

8th EMODnet Steering Committee Meeting Rome, Italy 14-15.09.2017

Review of the Black Sea Checkpoint Products

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HTTP://WWW.EMODNET-BLACKSEA.EU/



(1) Wind Farm Sitting What – By Who ?



This challenge handles the ability to determine the suitability of sites for offshore wind farm development in Black Sea, to assess whether the current available marine datasets are available and appropriate to the use case, as well as to indicate gaps in the current EU data collection framework.

- National and Kapodistrian University of Athens, NKUA, Greece
- Institute of Oceanology, Bulgarian Academy of Sciences, IO-BAS, Bulgaria
- National Institute for Marine Research and Development "Grigore Antipa", NIMRD, Romania
- Sofia University "St. Kliment Ohridski", USOF, Bulgaria



(1) Wind Farm Sitting

List of products

Nb products	Nb formats SIG	Nb Excel	Nb Other (pdf	, txt,img)							
3	3	0	2								
Name of product / component Short & Descriptive Title Format Units											
BLACKSEA_ CH01_product_	1 Black Sea Wind/W	/ave data base (2001-2010) /	SQLdatabase Available on request	unitless five- grade index							
BLACKSEA_ CH01_product_	Assessment of the detailed statistical Suitability map for BlackSea, where -PC1-waters of Bu -PC2-waters of Tur -PC3- waters of Tur	e available database through a l analysis r offshore windfarm siting in lgaria and Romania rkey and Bulgaria meet urkey and Georgia meet	Report & GIS compatibles	unitless five- grade index							
BLACKSEA_ CH01_product_	Assessment of the sets for the test re	e confidence limits of the data egions	Report & GIS compatibles	unitless five- grade index							

Upstream data identified in Sextant

env. matrix	Characteristics (P02)	Sources (data provider)	ir dat	nput tasets	s Air	Biota/Biology	lce	Fresh Water	Marine Water	Riverbed /Seabed	Human activities
2	11	7	(44)	11	None			32		None
			· /								3



(2) Marine Protected Areas What – By Who ?



This challenge handles the ability to analyze the existing network of Marine Protected Areas with respect to fishery activities & climate change impact, determine whether the network constitutes a representative and coherent network as described in article 13 of the Marine Strategy Framework Directive, and determine how MPAs are likely to be affected by Climate Change, to assess whether the current available marine datasets are available and appropriate to the use case, as well as to indicate gaps in the current EU data collection framework.

- Institute of Oceanology, Bulgarian Academy of Sciences, IO-BAS, Bulgaria
- National Institute for Marine Research and Development "Grigore Antipa", NIMRD, Romania
- Euro-Mediterranean Center for Climate Change, CMCC, Italy
- ORION Joint Research and Development Centre, ORION, Cyprus
- Ukrainian Scientific Centre of Ecology of the Sea, UkrSCES, Ukraine
- Ivane Javakhishvili Tbilisi State University, TSU, Georgia
- Institute of Marine Sciences, Middle East Technical University, IMS, Turkey
- P.P. Shirshov Institute of Oceanology, Russian Academy of Sciences, SIO-RAS, Russia
- SC Marine Research Srl, SCMR, Romania



