

Date 8 May 2018

Bulletin n° 2 for: "Simulations for *Bright ship in support of SAR operations*"

The bulletin is built by CMCC upon Currents (Copernicus Marine Service) and wind (ECMWF provided by Italian Met Office) products used to force the LEEWAY (further developed by CMCC) objects trajectory model. The bulletin contains the forecast of objects transport in the accident area in support of search and rescue (SAR) operations. ANNEX I presents the description of simulation scenarios.

*DISCLAIMER*

*The information and views set out in this Bulletin are those of the authors (CMCC) and do not necessarily reflect the official opinion of the governments of the area. CMCC does not guarantee the accuracy of the data included in this study. Neither CMCC nor any person acting on the author's behalf may be held responsible for the use, which may be made of the information contained therein.*

**Brief on the results:**

Object dispersion forecast: An object (represented by hundreds of particles) transport is simulated starting at 0:00 on 2 May 2018. The present 190 hour-forecast is based on updated meteo-oceanographic forecast produced 8 May 2018.

For a person-in-the-water scenario, the total search area is expected to be around 100–200 km to the southwest of the accident site.

In case of life raft the search area shifts further to the south. Around 60 km further for a life raft without ballast system, and 30 km for a shallow ballast system.

The object trajectory simulations have been additionally run using the high resolution regional system Atlantic-Iberian Biscay Irish-Ocean (IBI-MFC) Physics Analysis and Forecast provided by CMEMS. The results predict a little bit faster movement towards the south, which is especially clear for the person-in-water scenario. However, the other simulations quickly hit the edge of the model domain. So, we will not show the IBI results.

**The mean drift over the last days has been quite steady towards the southwest.**

Animations of the simulations of the 3 scenarios are available here:

