

# A decade of success in Ocean Exploration using the Spanish Research Oceanographic Fleet



INSTITUTO  
ESPAÑOL DE  
OCEANOGRAFÍA



**CSIC**

CONSEJO SUPERIOR DE INVESTIGACIONES CIENTÍFICAS

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*Vigo, 11-13 June 2024*

# CSIC Fleet (2014-24)

## Global

*RV Cornide de Saavedra 66,7 m*



*RV Sarmiento de Gamboa 70,5 m*

*RV Odón de Buen 84,5 m*



## Regional

*BO Ramón Margalef 46,70 m*

*BO Angeles Alvarino 46,70 m*

*BO Garcia del Cid 37,20 m*



*BO Francisco De Paula Navarro 30,46 m*

## Local

*BO Lura 14,30 m*

*BO Jose Maria Navaz 16 m*



*BO Mytilus 24 m*

*BO Volandeira 7 m*

# Whole Spanish Research Fleet

Global

*RV Hesperides 82 m*

*RV Cornide de Saavedra 66,7 m*



*RV Sarmiento de Gamboa 70,5 m*

*RV Odón de Buen 84,5 m*



*BO Vizconde de Eza 53 m*

*BO Miguel Oliver 70 m*

← Spanish Navy

← Ministry of  
Agriculture and  
Fisheries

Regional

*BO Ramón Margalef 46,70 m*

*BO Angeles Alvarino 46,70 m*

*BO Garcia del Cid 37,20 m*



*BO Francisco De Paula Navarro 30,46 m*

Local

*BO Lura 14,30 m*

*BO Jose Maria Navaz 16 m*



*BO Mytilus 24 m*

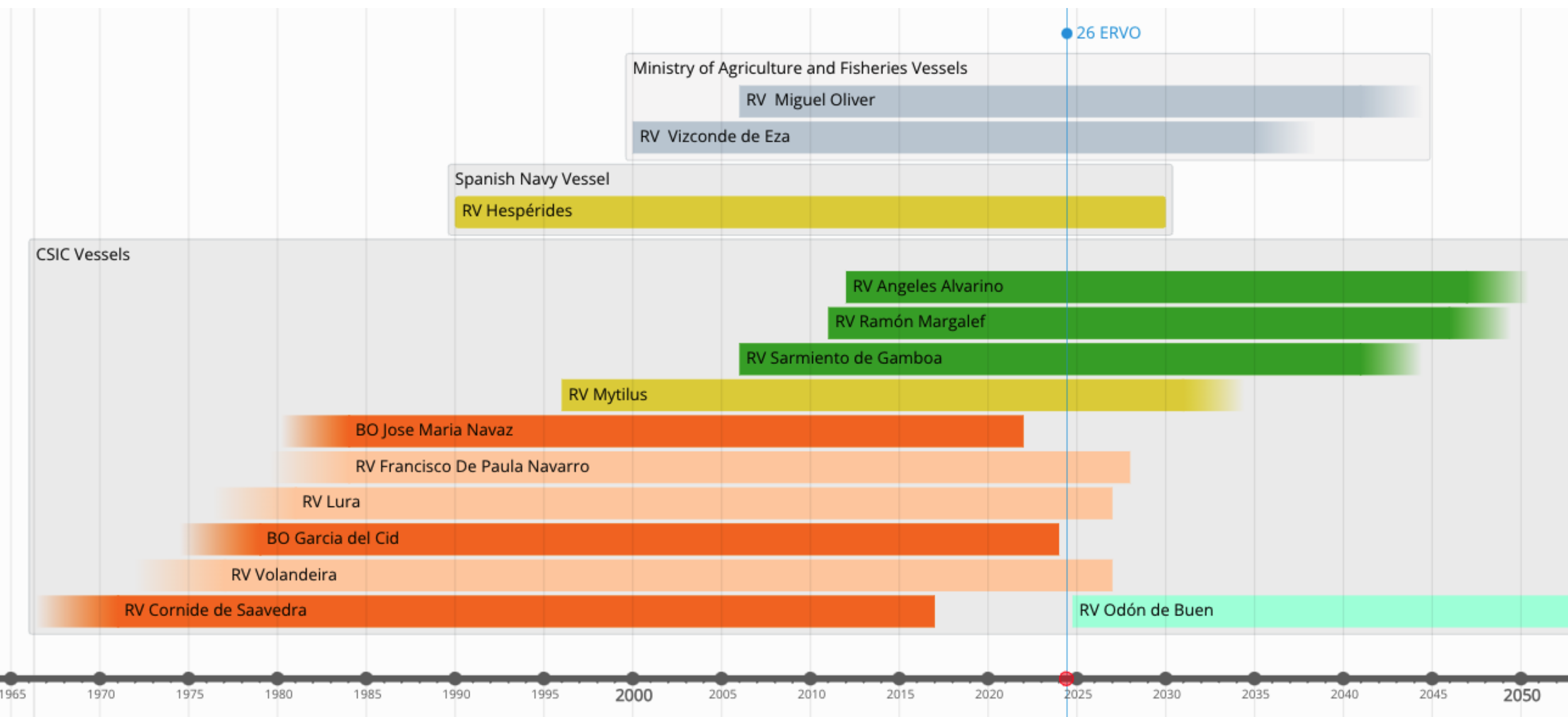
*BO Volandeira 7 m*

# Whole fleet status

## Vessels age table

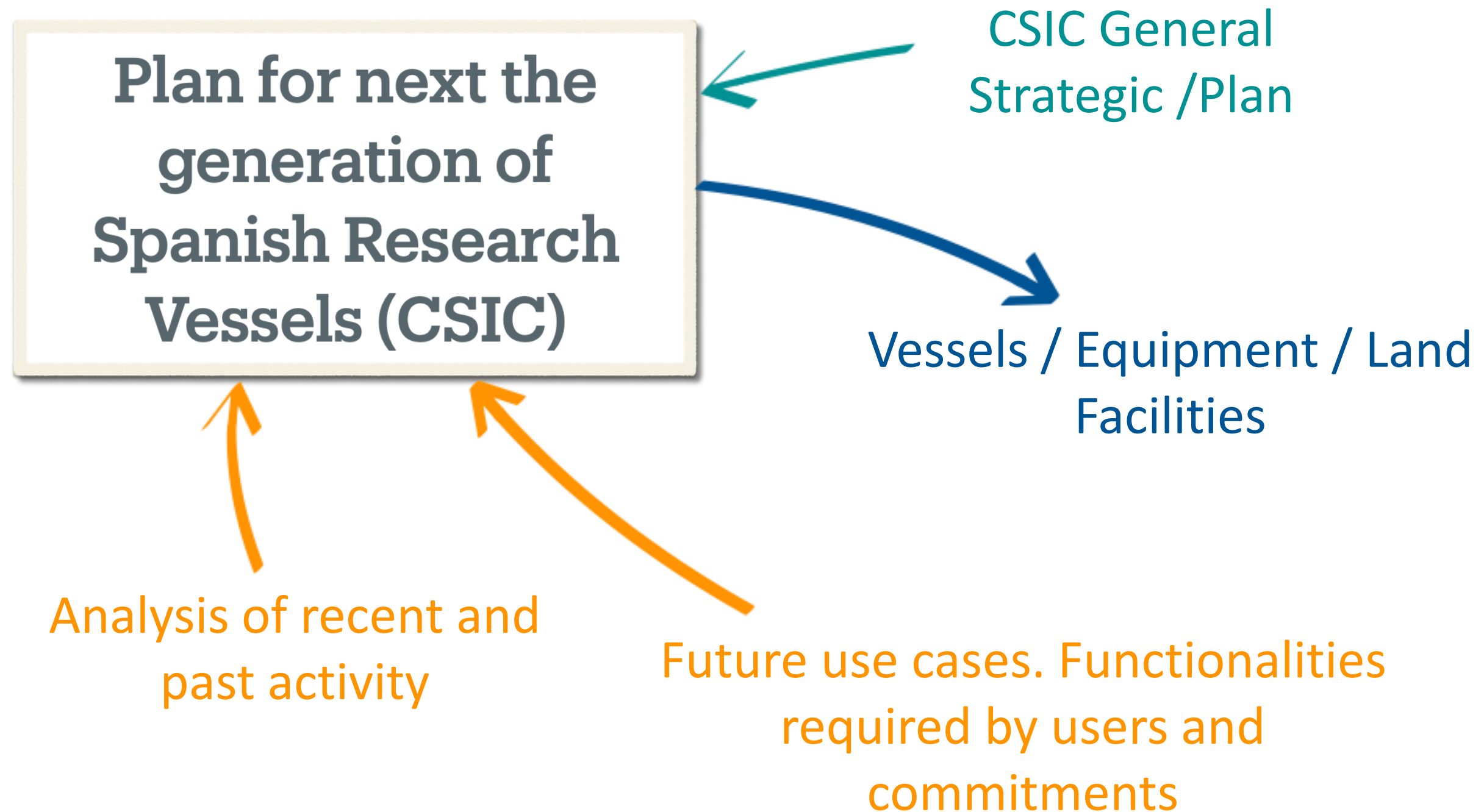
Vessel	Lenght	Year	Planned retirement year	Retirement age	Current age	Time for retirement	Status
RV Miguel Oliver	70,00	2006	2041	35	18	17	Active
RV Vizconde de Eza	53,00	2000	2035	35	24	11	Active
BIO Hespérides	82,50	1990	2030	40	34	6	Close to retirement
BO Cornide de Saavedra	66,70	1971	2017	47			Retired
BO Sarmiento de Gamboa	70,50	2006	2041	35	18	17	Mid life refit
BO Ramón Margalef	46,70	2011	2046	35	13	22	Active
BO Angeles Alvarino	46,70	2012	2047	35	12	23	Active
BO Francisco De Paula Navarro	30,46	1984	2028	45	40	5	Close to retirement
BO Garcia del Cid	37,20	1979	2024	45			Retired
BO Lura	14,30	1981	2025	45	43	2	Close to retirement
BO Jose Maria Navaz	16,00	1984	2022	39			Retired
BO Mytilus	24,00	1996	2031	35	28	7	Active
BO Volandeira	7,00	1977	2026	50	47	3	Close to retirement

# Whole fleet status



# *Building an Strategic Plan for the next decades*

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# Analysis of recent and past activity



