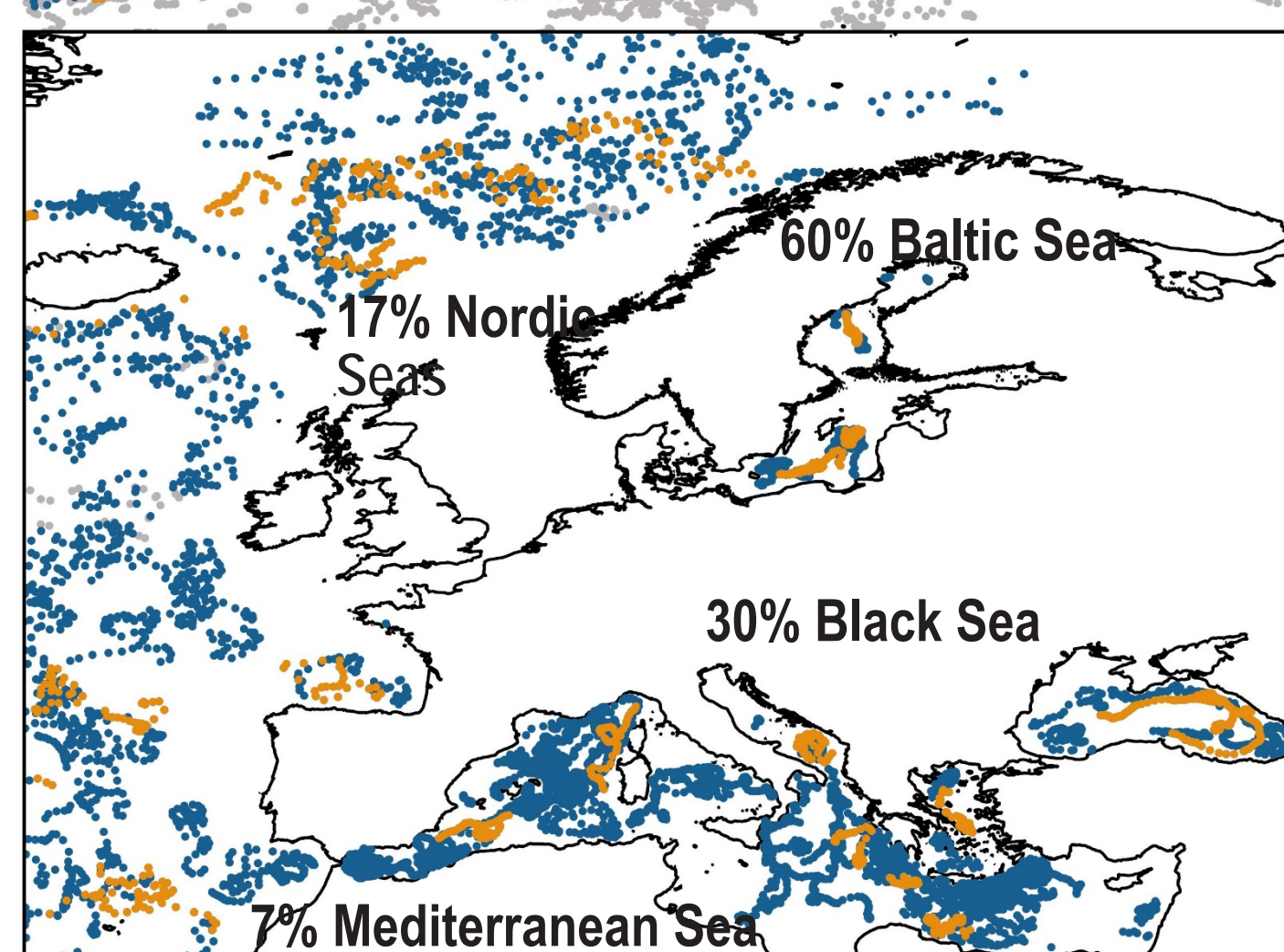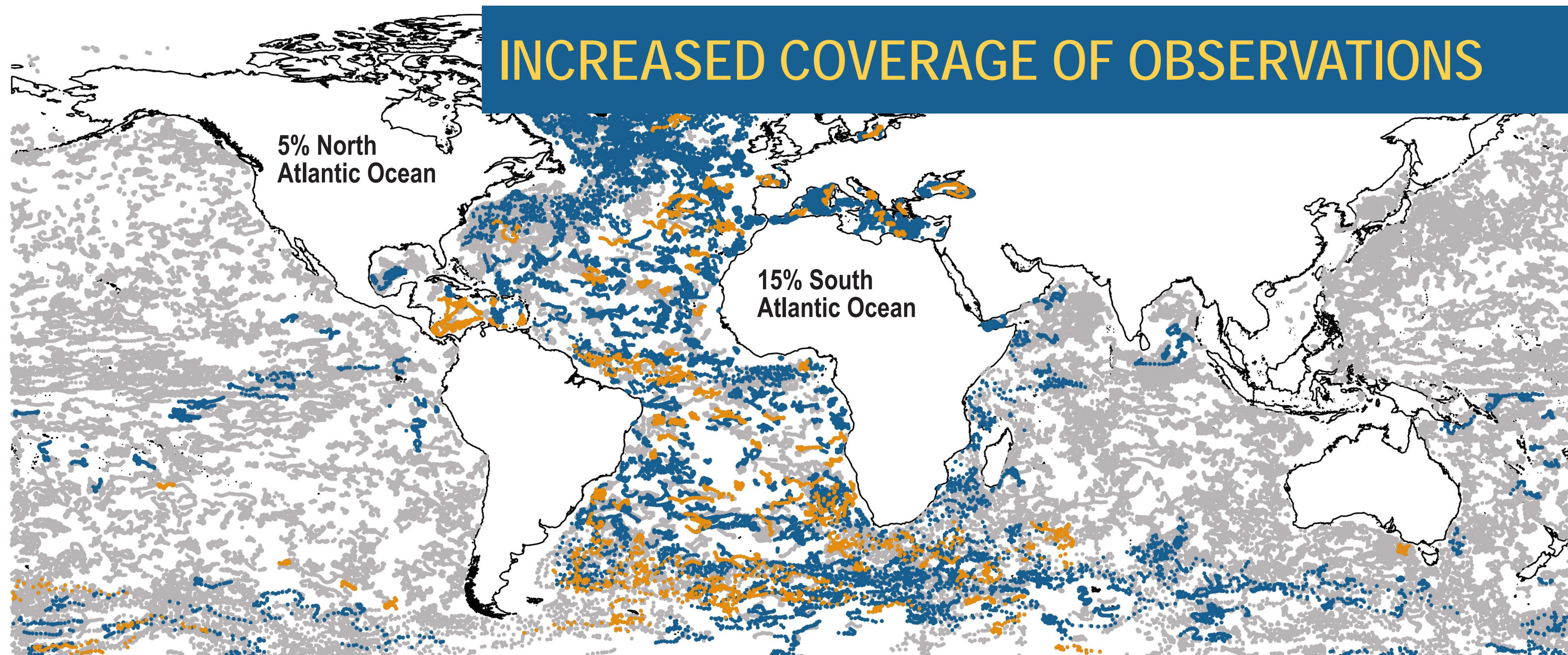