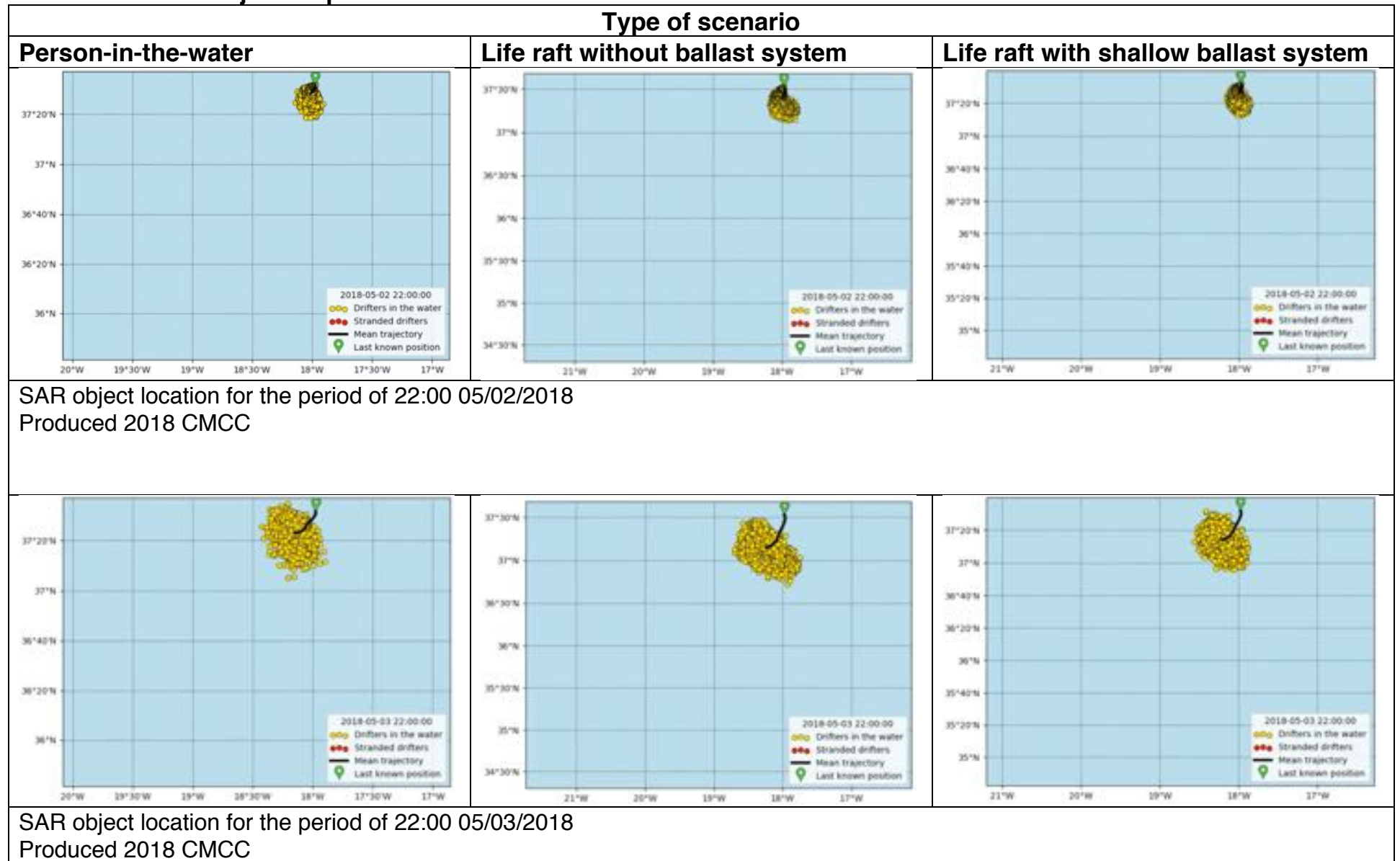
Type of scenario	Link to the animation file
Person-in-the-water	<a href="https://www.dropbox.com/s/7chmkhzesj0bm8w/%231azores_pi_w_1.mp4?dl=0">https://www.dropbox.com/s/7chmkhzesj0bm8w/%231azores_pi_w_1.mp4?dl=0</a>
Life raft without ballast system	<a href="https://www.dropbox.com/s/mjbf8qf1xclrw9/%232azores_liferaft_nb1.mp4?dl=0">https://www.dropbox.com/s/mjbf8qf1xclrw9/%232azores_liferaft_nb1.mp4?dl=0</a>
Life raft with shallow ballast system	<a href="https://www.dropbox.com/s/hyvgzlesy8iovxc/%233azores_liferaft_sb6.mp4?dl=0">https://www.dropbox.com/s/hyvgzlesy8iovxc/%233azores_liferaft_sb6.mp4?dl=0</a>

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**Acknowledgement:** Currents are provided by Copernicus Marine Environment Monitoring Service (CMEMS) Global Ocean forecasting system (GLOBAL\_ANALYSIS\_FORECAST\_PHY\_001\_024). Wind from ECMWF system is provided by Italian Meteorological Office (Aeronautica Militare).