Survey Statistics  
2014 - 2024

1.848 Surveys

Vessel type (local, regional, global)
Vessel
Survey name
Promoting Entity
Project Type
Project
Start
End
Duration
Survey type (1 day; < 7d; < 15d; > 15d)
Departure Port
Arrival Port
Survey Chief/Head
Entity
Center
Geographic Area 1 (SeaVox)
Geographic Area 2
Geographic Area 3
Discipline (SeaVox)
Main_discipline
Discipline_2
Discipline_3



# Activity

1.848 Surveys / 14.346 days at sea

- 1 day
- 1 week
- 1 to 2 weeks
- More than 2 weeks





# Activity: General figures

## Surveys by type and vessel

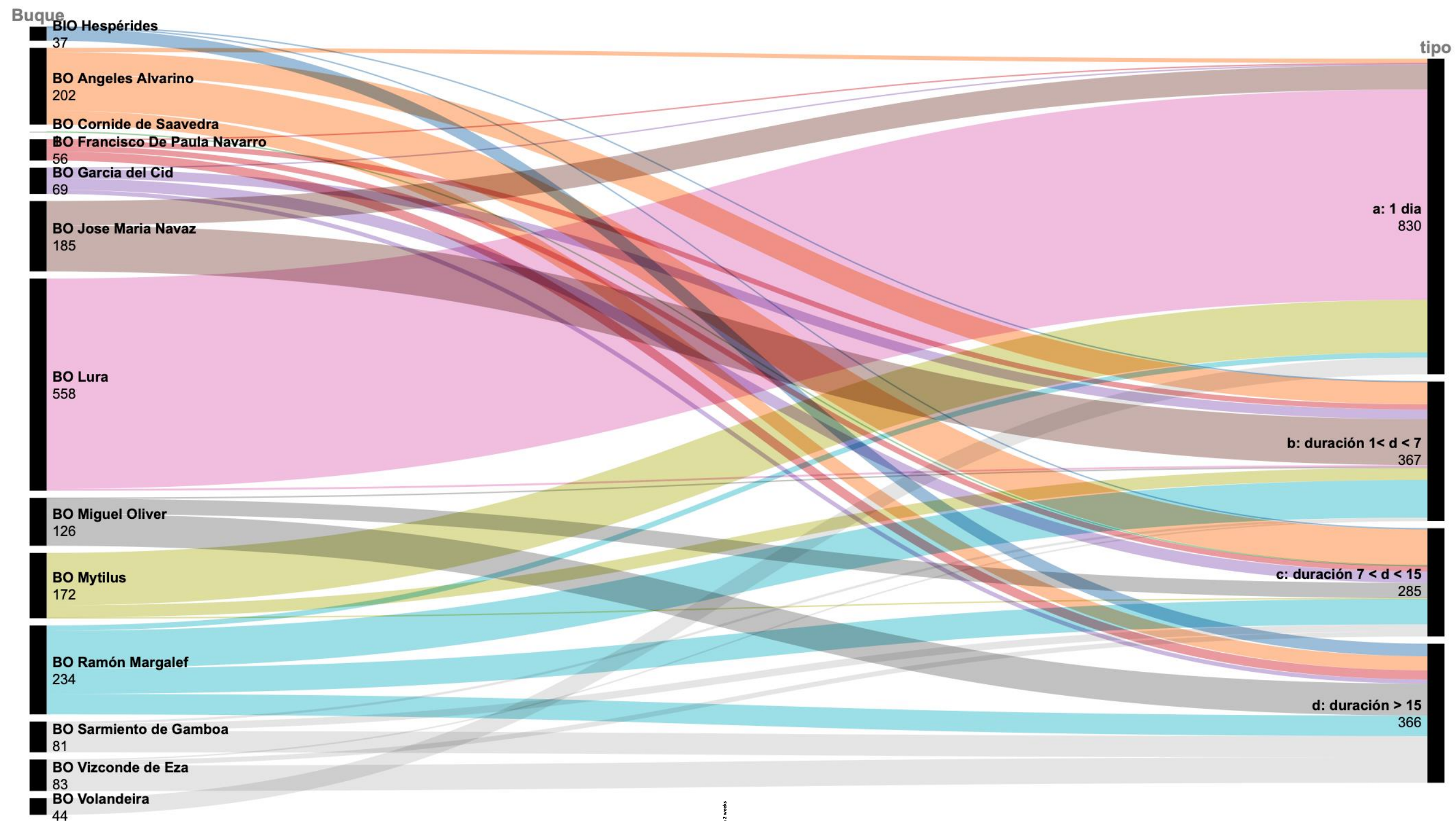
Vessel	1 day	1 week	2 weeks	more than 2 weeks
RV Lura	553	5		
RV Ramón Margalef	14	99	67	54
RV Angeles Alvarino	11	59	95	37
RV Jose Maria Navaz	64	121		
RV Mytilus	138	32	2	
RV Miguel Oliver		2	40	84
RV Vizconde de Eza		3	13	67
RV Sarmiento de Gamboa		6	19	56
RV Garcia del Cid	3	25	30	11
RV Francisco De Paula Navarro	3	14	15	24
RV Volandeira	44			
RV Hespérides		1	3	33
RV Cornide de Saavedra			1	

	1 day	1 week	2 weeks	more than 2 weeks
RV Lura	553	5		
RV Ramón Margalef	14	99	67	54
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RV Vizconde de Eza		3	13	67
RV Sarmiento de Gamboa		6	19	56
RV Garcia del Cid	3	25	30	11
RV Francisco De Paula Navarro	3	14	15	24
RV Volandeira	44			
RV Hespérides		1	3	33
RV Cornide de Saavedra			1	

Survey days by survey type	days
1 day	830
1 week	1.151
2 weeks	3.105
more than 2 weeks	9.260
<b>Total</b>	<b>14.346</b>

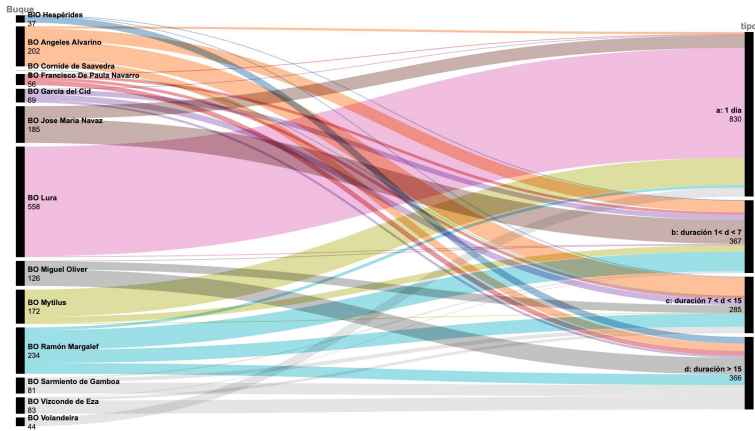
Nº of surveys by survey type	nº
1 day	830
1 week	367
2 weeks	285
more than 2 weeks	366
<b>Total</b>	<b>1.848</b>

# Vessels vs Survey Size



	1 day	1 week	2 weeks	more than 2 weeks
RV Lura	553	5		
RV Ramón Margalef	14	99	67	54
RV Angeles Alvarino	11	59	95	37
RV Jose Maria Navaz	64	121		
RV Mytilus	138	32	2	
RV Miguel Oliver	2	40	84	
RV Vizconde de Eza	9	13	67	
RV Sarmiento de Gamboa	6	19	56	
RV Garcia del Cid	3	25	30	11
RV Francisco De Paula Navarro	3	14	15	24
RV Volandeira	44			
RV Hespérides	1	3	33	
RV Cornide de Saavedra			1	

