Progress in the use of VMS data for spatial management of fishing activity

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GENERAL FISHERIES COMMISSION FOR THE MEDITERRANEAN
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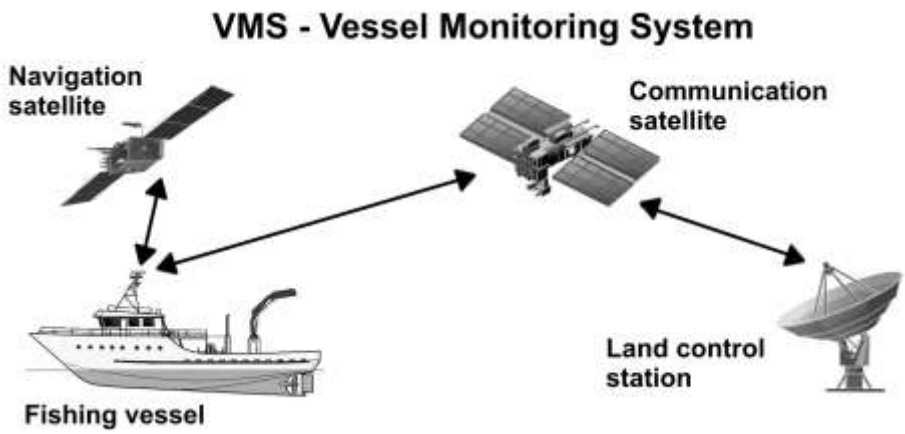
VMS technology



The context

- VMS data are routinary processed within the **Data Collection Framework** (http://ec.europa.eu/fisheries/cfp/fishing_rules/data_collection/index_en.htm) in order to assess and analyze the spatial extension of fishing effort
- This requires a complex flow since VMS data must be processed and coupled with other data sources (i.e. Logbooks)

The challenge

Some key steps are:

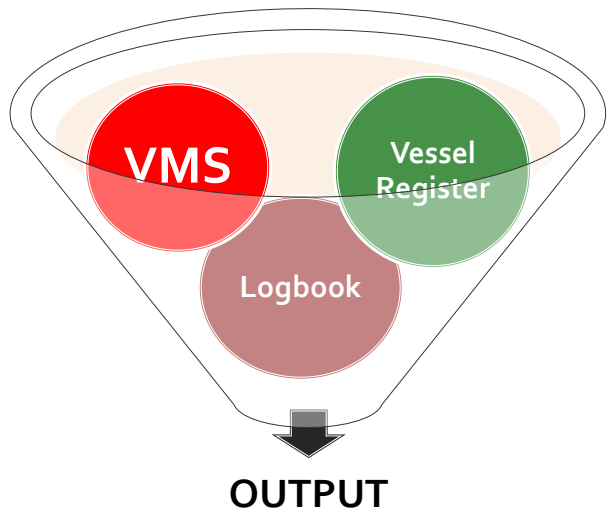
- Disaggregation of VMS dataset into single "tracks", that are fishing trips starting by and ending to a given harbor;
- Interpolation at sound standard frequency (e.g. 10 minutes) in order to realistically represent fishing activity;
- Recognize fishing activity with respect to targeted resources (i.e. Métiers classification)

The challenge

- Distinguish between fishing and steaming points within each classified track;
- Aggregate fishing points per area, per activity and per time, on a spatial grid;
- Analyze the obtained pattern in order to:

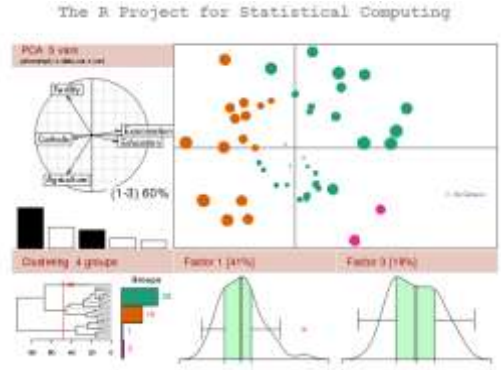
1. Compute pressure indicators (extension of exploited area)
2. Identify and monitoring fishing grounds through time