## Forecast of SAR object dispersion

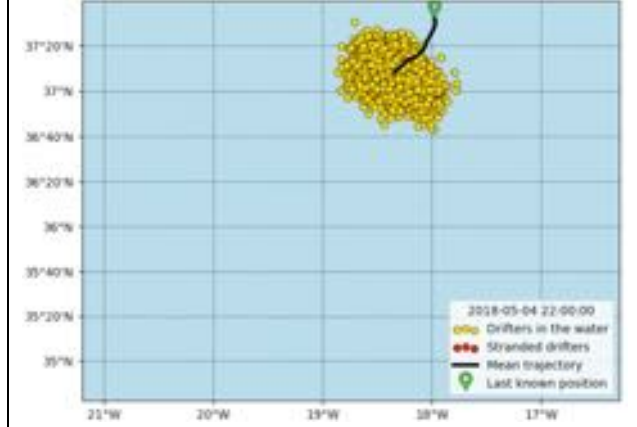
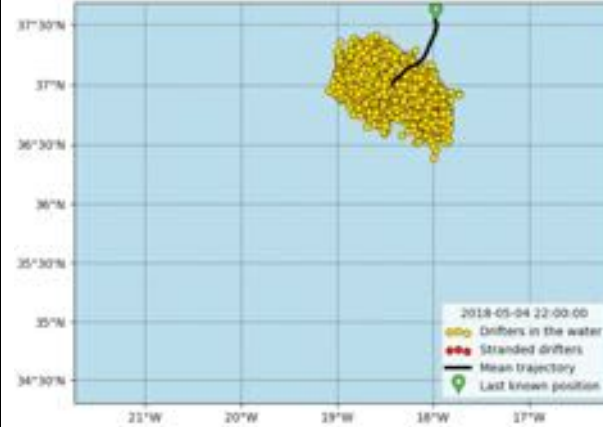
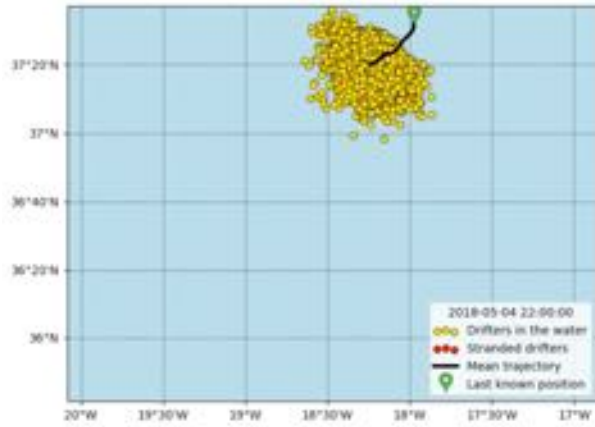


### Type of scenario

#### Person-in-the-water

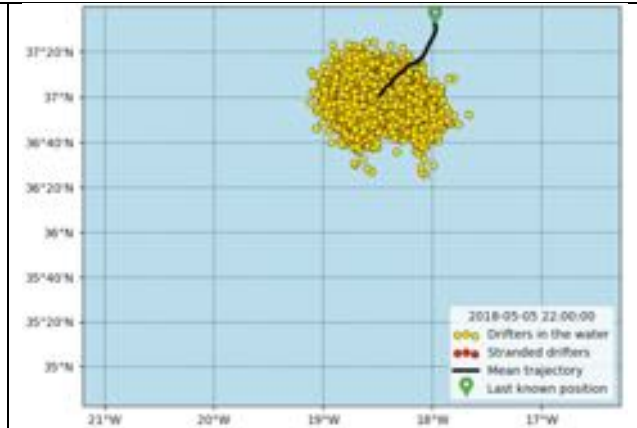
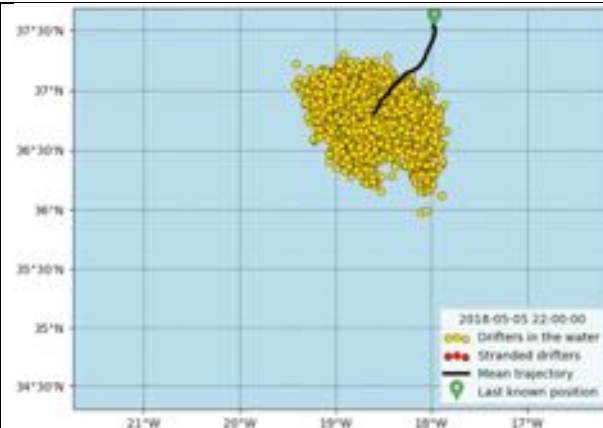
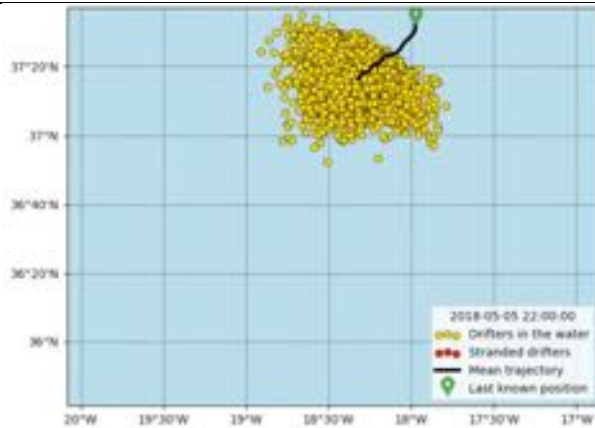
#### Life raft without ballast system