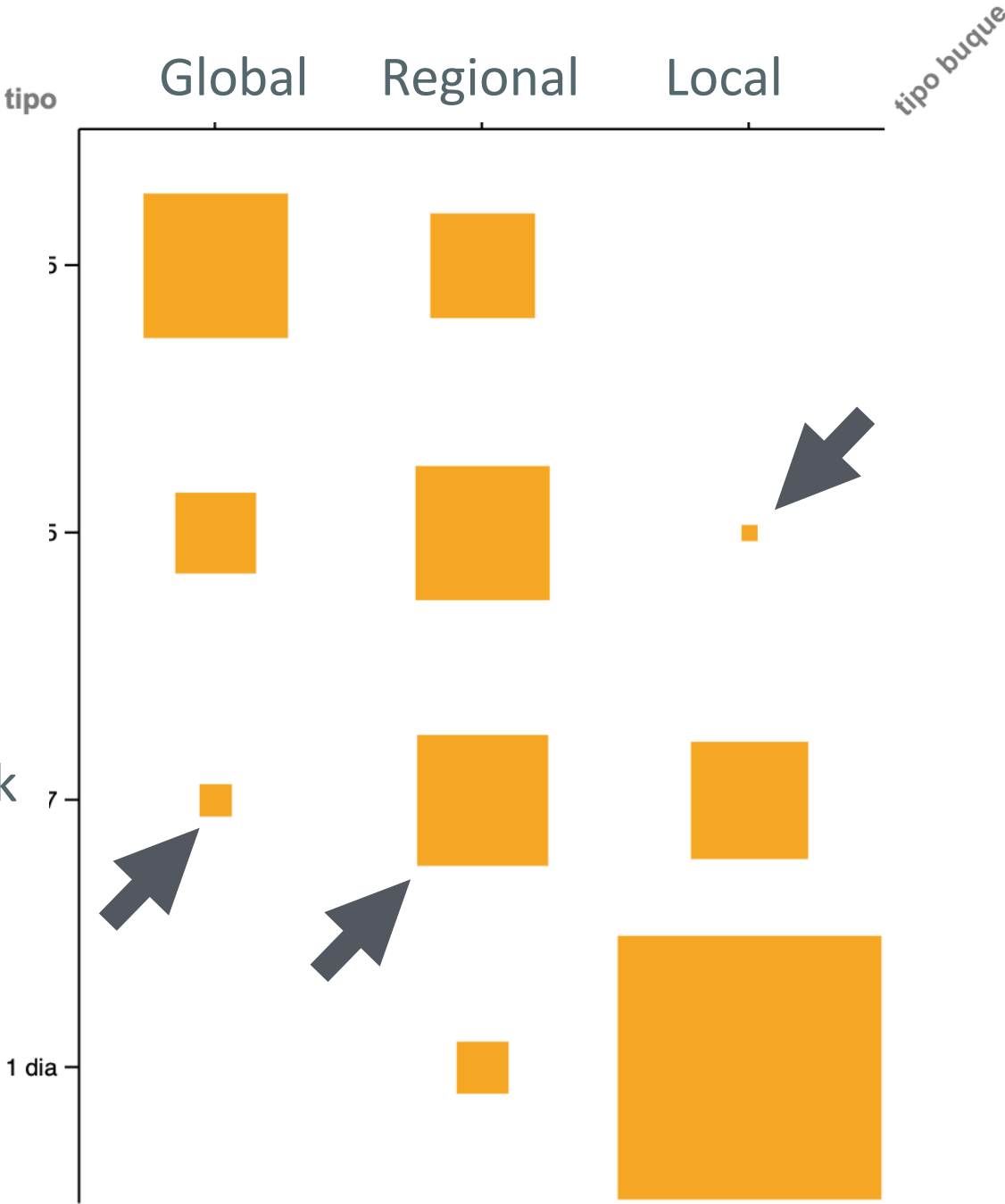
# Nº of surveys by Vessel type



More than 2 weeks

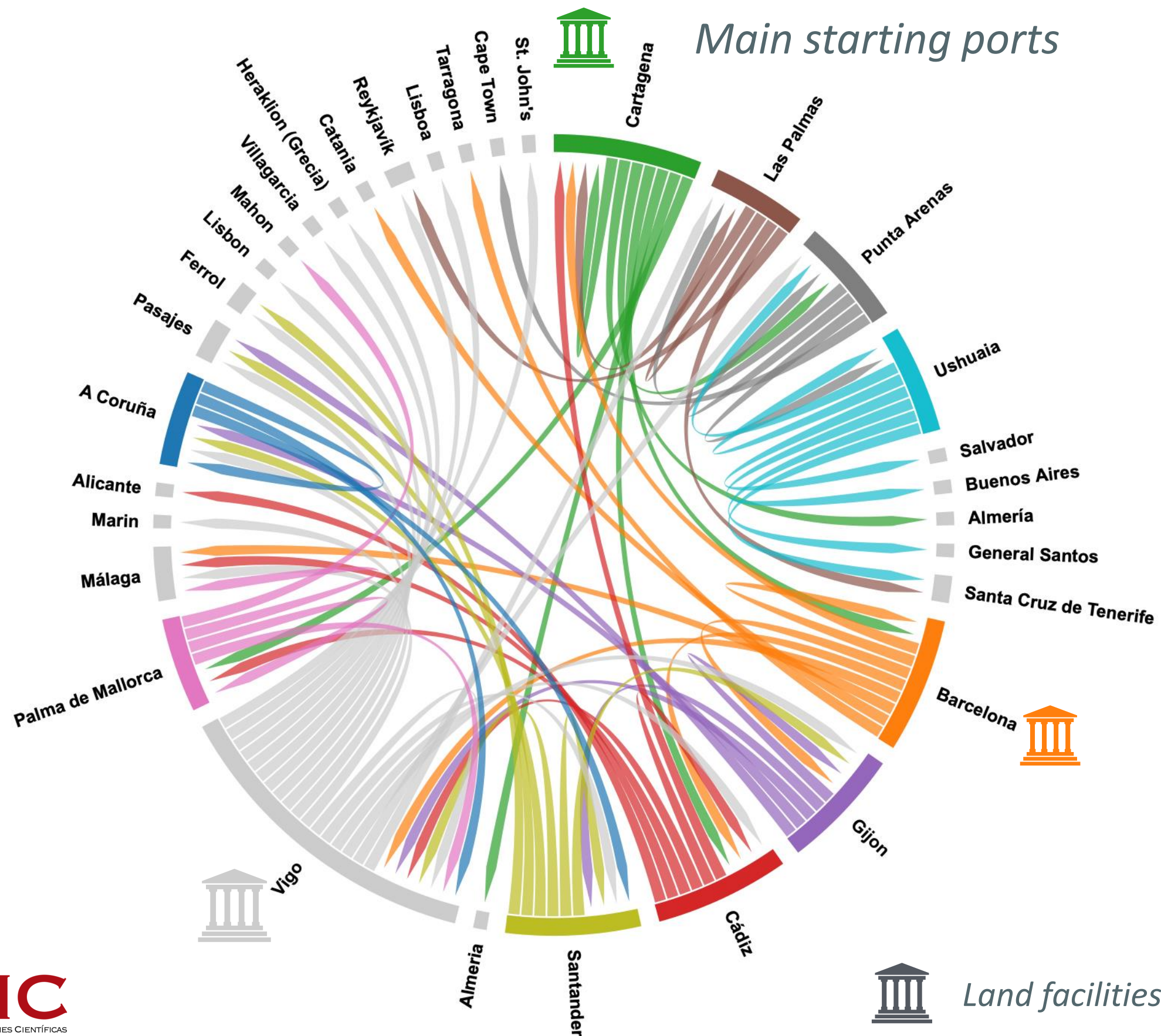
1 to 2 weeks

	Global	Local	Regional	Total
1 day		799	31	830
1 week	12	158	197	367
2 weeks	75	3	207	285
more than 2 weeks	240		126	366
Total	327	960	561	1.848