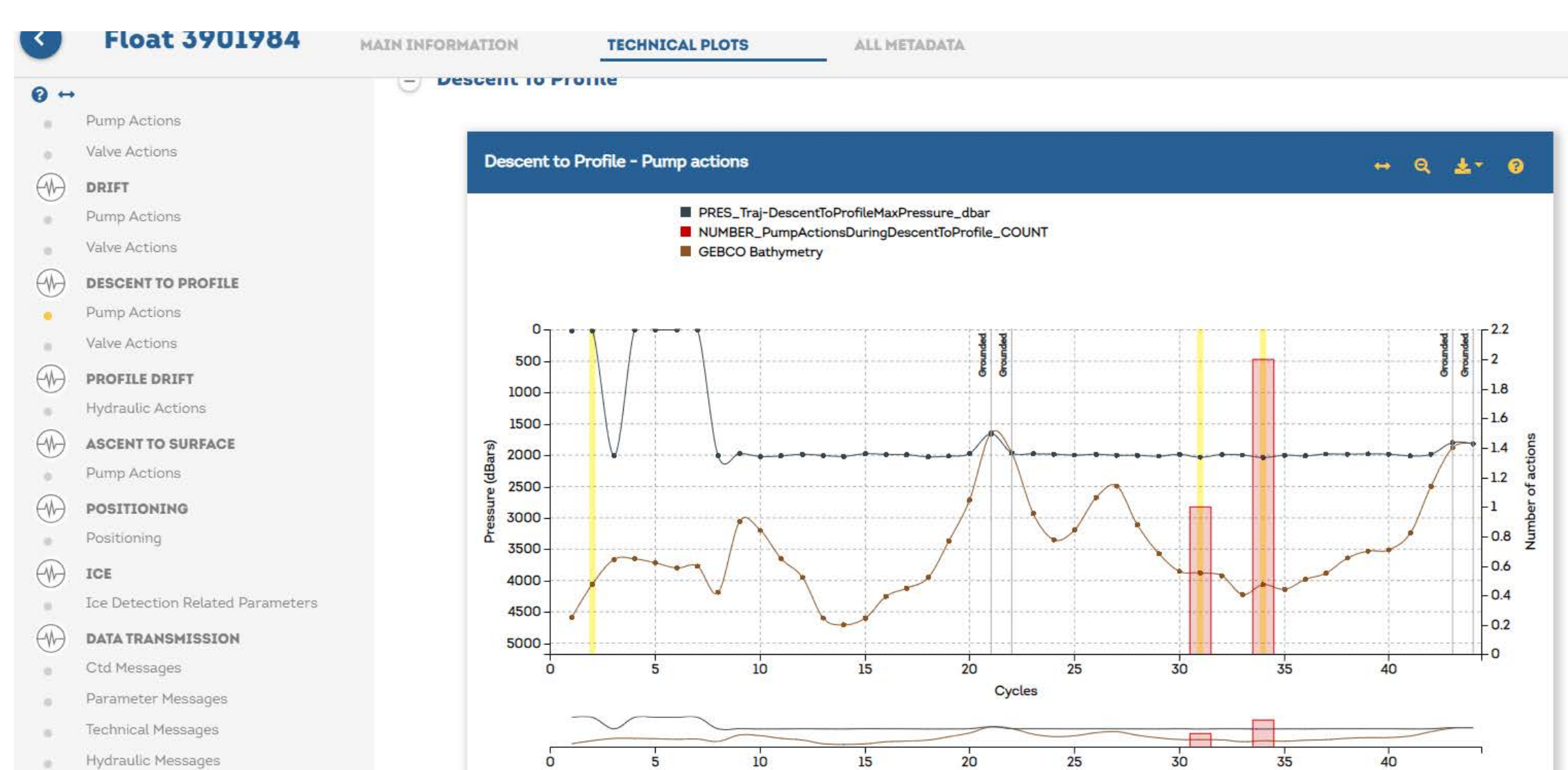**16,000 CTD PROFILES (+600 EACH MONTH)**

