



## CALYPSO South Extending Data and Services for Safer Navigation and Marine Protection

Half-Day Seminar Marine litter, micro-plastics and sea pollution: state of the art, perspectives and use of HF radars **Pozzallo, 11<sup>th</sup> December 2019** 

Prof. Aldo Drago Project Leader



Civil Protection Department





Istituto per lo studio degli Impatti Antropici e Sostenibilità in ambiente marino

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## **Scale of weather systems**







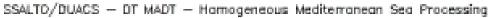
## ROSARIO numerical model 1/64°

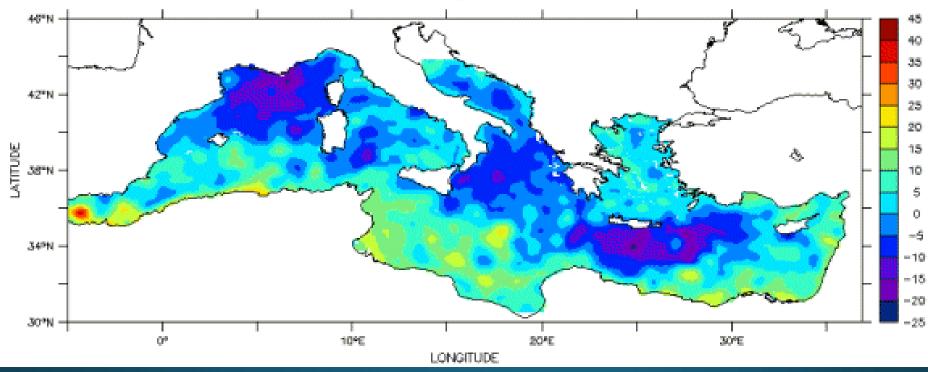
LAS 7.+/Ferret 5.07 NOAA/PMEL

DODS URL: http://opendap.avlea.oceanobe.com/thredde/dodeC/

TIME : 07-JUL-2004 00:00

DATA SET: dt\_upd\_med\_merged\_madt\_h

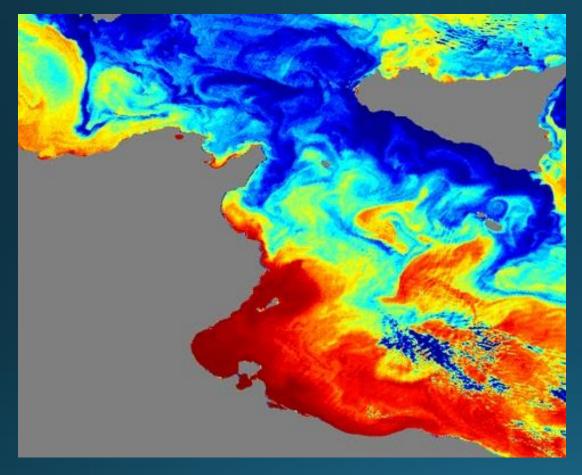






## **SST from satellites**





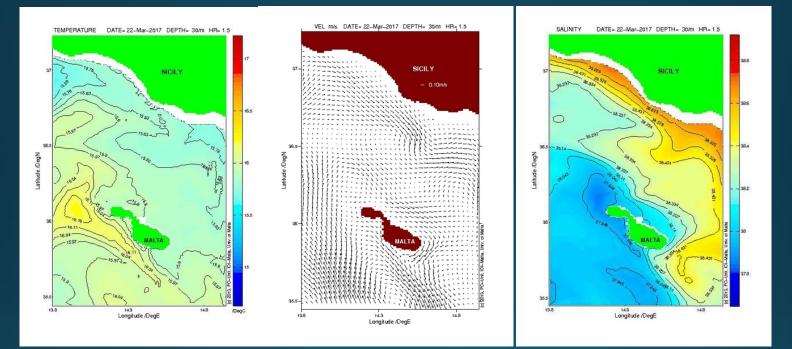
Temperature is a conservative quantity and hence serves as a tracer of water mass transport

