SSD-Pesca: the Fishery Oceanography Observing System (FOOS)

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In recent years, a CNR-IAMC work group based in Cape Granitola has undertaken a process of technological innovation transfer to the fishing companies, designing and implementing intelligent and automated systems that can provide services and useful information to both the navigation safety and the sustainable use of marine resources.

On the other hand, in 2003 within the EU MFSTEP project, CNR-ISMAR Ancona started an observing system based on 7 commercial fishing vessels of the Adriatic fleet (the Fishery Observing System - FOS). This system is still operating, allowing the acquisition of catch data, position and depth and sea temperature of each haul and participating to EU I3 project JERICO.

Under the umbrella of the CNR project SSD-Pesca and taking advantage of the previous experiences, the two CNR research groups (CNR-IAMC - Capo Granitola and CNR-ISMAR - Ancona) joined forces to develop a new fishing Vessel Monitoring System (VMS), which was named Fisheries Oceanography Observing Systems (FOOS).

The FOOS is networked through satellite and/or GPRS/UMTS modems according to the distance from the coast and is able to receive and transmit data in real time to a ground station equipped, even at great distances, according to the operation of vessels.

The services made available by the system installed on board of vessels, involving the transfer of information trough synoptic-scale thematic maps generated by other groups and institutes of the National Research

Council. In particular, the parameters related to the state of the sea and the provisions thereof (like wave height, wind stress, marine current, etc.) are made available through the implementation of mathematical models developed by the Group of Operational Oceanography (G3O) of the CNR-IAMC of CNR in Oristano and the CNR-ISMAR of Venetia (KASSANDRA Storm Surge System).

Further information are provided by the Satellite Oceanography Group (GOS) of the Atmospheric Sciences and Climate Institute (ISAC) of the CNR, in charge for satellite remote sensing data processing and the production of mesoscale maps of sea surface temperature and chlorophyll-a distribution.

Thematic maps are then delivered to the fishing boats through the system developed, allowing the user to get a meso-scale and micro-scale picture of the oceanographic and weather conditions of the Mediterranean Sea.

The data acquired by the FOOS installed on board of different kinds of fishing boats, as well as providing a valuable framework for navigation-and in-situ weather conditions, during both navigation and fishing activities, can give useful information on fishing effort distribution patterns, to the aims of improving the management of marine resources. Specifically, the acquisition of geo-referenced catch data allows the estimation of catch per unit effort (CPUE) that can be put in relation to oceanographic data collected during the same fishery operation, in order to better understand relationships between environmental conditions and the distribution of the target species.

Furthermore the collection of environmental information may contribute to data assimilation of meteorological and oceanographic models, in order to increase accuracy in forecasts.