PROCUREMENT & TESTING PROCEDURES

- Framework contract with a European Manufacturer
- Development of Euro-Argo ERIC capability to check big batch of floats
- Setup of operational acceptance tests protocol for EU floats

ENHANCED AT SEA MONITORING

- See posters on tuning of the floats ice-sensing algorithm for the Nordic Seas & on impact of waves on ARVOR floats behaviour
- Successful experiment of deployments in shallow waters like the Baltic Sea, in-depth analyses of floats behaviour
- Development of the Euro-Argo monitoring website. See live demo of **fleetmonitoring.euro-argo.eu**

INCREASED COVERAGE OF OBSERVATIONS

5% North Atlantic Ocean
15% South Atlantic Ocean
17% Nordic Seas
60% Baltic Sea
30% Black Sea
7% Mediterranean Sea
60% Caribbean Sea

All Argo CTD profiles collected in 2019, from:

- MOCCA
- Euro-Argo
- Argo international

x%: % of collected Argo profiles in the area in 2019 from MOCCA floats, vs. all

STRUCTURED DEPLOYMENT PLAN

- Good coverage of European and Caribbean marginal seas, Nordic seas, South Atlantic
- Substantial measurements in the South Indian and South Pacific oceans
- Met the recommendations from the "Strategy for evolution of Argo in Europe" document and improved the density of the Argo network in poorly sampled areas
- European and international cooperation for float deployments. See poster on synergies with other infrastructures like EMSO in south Ionian sea
- Use of Research Vessels, engagement with private sector (e.g. Orange Marine)