SST is a signature of mesoscale dynamics.....eddies, fronts, upwelling





## ROSARIO numerical model 1/64°



Sea surface Temperature

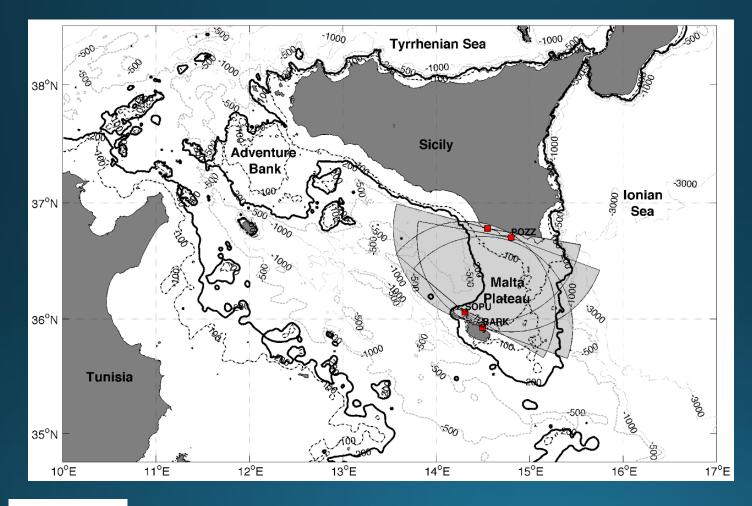
**SS** Velocities

#### SS Salinity

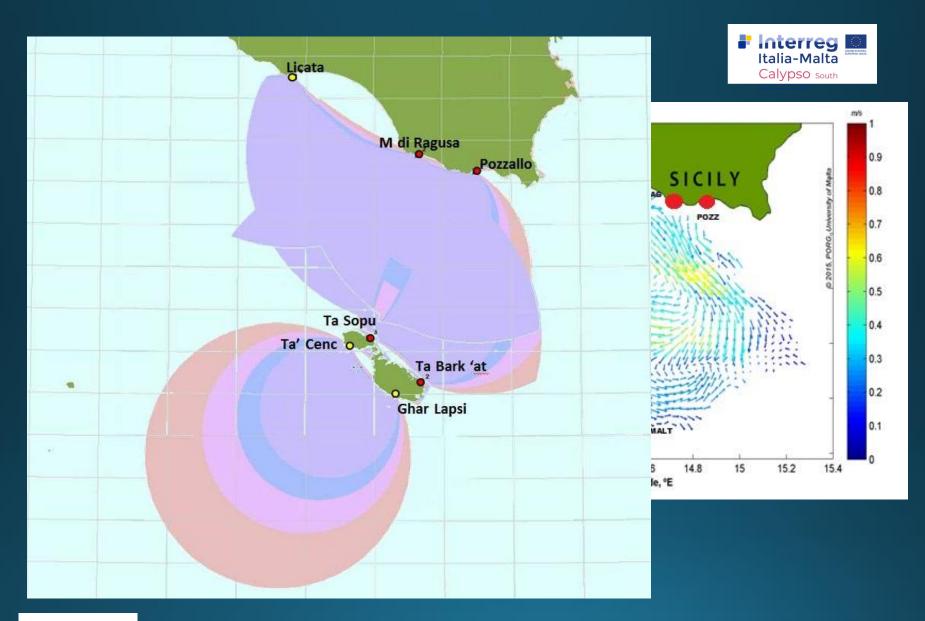
### www.capemalta.net



### CALYPSO HF Radar network

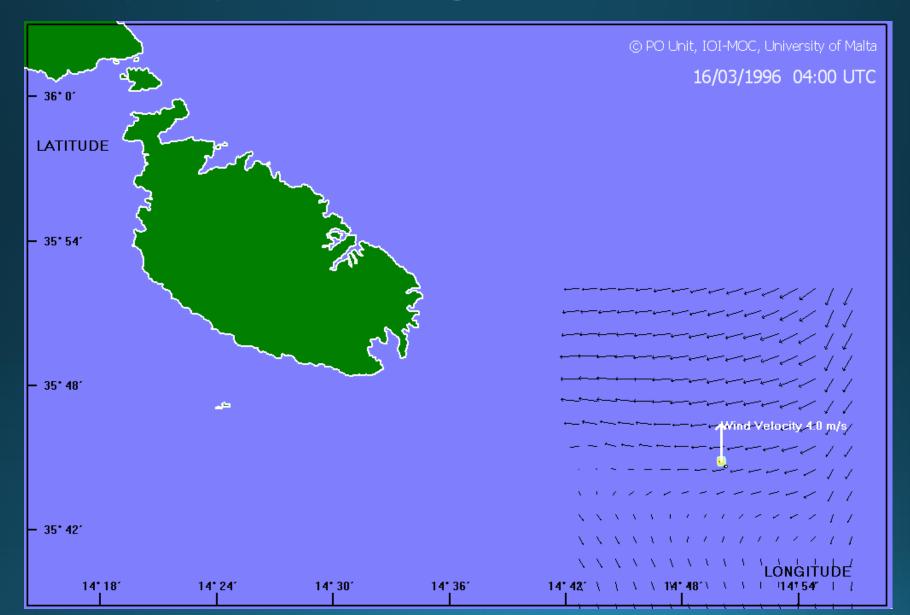








### Oil spill response – Predicting fate of oil



## **Real-Time Stations**

CALYPSO SOUTH Porto Network

## Providing a service for safer navigation and port safety









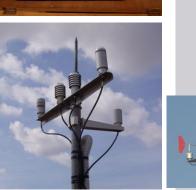