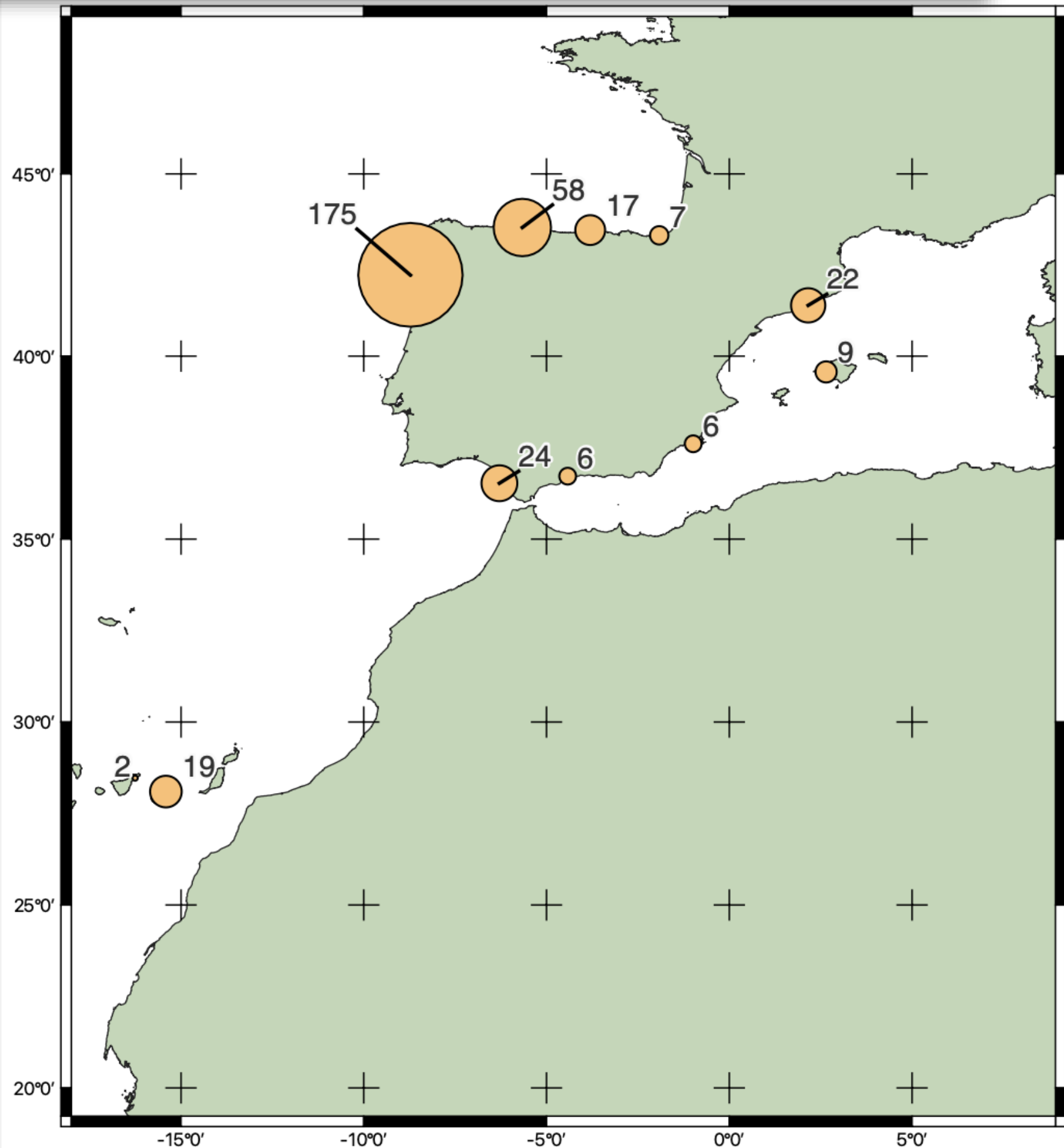


# Land facilities



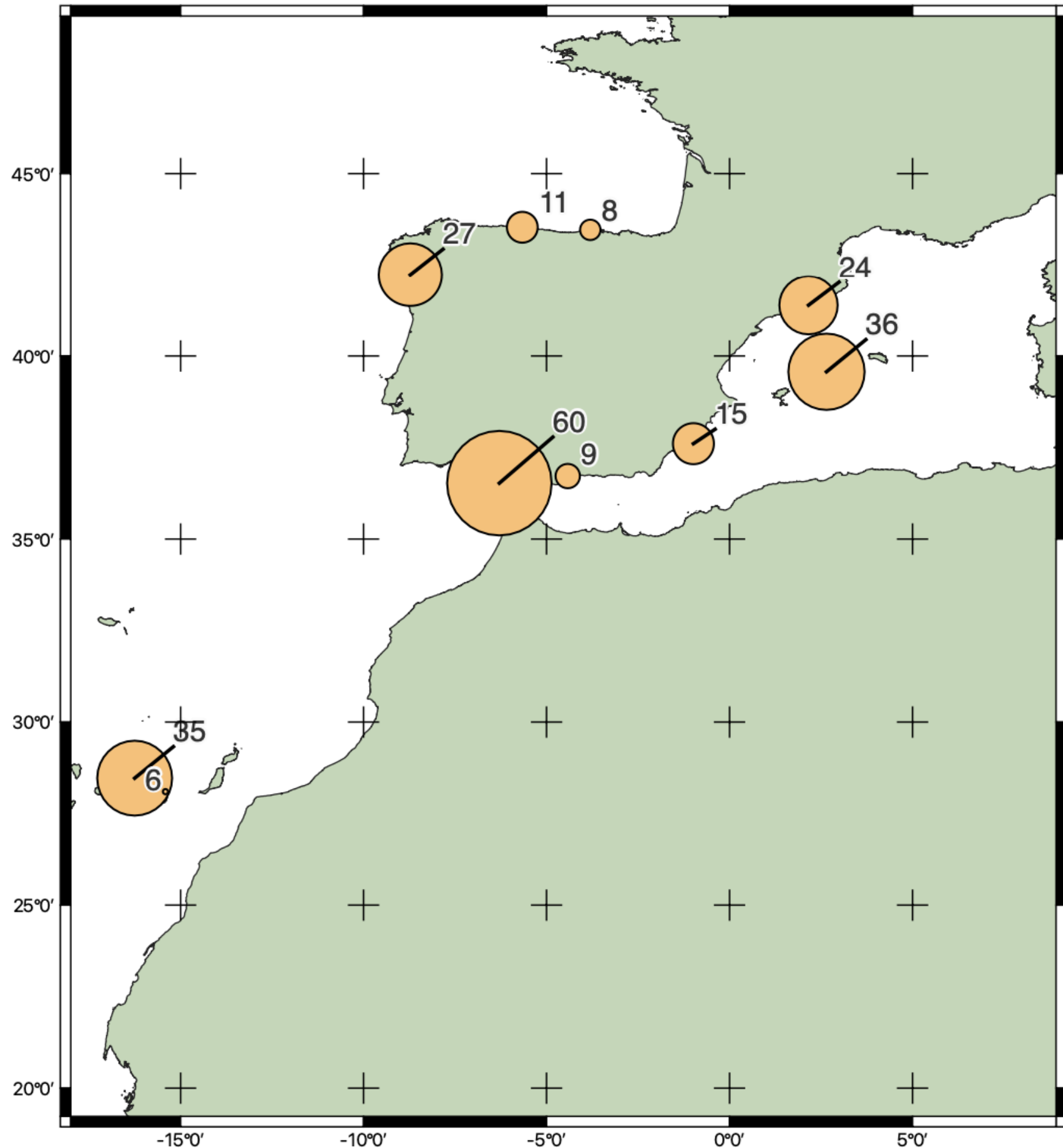
# Ports

*Main ports for  
surveys up to 1  
week*



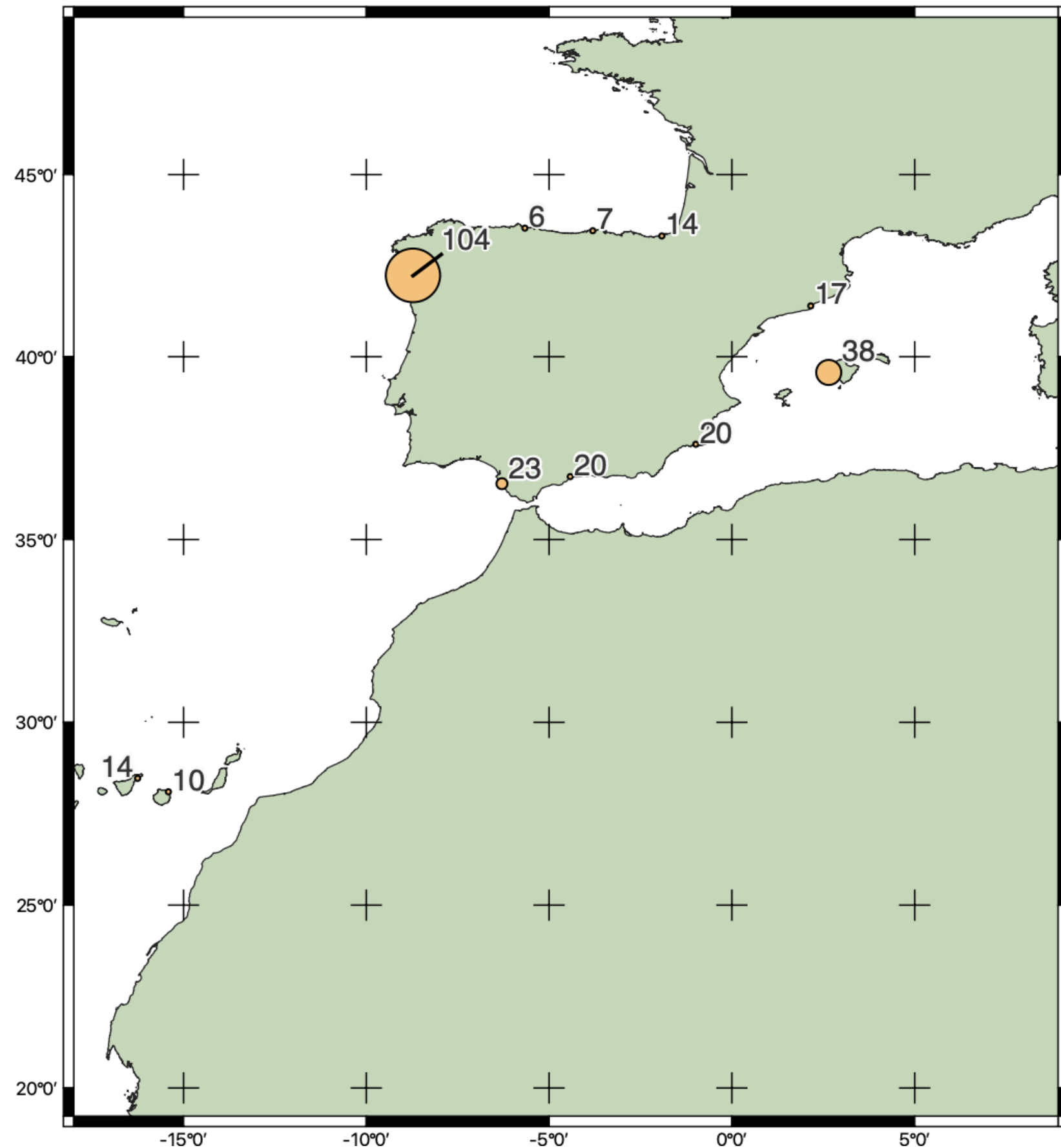
# Ports

*Main ports for  
surveys up to 2  
weeks*



# Ports

*Main ports for  
longer surveys*





# Sea Areas

*All kind of surveys*

<b>Surveys by Sea Area</b>	<b>nº of days</b>	<b>nº of surveys</b>	<b>survey extension mean</b>
Northeast Atlantic Ocean (40w)	6193	1304	5
Mediterranean Sea, Western Basin	2294	132	17
Bay Of Biscay	1729	153	11
Balearic Sea	1220	108	11
Northwest Atlantic Ocean (40w)	814	29	28
Alboran Sea	603	40	15
Southwest Atlantic Ocean (20w)	421	14	30
Strait of Gibraltar	319	38	8
Bransfield Strait	228	8	29
Celtic Sea	135	4	34
Drake Passage	131	7	19
Southern Ocean	84	3	28
Scotia Sea	67	2	34
Tyrrhenian Sea	35	3	12
Black Sea	35	1	35
Southeast Atlantic Ocean (20w)	22	1	22
Weddell Sea	16	1	16

