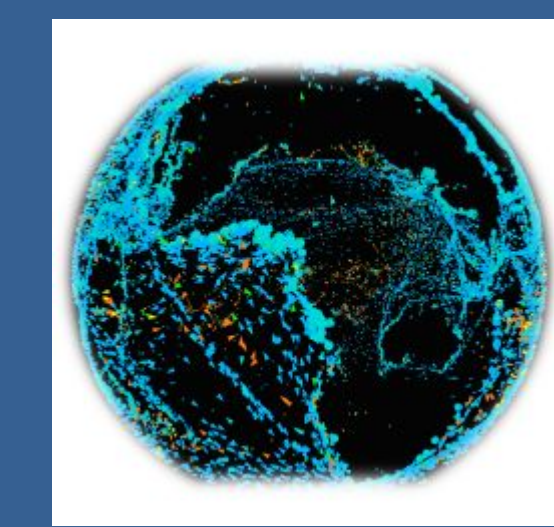# EuroSciCon Conference on Aquaculture 2018
Satellite technology for monitoring in the Mediterranean Sea

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Abstract

This study presents a general evaluation of Monitoring Control and Surveillance of vessels (hereinafter MCS) in the Mediterranean Sea. The MCS, with satellite technology, was applied to the Mediterranean, in order to achieve a comprehensive picture of the maritime traffic and presence of fishing vessels over a one-year period.

Satellite data, as AIS (Automatic Identification System), was reviewed for the entire Mediterranean Sea for the period between 1st April 2015 to the 1st April 2016. Information concerning vessels, IUU lists and other fisheries regulations obtained from updated databases completed the analysis. Enforcement and regulatory expertise together with machine learning, 3D gaming and cyber security were used to empower fisheries enforcement and compliance. Maps are presented using QGIS software.

Introduction

The monitoring and control by satellite data was studied for the entire Mediterranean for the period 1st April 2015 - 1st April 2016. The Automatic Identification System (AIS) transmissions were analyzed over the period of a year.

