

Environmental Monitoring and Surveillance

Fisheries Management Applications

Margarida Castro



Surveillance data

- VMS – Vessel Monitoring System
- AIS – Automatic Identification System

Position + time + speed



Source:

<http://www.inov.pt/pages/monitorizacao/monicap.php>

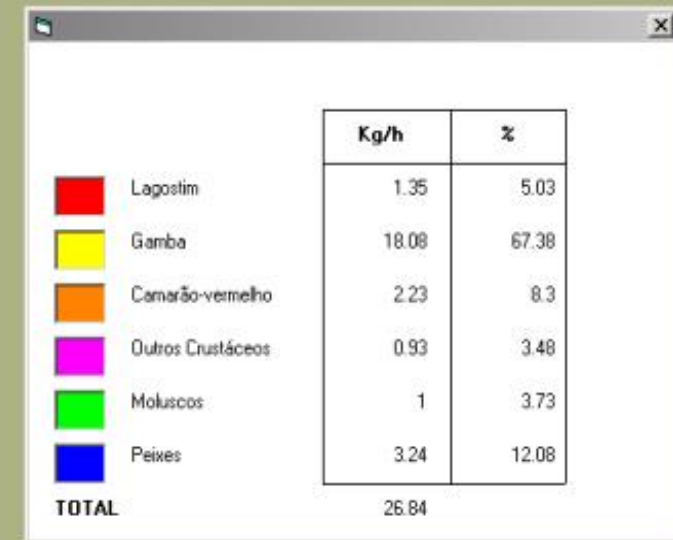
Source:

Afonso-Dias, M., Simões, J.M., Pinto, C., Sousa, P. 2002

Webpage of the GeoCrust project

http://w3.ualg.pt/~madias/GeoPesca/geocrust2.0_RollUp.pdf

Project coordinator:
Manuel Afonso Dias
U. Algarve



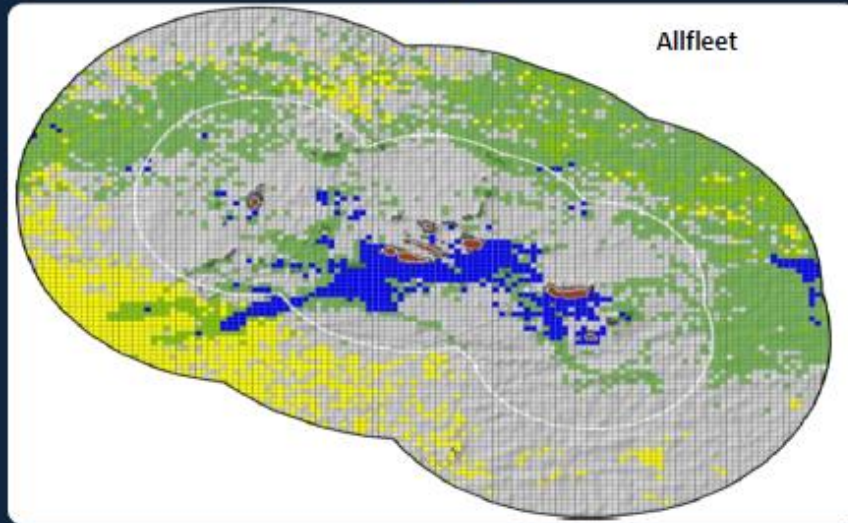
MONICAP
+
Landings
+
Log-books

Pelagic and bottom longline

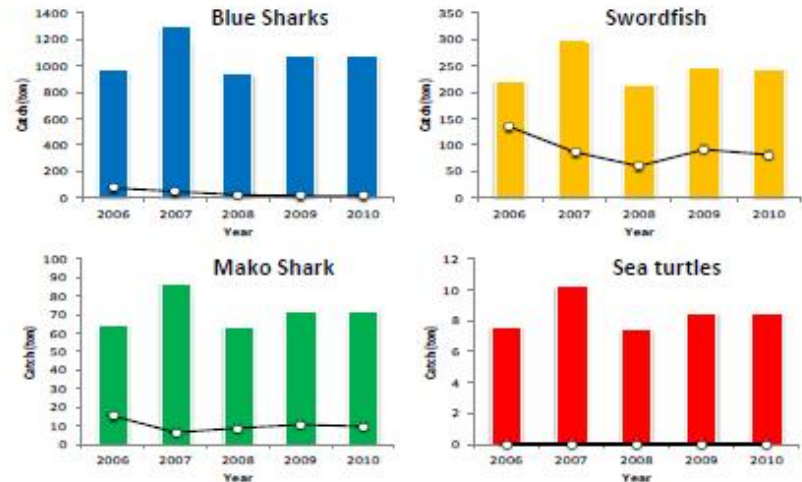


Production of fishing effort maps and estimated catches (VMS data: 2002 - 2010)