# Sea Areas

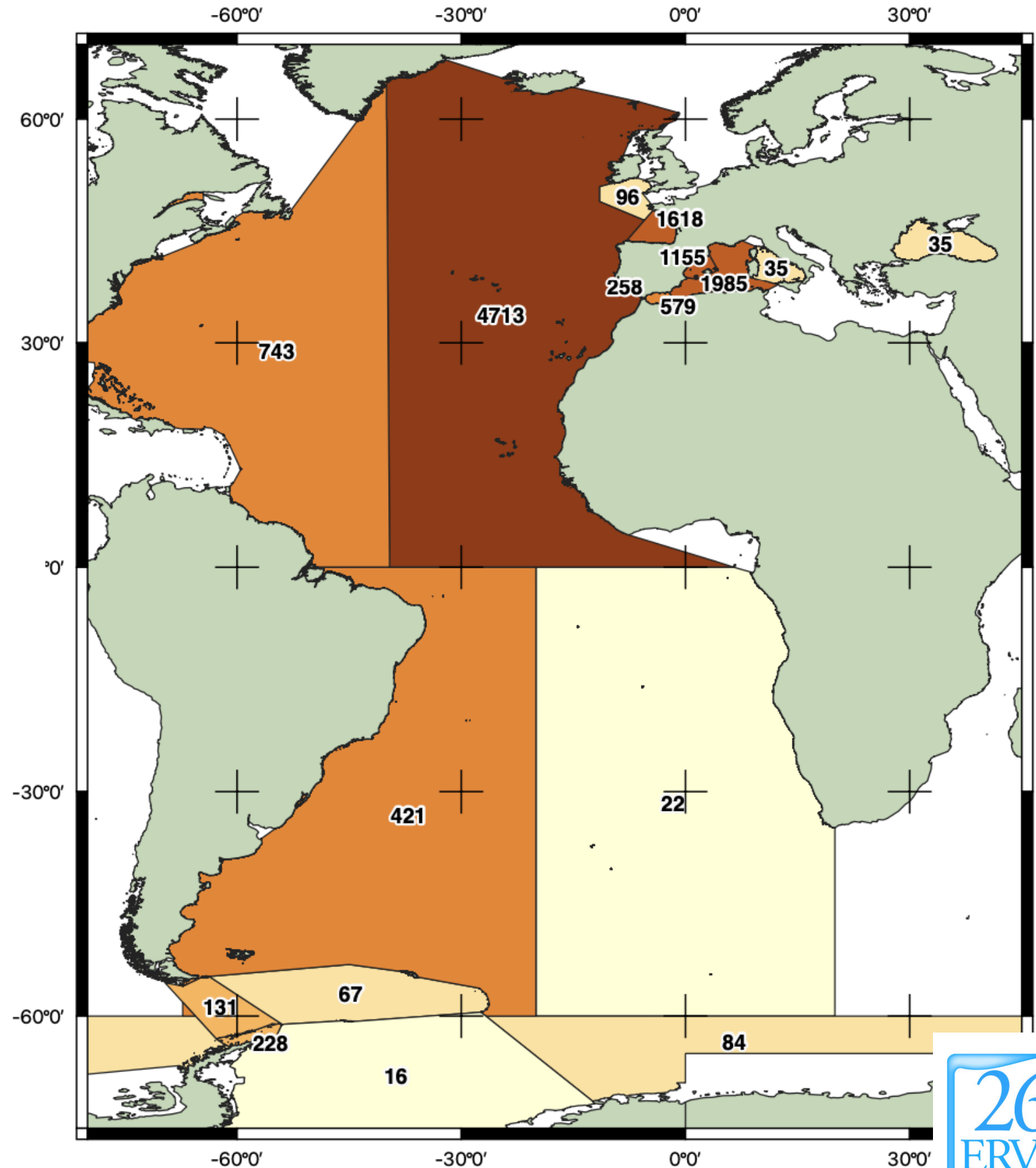
*Surveys longer than 1 day*

Surveys by Sea Area	nº of days	nº of surveys	survey extension mean
Northeast Atlantic Ocean (40w)	5370	481	11
Mediterranean Sea, Western Basin	2291	129	18
Bay Of Biscay	1729	153	11
Balearic Sea	1217	105	12
Northwest Atlantic Ocean (40w)	814	29	28
Alboran Sea	603	40	15
Southwest Atlantic Ocean (20w)	421	14	30
Strait of Gibraltar	318	37	9
Bransfield Strait	228	8	29
Celtic Sea	135	4	34
Drake Passage	131	7	19
Southern Ocean	84	3	28
Scotia Sea	67	2	34
Tyrrhenian Sea	35	3	12
Black Sea	35	1	35
Southeast Atlantic Ocean (20w)	22	1	22
Weddell Sea	16	1	16

# Sea Areas

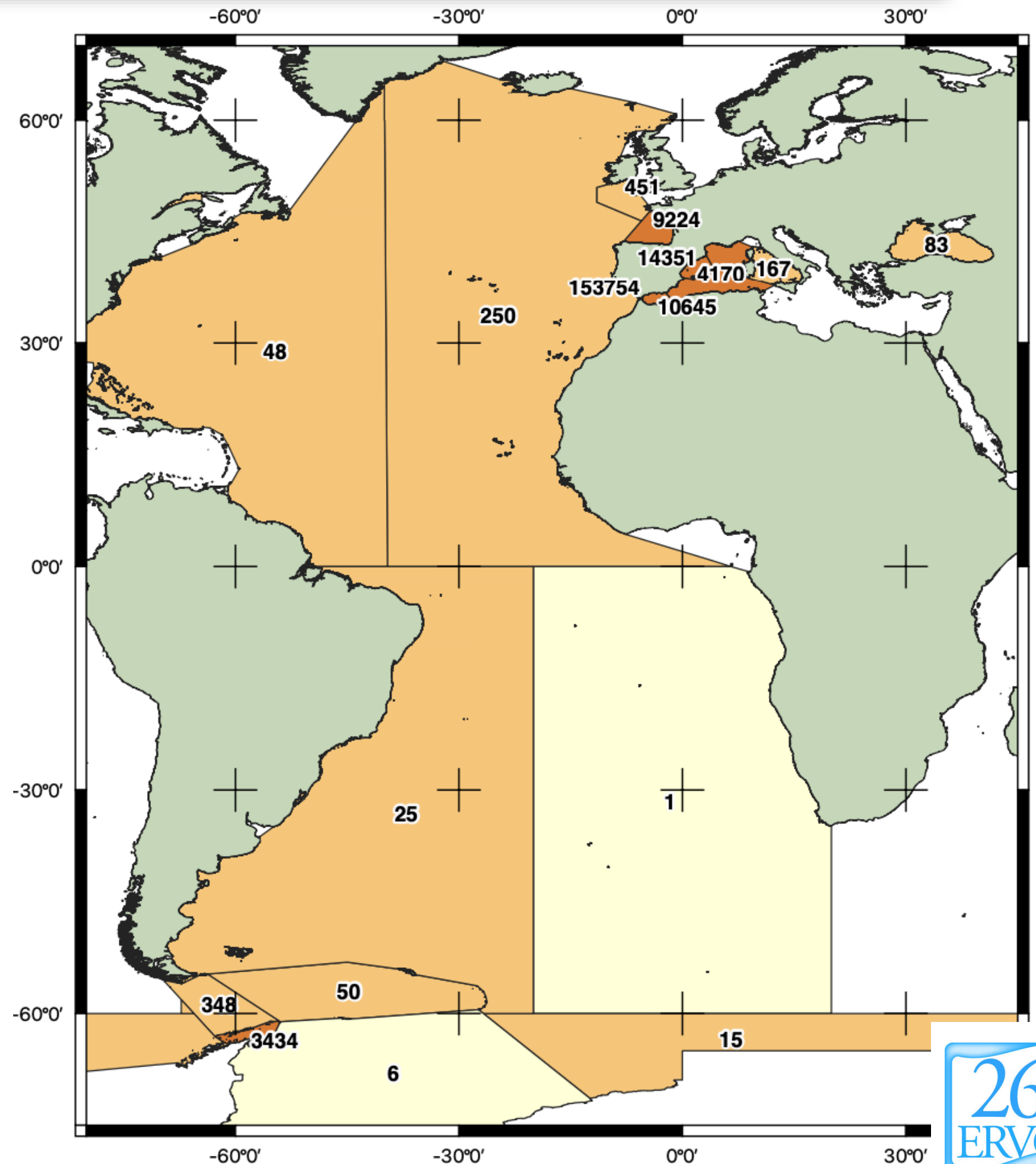
*Activity areas:  
surveys longer than 1 day*

