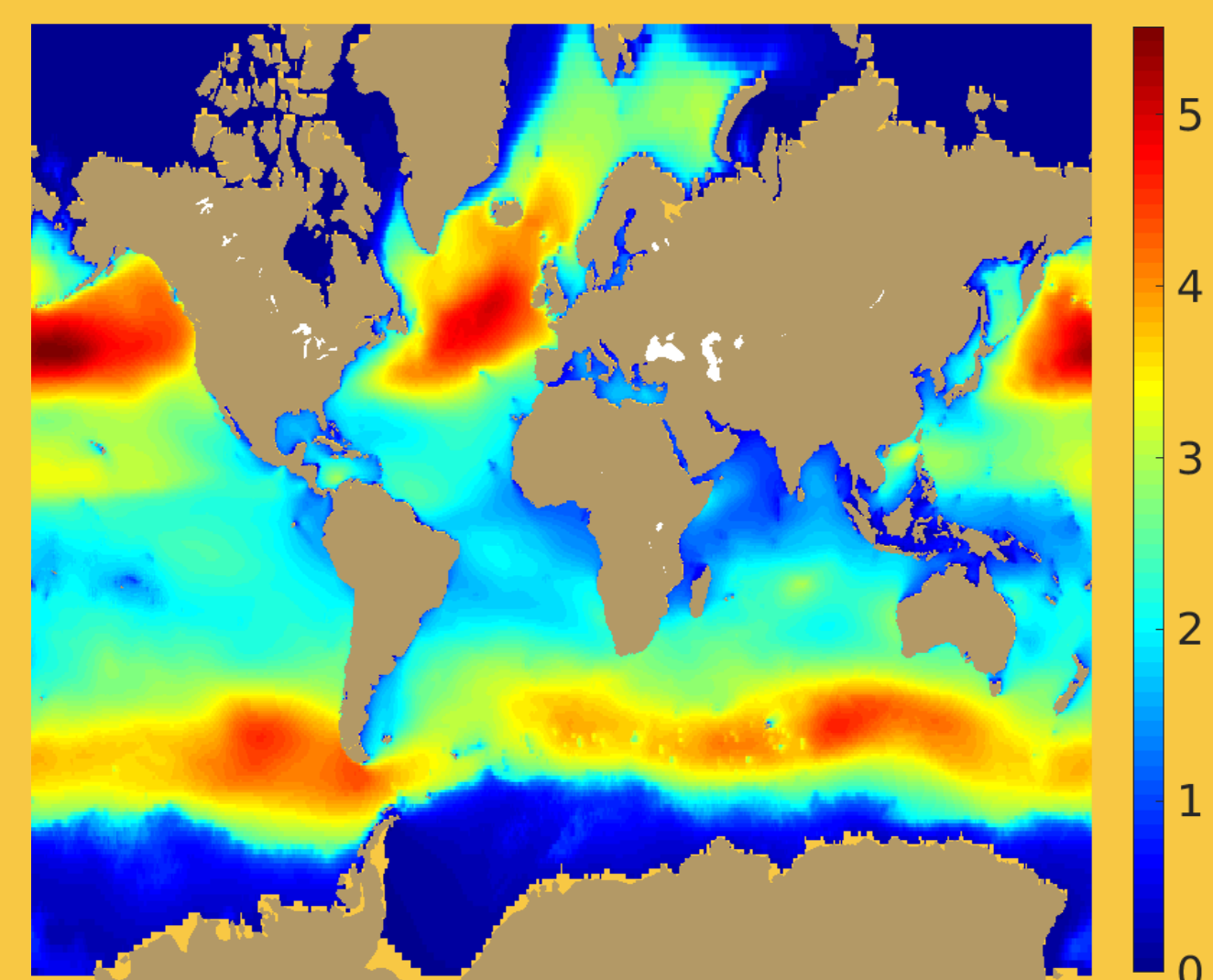# Impact of waves on ARVOR floats behavior

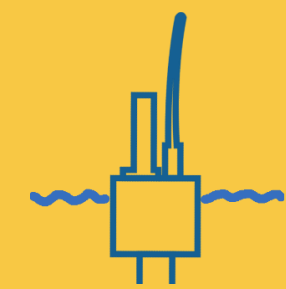Andrea Garcia Juan, Euro-Argo ERIC
MOCCA project
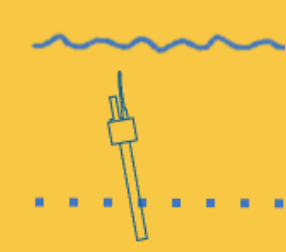
Euro Argo