The data used

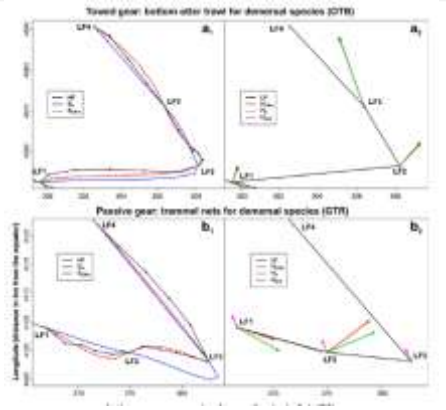


The way

- Development of R code (libraries, routines) in order to facilitate validation, sharing and enhancement of methological skills

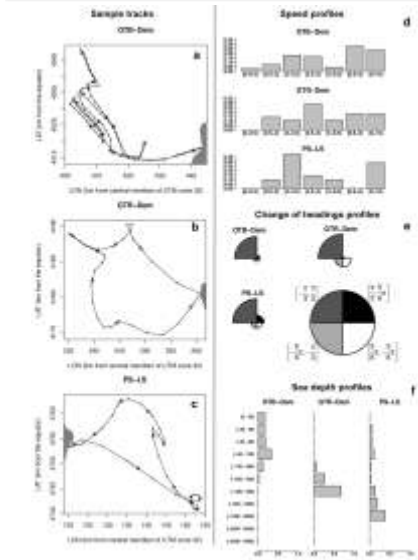


Interpolation



In this way it is possible to obtain high frequency tracks from VMS signals natively characterized by low frequency (e.g. 2 hours, that is the default for Italian fleet)

Recognize fishing activity



Fisheries Research

journal homepage: www.elsevier.com/locate/fishres

When behaviour reveals activity: Assigning fishing effort to métiers based on VMS data using artificial neural networks