#### Life raft with shallow ballast system



SAR object location for the period of 22:00 05/04/2018

Produced 2018 CMCC



SAR object location for the period of 22:00 05/05/2018

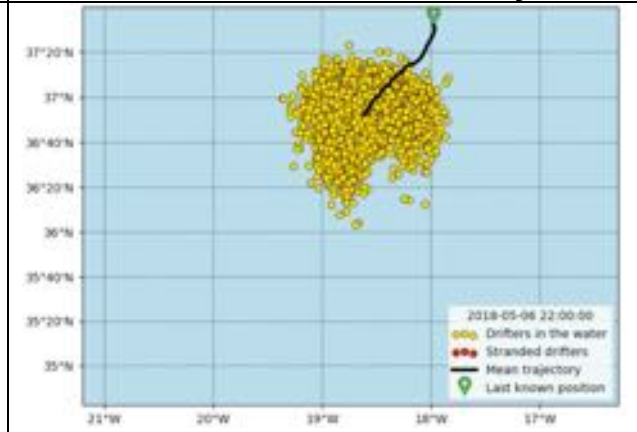
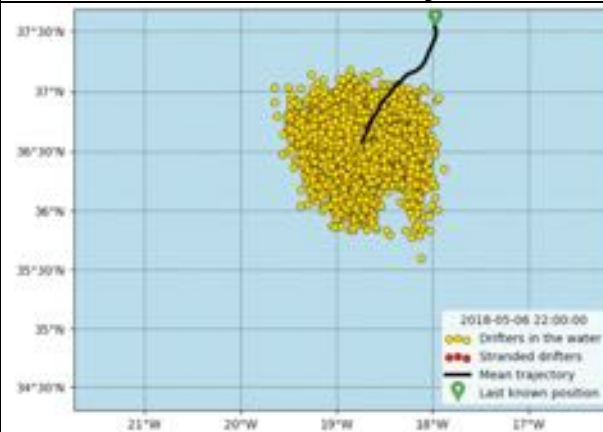
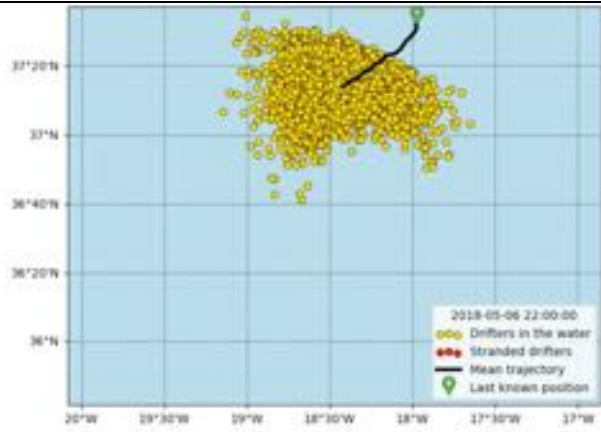
Produced 2018 CMCC