*N<sup>o</sup> of days*



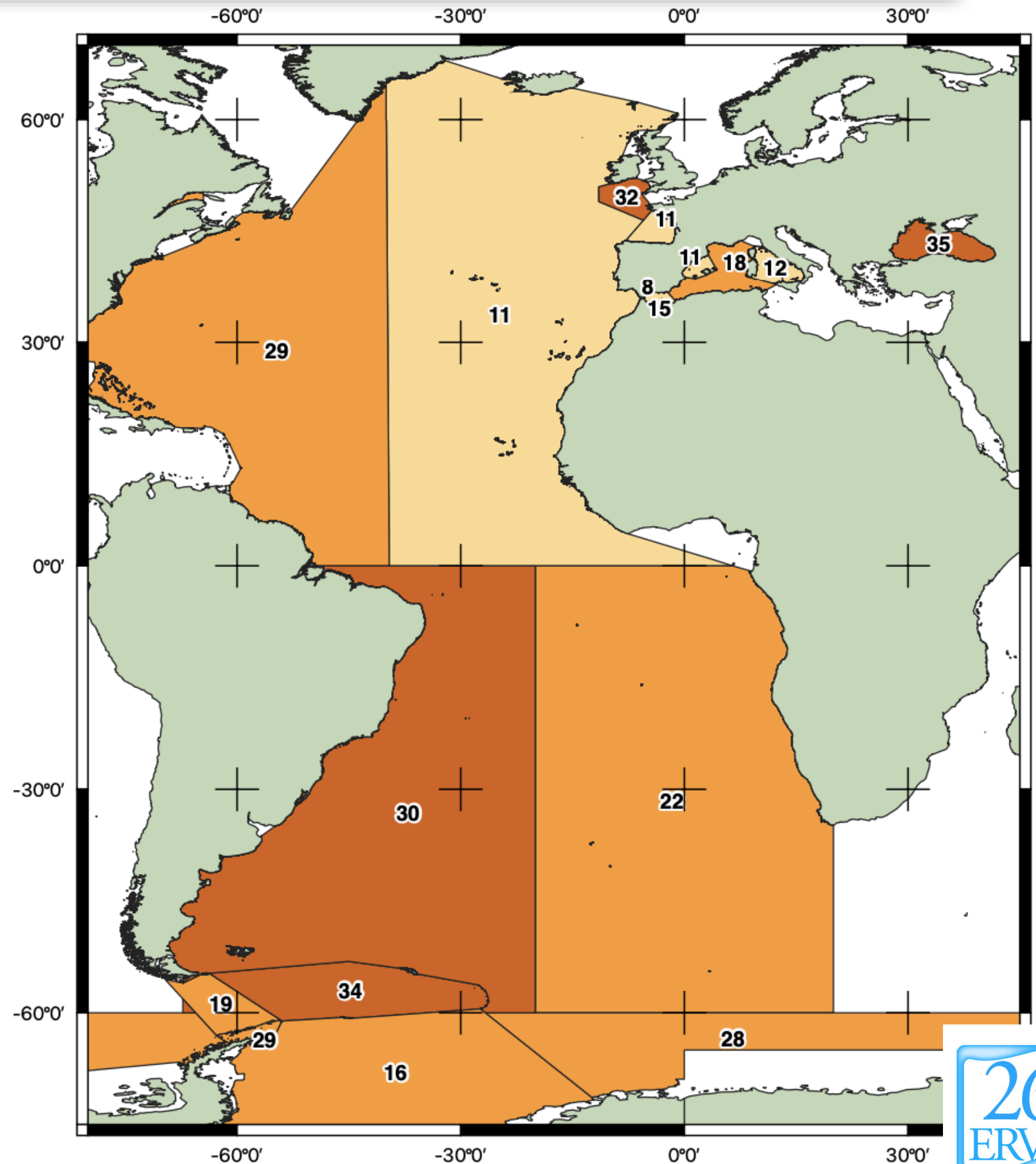
# Sea Areas

*Survey days per area  
unit (density)*



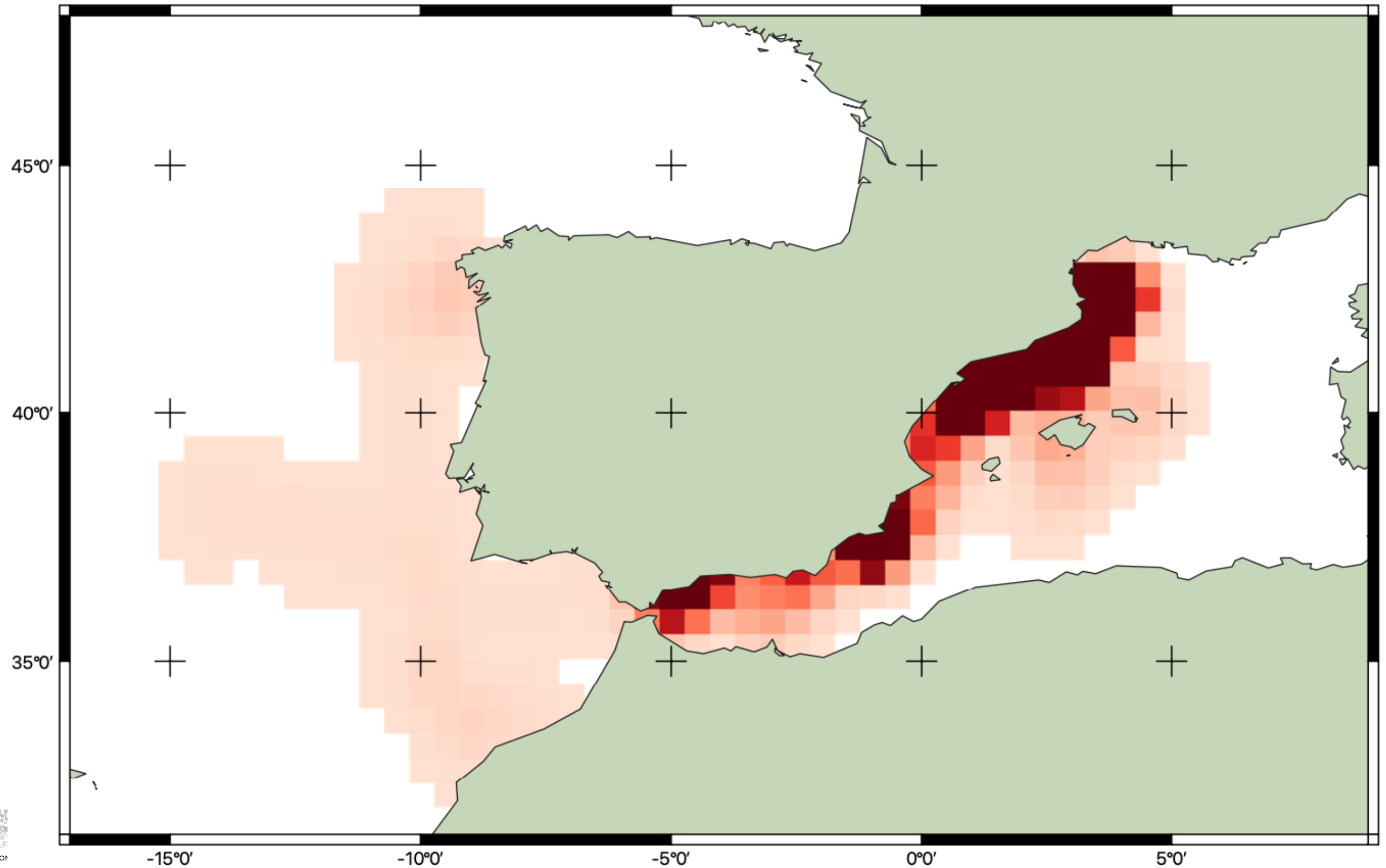
# Sea Areas

*Average Survey  
length (days)*



# Sea Areas

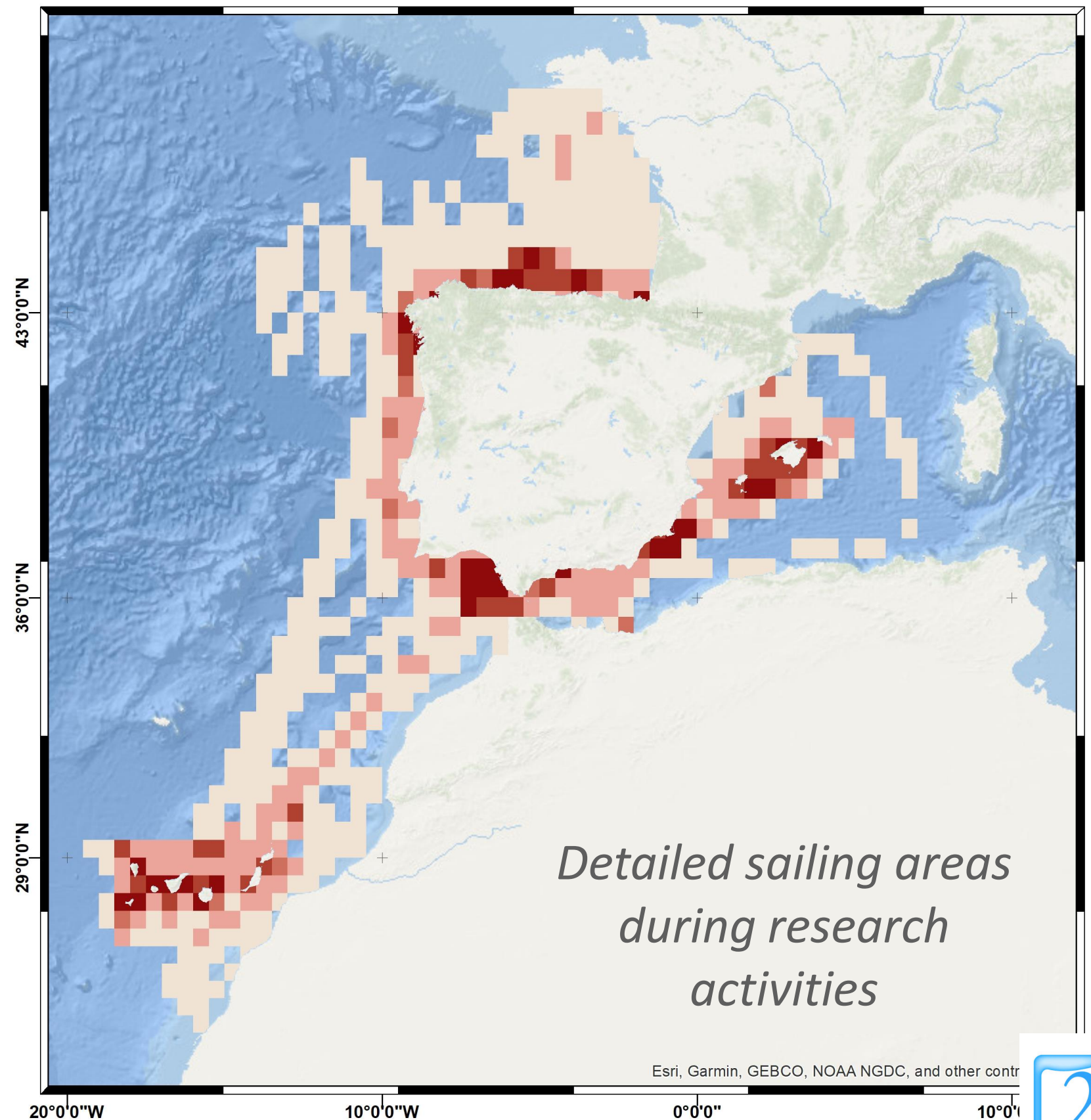
*RV Garcia del Cid (Regional)*





# Sea Areas

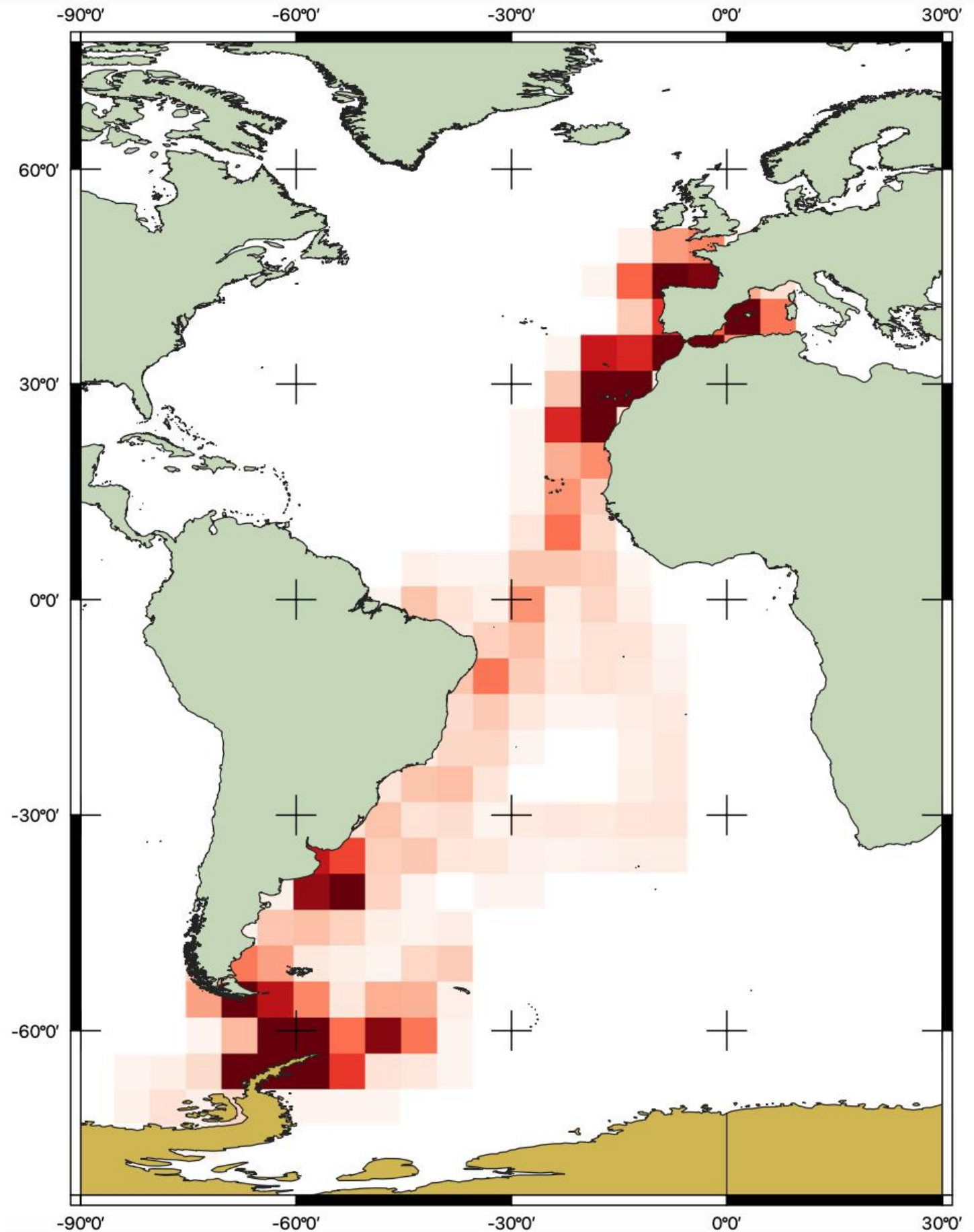
*RV Ángeles Alvariño  
(Regional)*





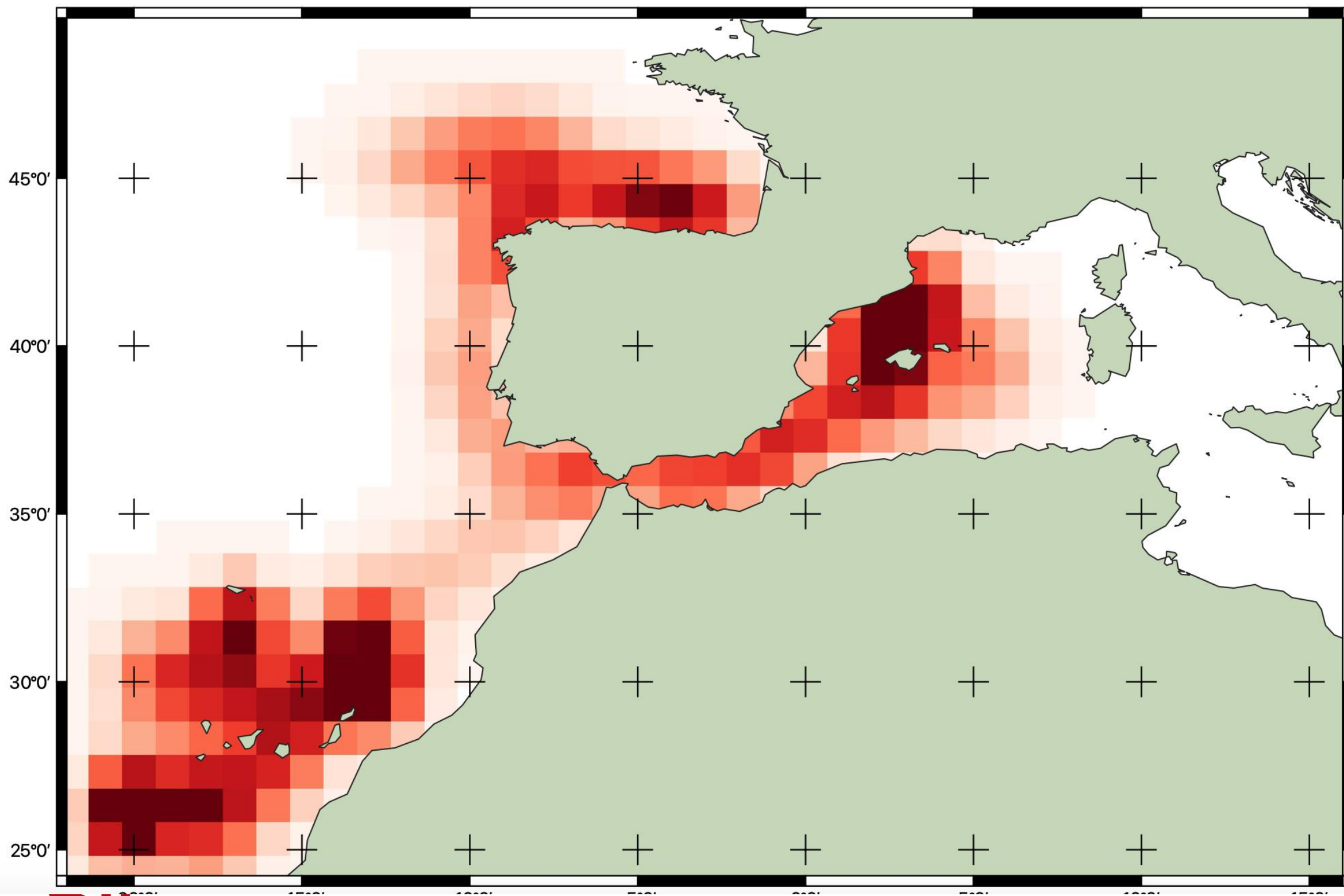
# Sea Areas

*RV Hespérides (Global)*



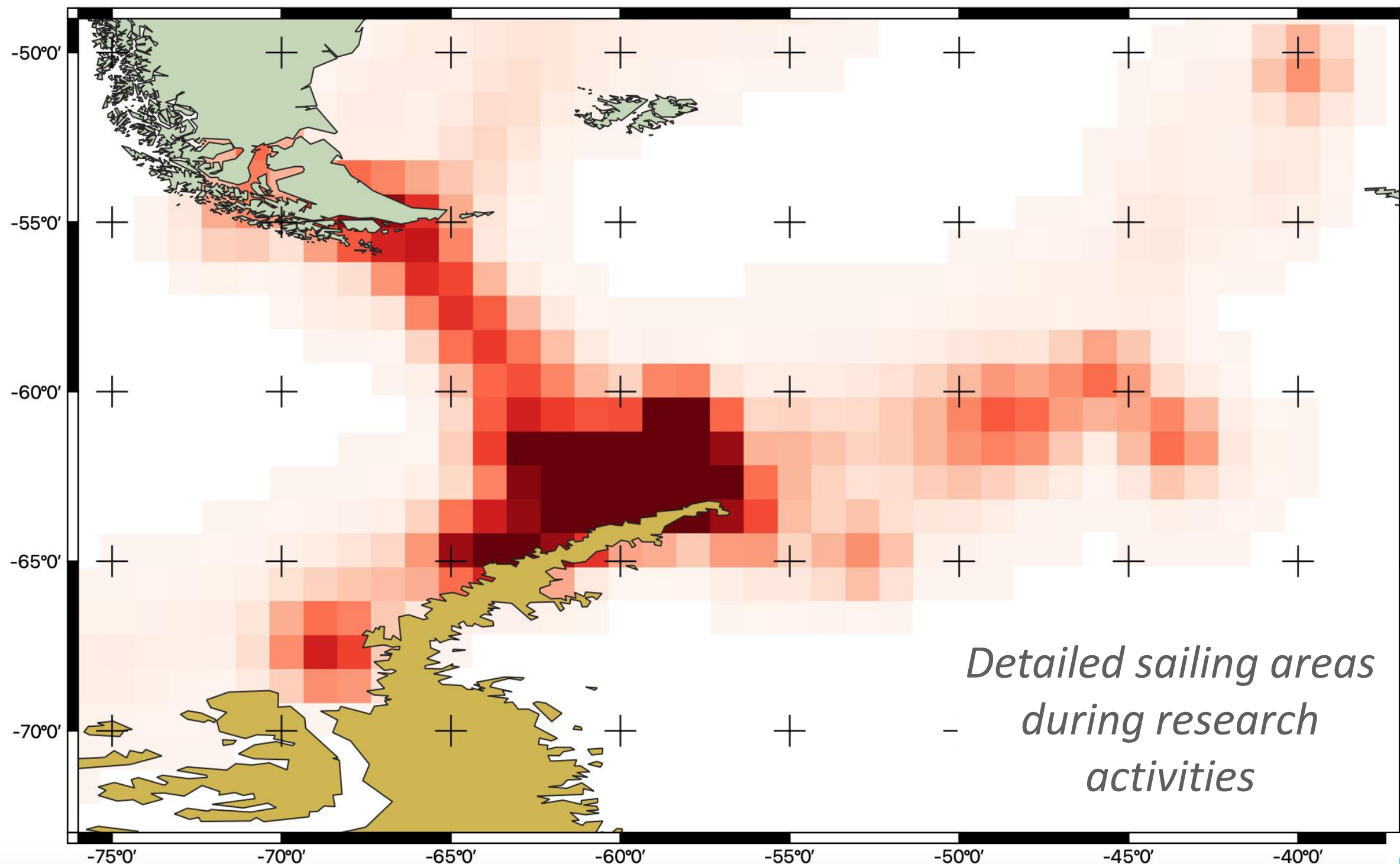
# Sea Areas

*RV Hespérides (Global)*



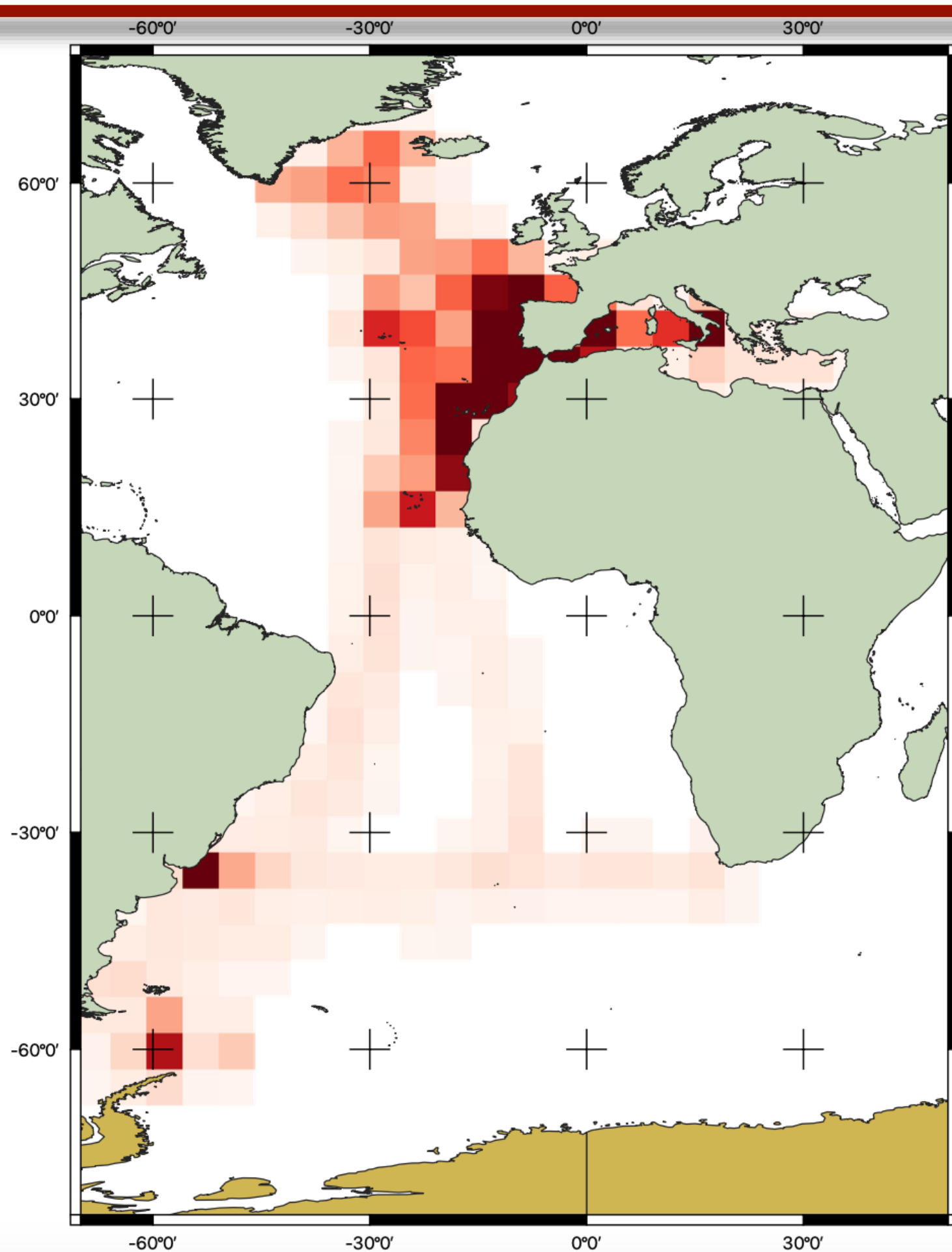
# Sea Areas

*RV Hespérides (Global)*



# Sea Areas

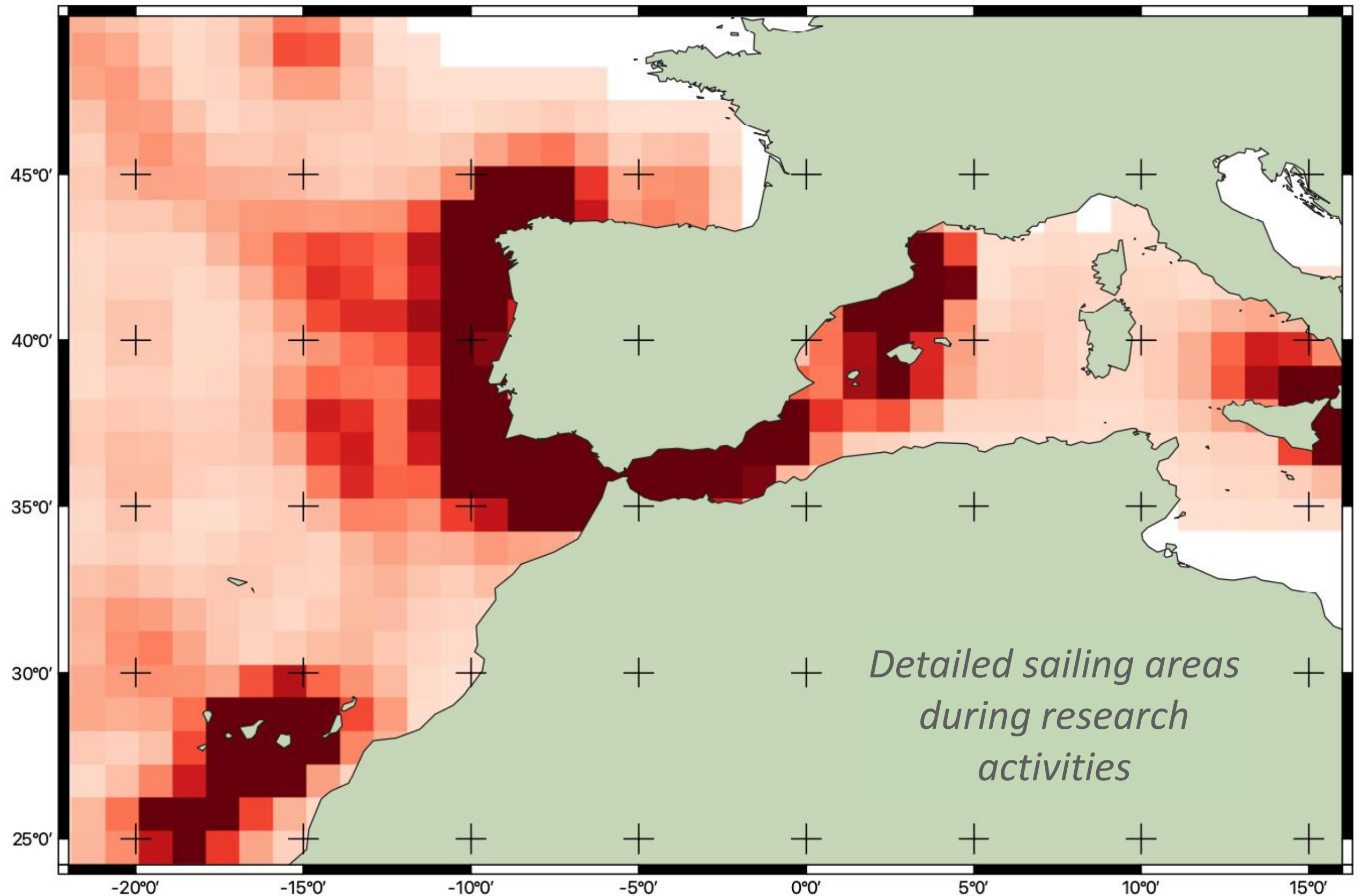
*RV Sarmiento de  
Gamboa (Global)*





# Sea Areas

*RV Sarmiento de Gamboa (Global)*



## Main ship user institutions/centres

### Users (Survey head)

	Days at sea %	
Spanish Research Council. Spanish Oceanographic Institute	9042	63,03%
Spanish Research Council. Marine Centers	1983	13,82%
National Univeristies	1088	7,58%
Regional Administration	926	6,45%
Ministries & National Administration	825	5,75%
International Research Entities	341	2,38%
Private Entities	84	0,59%
Other National Research Entities	57	0,40%

### Users

	Global	Local	Regional
Spanish Research Council. Spanish Oceanographic Institute	191	448	429
Regional Administration	2	391	15
Spanish Research Council. Marine Centers	61	66	47