MANAGEMENT OF THE EUROPEAN CONTRIBUTION TO ARGO
Within MOCCA, the Euro-Argo ERIC demonstrates its operational capabilities

## MOCCA: A PROJECT FOCUSED ON DATA QUALITY

- **DMQC** (Delayed-Mode Quality Control) of the collected data. Flagging, identification and if possible, correction of sensor drifts
- **Update of reference datasets** for the DMQC activity (Med., Black and Nordic Seas)
- **DMQC training** (1st European DMQC workshop, new generation of DMQC operators)
- **Performance assessment** of new DMQC method, based on machine learning
- Implementation of the **MinMax** climatology test at the Argo GDAC
- Improvements to efficiency of **DMQC workflows**, including introduction of new tools
- See Osnet poster showing how a neural network trained on Argo and Altimetry data can predict 2nd order temperature and salinity global structures useful to Argo QC
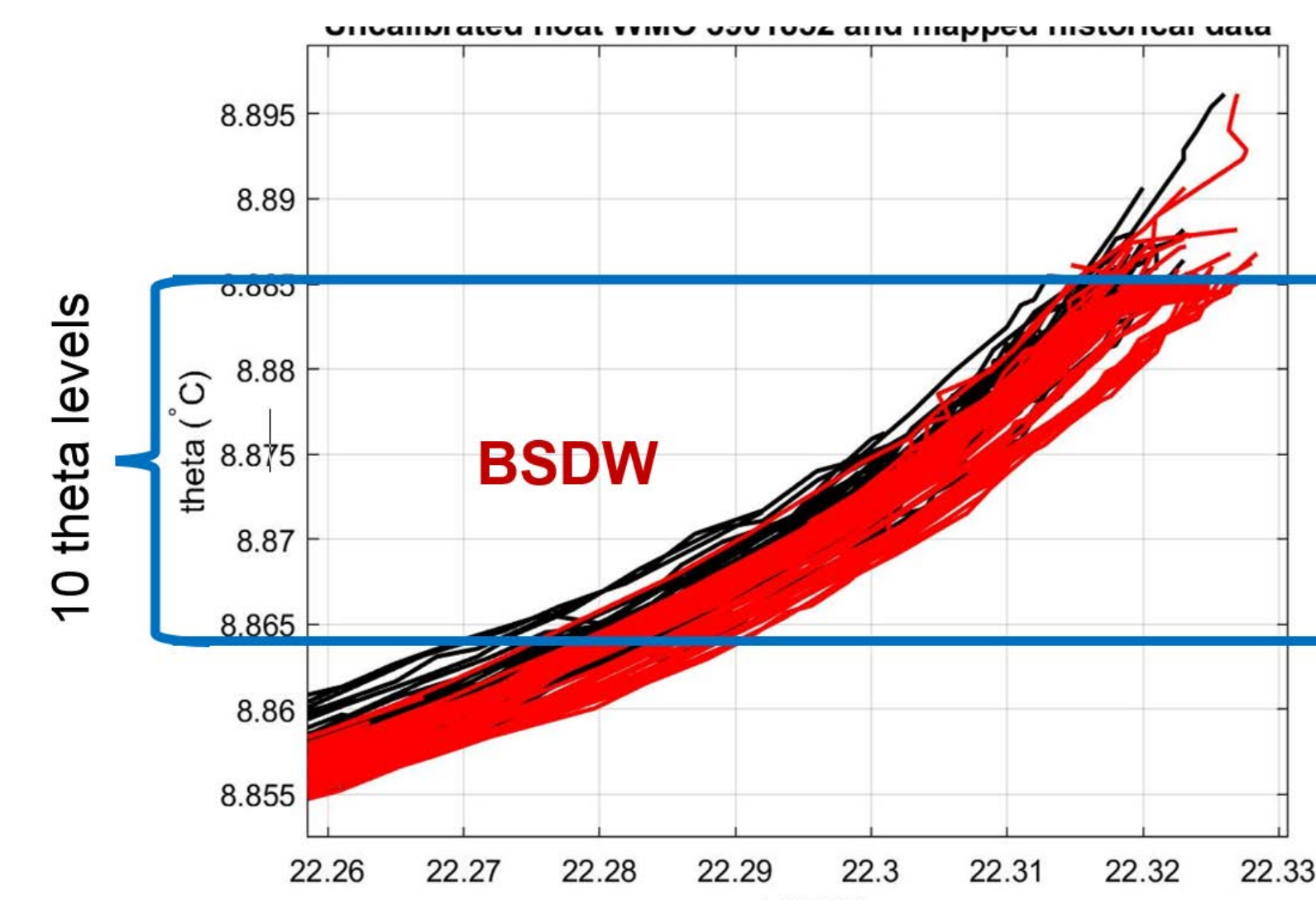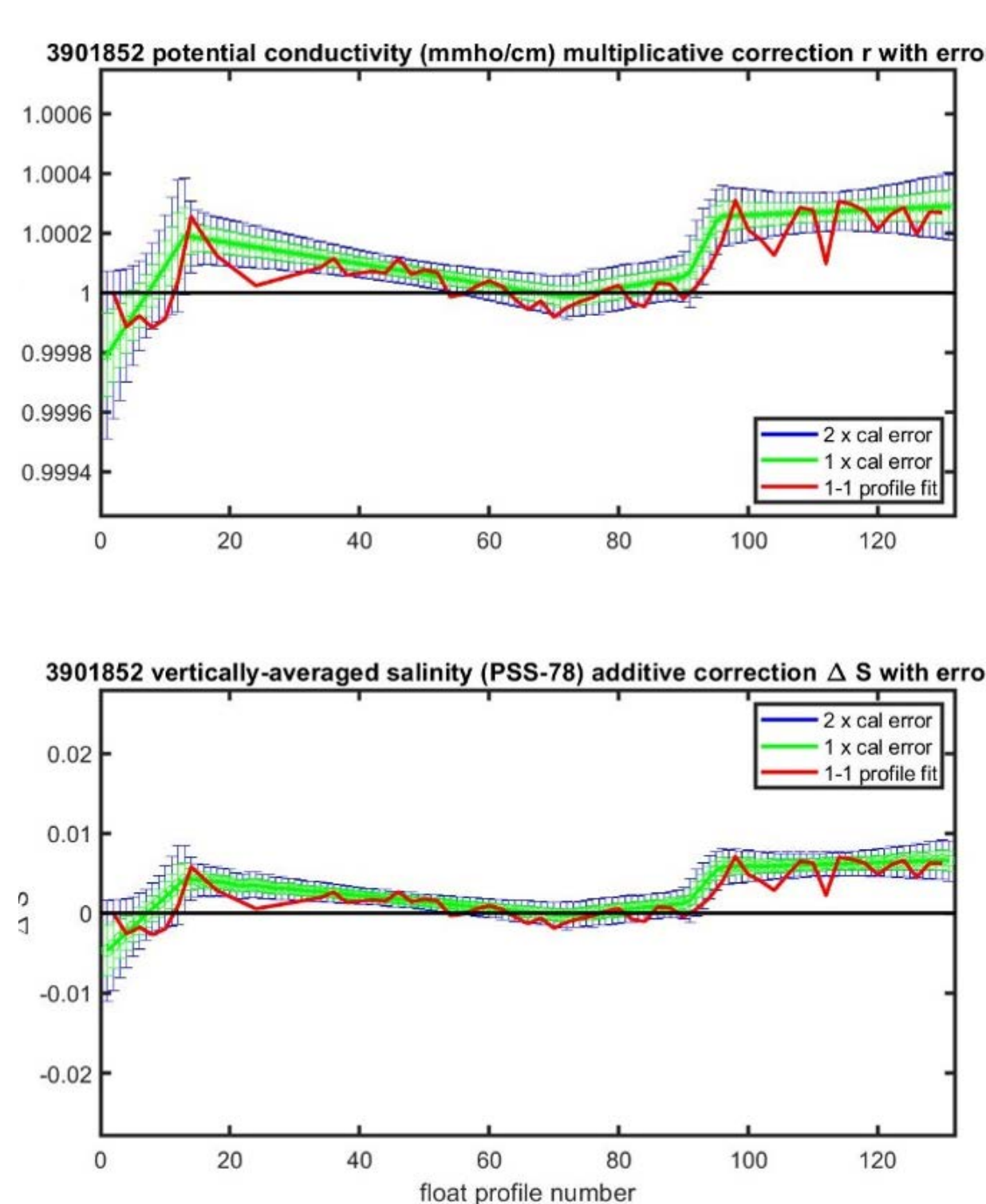
BSDW