Fishing effort



Estimated catch VS regional statistics (black line)



The level of discards and unreported shark catch for Azorean pelagic longliners is 418 tons/year of that declared in official statistics (73 tons)

T. Morato, B. Glogovac, F. Vandeperre, C. Pham, G. Menezes, R. Ferraz

Former Fishing Technology Group: A. Campos, P. Fonseca and collaborators, Teresa Fonseca, PhD thesis



Definition of fleet components in the Portuguese bottom trawl fishery

Aida Campos^{*}, Paulo Fonseca, Tereza Fonseca, Joaquim Parente

INIA/IPIMAR, Portuguese Institute for Agriculture and Fisheries Research, Avenida de Brasília, 1449-006 Lisbon, Portugal

Received 21 February 2006; received in revised form 8 September 2006; accepted 28 September 2006



Trawling for cephalopods off the Portuguese coast—Fleet dynamics and landings composition

Tereza Fonseca^a, Aida Campos^{a,*}, Manuel Afonso-Dias^b, Paulo Fonseca^a, João Pereira^a

Maritime Engineering and Technology – Guedes Soares et al.
© 2012 Taylor & Francis Group, London, ISBN 978-0-415-62146-5

The importance of satellite-based vessel monitoring system (VMS) for fisheries management: A case study in the Portuguese trawl fleet

T. Pilar-Fonseca, A. Campos, P. Fonseca, B. Mendes, V. Henriques & J. Parente
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M. Afonso-Dias
Centro de Investigação Marinha e Ambiental, Universidade do Algarve, Faro, Portugal

Sustainable Maritime Transportation and Exploitation of Sea Resources – Rizzuto & Guedes Soares (eds)
© 2012 Taylor & Francis Group, London, ISBN 978-0-415-62081-9

Fuel efficiency in trawlers under different fishing tactics using a consumption model and VMS data: A case-study for the Portuguese fleet

A. Campos, T. Pilar-Fonseca, J. Parente & P. Fonseca
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Centro de Investigação Marinha e Ambiental, Universidade do Algarve, Faro, Portugal



