Development of coastal marine services for tackling coastal risks in the Atlantic Area : the value of regional cooperation

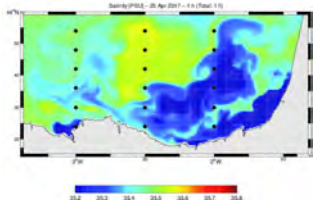
Manuel Ruiz-Villarreal, Julien Mader, Pablo Carracedo, Ricardo Torres, James Clark, Pedro Montero, Tomasz Dabrowski, Joe McGovern, Luz García-García, Vicente Pérez-Muñuzuri, Alejandro Gallego
and MyCOAST partners (AZTI,IEO, INTECMAR, IMI, USC, SHOM, PdE, Ifremer, CEFAS, IST, PML, Marine Scotland, MeteoGalicia, IH)

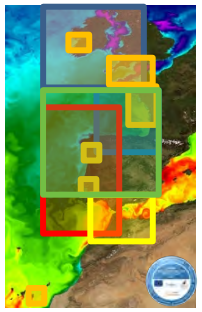
MyCoast Work plan

WP 0 Project Preparation

WP 4 Development of coastal observing systems

WP 5 Downscalling from regional to coastal services





WP 6 Complying with Data Interoperability Standards

WP 7 Development of coastal risks tools

Coastal Flooding

Aquaculture operations

Pollution

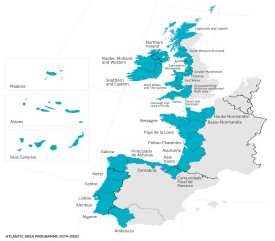
SAR

Maritime security in harbours

Oil spill

Marine Renewable energy

WP 8 Pilot implementations of coastal risk tools



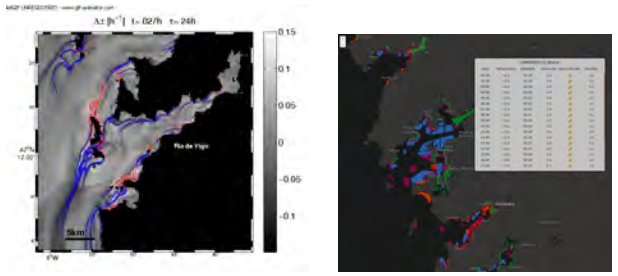
WP 3 Project Capitalization

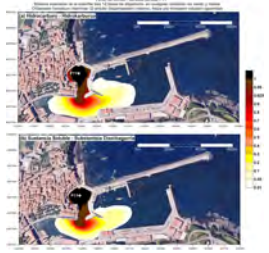
WP 2 Project Communication

WP 1 Project coordination

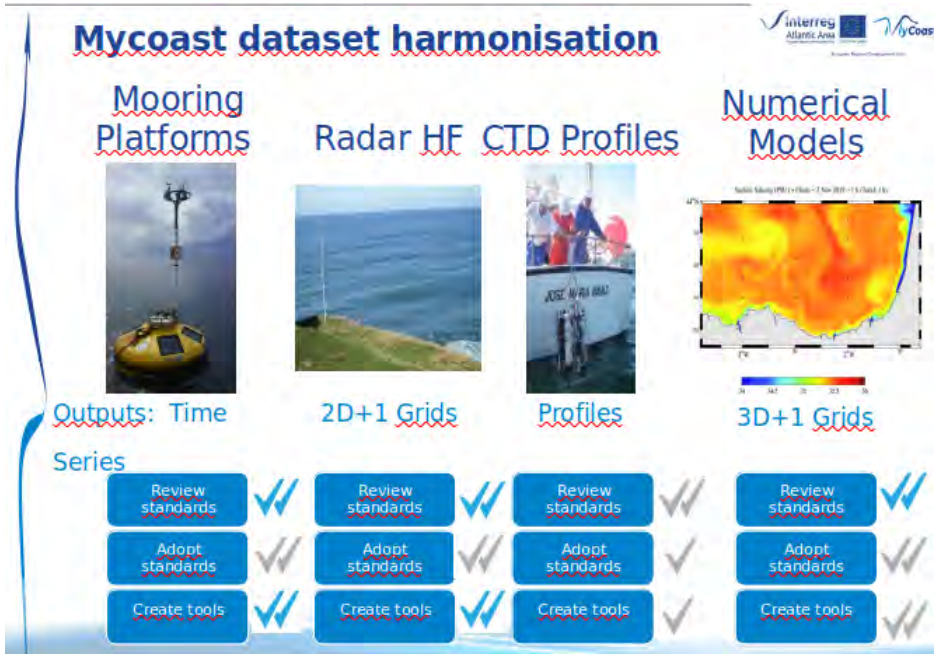
Transnational approach in handling the pillar of the system: a Coordinated Atlantic Coastal Operational Observatory, through the development of **standard observing and processing strategies**, MyCoast will greatly facilitate a more extensive exploitation of **transferable tools** to face the main challenges of the **coastal risks**

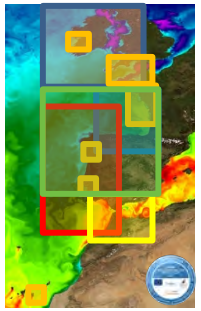
Review of existing tools for different coastal risks