DMQC: manipulation of the OW software in order to track the Black Sea Deep Water (BSDW), the water mass with the tightest T-S relationship where the OW results are the most reliable. © OGS
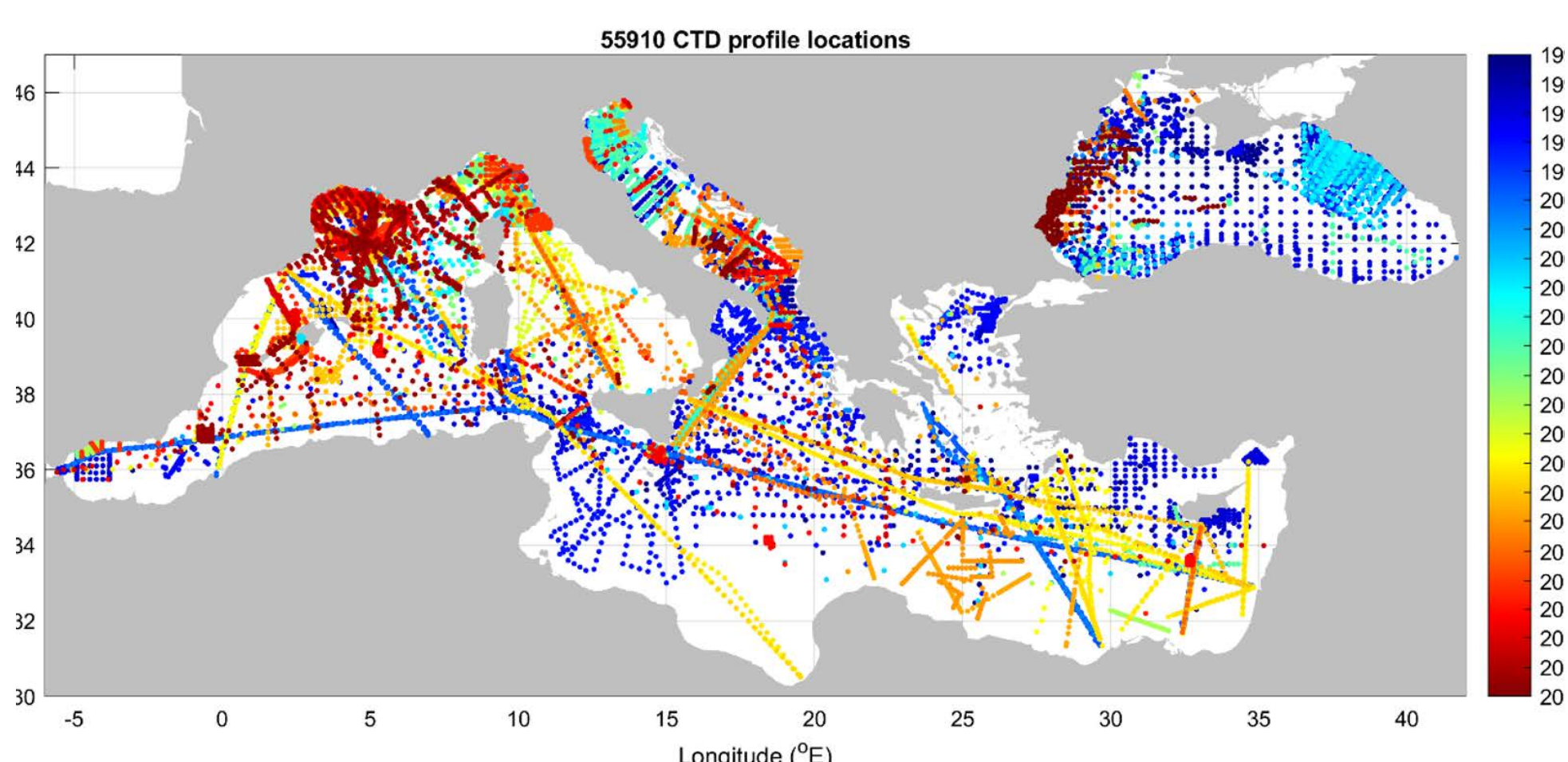
Updated version of the CTD reference dataset for the Mediterranean and Black Seas. © OGS