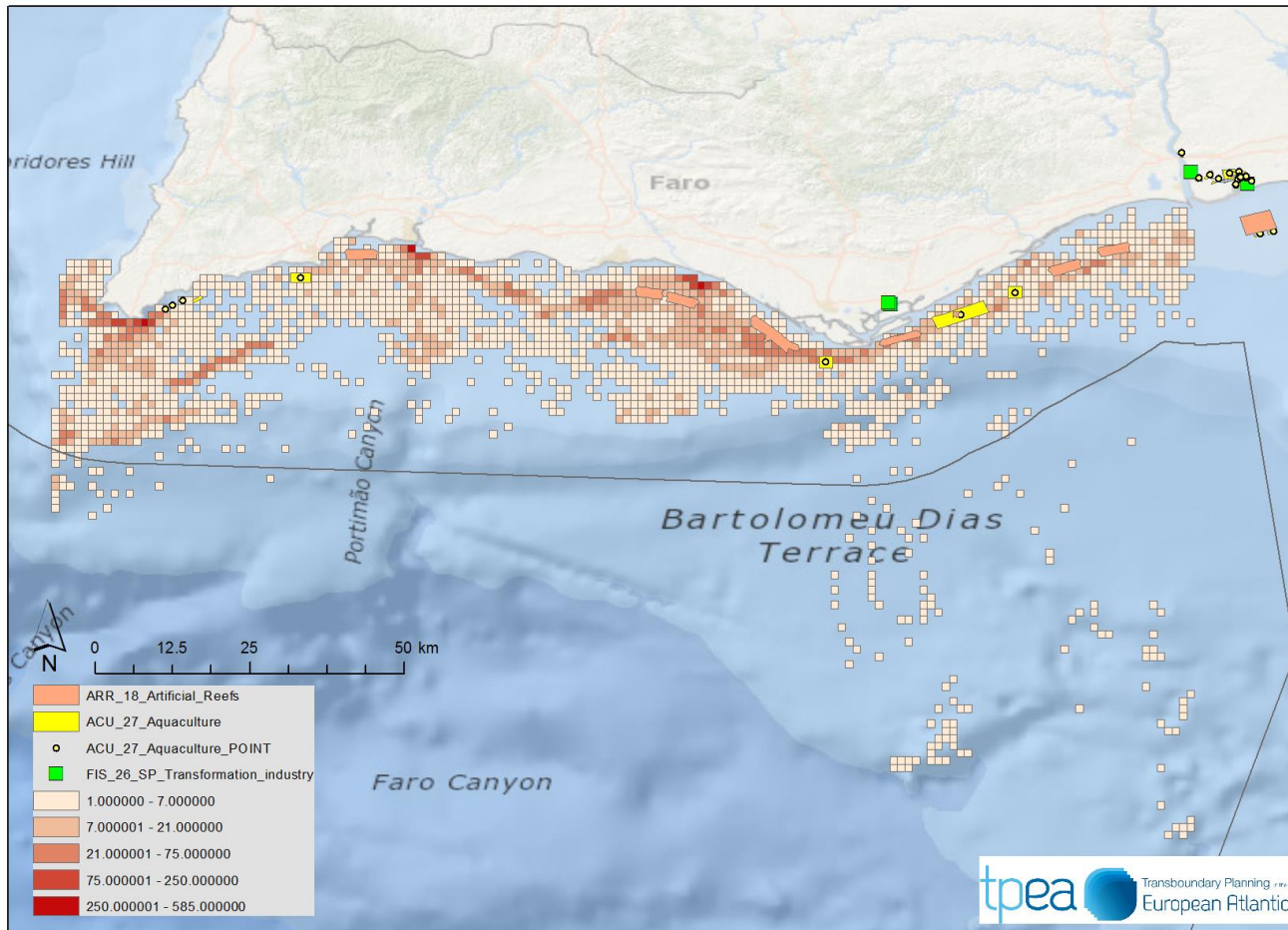
Integration of fishery-dependent data sources in support of octopus spatial management

Tereza Pilar-Fonseca^{a,b,*}, Aida Campos^a, João Pereira^a, Ana Moreno^a, Sílvia Lourenço^{a,c}, Manuel Afonso-Dias^b