(2) Marine Protected Areas List of products

Nb pro	ducts	Nb fo	rmats SIG		Nb Excel			Nb Other	(pdf, txt,img	;)	
4)		4		0				0		
Name of product / component			Short &	Desc	riptive Title	•		Format	Ur	nits	
BLACKSEA C PC1- Ecoregions PC2: MPAs in Ge PC3- Internation PC4-Zoning PC5- National pr PC6- Natura 200	CHO2_produ eorgia hal Protected S otected Stes 10 sites	uct_1 ites	Black Sea ne list, position (IUCN classi (including si spacing bety	Black Sea network of marine protected areas: list, position and boundaries (IUCN classification) (including size and shape of each MPA and spacing between each other)					Nc	one	
BLACKSEA_CH02_product_2 PC1 - Romania PC2 – Bulgaria			Black Sea ne Habitat type for Bulgaria	Black Sea network of marine protected areas: Habitat types and mapping for Bulgaria & Romania					No	one	
BLACKSEA_C PC1- Marine ma PC2- Fish (specie PC3- Seabirds (b	CHO2_produ mmals (cetace es occurrence) ird observatio	uct an observations	Black Sea ne Biodiversity	Black Sea network of marine protected areas: Biodiversity					Shapefile: None 3 layers		
BLACKSEA_C PC1- Jun-Aug [20 PC2-Sept-Nov [2 or 12 monthly m	3LACKSEA_CH02_product_4 Qualitative analysis of connectivity between Shapefile: deg C 9C1-Jun-Aug [2005-2015) MPAs: seasonal maps of surface temperature 4 layers m/s 9C2-Sept-Nov [2005-2015) [deg C] and surface currents [m/s]										
upstream	n data l			nt			Fresh	Marine	Riverhed	Human	
env. matrix	(P02)	(data provider	davasets	Air	Biota/Biology	Ice	Water	Water	/Seabed	activities	
4 ack Sea Chec	12 kpoint	17	(41)		17			21	2	1	



(2) Marine Protected Areas Example

BLACKSEA_CH_2_Pro

network of marine protected areas





(3) Oil platform leaks What – By Who ?



This challenge handles the ability to monitor any oil spill over the Black Sea and the statistical likelihood that sensitive coastal habitats or species or tourist beaches will be affected within 24, 48 and 72 hours after the accident, to assess whether the current available marine datasets are available and appropriate to the use case, as well as to indicate gaps in the current EU data collection framework.

- ORION Joint Research and Development Centre. ORION, Cyprus
- Euro-Mediterranean Centre of Climate Change, CMCC, Italy
- Institute of oceanology, Bulgarian Academy of Sciences, IO-BAS, Bulgaria
- National and Kapodistrian University of Athens, NKUA, Greece



(3) Oil platform leaks List of products

Nb products	Nb	formats SIG	Nb Excel	Nb Other (pd	lf, txt,img)	
2		0	0	2		
Name of product / com	nponent	Short & De	scriptive Title	Format	Units	
BLACKSEA_CH03_produ	uct_1	Oil Platform Le	ak Bulletin released on 11 May	Pdf	None	
incident declared on		2016, fast rele	ase, 24h after the incident with	No shapefile		
10th May 2016 by DG N		 information on Bathymetry, Se Surface, subsurface, subsurface, subsurface, subsurface, subsurface, subsurface, wind, current Wind, current Predicted imparts a seabed habitats a Comparison be meteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogrameteo-oceanogram	eabed substrate rface and coastal oil spill and wave . act on the coastal environment, and human activities; etween different oil spill models and aphic data set simulations.			
BLACKSEA_ CH03_produ	uct_2	Oil Platform Le 2016, 72h afte above informa	ak Bulletin released on 13 May r the incident with update of tion	Pdf No shapefile	None	

Upstream data identified in Sextant

env. matrix	Characteristics (P02)	Sources (data provider)	inpu	tidatasets	Air	Biota/Biology	lce	Fresh Water	Marine Water	Riverbed /Seabed	Human activities
5	9	12	(19	4	1			9	4	1



What – By Who ?

(4) Climate



This challenge aims to compute the change of key ocean characteristics over past 10 to 100 years, temperature, internal energy, ice coverage and phytoplankton abundance (top three species), to assess whether the current available marine datasets are available and appropriate to the use case, as well as to indicate gaps in the current EU data collection framework.

- Sofia University St. Kliment Ohridski, USOF, Bulgaria
- Institute of oceanology, Bulgarian Academy of Sciences, IO-BAS, Bulgaria
- National Institute of Marine Research and Development "Grigor Antipa", NIMRD, Romania
- Euro-Mediterranean Centre of Climate Change, CMCC, Italy
- University of Plymouth, UPL, United Kingdom
- P.P. Shirshov Institute of Oceanology, Russian Academy of Sciences, SIO-RAS, Russia