Methodology

Hs mean during 2018
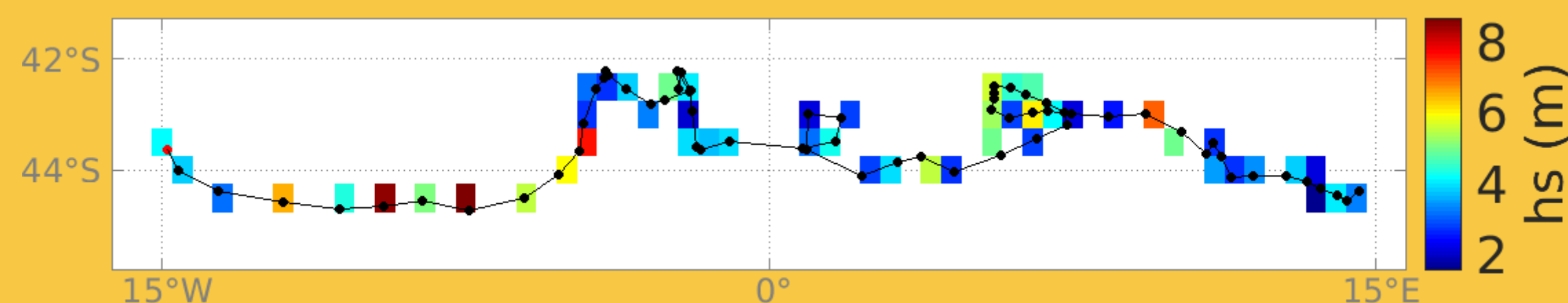IOWAGA hindcast, 0.5° / 3h resolution