Selection of MyCoast tools to be developed



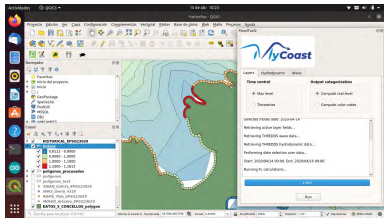


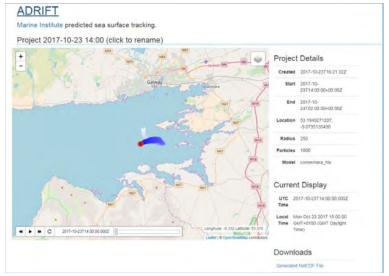
Interreg Atlantic Area — MyCoast

WP7 - QUICK GUIDE FOR TOOL ADOPTERS

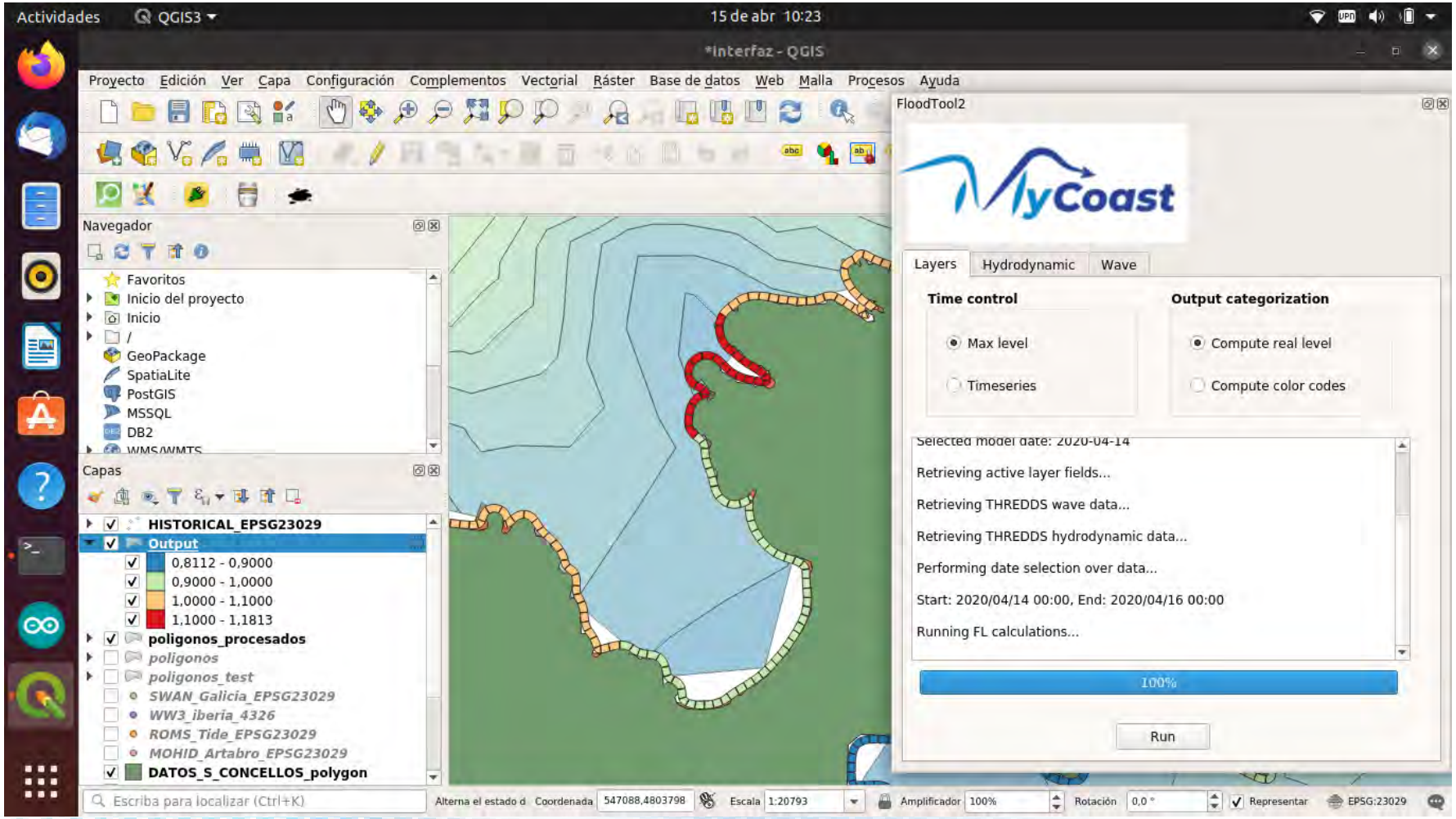
This is an internal MyCOAST document aimed at providing MyCOAST partners with a quick overview of the principle requirements they must meet in order to adopt the five tools to work with their system.