Nb products	Nb formats SIG	Nb Excel	Nb Other (pdf, txt,img)		
18	12	6	0		

Name of product / component	Short & Descriptive Title	Format	Units
BLACKSEA_ CH04_product_1	Map of the change of the annual mean temperature • At surface • Over 10 years	Shapefile	degrees Celcius / decade
BLACKSEA_CH04_product_2	Map of the change of the annual mean temperature At mid water column (500 m) Over 10 years 	Shapefile	degrees Celcius / decade
BLACKSEA_CH04_product_3	 Map of the change of the annual mean temperature At sea bottom Over 10 years 	Shapefile	degrees Celcius / decade
BLACKSEA_CH04_product_4	Map of the change of the annual mean temperature • At surface • Over 50 years	Shapefile	degrees Celcius / decade
BLACKSEA_CH04_product_5	Map of the change of the annual mean temperature At mid water column (500 m) Over 50 years: 	Shapefile	degrees Celcius / decade
BLACKSEA_CH04_product_6	 Map of the change of the annual mean temperature At sea bottom Over 50 years 	Shapefile	degrees Celcius / decade



Nb products	N	b formats SIG	Nb Excel		Nb Other (pdf, txt,img)		
18		12	6		0		
Name of product / com	ponent	Short & Desc	riptive Title		Format	Units	
BLACKSEA_CH04_produ	ict_7	Map of the chang • At surface • Over 100 years	ge of the annual mean tempera	Shapefile	degrees Celcius / decade		
BLACKSEA_CH04_produ	ıct_8	Map of the chang • At mid water co • Over 100 years	ge of the annual mean tempera olumn (500 m) ;	Shapefile	degrees Celcius / decade		
BLACKSEA_CH04_produ	uct_9	Map of the chang • At sea bottom • Over 100 years	ge of the annual mean tempera .	ture	Shapefile	degrees Celcius / decade	
BLACKSEA_ CH04_produ	uct_10	Map of the avera • Over 10 years	ge extent of sea ice coverage		Shapefile	None	
BLACKSEA_CH04_produ	.ct_11	Map of the avera	ge extent of sea ice coverage		Shapefile	None	
BLACKSEA_CH04_produ	.ct_12	Map of the avera	ge extent of sea ice coverage		Shapefile	None	



Nb products	Nb formats SIG	Nb Excel	Nb Other (pd	lf, txt,img)			
	12	6	0				
Name of product / com	nponent Short & Des	criptive Title	Format	Units			
BLACKSEA_CH0	uct_13 Time series of a · At surface	nnual mean temperature	Excel (time plots)	degrees Celcius/decade (1° resolution)			
BLACKSEA_CH04_produ	uct_14 Time series of a • At mid water	nnual mean temperature column (500 m)	Excel (time plots)	degrees Celcius/decade (1° resolution)			
BLACKSEA_CH04_prod	ct_15 Time series of a • At sea bottom	nnual mean temperature า	Excel (time plots)	degrees Celcius/decade (1° resolution)			
BLACKSEA_CH04_produ	uct 16 Time series of a	verage annual internal energy	Excel (time plots)	°C.m, J			
BLACKSEA_ CH04_produ	uct_1 Time series of to over past 100 y	otal ice cover in sea ears	Excel (time plots)	m2			
BLACKSEA_CH04_product_18 Time series of abundance of three most abundant Excel Abun pecies of phytoplankton (time plots)							
	Sources		Fresh Marine R	Riverhed Human			

	env. matrix	Characteristics (P02)	Sources (data provider)	input datasets	Air	Biota/Biology	lce	Fresh Water	Marine Water	Riverbed /Seabed	Human activities
B	2=> 3 lack Sea Che	5 eckpoint	45	121		9	??		107		



Example

BLACKSEA_CH4_Product_1

Map of the change of the average temperature at surface over 10 years





What – By Who ?



This challenge handles the ability to follow up on the **Sea-level rise and sediment balance per stretch of coast** of the BlackSea, **over past 10, 50 and 100 years, to assess whether the current available marine datasets are available and appropriate to the use case**, as well as **to indicate gaps in the current EU data collection framework**.