- **Colocalisation** of cycles with waves model hindcast

- Split results regarding a **configuration parameter**

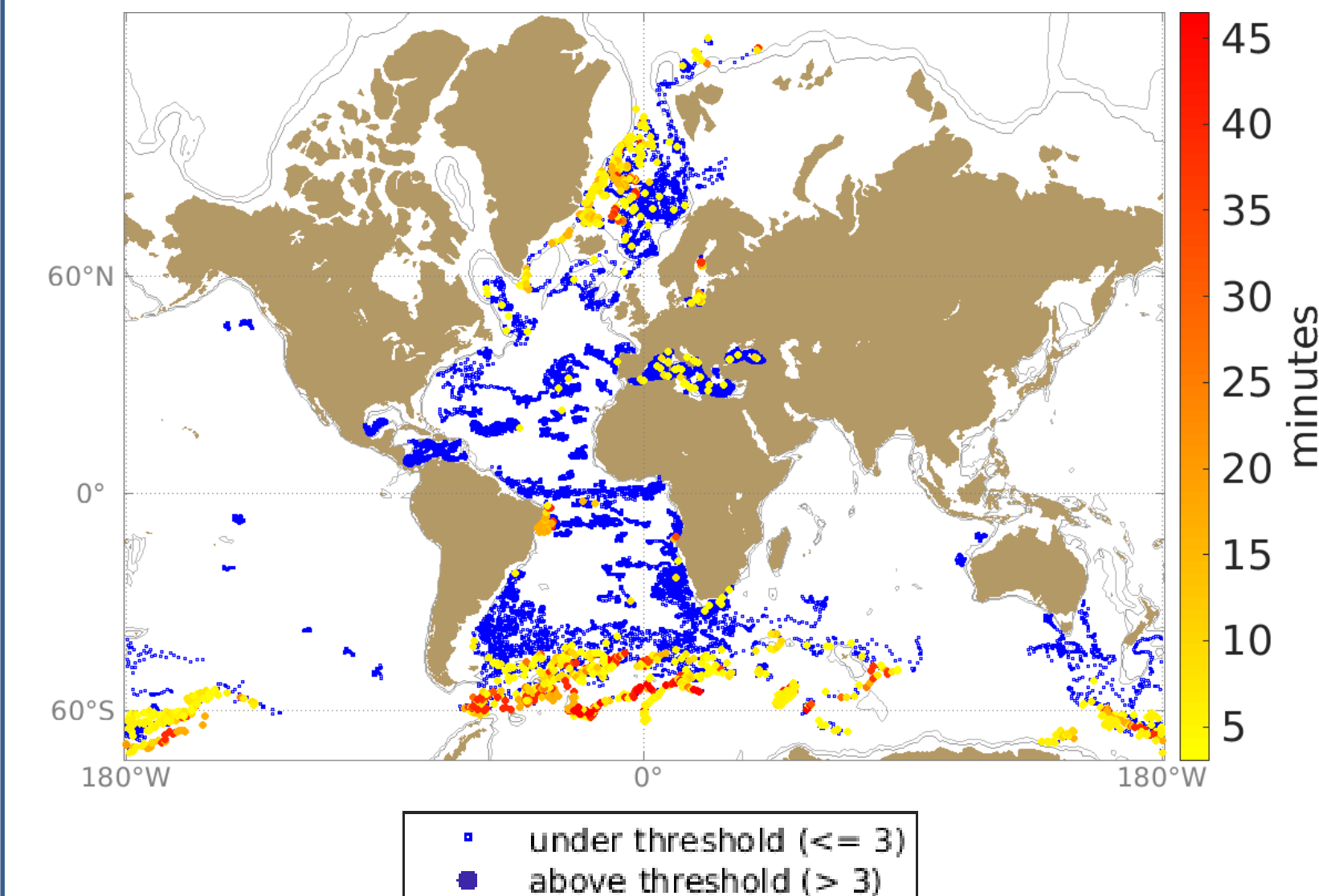 