Pilot demonstrations along the Atlantic Area





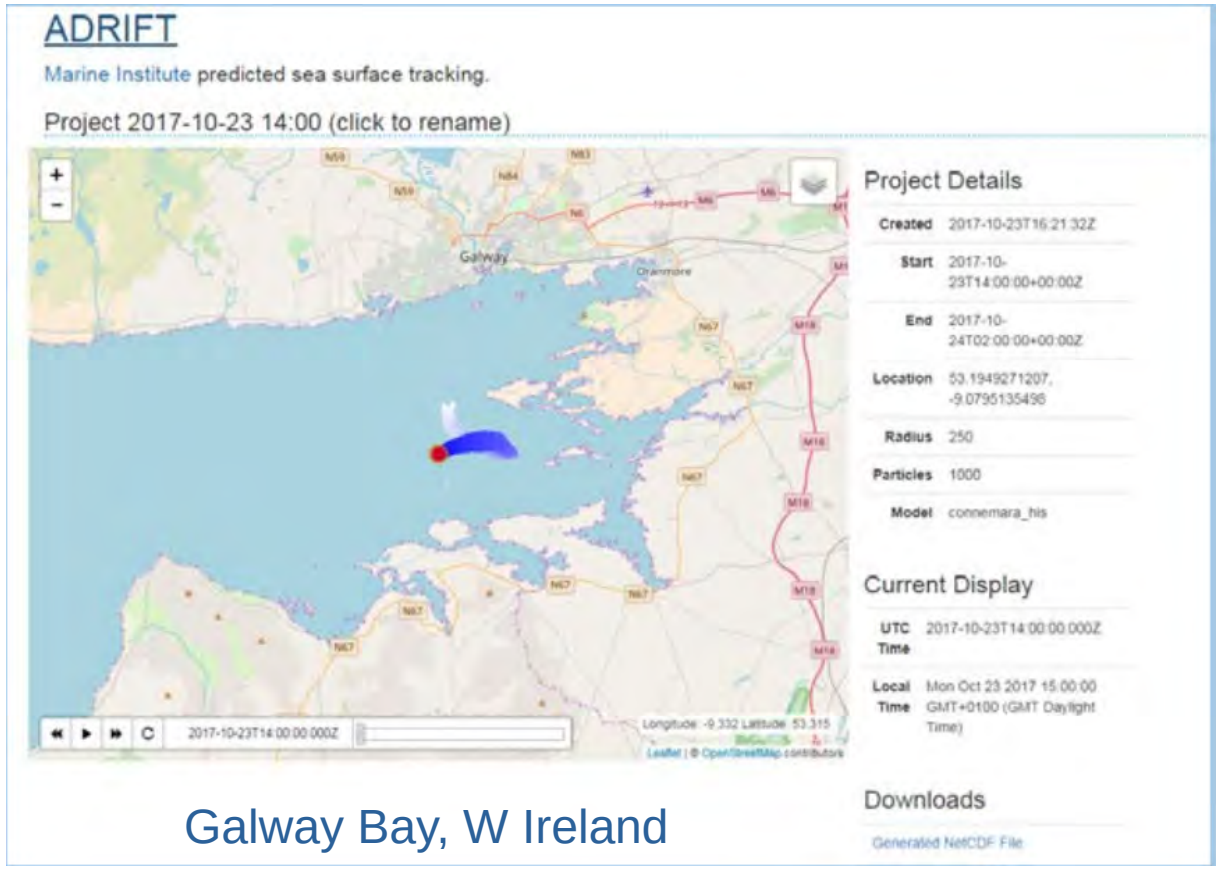
MyCOAST Flood Tool



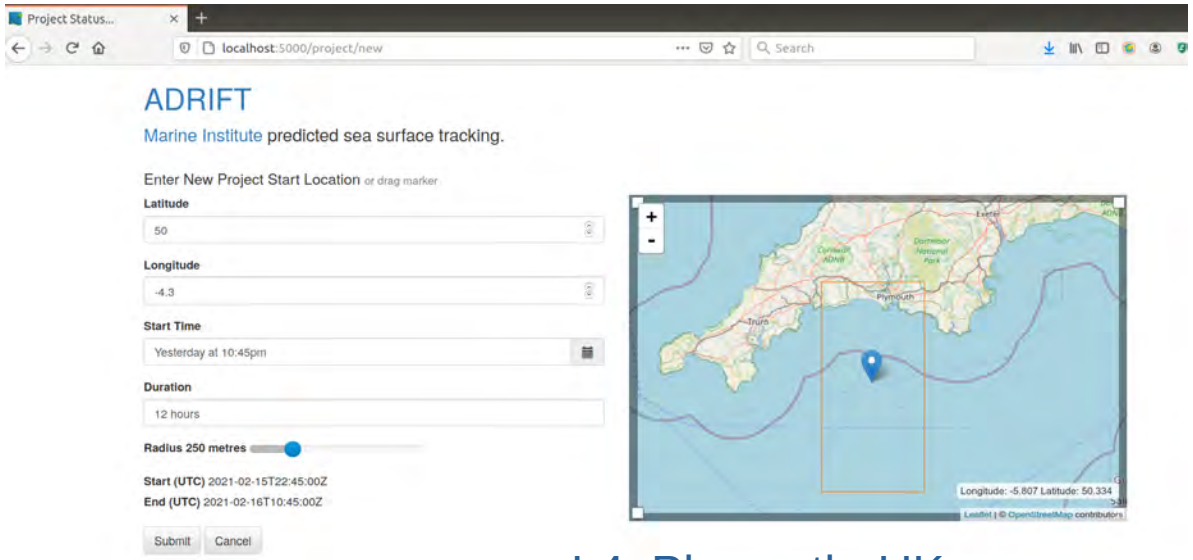
Tool for forecasting extreme events and providing flood risks warnings for municipalities (the objective is to support around 9 municipalities with a population of 900.000).

A Coruña, Galicia, Spain

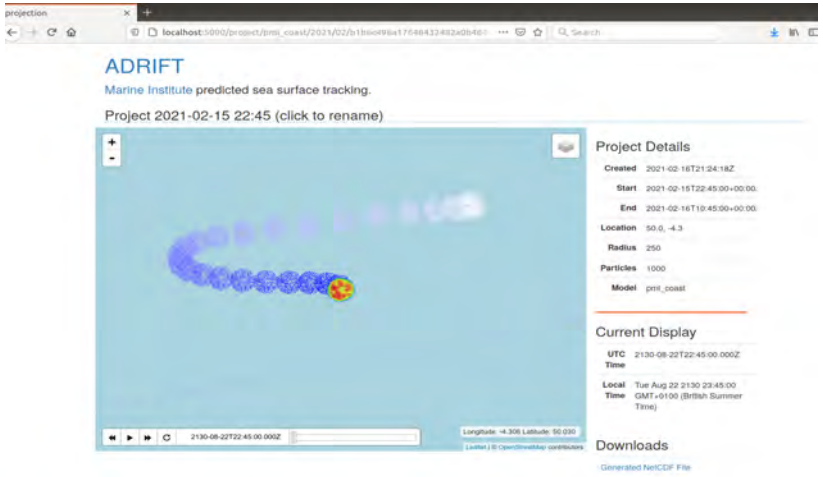
Search and Rescue Tool: ADRIFT



Galway Bay, W Ireland



L4, Plymouth, UK



Based on the ICHTHYOP lagrangian particle tracking software and a tailor made web tool.
The existing tool can accept gridded metocean data from ROMS, NEMO and FVCOM.

MyCoast tools for maritime security and harbour operations

PORTO DE SETÚBAL

RELATÓRIO DE PREVISÕES
DOCA DAS FONTAÍNHAS

30-10-2018 11:18

1. GERAL

Relatório de previsões meteorológicas, agitação marítima e nível do mar para o Porto da APSS. Previsões para o período de: 30-10-2018 a 02-11-2018, hora local.