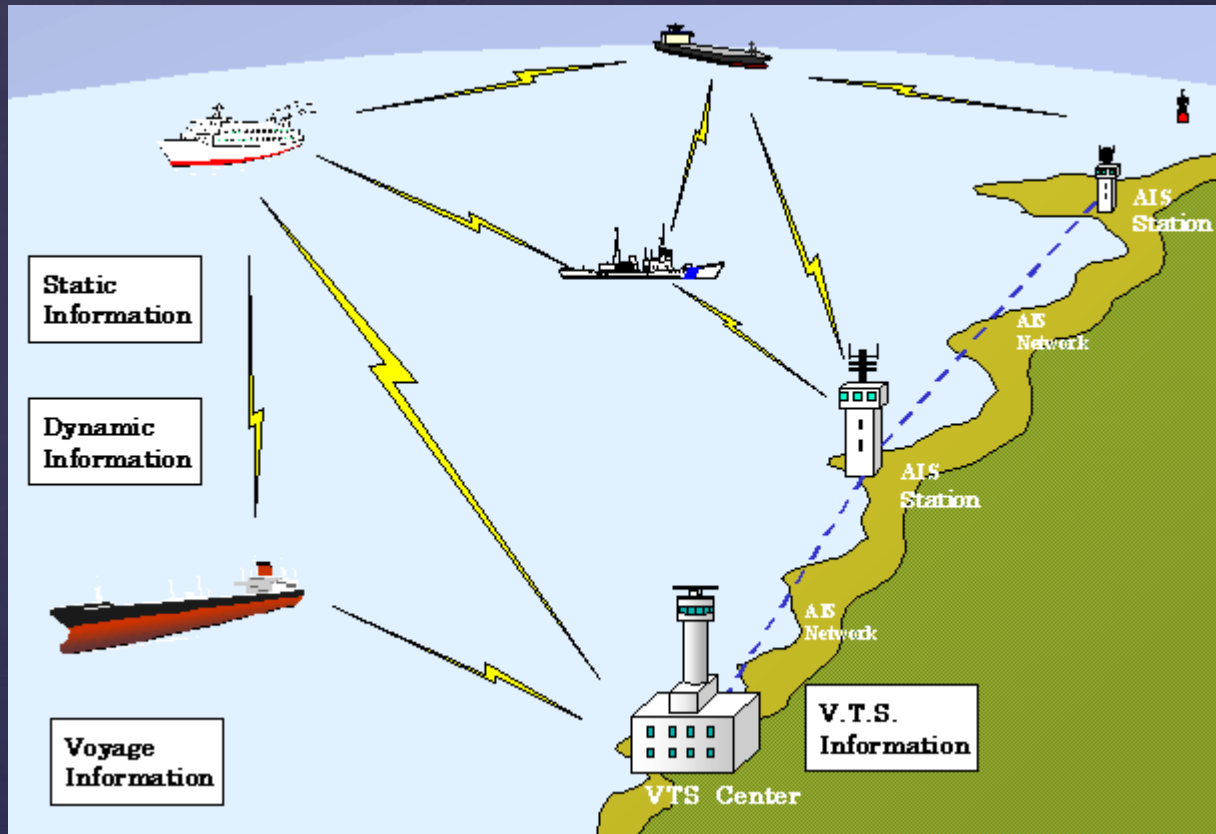
Project coordinator in Portugal: DGRM

Aquaculture and Fisheries (Multigear -VMS)



Source: Jorge Gonçalves, CCMAR, U. Algarve

Automatic Identification System – AIS (VHF radio transmission)



http://www6.kaiho.mlit.go.jp/kanmon/eng/mg_2.files/ais_1.gif



[Export data](#)

Date Range

2014-12-01 00:40 - 2014-12-04 00:40

[Clear filters](#)

[Hide filters](#)