Number of MinMax alerts on 10 sliding days
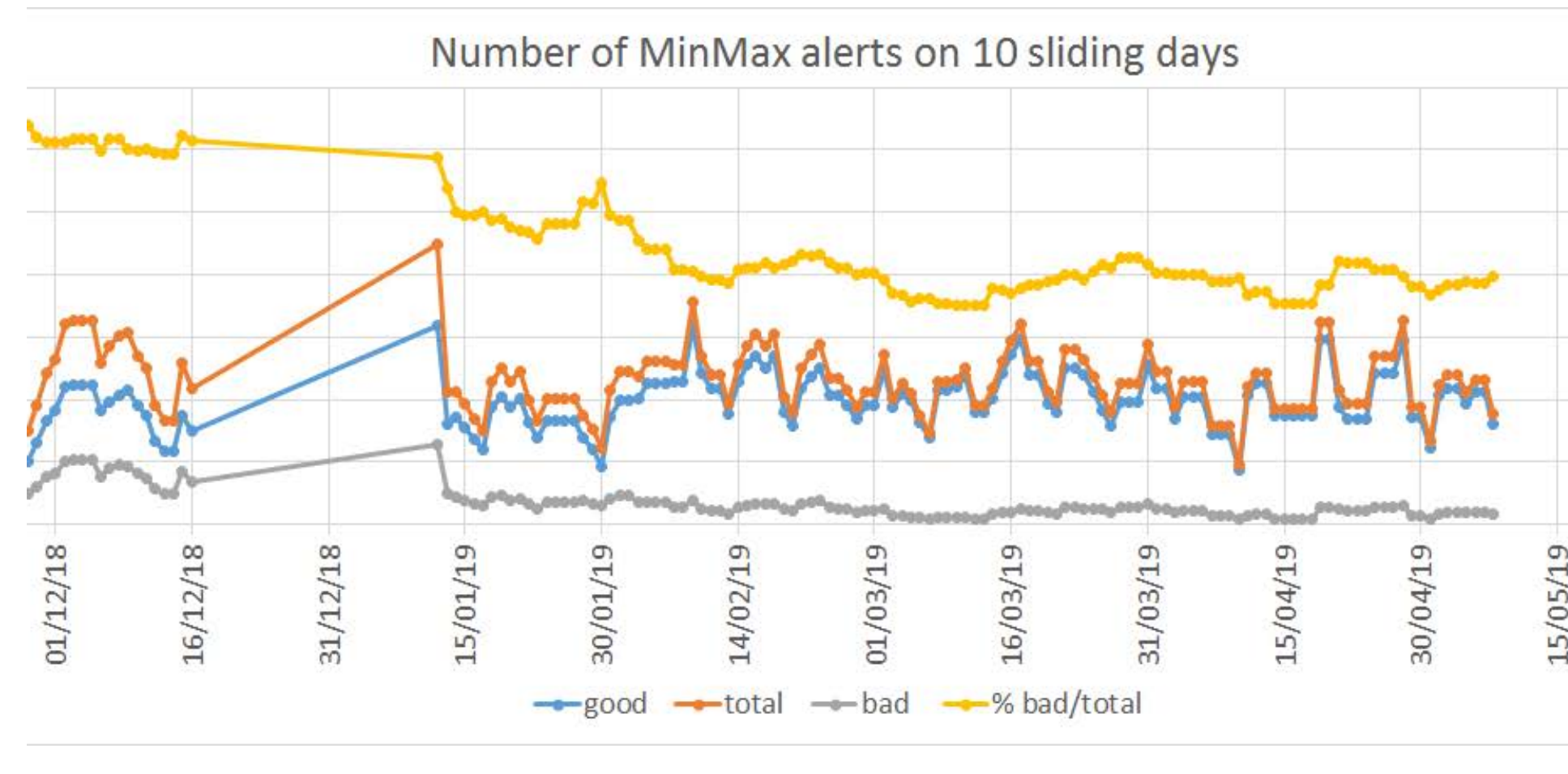
Adaptation of MinMax thresholds in January 2019 to decrease the number of bad alerts for operational NRT Visual Quality Control checks. MinMax alerts are now also used to prioritize the treatment of floats in delayed mode. © IFREMER

1st European Argo DMQC workshop, organised by MOCCA partners, 17-18 April 2018