### Type of scenario

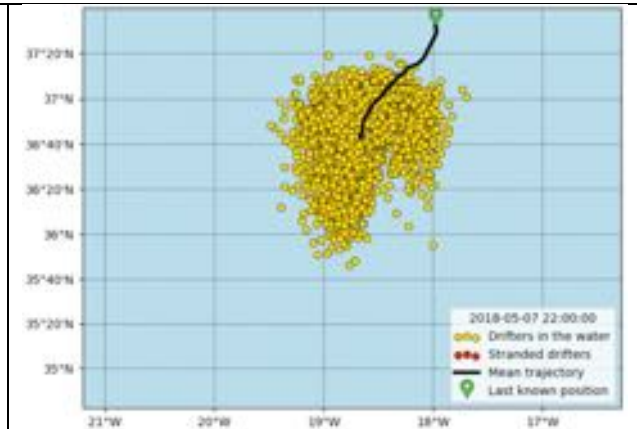
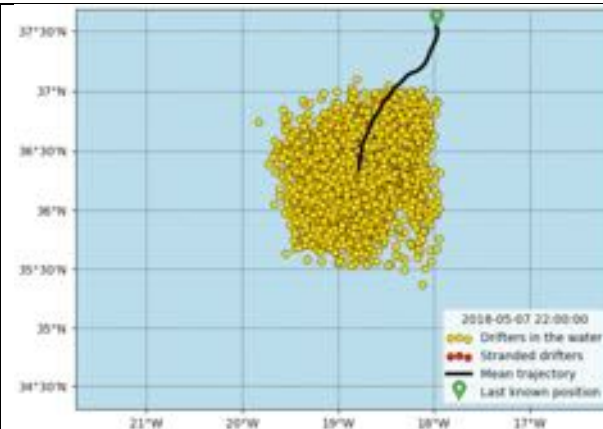
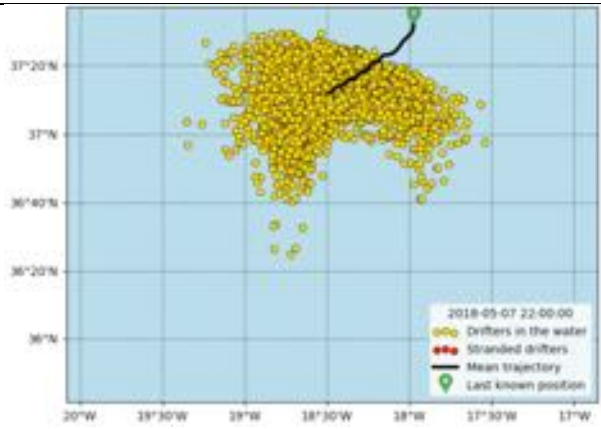
#### Person-in-the-water