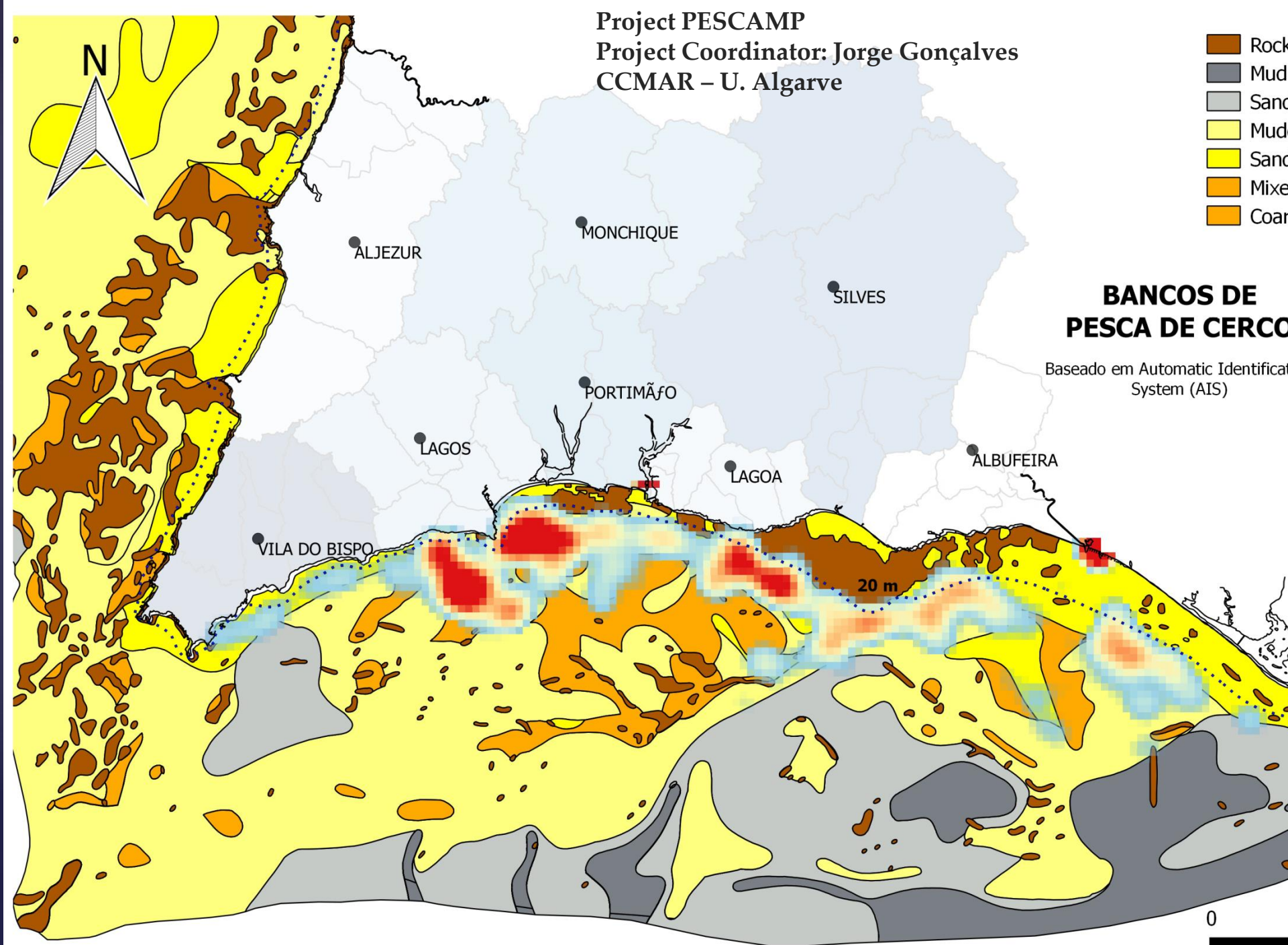
Time (UTC)	Event	Area	Port	Speed (kn)	Course (°)	Latitude (°)	Longitude (°)	Show on Map
2014-12-03 21:48	Underway	Atlantic North		9.5	289	36.85066	-8.346204	
2014-12-03 21:33	Stopped	Atlantic North		0.8	246	36.84809	-8.332098	
2014-12-03 16:33	Underway	Atlantic North		5.8	6	36.82615	-8.583226	
2014-12-03 16:27	Stopped	Atlantic North		0.6	45	36.82062	-8.58605	
2014-12-03 13:57	Midday position	Atlantic North		3.0	224	36.88931	-8.514102	
2014-12-03 13:36	Underway	Atlantic North		9.5	284	36.9062	-8.49623	
2014-12-03 13:15	Stopped	Atlantic North		0.8	198	36.90274	-8.493917	
2014-12-03 07:36	Underway	Atlantic North		10.3	13	36.87955	-8.501192	
2014-12-03 02:51	Stopped	Atlantic North		0.5	115	36.87595	-8.503798	
2014-12-03 00:57	Midnight position	Atlantic North		2.9	288	36.86039	-8.392583	

Project PESCAM
Project Coordinator: Jorge Gonçalves
CCMAR – U. Algarve

- Rock
- Mud
- Sand
- Mud
- Sand
- Mixed
- Coar

BANCOS DE PESCA DE CERCO

Baseado em Automatic Identification System (AIS)



Surveillance data

- VMS – Vessel Monitoring System
- AIS – Automatic Identification System
- Mobile phone network

PRESPO

Pesca Responsável
Pêche Responsable
Pesca Responsable



Project coordinator:
Miguel Gaspar - IPMA

GPS (sistema de posicionamento)



Rede móvel
GSM/GPRS
(módulo de comunicação sem fios)