2. CRITÉRIOS

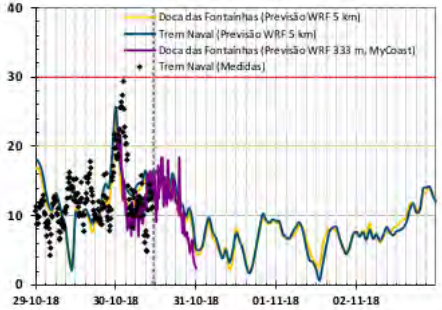
Parâmetro	amarelo	vermelho
Intensidade do vento (knot)	≥20 até 30	≥ 30
Altura significativa (m)	≥0.6 até 1.0	≥ 1.0

3. METEOROLOGIA

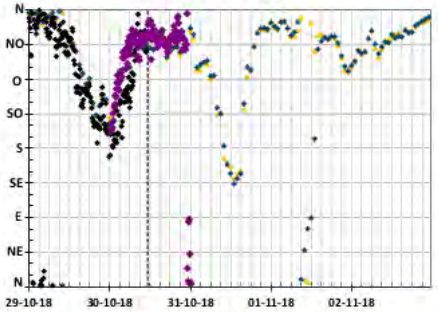
Data/hora	terça-feira, 30-10-2018							quarta-feira, 31-10-2018							quinta-feira, 01-11-2018							sexta-feira, 02-11-2018							
Local	00	03	06	09	12	15	18	21	00	03	06	09	12	15	18	21	00	03	06	09	12	15	18	21	00	03	06	09	12	15	18	21	00
Doca das Fontainhas Dir	↗	→	→	↘	↘	↘	↘	↘	↘	→	→	↗	↖	↖	→	↘	↓	↓	↓	↓	↓	↘	↘	↘	→	↘	↘	↘	↘	↘	↓	↓	↓
Int (knot)	25	13	13	15	16	15	13	9	4	8	6	5	8	3	5	9	9	7	8	6	3	7	8	5	8	7	7	8	8	10	11	14	12
Tmp (°C)	15	15	15	14	15	15	13	13	12	13	13	14	14	15	15	14	13	13	13	14	16	17	16	15	15	15	15	16	18	19	17	14	14
HR (%)	95	93	90	77	71	73	86	89	93	90	94	91	93	85	87	90	87	88	89	89	73	63	77	87	94	98	96	91	82	79	88	93	94
Tróia Dir	↗	→	→	↘	↘	↘	↘	↘	↘	→	→	↗	↖	↖	→	↘	↓	↓	↓	↓	↙	↘	↘	↘	→	↘	↓	↘	↓	↓	↓	↓	↓
Int (knot)	27	14	14	17	17	16	13	10	6	9	7	5	8	3	6	10	10	7	8	7	2	7	9	5	8	8	8	9	9	10	12	15	13
Tmp (°C)	15	16	15	14	15	15	13	14	13	14	14	14	14	15	15	15	14	14	14	14	15	18	16	16	16	15	16	16	18	19	17	15	14
HR (%)	95	93	90	77	71	73	86	89	93	90	94	91	93	85	87	90	87	88	89	89	73	63	77	87	94	98	96	91	82	79	88	93	94

Previsões da direção do vento [Dir] e intensidade do vento [Int] do vento (1 knot = 1.852 km/h), temperatura do ar [Tmp] e humidade relativa [HR] do modelo WRF (5 km de resolução) na Doca das Fontainhas (8.886°W; 38.520°N) e em Tróia (8.900°W; 38.495°N).

Intensidade do vento [knot]



Direção do vento [°]



4. HORAS DE TRANSIÇÃO DE CREPÚSCULOS, NASCER E PÔR DO SOL (hora local)

Data	Crepúsculo náutico	Crepúsculo civil	Nascer do sol	Meridiano	Pôr do sol	Crepúsculo civil	Crepúsculo náutico
30/10/2018	6:01	6:32	7:00	12:19	17:38	18:06	18:37
31/10/2018	6:02	6:33	7:01	12:19	17:37	18:04	18:36
01/11/2018	6:03	6:34	7:02	12:19	17:36	18:03	18:35
02/11/2018	6:04	6:36	7:03	12:19	17:35	18:02	18:34

HIDROMOD · Interreg Atlantic Area · MyCoast

Relatório automático produzido pela plataforma

PORTO DE SETÚBAL

RELATÓRIO DE PREVISÕES
DOCA DAS FONTAÍNHAS

30-10-2018 11:18

5. NÍVEL DO MAR

Data/hora	terça-feira, 30-10-2018															quarta-feira, 31-10-2018																
Local	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17
NL (m)	2.6	2.0	1.5	1.2	1.2	1.4	1.9	2.4	2.8	3.1	3.2	3.1	2.7	2.2	1.7	1.4	1.3	1.4	1.8	2.3	2.7	3.1	3.3	3.3	3.0	2.5	2.0	1.6	1.3	1.2	1.4	1.8	2.2

Previsões do nível do mar [NL] do modelo MOHID (50 m de resolução) na Doca das Fontainhas (8.886°W; 38.520°N).

Nível do mar em Tróia [m] e correntes na Doca das Fontainhas [m/s]

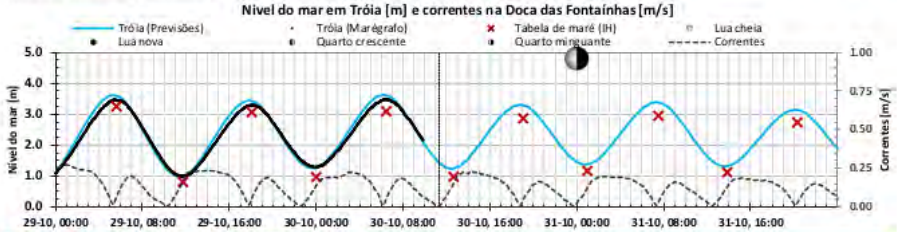


TABELA DE MARÉ (INSTITUTO HIDROGRÁFICO)