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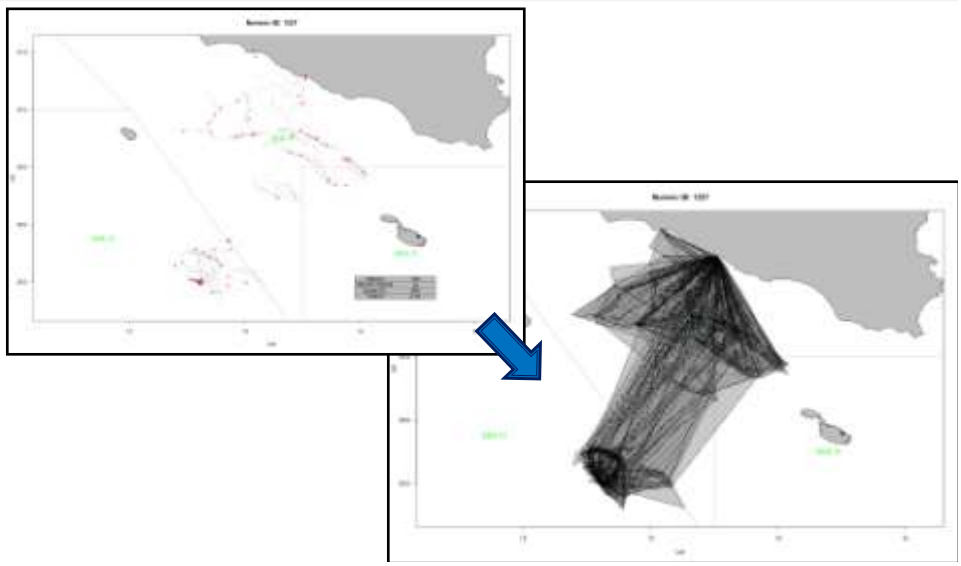
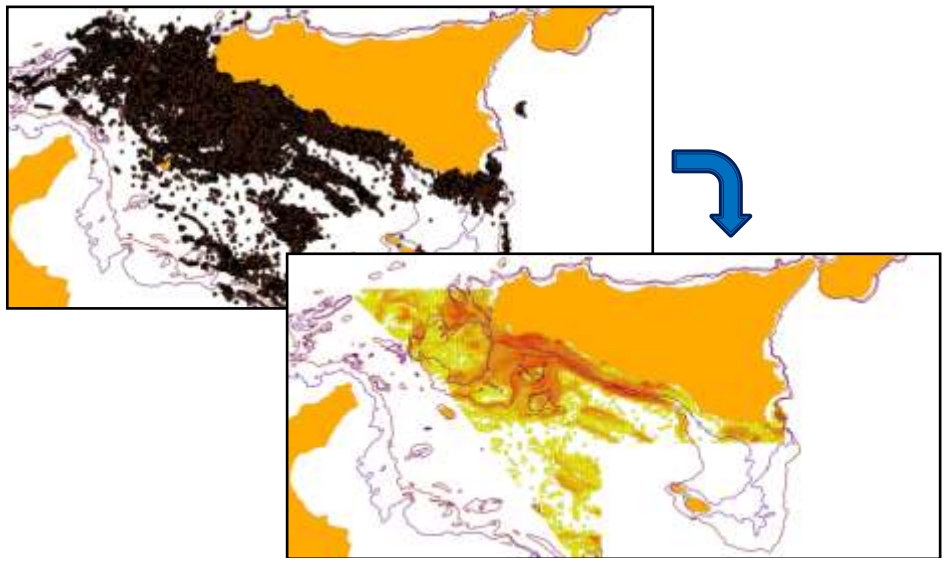
ARTICLE INFO

ABSTRACT

In summary: from points to tracks

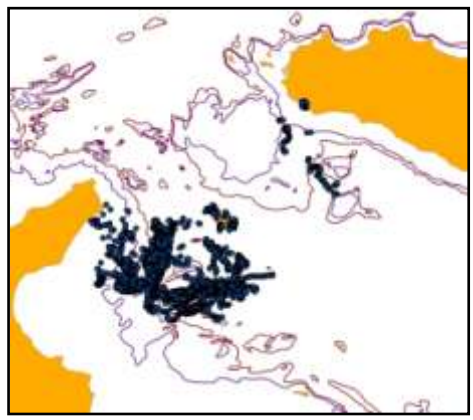


From points to pattern

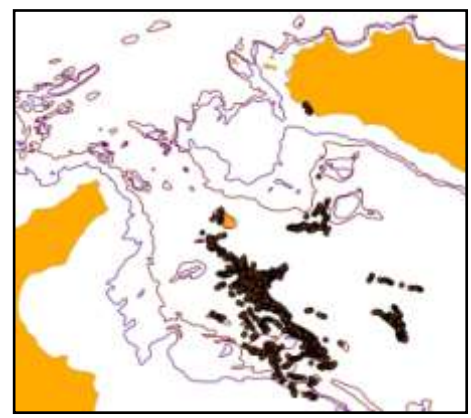


Possible analysis: seasonal patterns

Winter



Spring

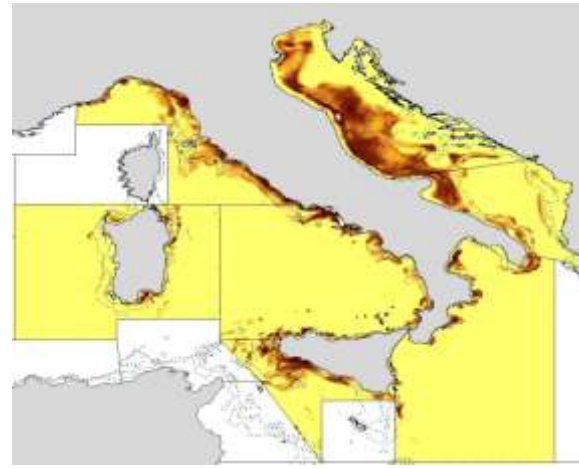


Fishing grounds

Use of VMS data to track spatio-temporal changes of fishing grounds.