- University of Plymouth, UPL, United Kingdom
- Institute of Oceanology, Bulgarian Academy of Sciences, IO-BAS, Bulgaria
- Sofia University St. Kliment Ohridski, USOF, Bulgaria
- Ukrainian Scientific Centre of Ecology of the Sea, UkrSCES, Ukraine

(5) Coasts





List of products

Nb products	Nb formats SIG	Nb Excel	Nb Other (pdf, txt,img)
10	4	7	0

Name of product / componer	^{it} Short & Descriptive Title	Format	Units
BLACKSEA_CH05_product_1	Sea level rise from altimetry and trend for the last 10 years		
BLACKSEA_ CH05_product_2	(2006-2015)	Shapefile 🗕	
	C1: Maps	Excel file	mm/year
	C3 ? Nuts 3	+ Images	
BLACKSEA_ CH05_product_3	Tables of regional sea level time-series and trend	Excel file	mm/year
	for the past 50 years (1966-2015), in selected coastal stations (Sevastopol, Poti, Tuapse, Costanza, Burgas and Varna).	+ Images	
BLACKSEA_ CH05_product_4	Tables of regional sea level time-series and trend	Excel file	mm/year
	for the past 100 years (1916-2015), in selected coastal stations (Sevastopol, Poti, Tuapse, Costanza, Burgas and Varna).	+ Images	_
BLACKSEA_ CH05_product_5	Tables of time series and sea-level trend for the past 10 years	Excel file	mm/year
	(2006-2015) for 4 NUTS3 in Turkey. (from TUDES & PSMSL datasets)	+ Images	
BLACKSEA_CH05_product_6	Tables of time series and sea-level trend for the past 50 years	Excel file	mm/year
	(1966-2015), for each NUTS3 from selected coastal stations	+ Images	
	(Sevastopol, Poti, Tuapse, Costanza, Burgas and Varna).		
BLACKSEA_CH05_product_7	Tables of time series and sea-level trend for the past 100 years	Excel file	mm/year
	(1916-2015), for each NUTS3 from selected coastal stations	+ Images 🗕	J
	(Sevastopol, Poti, Tuapse, Costanza, Burgas and Varna).		





List of products

Nb products	N	o formats SIG	Nb Excel	Nb Other (pdf	df, txt,img)	
(10)		4	7	0		
Name of product / com	ponent	Short & Desc	riptive Title	Format	Units	
BLACKSEA_CH05_produ	ıct_8	Maps of sedimer for the last 10 ye cover Adjara & Po	n t mass balance trend e ars (2006-2015) oti regions (Georgia)	Shapefile	m3/year	
BLACKSEA_ CH05_produ	ıct_9	Maps of sedimer for the last 50 ye cover Adjara & Po	n t mass balance trend e ars (1966-2015). oti regions (Georgia)	Shapefile	m3/year	
BLACKSEA_CH05_produ	t <u>10</u>	nt mass balance trend rears (1916-2015).	Shapefile	m3/year		

Upstream data identified in Sextant

	env. matrix	Characteristics (P02)	Sources (data provider)	input datasets	Air	Biota/Biology	lce	Fresh Water	Marine Water	Riverbed /Seabed	Human activities
B	3 lack Sea Che	3 ckpoint	10	46				2	42	2	



(5) Coasts

Example

BLACKSEA_ CHU5_product_r

Sea level rise from altimetry and trend for the last 10 years (2006-2015)





(6) Fishery Management What – By Who ?



This challenge aims to collect fish catch information for the whole sea basin on **landings**, **discards**, **and by-catch of fish**, **mammals**, **reptiles and seabirds** (mass & number by species and year), to assess whether the current available marine datasets are available and appropriate to the use case, as well as to indicate gaps in the current EU data collection framework.

- National Institute of Marine Research and Development "Grigore Antipa", NIMRD, Romania
- Institute of oceanology, Bulgarian Academy of Sciences, IO-BAS, Bulgaria
- Ivane Javakhishvili Tbilisi State University, TSU, Georgia
- Institute of Marine Sciences, Middle East Technical University, IMS, Turkey
- P.P. Shirshov Institute of Oceanology, Russian Academy of Sciences, SIO-RAS, Russia