#### Life raft without ballast system

#### Life raft with shallow ballast system



SAR object location for the period of 22:00 05/06/2018  
Produced 2018 CMCC



SAR object location for the period of 22:00 05/07/2018  
Produced 2018 CMCC

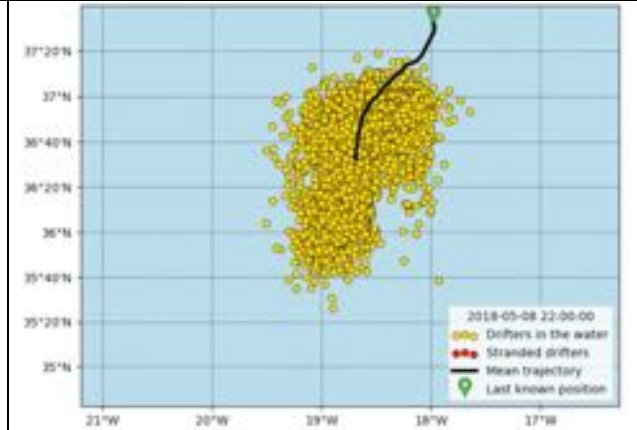
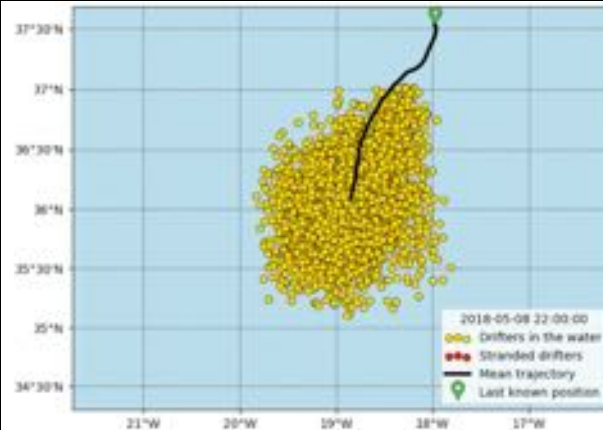
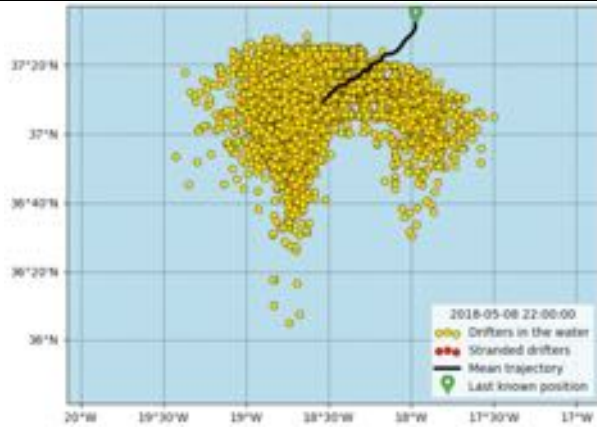


### Type of scenario

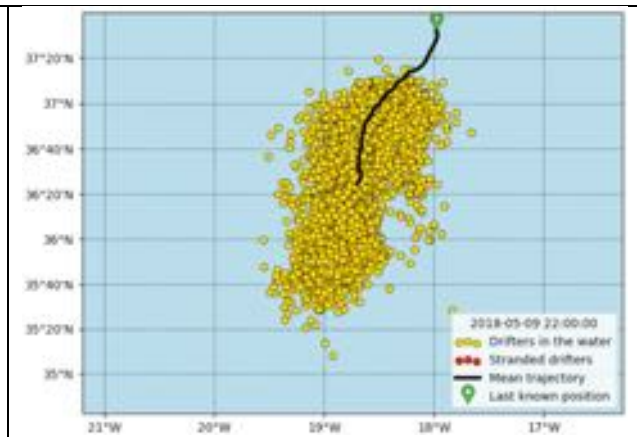
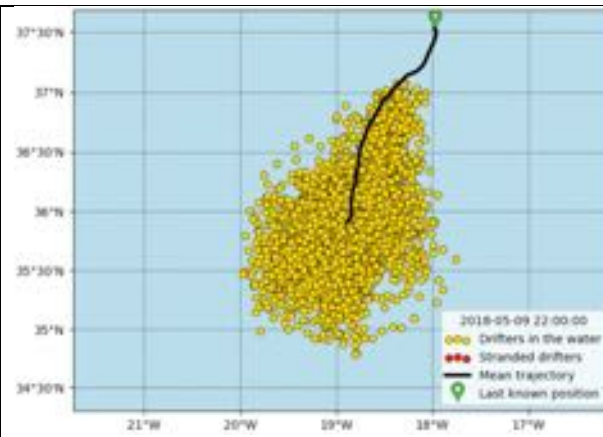
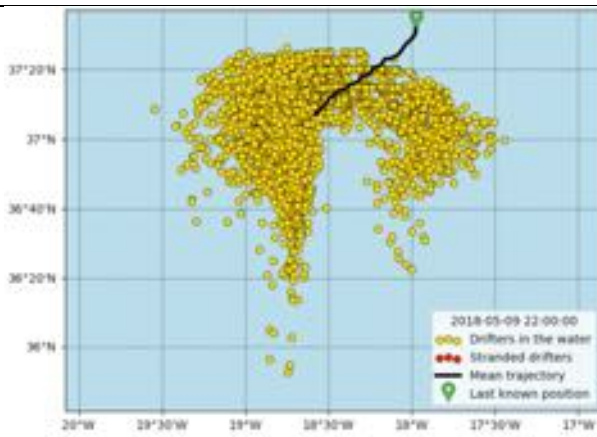
#### Person-in-the-water