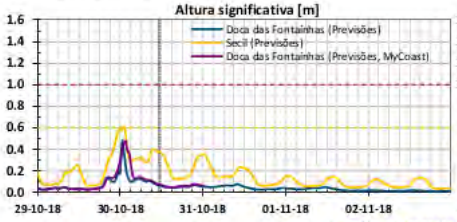
Marégrafo de Tróia	Data	Hora	Nível do mar [m]	Maré
Valores fornecidos pelo Instituto Hidrográfico o marégrafo de Setúbal (Tróia): Latitude 38°29,67' N; Longitude 8° 54,05' W - WGS84. Alturas de maré: Referidas ao nível do zero hidrográfico; Nível médio: 2.00 m.	terça-feira, 30-10-2018	06:27	3.09	Preia-mar
		12:39	0.97	Baixa-mar
		19:03	2.86	Preia-mar
	quarta-feira, 31-10-2018	00:58	1.16	Baixa-mar
		07:31	2.95	Preia-mar
		13:51	1.11	Baixa-mar
		20:19	2.73	Preia-mar
	quinta-feira, 01-11-2018	02:17	1.30	Baixa-mar

6. AGITAÇÃO MARÍTIMA

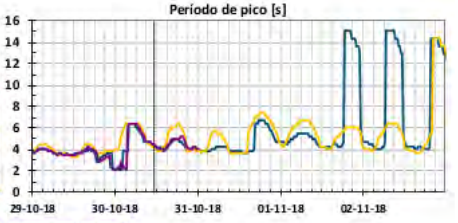
Data/hora	terça-feira, 30-10-2018											quarta-feira, 31-10-2018												quinta-feira, 01-11-2018												sex, 02-11-2018				
Local	00	02	04	06	08	10	12	14	16	18	20	22	00	03	06	09	12	15	18	21	00	03	06	09	12	15	18	21	00	03	06	09	12
Doca das Fontainhas Dir	↗	↗	↗	↗	↗	↗	↗	↗	↗	↗	↗	↗	↗	↗	↗	↗	↗	↗	↗	↗	↗	↗	↗	↗	↗	↗	↗	↗	↗	↗	↗	↗	↗
Hs (m)	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tp (s)	2	2	6	6	5	5	4	4	4	5	4	4	4	4	4	4	4	4	7	6	5	5	5	5	4	4	4	14	5	4	4	15	5
Pw (kW/m)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Secil Dir	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑
Hs (m)	0.6	0.4	0.3	0.3	0.3	0.4	0.4	0.2	0.1	0.1	0.1	0.3	0.3	0.2	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.0	0.1
Tp (s)	4	5	6	6	4	4	4	6	6	5	4	4	4	5	4	4	6	5	4	4	6	7	7	4	6	4	4	6	6	4	4	6	6
Pw (kW/m)	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Previsões para a direção [Dir], altura significativa [Hs], período de pico [Tp] e potência da onda [Pw] do modelo SWAN (50 m de resolução) na Doca das Fontainhas (8.886°W; 38.520°N) e Secil (8.929°W; 38.495°N).

Altura significativa [m]



Período de pico [s]



http://portodesetubal.aquasafeonline.net/

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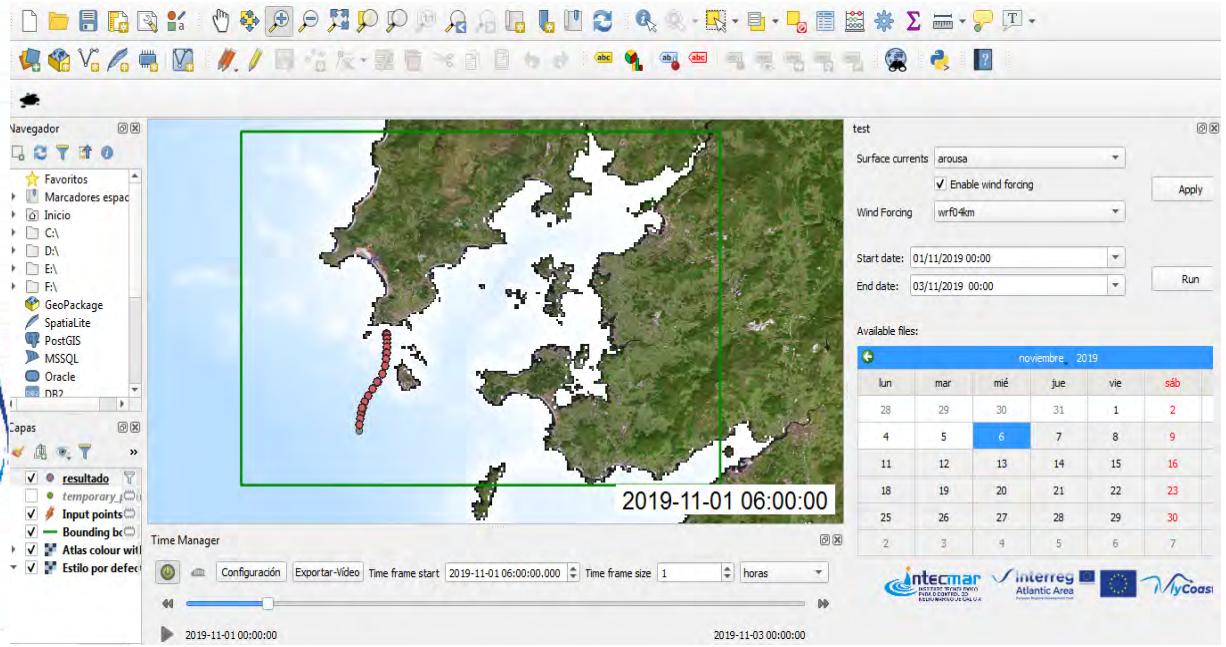
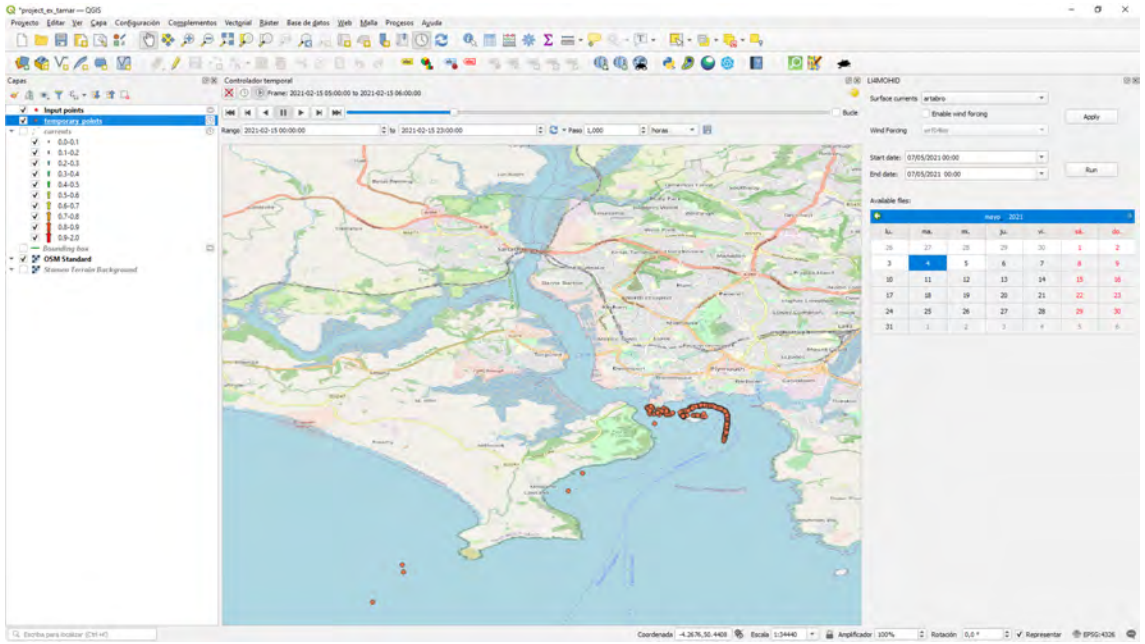
Relatório automático produzido pela plataforma