(6) Fishery Management List of products

Nb products	Nk	o formats SIG	Nb Excel	Nb Other (pdf,	txt,img)
3		0	7	0	
Name of product / com	ponent	Short & Desc	riptive Title	Format	Units
BLACKSEA_CHO	ict_1	a collated data set of by species and year - Mass for whole BLAG - Mass for Romania 2 PC3: Number for Ron PC4: Mass for Bulgari	of landings , fish & shellfish, CK SEA 2008-2014 2010-2016 nania 2010-2016 ia 2009-2015	4 Excel files No GIS inputs	mass in kg + number
BLACKSEA_ CH06_prod	uct_2	a collated data set of by species and year PC1: Mass for Roma PC2: Number for Roma	of discards , ania 2010-2016 omania 2010-2016	2 Excel files No GIS inputs	mass in kg + number
BLACKSEA_ CH06_produ	ict_	a collated data set on by species and year PC1: Mass for Roma	of by-catch , ania 2009-2016	1 Excel file No GIS inputs	mass in kg + number

Upstream data identified in Sextant

env. matrix	Characteristics (P02)	Sources (data provider)	inpu ⁻ d	latasets	Air	Biota/Biology	lce	Fresh Water	Marine Water	Riverbed /Seabed	Human activities
1 Slack Sea Che	2 ckpoint	3		3				0	3	0	



(6) Fishery Management Example

. Collated data setof LANDINGS by species MASS BULGARIA 2009-2015

Year	Ŧ	Species	Ŧ	Species - CODE	Ŧ	Total catch [💌
2009		Big-scale sand smelt		SIL		13549
2009		Red mullet		MUR		23969
2009		Garfish		GAR		5481.5
2009		Leaping mullet		LZS		6874.1
2009		Turbot		TUR		52074.45
2009		Pontic shad		SHC		37147.7
2009		So-iuy mullet		MYZ		2303
2009		European seabass		BSS		40
2009		Bluefish		BLU		52344.5
2009		Common stingray		JDP		2176.3
2009		Thornback ray		RJC		46754.8
2009		Angler		ANF		150
2009		Sand sole		SOL		103.5
2009		Flathead grey mullet		MUF		10619.95
2009		Shrimps				308.3
2009		Bonito		BON		4807.9
2009		European flounder		FLE		74
2009		Golden grey mullet		MGA		3303
2009		Gobies		GPA		36750.8
2009		Sand shrimp		CSH		116.3
2009		Rapa whelk		RPN		2212552.3
2009		European pilchard		PIL		3482
2009		Horse mackerel		нмм		176880.7
2009		Picarel		PIC		151
2009		Anchovy		ANE		42379
2009		Sprat		SPR		4535923
2009		Blue mussel		MSM		45490
2009		Red mullet		MUT		48193.5
2009		Spiny dogfish		DGS		9454
2009		Mackerel		MAC		85
2009		Whiting		WHG		2273
2010		Big-scale sand smelt		SIL		26968
2010		Red mullet		MUR		38248.85
2010		White clams		CLS		20
2010	_	Constantion of the second s				2700 5



(7) Fishery Impact What – By Who ?



This challenge aims to produce map layers showing the **extent of the fisheries impact, trawlers, on the sea floor** (gridded data), **to assess whether the current available marine datasets are available and appropriate to the use case**, as well as **to indicate gaps in the current EU data collection framework**.

- National Institute of Marine Research and Development "Grigore Antipa", NIMRD, Romania
- Institute of Marine Sciences, Middle East Technical University, IMS, Turkey



(7) Fishery Impact List of products

Nb products	Nł	o formats SIG	Nb Other (pdf,	txt,img)			
2		2	0	0			
Name of product / com	ponent	Short & Desc	riptive Title	Format	Units		
BLACKSEA_CH07_produ	ıct	Mapping of the e trawling) computed from V 2013-2016 (number of distury years +	xtent of fisheries trawlers (botto /essel Monitoring System Datase rbances per month over the pas	om shapefile et t ten	None		
BLACKSEA_CH07_prod	ct_2	Mapping of the p fisheries on the s ie. extent of fishe sandy habitats w Beam trawling Pelagic trawling Trawling areas_	otential damage / impact of eafloor eries impact on specific seafloor here trawling is performed areas_Romania g areas_Romania _Turkey	Shapefile 3 map layers	None		

Upstream data identified in Sextant

env. matrix	Characteristics (P02)	Sources (data provider)	input datasets	Air	Biota/Biology	Ice	Fresh Water	Marine Water	Riverbed /Seabed	Human activities
2 Black Sea Che	3 eckpoint	4	7					4		3



(7) Fishery Impact Example

BLACKSEA_CH_/_Product_1

Vessel Monitoring System Dataset 2013-2015- Romanian waters





(8) Eutrophication What – By Who ?