We developed a statistical method to identify fishing grounds and to track temporal changes.

"Static" map of the fishing grounds

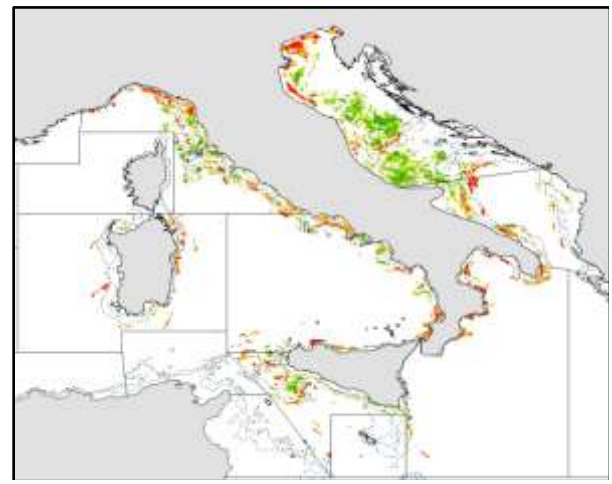


Tracking changes: Temporal trends within fishing grounds

"Dinamic" map of the fishing grounds

Decreasing effort

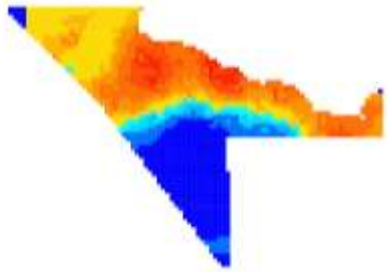
Increasing effort



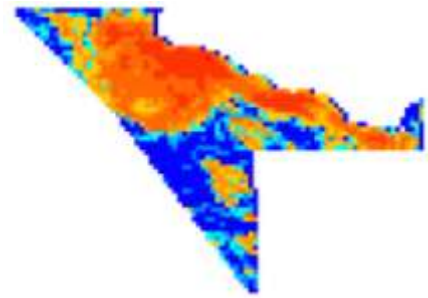
VMS for management of fishing activity

Preliminary analyses suggest an (obvious?) relationship between spatial pattern of fishing effort and resource distribuition/status

Distribution of 0+ rose shrimp

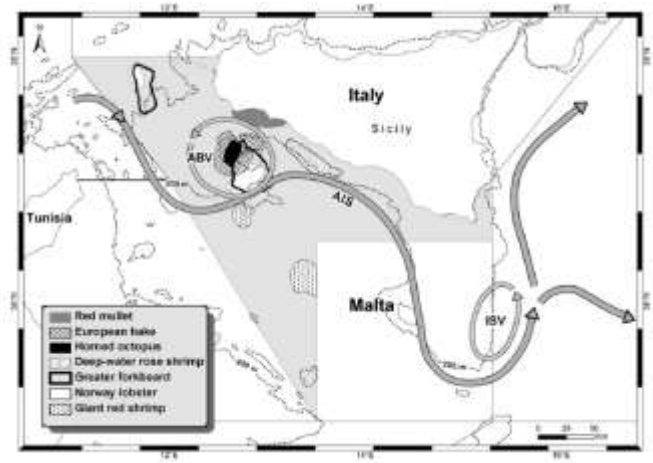


Fishing effort pattern by VMS



VMS for management of fishing activity

VMS could be profitably used to draw new scenarios of fishing effort allocation, also considering information about critical biological areas to be protected



Thank you for the attention

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