### **PORTO online**

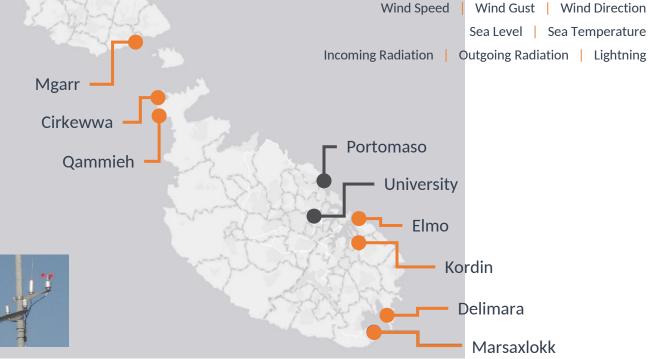












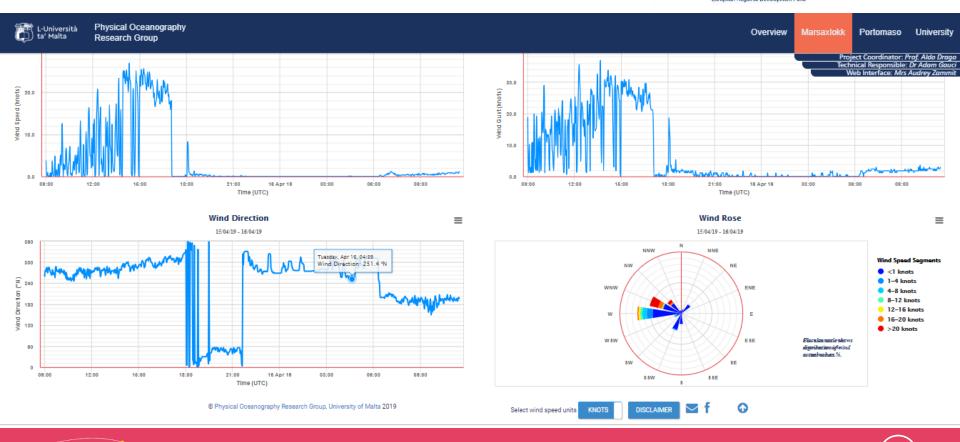




# **PORTO web interface**

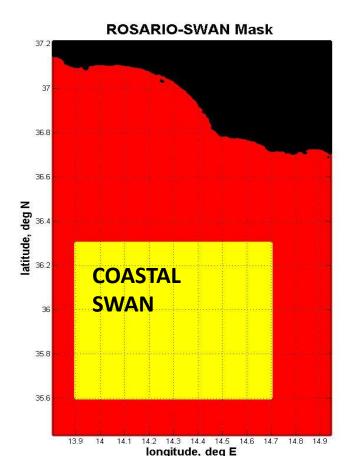






## **ROSARIO SWAN wave model**





#### **Covers Malta shelf area**

Regular grid at a resolution of 0.002° ≈ 200m

Longitude: 13.750°E to 15.250°E Latitude: 35.375°N to 37.125°N

nested to the MARIA-WAM system

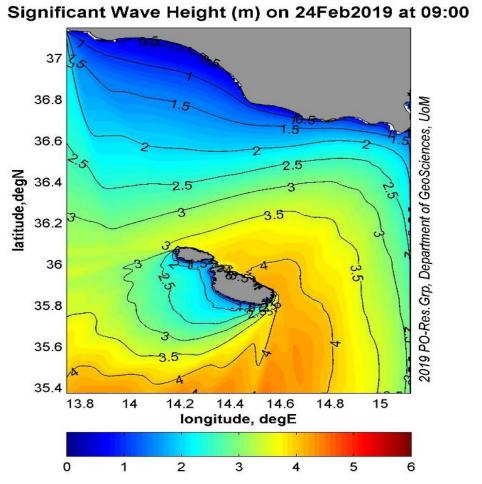
Atmospheric forcing by 1h SKIRON wind fields at 0.005° (≈ 600m) resolution