This challenge handles the ability to compute the **seasonal averages and changes of eutrophication** in the basin over past 10 years (i.e. for reduction or increase), to assess whether the current available marine datasets are available and appropriate to the use case, as well as to indicate gaps in the current EU data collection framework.

- National Institute for Marine Research and Development "Grigore Antipa", NIMRD, Romania
- Euro-Mediterranean Center for Climate Change, CMCC, Italy
- Institute of Oceanology, Bulgarian Academy of Sciences, IO-BAS, Bulgaria
- University of Plymouth, UPL, United Kingdom
- P.P. Shirshov Institute of Oceanology, Russian Academy of Sciences, SIO-RAS, Russia



Black Sea Checkpoint

(8) Eutrophication List of products

Nb pr	oducts	Nb	formats SIG		Nb Excel			Nb Other	(pdf, txt,img	;)	
	1		1		0			0			
Name of p	roduct / com	ponent	Short & D	escriptiv	/e Title			Format	Ur	nits	
BLACKSEA_CH08_product_1			Mapping of seasonal Chlorophyll over 10 years					Shapefile map laye	: rs		
	 Seasonal concentration Change trend 								[mg] [mg/m]	/m3] i3/year]	
<u>Upstre</u>	am data i	identif	ied in Sex	<u>ktant</u>							
env. matrix	Characteristics (P02)	Sources (data provider)	input datasets	Air	Biota/Biology	Ice	Fresh Water	Marine Water	Riverbed /Seabed	Human activities	



(8) Eutrophication Example

Product 2 – Mapping of seasonal trend of Chlorophyll over 10 years in BlackSea (2004-2014 time period, 1 km

resolution)





(9) River Inputs What – By Who ?



This challenge handles the ability to compute **annual water discharges for each river bordering the sea basin**, inputs of **fresh water, sediment loading, pollution, biota to sea** (time series), to assess whether the current available marine datasets are **available and appropriate to the use case**, as well as **to indicate gaps in the current EU data collection framework**.

- National Institute for Marine Research and Development "Grigore Antipa", NIMRD, Romania
- Sofia University St. Kliment Ohridski, USOF, Bulgaria
- Ukrainian Scientific Centre of Ecology of the Sea, UkrSCES, Ukraine
- Ivane Javakhishvili Tbilisi State University, TSU, Georgia
- Institute of Marine Sciences, Middle East Technical University, IMS, Turkey
- P.P. Shirshov Institute of Oceanology, Russian Academy of Sciences, SIO-RAS, Russia



(9) River Inputs

Nb products	Nb	formats SIG	Nb Excel	Nb	Other (pdf	, txt,img)			
5		??	5		0				
Name of product / com	ponent	Short & Desc	riptive Title	Fo	ormat	Units			
BLACKSEA_CH09_produ PC1: Danube River (1921-19 PC2: Kamtehiya River (1921 PC3: Kamchia River (1965-1 PC4: Kizilirmak River (1976- PC5: Sakarya River (1976-19 PC6: Dniester River (1965-1 PC7: Dnieper River (1976-19	uct_1 984) -1984) 979) 1983) 983) 984) 983)	Historical month Discharge (QW) i the Global Month (RIVDIS) (1921-19	ly mean time series of Water nto Black Sea basin computed fi hly River Discharge in situ Data 984)	cs rom & Set sha	v, xls ESRI pefiles	[m3/s/month] (Qw)			
BLACKSEA_CH09_produ PC1: Danube Riverv (1921-1 PC2: Kamtehiya River (1921 PC3: Kamchia River (1965-1 PC4: Kizilirmak River (1976- PC5: Sakarya River (1976-1 PC6: Dniester River (1965-1 PC7: Dnieper River (1976-1)	uct_2 984) -1984) .979) 1983) 983) .984) 983)	Yearly mean time into Black Sea ba Monthly River Di	e series of Water Discharge (QW sin computed from the Global scharge in situ Data Set (RIVDIS	/) cs & ;) sha	v, xls ESRI pefiles	[m3/s/month] (Qw)			



