Atmospheric electric field in the Atlantic marine boundary layer: first results from the SAIL project

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Project SAIL

- Aim: increase the scientific understanding of the marine boundary layer

- Multi-parametric monitoring campaign on-board NRP Sagres sailing ship in its 2020 circumnavigation expedition

- Focus on the the atmospheric electric field
NRP Sagres circumnavigation expedition (planned)

371 days (5 January 2020 / 10 January 2021)
NRP Sagres circumnavigation expedition (current)

The ship is returning to Portugal from Cape Town following the Pandemic crisis
SAIL monitoring system

Space/Atmosphere
- Kinematic high-precision GNSS
- Atmospheric electric field (2 field mills CS110)
- Gamma radiation + Cosmic radiation
- Visibility
- Solar radiation
- Ion counter (CIC, Airel)
SAIL monitoring system

Ocean
- CTD (temperature, conductivity, depth)
- Chlorophyll
- Dissolved O2
- pH
- Turbidity
- Spectral radiance
- Acoustic noise (hydrophone)

Tow-fish (INESC TEC)
SAIL – Results

Gamma radiation

Arrival to Cape Verde

Departure from Cape Verde
SAIL – Results

Atmospheric electric field

![Graph showing atmospheric electric field](image_url)
SAIL – Results

Atmospheric electric field

[Graph showing fluctuations in atmospheric electric field over time]
Summary

- Multi-parametric data set

- Continuous measurements (1-sec) over the North and South Atlantic of the atmospheric electric field in oceanic air from January-May 2020

- GEC signature clearly visible in FW days

- Consistent variations of the Efield observed in the two field mills (non-FW days)
Check for news on the project & data!

@sail_sagres