#### Life raft without ballast system

#### Life raft with shallow ballast system



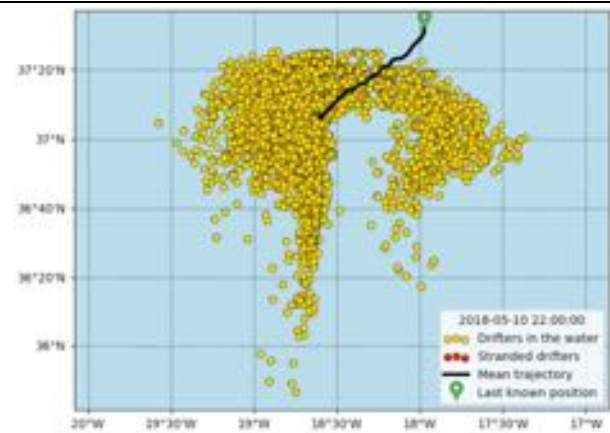
SAR object location for the period of 22:00 05/08/2018  
Produced 2018 CMCC



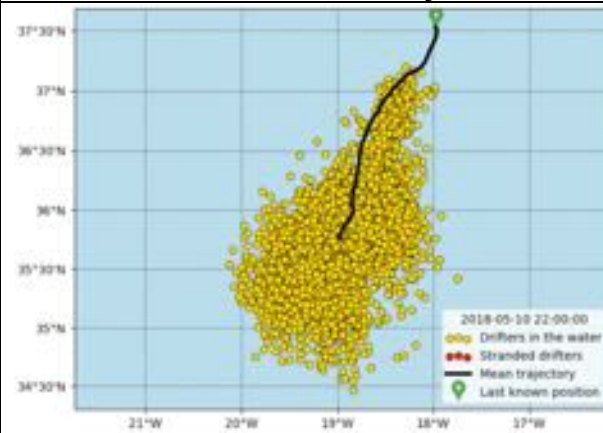
SAR object location for the period of 22:00 05/09/2018  
Produced 2018 CMCC