Oil Spill & HNS forecast tool: LI4MOHID



Ria de Arousa, Galicia, Spain

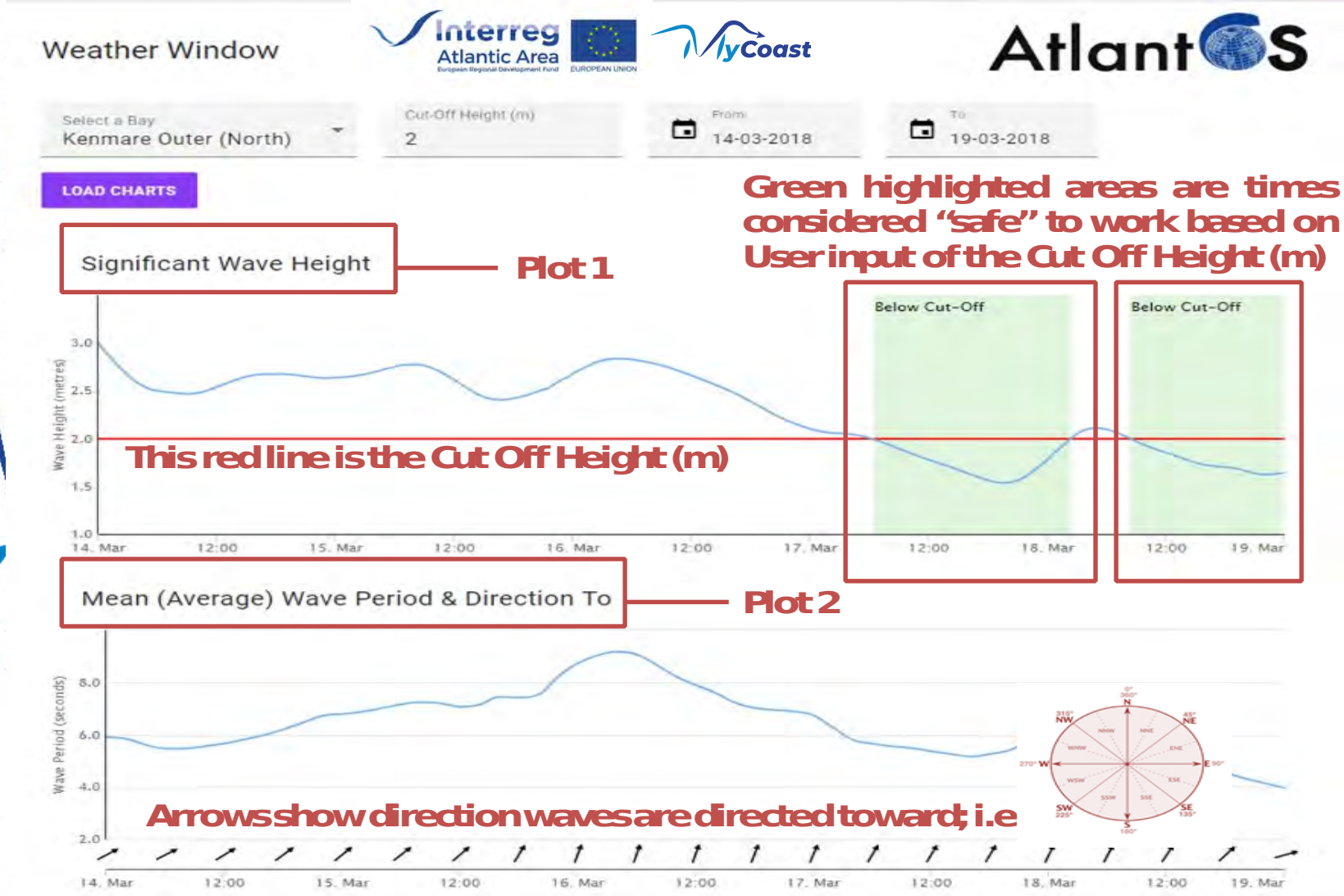


Plymouth Sound, Devon, UK

Lagrangian Interface for MOHID (LI4MOHID) coupled to other standard model outputs