(9) River Inputs

Nb products	Nb for	mats SIG	Nb Excel	Nb C	Other (pdf, txt,	img)		
5		?	5		0			
Name of product / com	nponent Sh	nort & Desc	riptive Title	For	rmat	Units		
BLACKSEA_ CH09_produ PC1: Danube River Mouth PC2: Kamtchiya River Mouth PC3: kamchaa River Mouth PC4: Kizilirmak River Mouth PC5: Sakarya River Mouth PC6: Dniester River Mouth PC7: Dnieper River Mouth	uct_3 Tim ten Sea phy	ne series of annual nperature 10yr ave a, computed from ysical reanalysis da	average river temperature (surface erage) at the discharge point into the Bla the CMEMS/MHI Black Sea basin model, ta (1992-2012)	csv ^{ck} &E shap	r, xls ESRI Defiles	[°C]		
BLACKSEA_ CH09_produ PC1: Danube River Mouth PC2: Kamtchia River Mouth PC3: Kamchia River Mouth PC4: Kizilirmak River Mouth PC5: Sakarya River Mouth PC6: Dniester River Mouth PC7: Dnieper River Mouth	uct_4 Tim of r bas	ne series of annual nitrate 10yr averag sin model bio-chen	average of river nitrate (surface concent ge), computed from the CMEMS/MHI Bla nical reanalysis data (1998-2012)	^{tration} CSV ^{ck Sea} &E shap	r, xls [r ESRI pefiles	nmol m-3]		



(9) River Inputs

List of products

Nb products	Nb formats SIG		Nb Excel	Nb Other (pdf,	txt,img)
7	0		5	0	
Name of product / com	ponent	Short	Units		
BLACKSEA_ CHO9_produce PC1- Danube River (Chilia RO1440 PC2- Danube River (Reni RO14390 CC3- Danube River (Sulina RO1443 PC4- Kamtchiya River (Kamchia BC (2003-2007) PC5- VRANA Station (Vrana BG-RV 2007) PC6- Veleka Station (Veleka BG-RV and 2007)	Jict_5 000) Mouth (2008-2012) 00) Mouth (2008-2012) 300) Mouth (2008-2012) G-RV30028061) Mouth /30028504) Mouth (2003- /30055517) Mouth (2005	Yearly river di surface EEA's c	mean of the total phosphorus a ischarge into the Black Sea, at e (2008-2012) based on water ri latabases	t csv, xls & shapefiles vers	[mg/l N]
BLACKSEA_ CH09_product_6		No info r ecruit (bioma	ermation available on eel cement and eel escapement ass) to make the product	N/A	N/A
BLACKSEA_CH09_product_7		No info r ecruit (bioma	ermation available on salmon ement and salmon escapement ass) to make the product	, ⊧ N/A	, N/A

Upstream data identified in Sextant

	env. matrix	Characteristics (P02)	Sources (data provider)	input datas	ts Air	Biota/Biology	lce	Fresh Water	Marine Water	Riverbed /Seabed	Human activities
B	2 Jack Sea Che	8 ckpoint	16	71				32	39		



(9) River Inputs Example

Product 1 and 2– Monthly and Yearly mean time series of Water Discharge (Qw) [m3/s] into Black Sea basin from in situ data