A full fisheries monitoring review of the area gives a global picture of the level of compliance.
The enforcement and regulatory expertise together with machine learning 3D gaming and cyber security empowers fisheries enforcement and compliance.
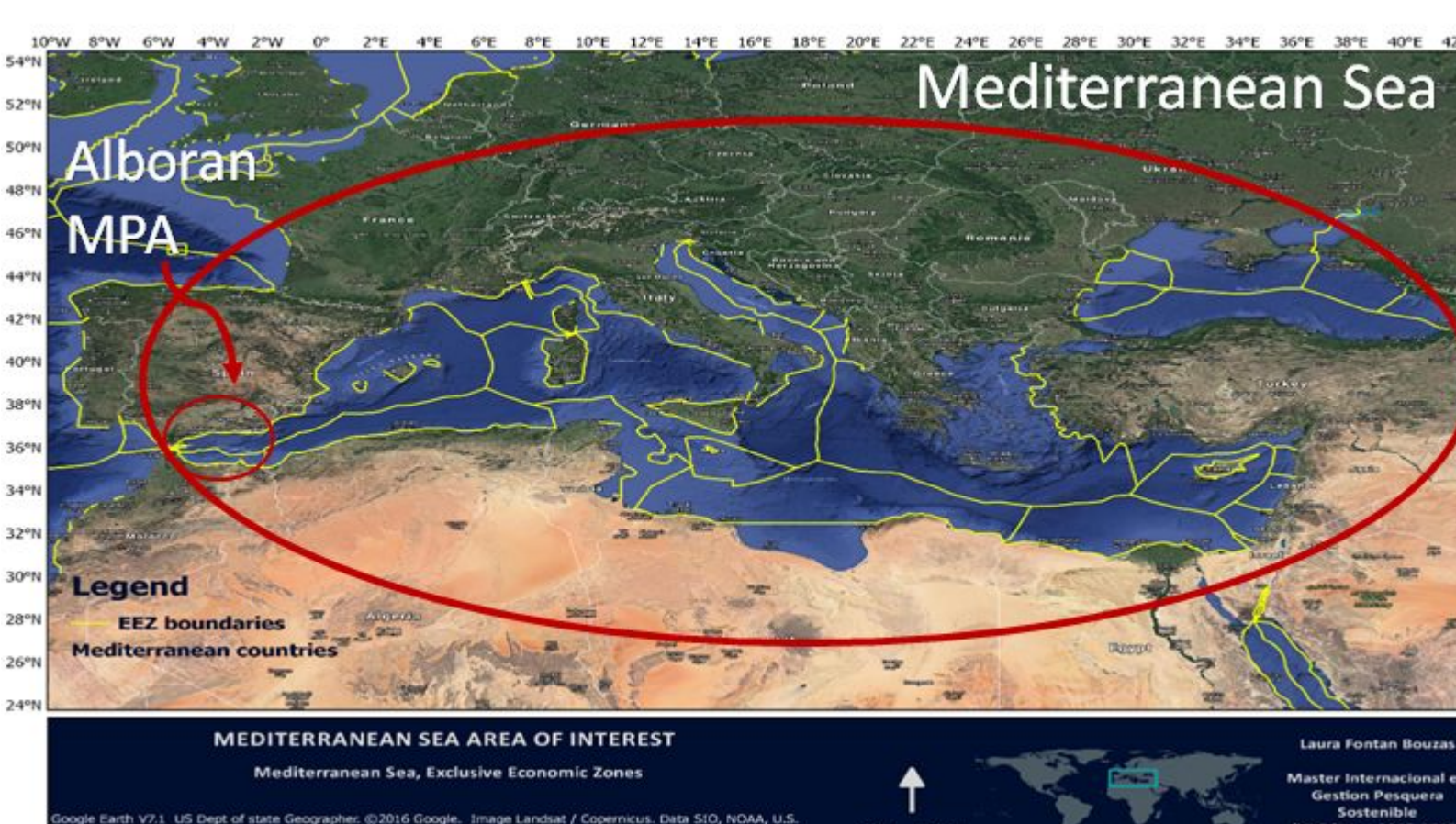

Figure 1. Map of the area of study

Methods and Materials

For this study we used Automatic Identification System (AIS), RFMO´s IUU lists, ITU and HIS data sourcesfor the fisheries monitoring and control analysis.

Some other data which can be used:

- VMS (Vessel Monitoring System)
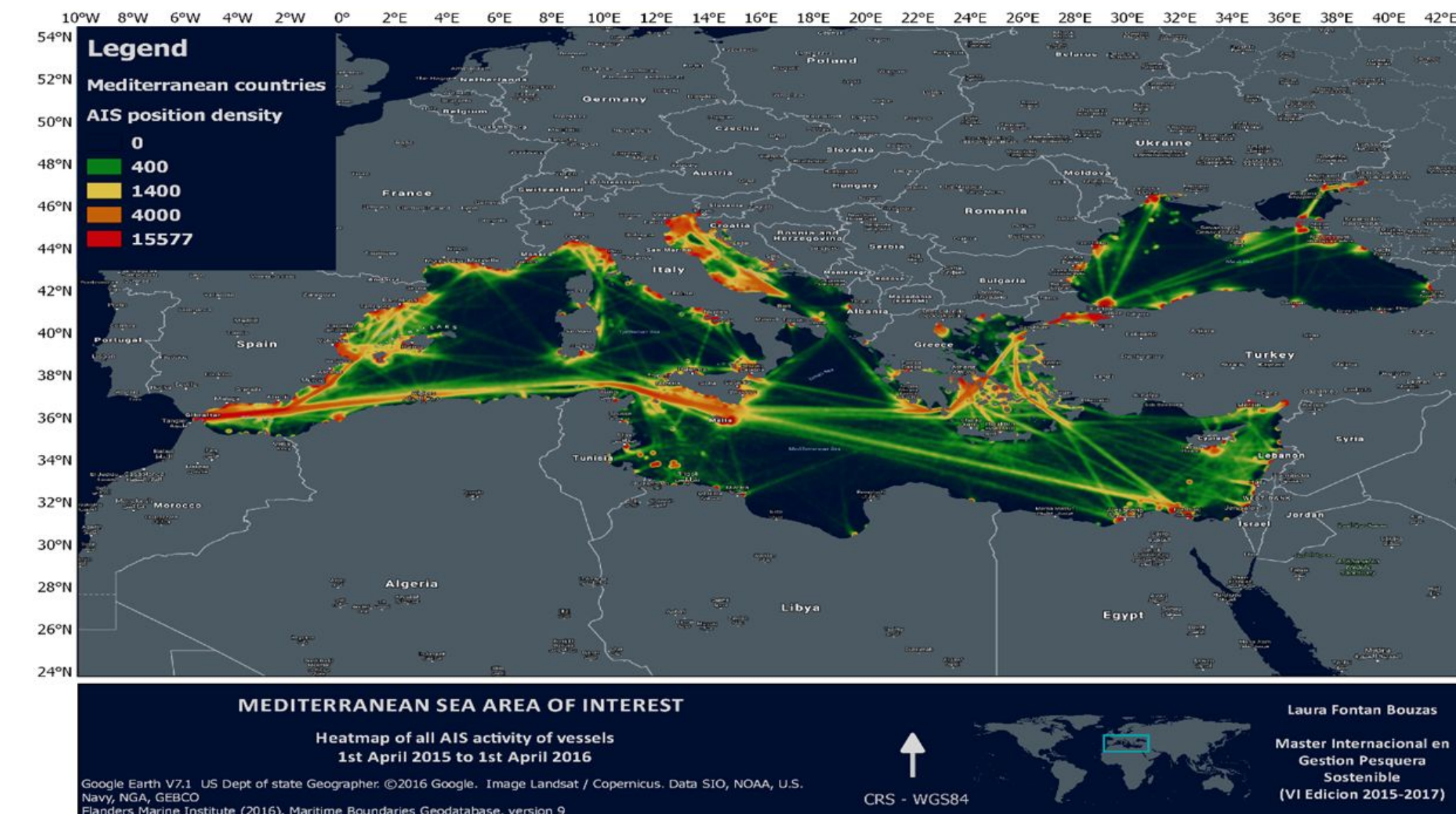- Radar
- Optical
- Data bases
- Machine Learning

Figure 2. AIS transmissions.

Results

As a result of the analysis, a total of 41,519 unique AIS vessel ID´s were detected in the Mediterranean area of interest during the review period. An intense traffic area, with shipping lanes running across the western Mediterranean from the Strait of Gibraltar to Italy, south of Italy and Greece, and between Italy and Egypt were identified.

Another area of intense traffic was detected between Greece and Turkey. AIS activity specifically identifying fishing vessels suggested that these commonly transit the area to fish on the coastal areas surrounding the Adriatic, Spanish coast, South Sicily and Greece.