PumpActionTimeBuoyancy Acquisition (csec)
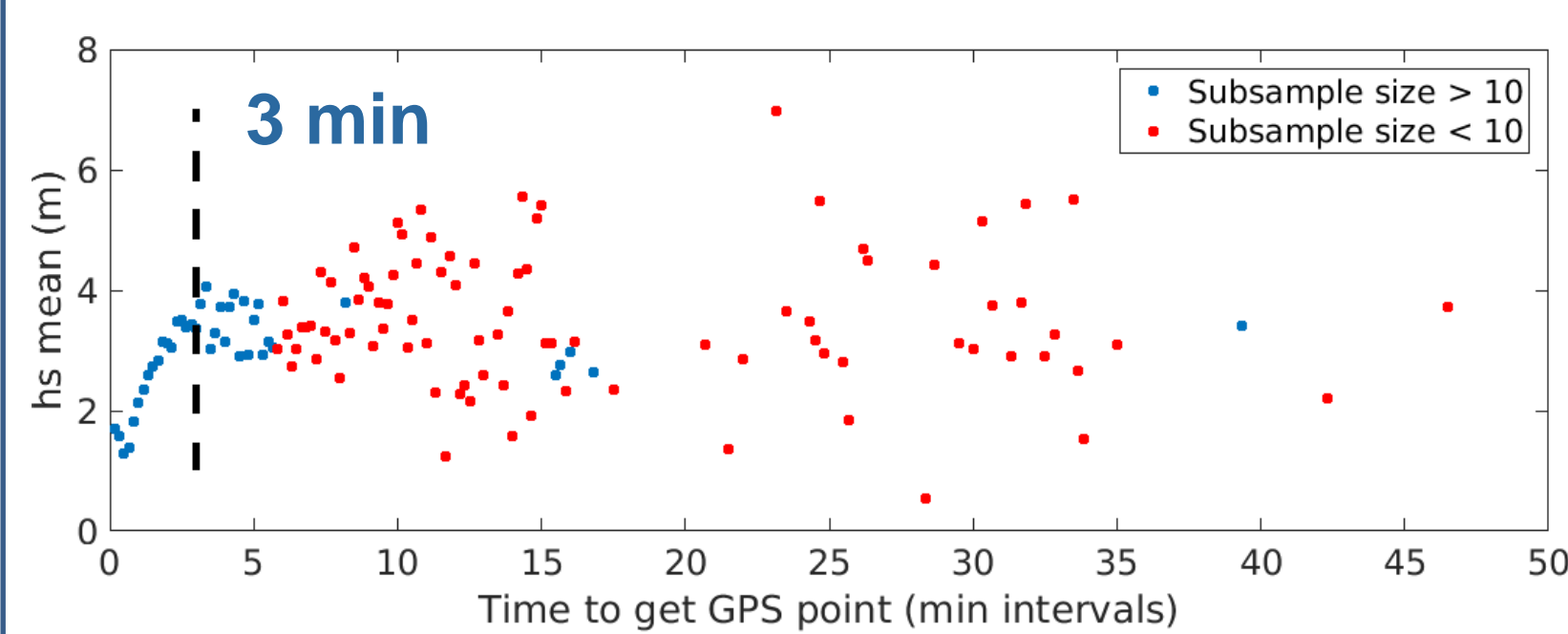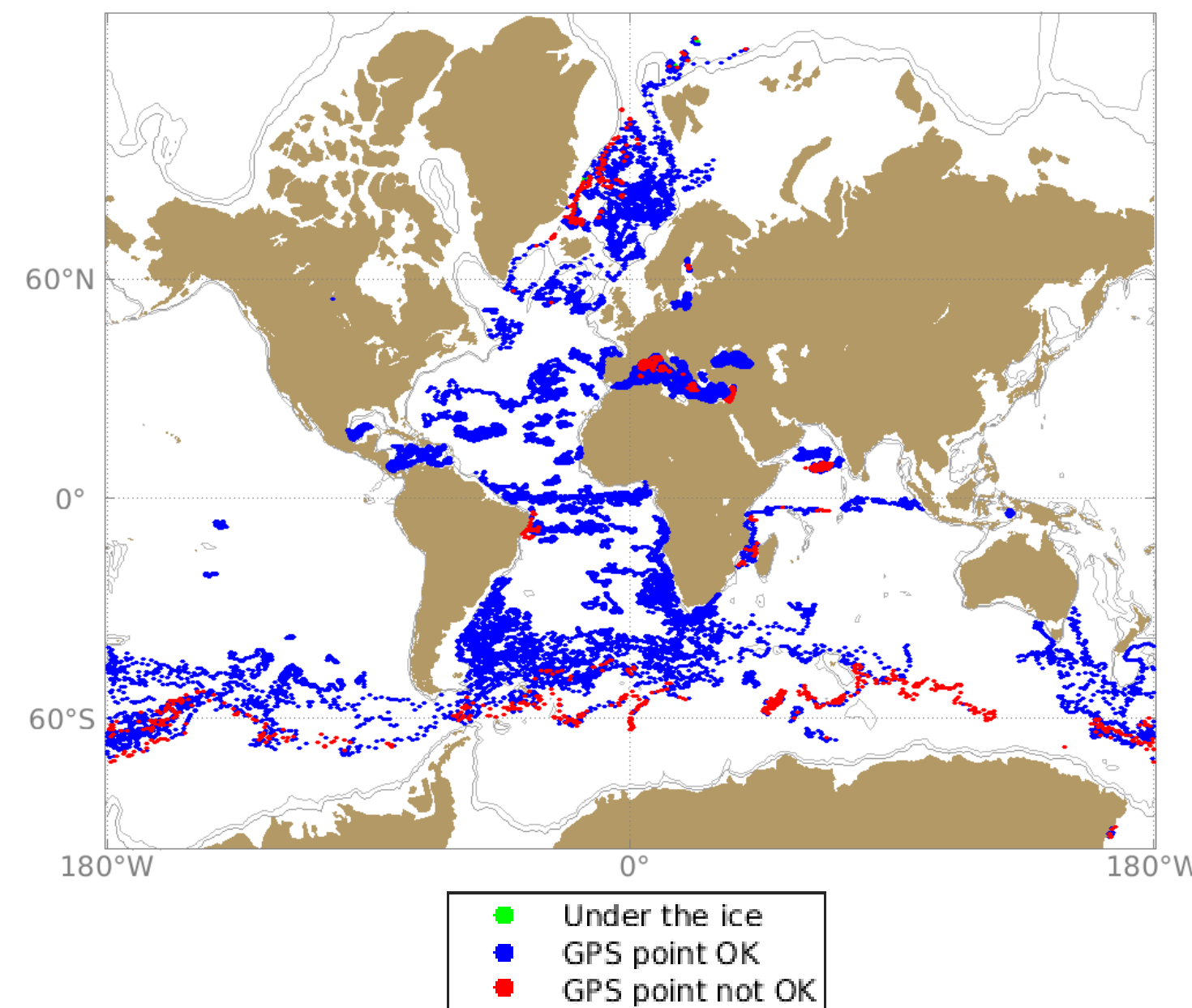
  BouyancyReductionSecondThreshold (dbar)