Centro de gestão de informação

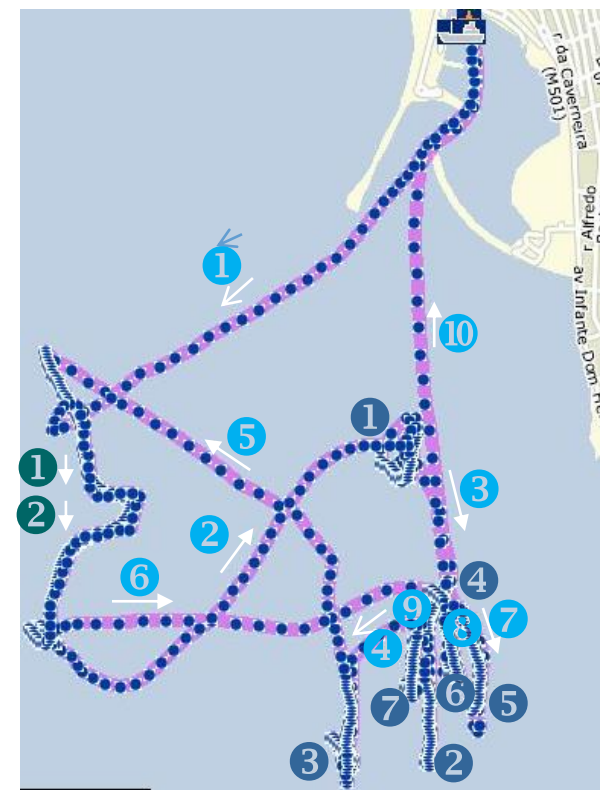
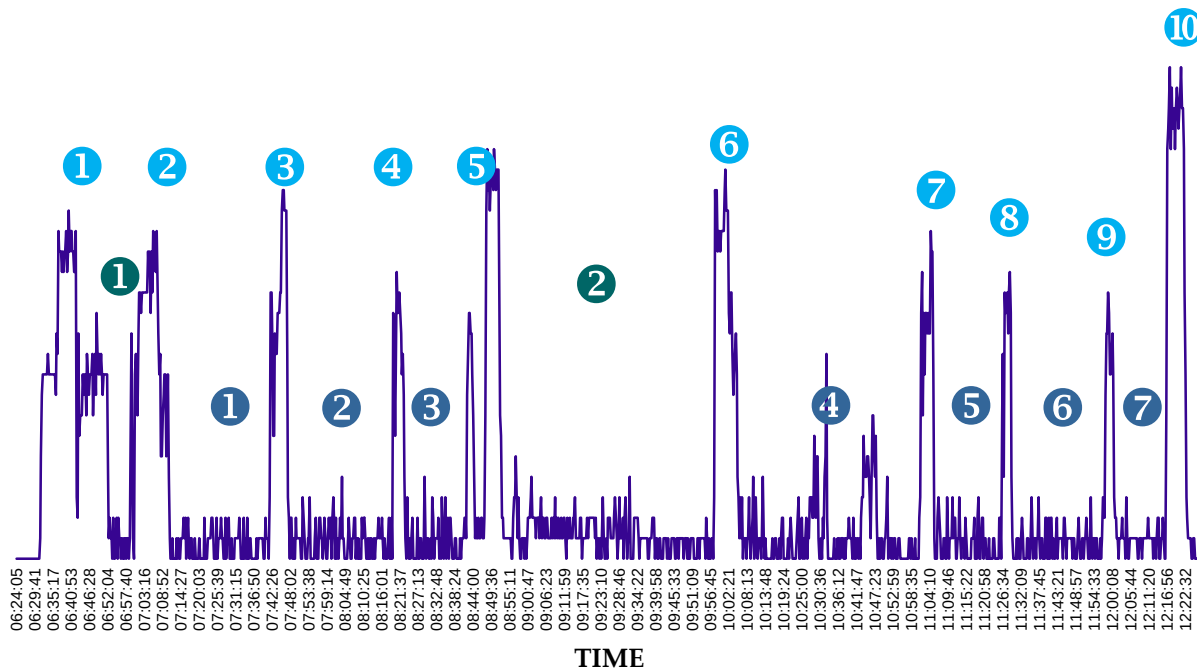
Centro de Controlo DGRM



Centro de controlo e análise de dados IPMA



SPEED



Source: PRESPO (<http://www.cripsul.ipimar.pt/prespo/>)

Potential uses

- Detailed info on fishing effort
- Mapping of fishing grounds
- Spatial Planning
- Fleet management

Can be combined with other data sources like

- Video recording
- Catch data
- Environmental monitoring
- Electronic log-books
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Potencial problems

- Mistrust in relation to control systems
- Difficulty in accessing the data
- Legal issues on using data bases
- Small fleet harder to control

Potencial problems

- Mistrust in relation to control systems
- Difficulty in accessing the data
- Legal issues on using data bases for other purposes
- Small fleet harder to control

Portuguese fleet at 1 January 2014				
Region	Multi-gear		Trawls	Purse seiners
	< 12m	≥ 12 m		
Mainland	6 357	359	82	176
Azores	390	43	0	3
Madeira	662	121	0	0
Total	7 409	523	82	179
Source. DGRM, Statistical Bulletins "Recursos da Pesca", 2013				