#### Surface currents from ROSARIO64

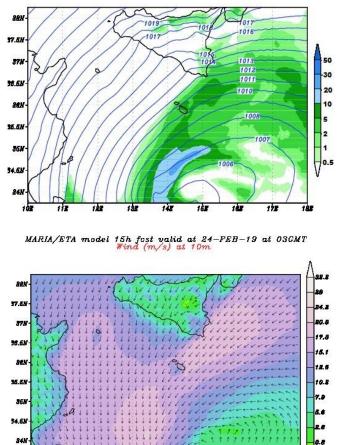


## **ROSARIO SWAN Validation**





MARIA/ETA model 15h fost valid at 24-FEB-19 at 03CMT Sh accum. Precipitation (mm) and MSL Pressure (hPa)



162

185

175

103

112

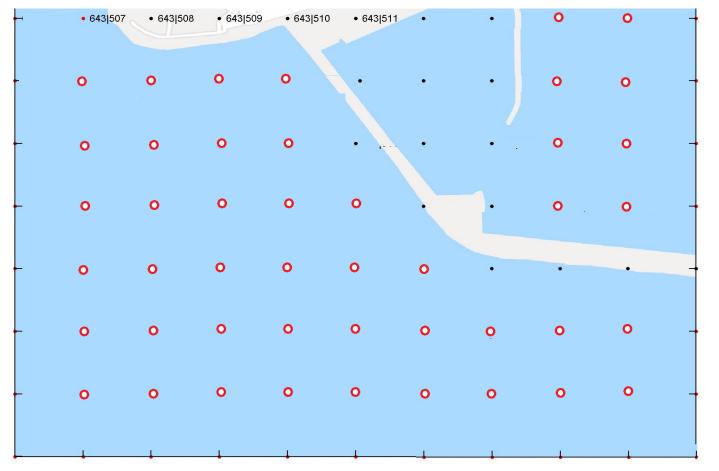
122

Ä

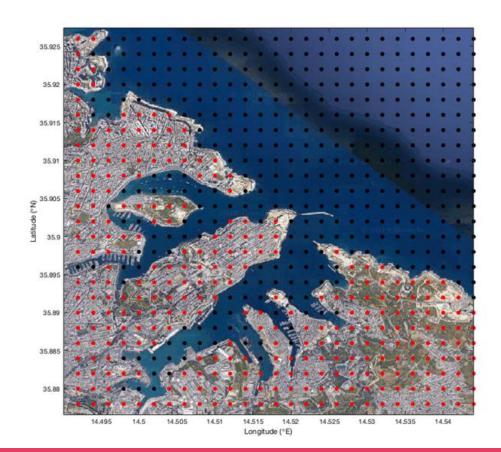
185 0

## **ROSARIO SWAN interface**





Max zoom at a resolution of 0.002°

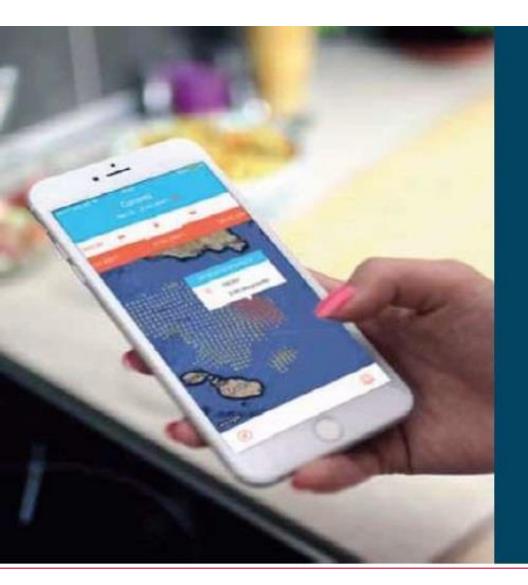




# SWAN high resolution wave forecast

- A layer of wave forecasts from the ROSARIO-SWAN Model will be available
- Detailed information about wave spectra at selected points





## KAPTAN MOBILE APPLICATION

#### Sea Surface Currents

Hourly 2D plots | Surface currents across a transect | Trajectory generated by surface currents