Trajectory of MOCCA float 3901889

GPS positioning

Time to get GPS point

under threshold (<= 3)
above threshold (> 3)

Valid GPS point

Under the ice
GPS point OK
GPS point not OK

3 min

Subsample size > 10
Subsample size < 10

	Number of floats
At least 1 not valid GPS point	53 (17.3 % of floats 5% of cycles)
> 50% of cycles GPS point not OK	13
> 30% of cycles GPS point not OK	22
> 20% of cycles GPS point not OK	31

- Times > 3 min to get a GPS point are not related with big waves
- Cycles with not valid GPS point are not related with big waves
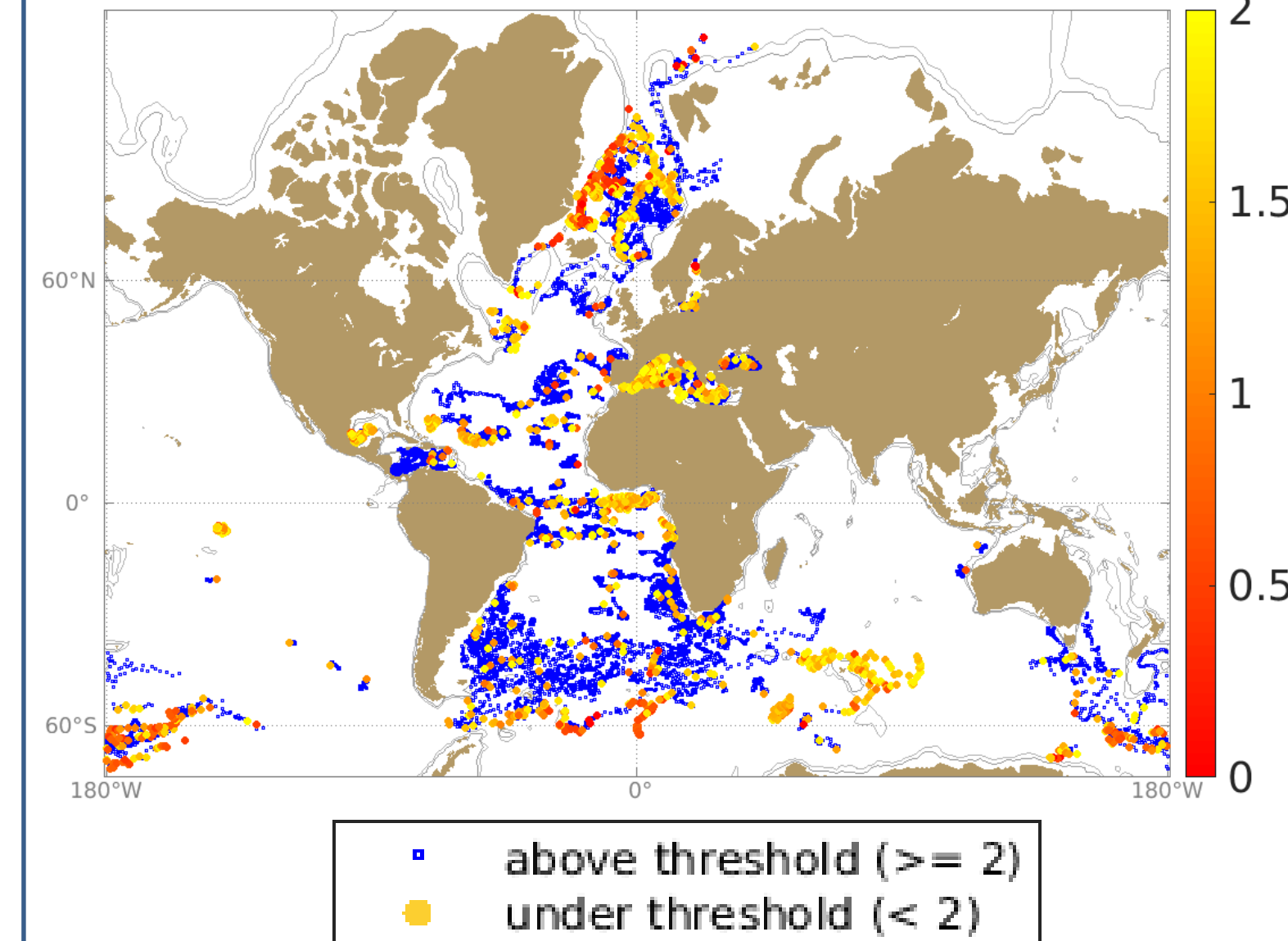- No changes depending on config. parameter

Not related with

Mediterranean

- Time to get GPS point > 3 min occurred only for 0.55% of cycles (3.2% in global ocean)
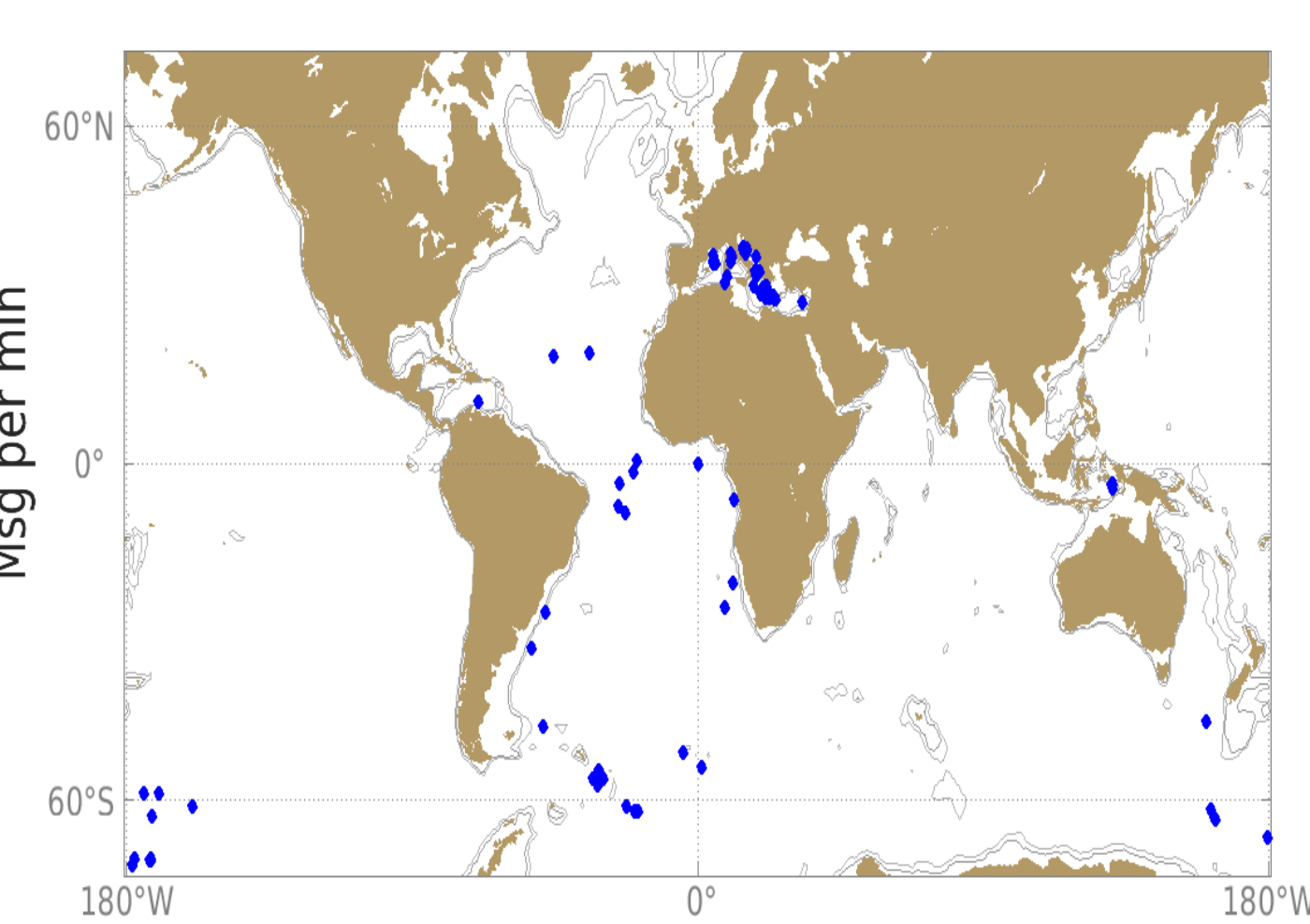- Floats with at list one not valid GPS point were deployed before 2014