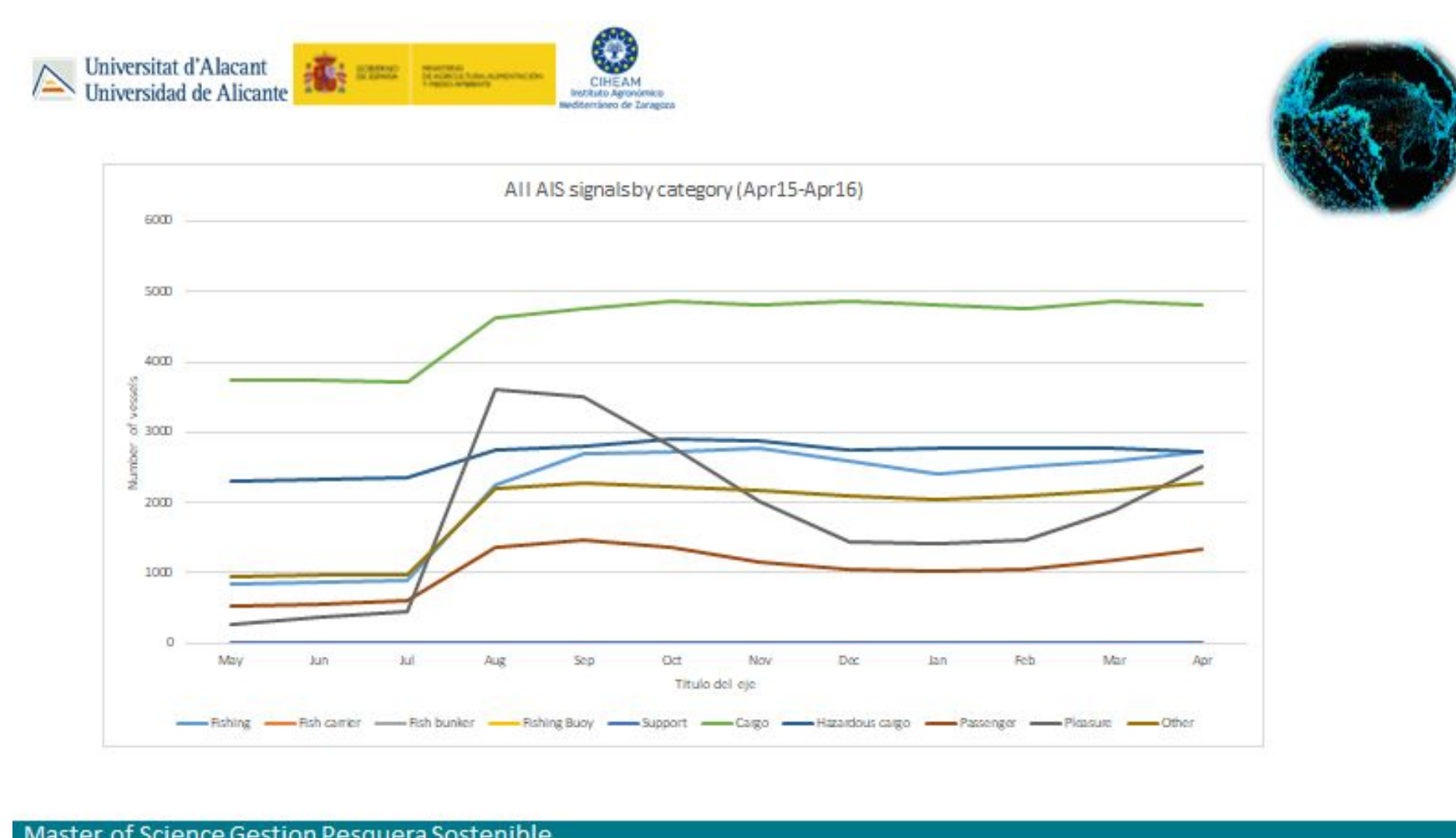**Graph 1.** AIS signals by category (Apr15-Apr16)i.

Chart 1. Fishing vessels (Apr15-Apr16)i.

Discussion

The monitoring and control by satellite technology reduce the time and cost.

Vessels which do not transmit by AIS are not analized. Gaps on AIS transmission are indicators of illicit activity. The improvement of satellite technology increases detections. Limitations on capacity and cost make more difficult to detect vessels.

Tools available for the monitoring and control depends on the capability and requirements of each area in particular.

Conclusions

Results highlight that satellite monitoring technology can drastically reduce the time and cost associated with traditional means of surveillance at sea.

It significantly improves the chances of detecting illegal fishing and serves to supplement patrol activities, through planning recommendations, based on the identification of targets and areas of investigation.

A strong knowledge of the area and the situation of fishing stocks are fundamental for a better management.

Future Directions

Monitoring and control are essential in order to have a much better understanding about the level of compliance of fisheries regulations, which are making the resources more sustainable and allow the sea to recover from human activity.

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References

Available on request due to data protection

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