Sea Surface Temperature

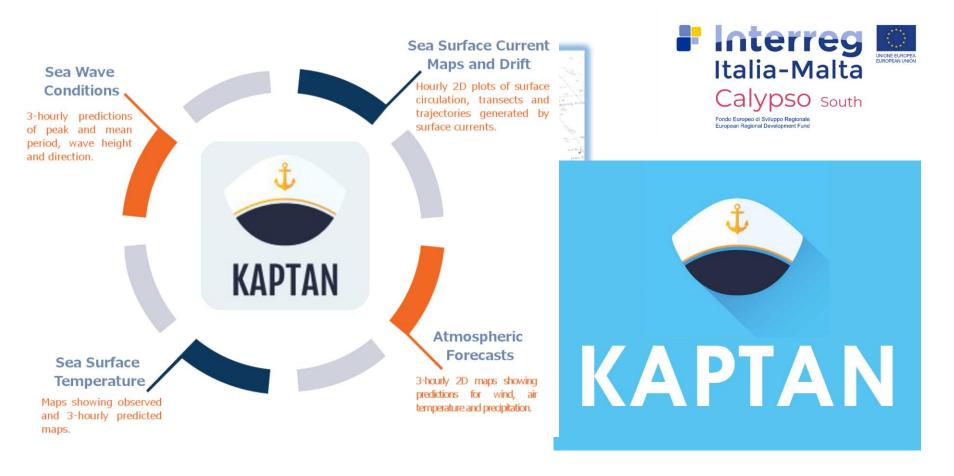
Observed satellite data | 3-hourly forecast maps

Sea Wave Conditions

Wave direction and height | Peak period | Mean period

Atmospheric Forecasts

3-hourly forecasts for: air temperature | wind | precipitation | atmospheric pressure



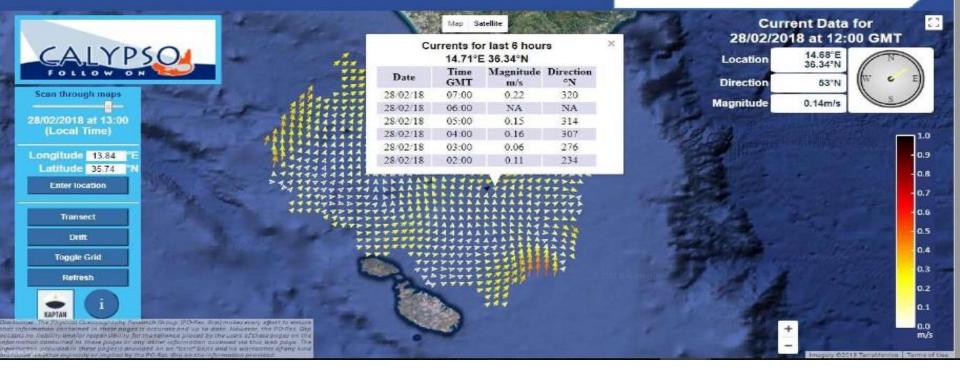


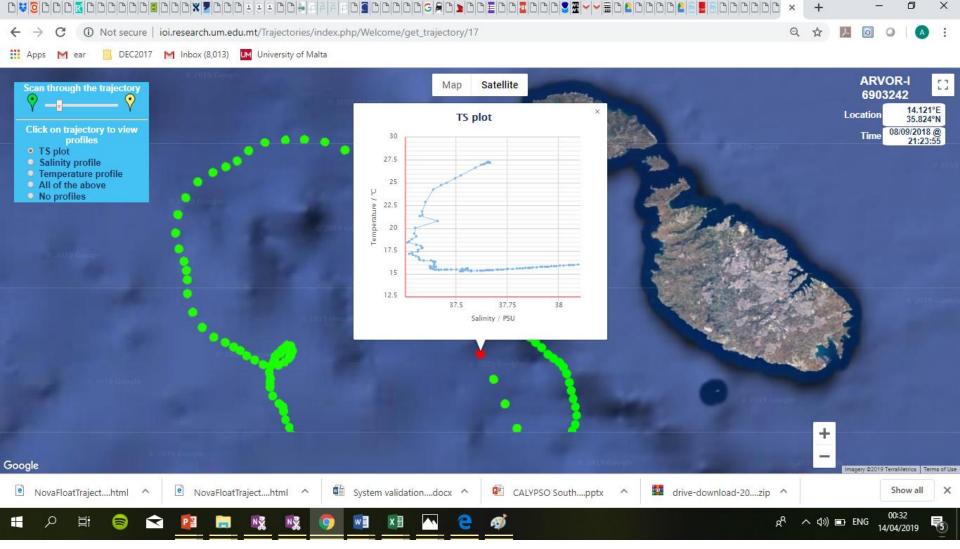


## KAPTAN Smartphone application delivering meteo-marine data to the public









- Interactive interface for user-defined display of data
- Online processing of data



#### **Extending Data and Services for Safer Navigation And Marine Protection**



#### **Prof. Aldo Drago**

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