Iridium transmission

Iridium transmission speed

above threshold (>= 2)
under threshold (< 2)

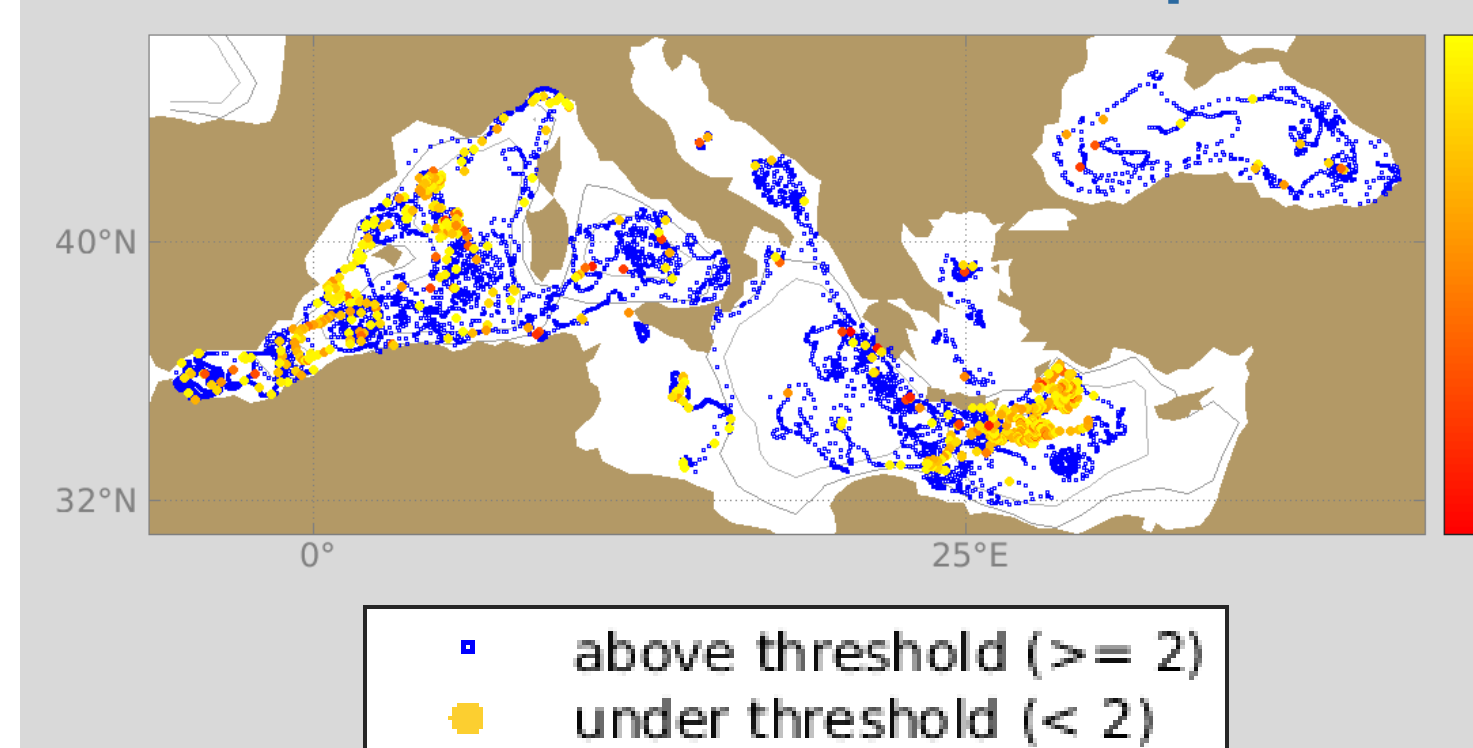**R = 0.04**

CTD data transmission incomplete

Mean hs = 1.3 m

- Smaller Iridium transmission speeds are not related with waves height
- Cycles with CTD data transmission incomplete are not related with big waves
- No changes depending on config. parameter