### Type of scenario

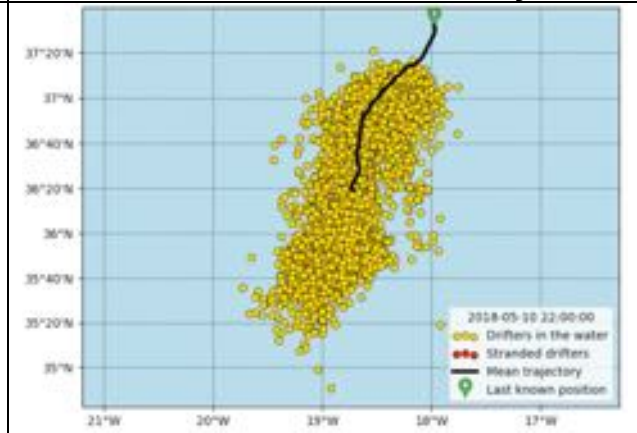
#### Person-in-the-water



#### Life raft without ballast system



#### Life raft with shallow ballast system



SAR object location for the period of 22:00 05/10/2018  
Produced 2018 CMCC

## ANNEX I

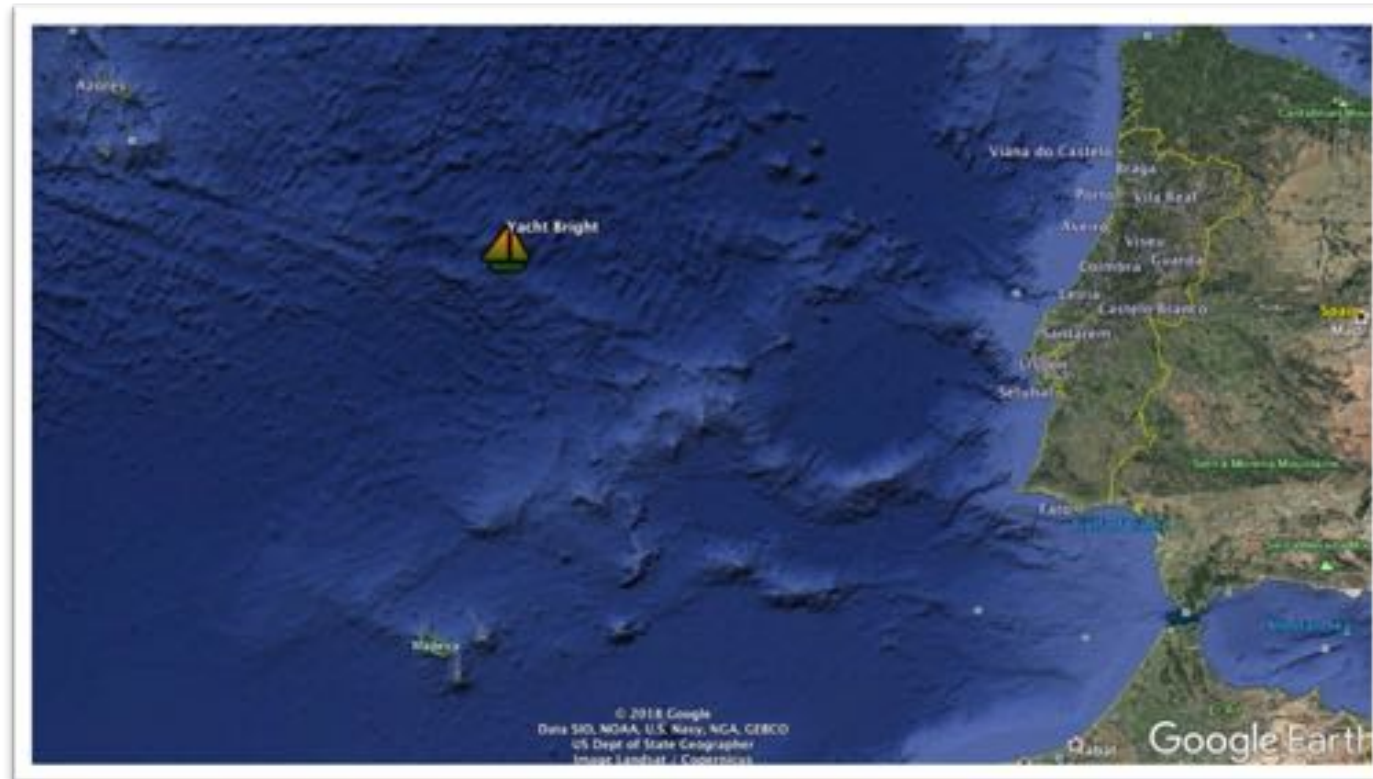
### Geographic coordinates of the possible accident:

lat\_degree=37.529N

lon\_degree=17.975W

37.35 N 17.57 W

660 km east of Sao Miguel as reported in the news (Fig. 2)



**Fig. 2** Possible location of the accident (start position of the simulations)

**Seeding** from 0:00 until 23:59 on 2 May 2018 with a radius of 25km

**Object class** PIW-1

**Ocean Currents:** Mercator Global hourly 1/12° (GLOBAL\_ANALYSIS\_FORECAST\_PHY\_001\_024)

**Winds:** ECMWF analysis 6-hourly 1/8°