National Univeristies	27	55	50
Ministries & National Administration	27		
International Research Entities	15		5
Other National Research Entities	2		12
Private Entities	2		3

# Disciplines

*SeaVox*

	Nº of surveys	days
Marine Environment	1205	5.136
Fisheries	252	5.154
Biological Oceanography	175	1.013
Marine Geology	72	1.232
Chemical Oceanography	45	803
Training	40	98
Physical Oceanography	28	349
Technical	14	174
Hydrography	11	304
Archeology	5	48
Search and Rescue	1	35
<b>Total general</b>	<b>1848</b>	<b>14.346</b>



# Disciplines

*By vessel ...*

	Global					Regional				Local				
	RV Cornide de Saavedra	RV Hespérides	RV Miguel Oliver	RV Sarmiento de Gamboa	RV Vizconde de Eza	RV Angeles Alvarino	RV Francisco De Paula Navarro	RV Garcia del Cid	RV Ramón Margalef	RV Jose Maria Navaz	RV Lura	RV Miguel Oliver	RV Mytilus	RV Volandeira
<b>Fisheries</b>	14		2.240		1.627	421	118		723			11		
<b>Marine Environment</b>			459		425	1.249	599		1.438	325	563		34	44
<b>Marine Geology</b>		233		701		123		130	45					
<b>Biological Oceanography</b>		129		366			7	288	31				192	
<b>Chemical Oceanography</b>		171		449		62		91	30					
<b>Physical Oceanography</b>		124		112		58		51	4					
<b>Hydrography</b>		289		7		8								
<b>Technical</b>		30		131				12			1			
<b>Training</b>			3	8		22	7	37	5				16	
<b>Archeology</b>				11		25			12					
<b>Search and Rescue</b>						35								