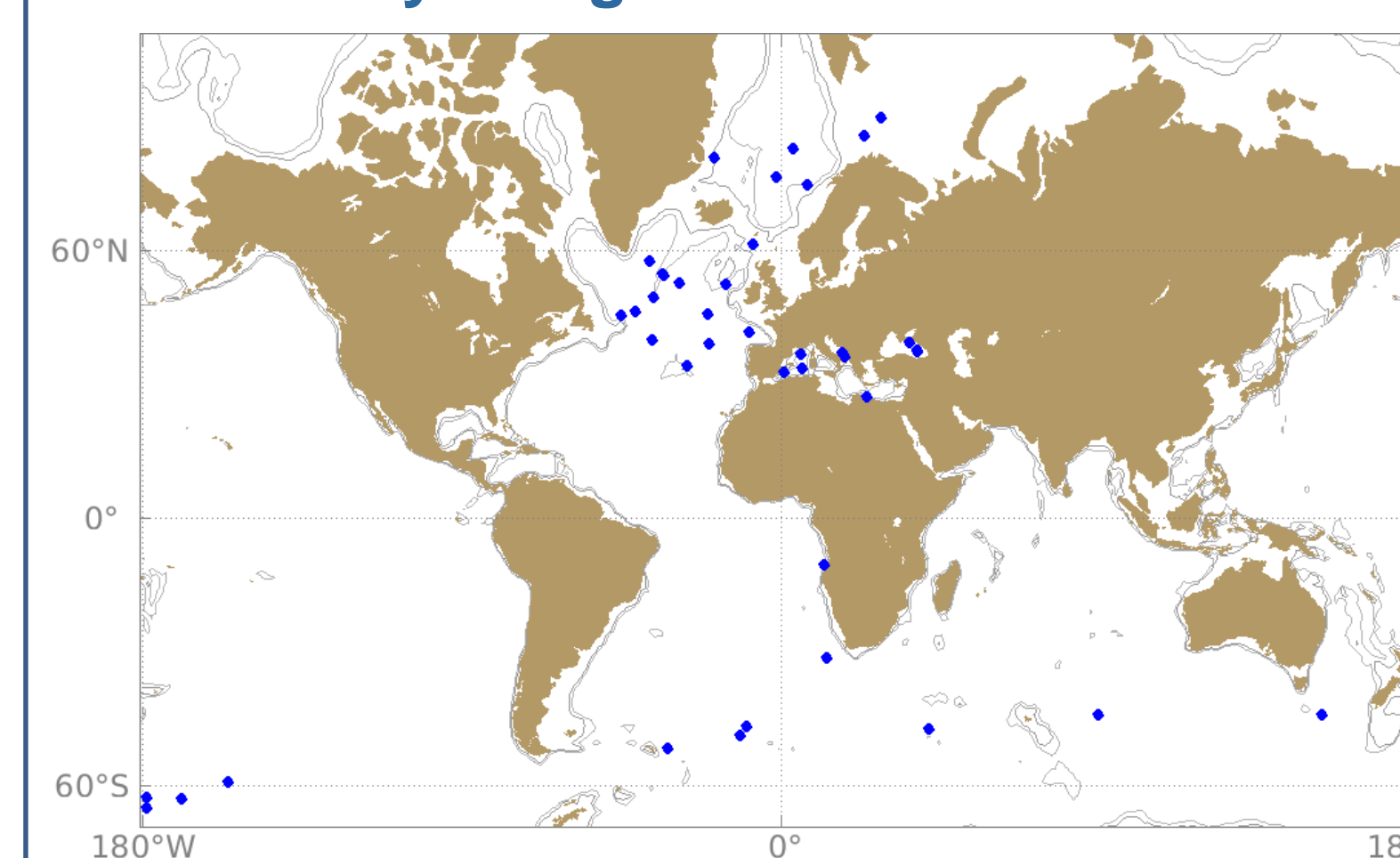**Not related with**

Mediterranean

Iridium transmission speed

above threshold (>= 2)
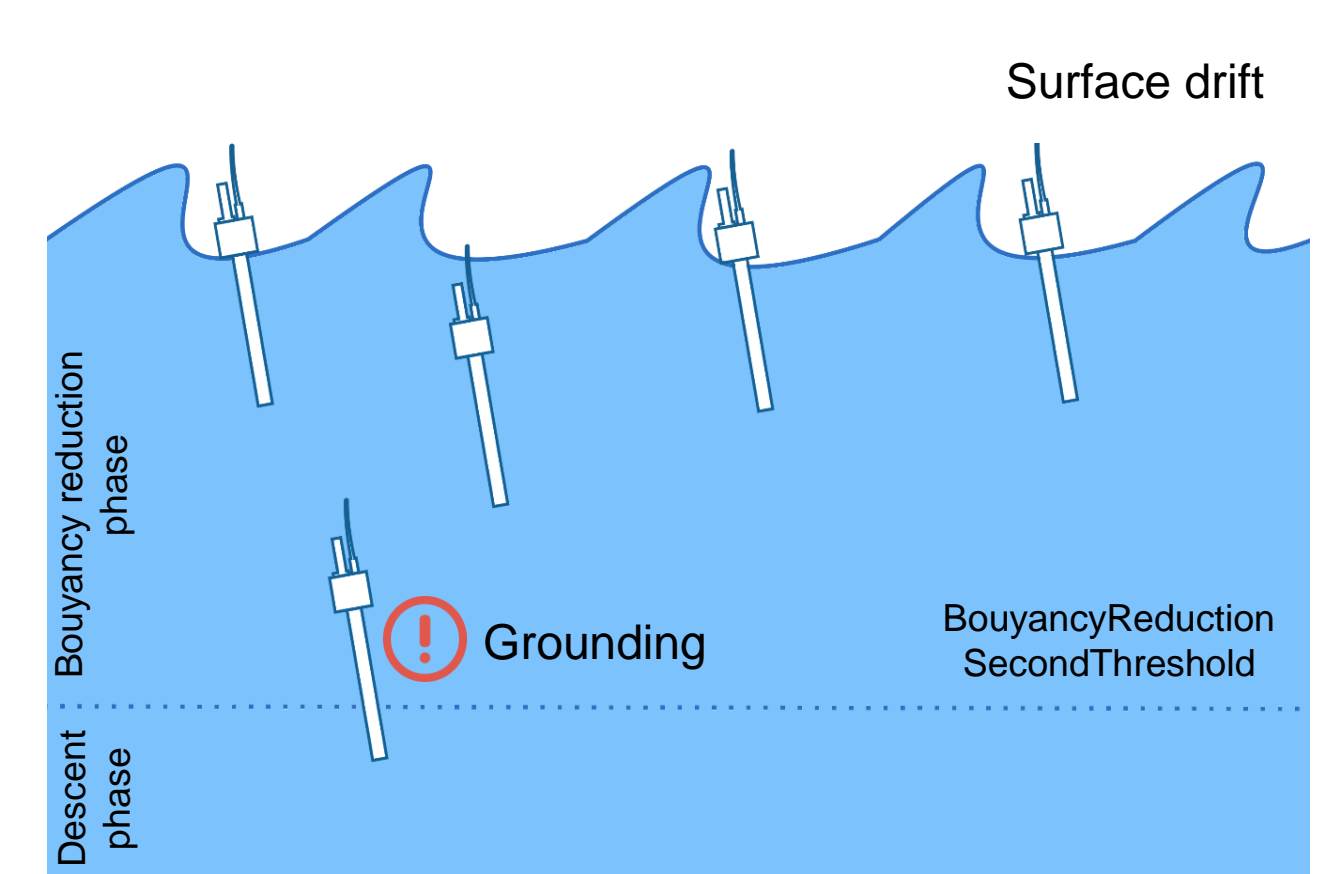under threshold (< 2)

- Eastern basin: same floats (24h period)

- CTD data trans. incomplete: 12 floats deployed before 2014

Surface grounding

Cycles grounded at surface

Surface drift

Grounding

Bouyancy reduction phase
Descent phase
BouyancyReduction SecondThreshold

Mean hs = 3.7 m
Waves of 5, 6 and 7 m

Mean hs = 4.3 m
(without marginal seas)

- Surface grounding is related with big waves except for floats in marginal seas

Related with

Conclusions

- **Iridium transmission**
- **GPS positioning**

- **Surface grounding in global ocean**

- **Key configuration parameters can be now optimized**

- **First step to a series of best practices in Arvor floats configuration settings**

- **Methodology to be used in life expectancy study (EA-RISE WP2)**

⚠ Consequences of these 3 issues ⚠

Loss of CTD data
Inaccurate positions

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