FVCOM, NEMO, ROMS

Marine Safety: Weather Window Tool



Support for planning of operations at ~50 sites including:

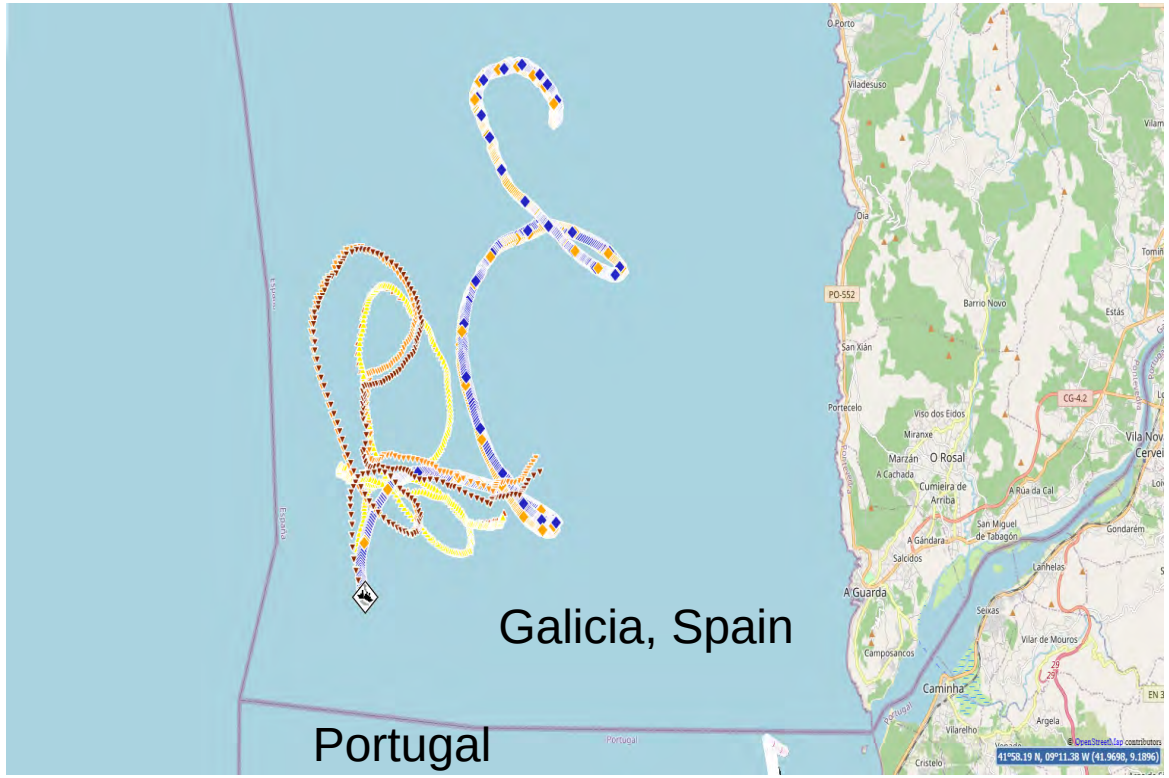
- aquaculture sites (Ireland, Galician mussel rafts, Basque Country)

- ocean-meteo buoys (PML Western Channel E1 and L4, IEO AGL Buoy, Xunta de Galicia Buoys)

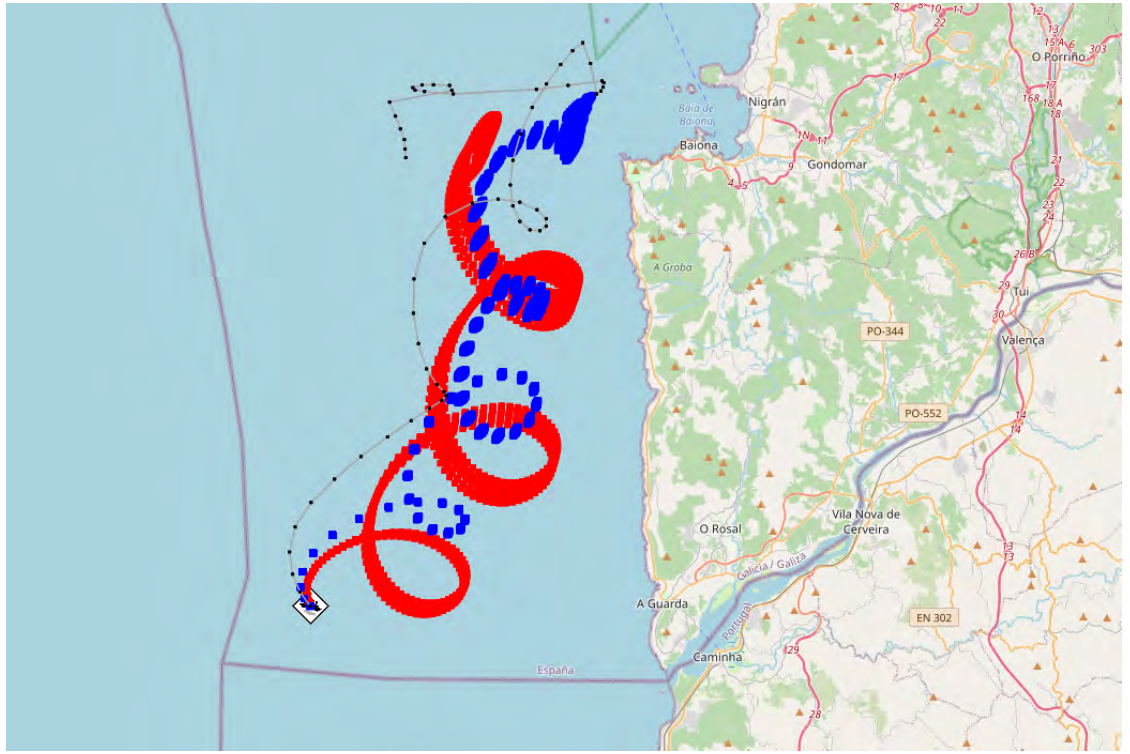
- pilot sites for locating renewable energy platforms (Basque Country, Portugal, Galicia)

https://digitalocean.ie/Home/WeatherWindow

Transboundary Exercise CAMINHA September 2020



IIM, IH, INTECMAR drifters



BLUE: MyCOAST Oilspill tool
RED: MyCOAST ADRIFT tool
GRAY: CAMGAL tool

Agencies responsible for marine operations were involved in the exercise:
Harbour Master´s Offices of Caminha, Viana and Povoa de Varzim in Portugal
Galician Coastguard
SASEMAR (Spanish Maritime Safety Agency).