# Disciplines

## Activity highlights ...

	Global					Regional				Local				
	RV Cornide de Saavedra	RV Hespérides	RV Miguel Oliver	RV Sarmiento de Gamboa	RV Vizconde de Eza	RV Angeles Alvarino	RV Francisco De Paula Navarro	RV Garcia del Cid	RV Ramón Margalef	RV Jose Maria Navaz	RV Lura	RV Miguel Oliver	RV Mytilus	RV Volandeira
Fisheries														
Marine Environment														
Marine Geology														
Biological Oceanography														
Chemical Oceanography														
Physical Oceanography														
Hydrography														
Technical														
Training														
Archeology														
Search and Rescue														



*dependent on third party vessels*



*moderate risk due to ship retirement*



*high risk due to ship retirement*

# Conclusions

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- ❖ *CSIC fleet & rest of spanish vessels has been used really intesively during lasts 10 years*
- ❖ *Time to work now on a whole strategic plan ...*
- ❖ *Mediterranean Sea is as an important pole of activity*
- ❖ *Fisheries & environmental monitoring plus Polar*
- ❖ *Regional and local Vessels are really important for our activity*
- ❖ *Land-based facilities need to be strengthened*
- ❖ *Increase focus on replacement of regional/local units*
  - *Deep meditation is needed on what we (our community) really need*
  - *Need to find the right design for local / regional*