Co-developed relocatable standardised tools for tackling coastal risks demonstrated along the Atlantic Area

Coastal Risk	MyCoast Tool	Models
Flood	Flood tool	ROMS (tide), SWAN (wave)
Pollution	MyCoastLCS	FVCOM, MOHID, ROMS, NEMO, TELEMAC
Search and rescue	ADRIFT	ROMS, FVCOM
HNS & OILSPILL Forecast	LI4MOHID	MOHID, FVCOM, NEMO, ROMS
Maritime safety tool	Weather Window tool	SWAN, WW3

Long Term Effect

EOOS Contribution of MyCoast in strengthening the coastal observing system in the Atlantic area.

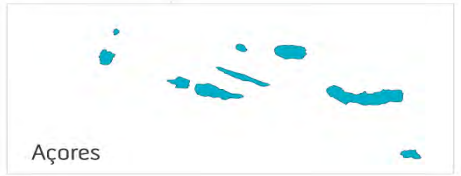
IBIROOS The consortium gathers the main partners of IBIROOS community. The objectives fit into the IBIROOS and EuroGOOS strategy.

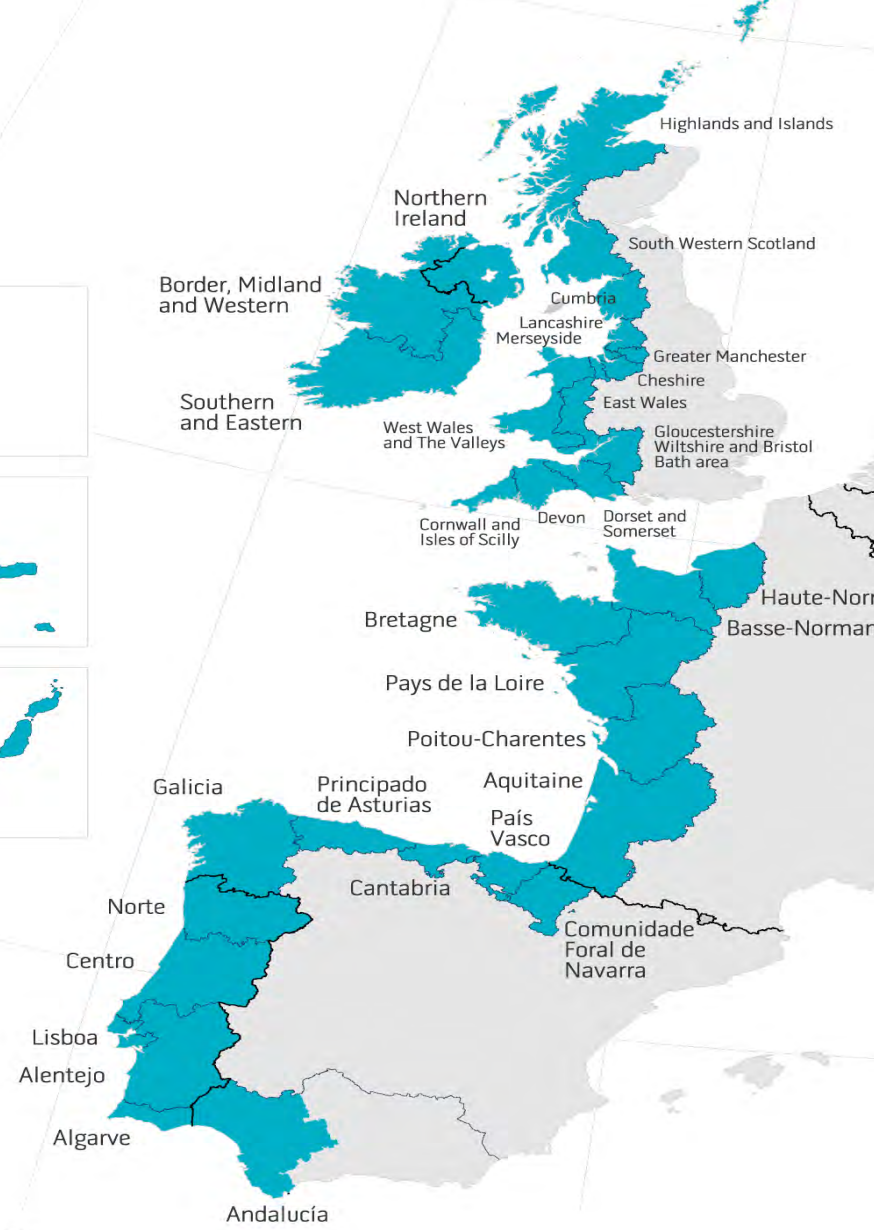
Downstream services from Copernicus Marine MyCoast will provide a coordinated use of the Copernicus sustained programme through the implementation of downstream products and services to support threat and emergency response.

Transfer The tools will be co-developed, open source, will use standardized data inputs and will be transferrable between coastal observatories.

Demonstration The benefits will be demonstrated to end-users in 5 study areas with 5 regional Workshops involving all public local and regional organisations and the private sector. **FINAL WORKSHOP: June 2021**

OBRIGADO!
¡GRACIAS! GRAZAS!
¡GRACIES!
ESKERRIK ASKO!
MERCI!
TRUGAREZ!
THANK YOU!
MEUR RAS!
DIOLCH YN FAWR!
TAPADH LEIBH!
GO RAIBH MAITH AGAIBH!





ATLANTIC AREA PROGRAMME 2014-2020