日も・ペート・	BLACKSEA_CH_9_Product_1ater - Excel	emihailov@alpha.mrii.ro 🖽 — 🗗 🗙	
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1 Product - PointiD - Source - River -	Station - Country - Area - Discharge Units	Area Units: Starting Year Endi Lat Lat Lon	
2 BLACKSEA_CH_9_Product_1_Danube00765_1 765 RivDIS Danube	Ceatal Izmail Romania 807000 km^2 m3/sec	km2 1921 1984 45,18 28,8	
3 BLACKSEA_CH_9_Product_1_Kemtehiya00775_2 775 Rivols Kemtehiya 4 BLACKSEA_CH_9_Product_1_Kemtehiya00181_3 181 Rivols Maritra	Gzozdevo Bulgaria 4857 km2 m3/sec Plowfiy Bulgaria 7933 km3 m3/sec	km2 1965 1979 43,02 27,81	
5 BLACKSEA_CH_9_Product_1_Kizilirmak804_4 804 Riv015 Kizilirmak	Inozu Turkey 75121 km2 m3/sec	km2 1976 1983 41.29 35.55	
6 BLACKSEA_CH_9_Product_1_Sakarya802_5 802 RivOIS Sakarya	Botbasi Turkey 55322 km2 m3/sec	km2 1976 1983 40,96 30,51	
7 BLACKSEA_CH_9_Product_1_Dniester776_6 776 RivOIS Dniester	Bendery U.S.S.R. 66100 km2 m3/sec	km2 1965 1984 46,8 29,68	
9	oniepernyori ukrainian_3.s.k. 463000 km2 (m3/sec		
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For DeLorme GEBCO, NDAA NGDC, and other



(10) Bathymetry What – By Who ?



This challenge handles the ability to compute **digital bathymetry and uncertainty** for sampling areas of the Black Sea, and indicate regions showing **priority areas for surveying for safer navigation**, to assess whether the current available marine datasets are available and appropriate to the use case, as well as to indicate gaps in the current EU data collection framework.

• Institute of Oceanology, Bulgarian Academy of Sciences, IO-BAS, Bulgaria



(10) Bathymetry

List of products

Nb products	Nb formats SIG	Nb Excel	Nb Other (pdf, txt,img)			
4	4	0	0			
Name of product / com	ponent Shor	t & Descriptive Title	Format	Units		
BLACKSEA_CH10_produ	ict_1 Black S digital LandSa	Sea and Azov sea coastlines by ization of 14.25 m panchromatic at 7 ETM+ satellite images	shapefile	None		
BLACKSEA_CH10_produ	ict_2 Conto basin This pi EMOD	ur bathymetric map for the Black with intervals of 100 meters roduct include data from GEBCO NET	k sea shapefile ,	[m]		
BLACKSEA_CH10_produ	nt_3 BlackS priorit naviga	ea divided into regions showing y areas for surveying for safer tion	shapefile	None		
BLACKSEA_ CH10_produ	Ict_4 Map of Black s	of uncertainty in water depth for sea basin	shapefile	None		

Upstream data identified in Sextant

	env. matrix	Characteristics (P02)	Sources (data provider)	input	datasets	Air	Biota/Biology	Ice	Fresh Water	Marine Water	Riverbed /Seabed	Human activities
B	1 lack Sea Che	1 ckpoint	5		42						42	



(10) Bathymetry Example

BLACKSEA_CH_10_Product_3

Identify and indicate priority areas for surveying for safer navigation taking into account emerging needs





(11) Alien Species What – By Who ?



This challenge handles the ability to **identify & source alien species** in the sea basin, as well as any **adverse impacts on ecosystems and socio-economy**, as established by the ballast water management convention, **to assess whether the current available marine datasets are available and appropriate to the use case**, as well as **to indicate gaps in the current EU data collection framework**.

- Institute of Oceanology, Bulgarian Academy of Sciences, IO-BAS, Bulgaria
- Institute of Marine Sciences, Middle East Technical University, IMS, Turkey
- P.P. Shirshov Institute of Oceanology, Russian Academy of Sciences, SIO-RAS, Russia



(11) Alien Species List of products

Nb products	Nb formats SIG	Nb Excel	Nb Other (pdf, txt,img)		
6	2	1	5		
Name of product / com	ponent Short & Descr	iptive Title	Format	Units	
BLACKSEA_CH11_produ	ict_1 Table of <i>Mnemios</i> and biomass distri	<i>spsis leidyi</i> alien species abundai ibution in the Black sea (1991-20	nce ascii 015)	ind/m2 g/m2	
BLACKSEA_CH11_produ	ict_2 Digital maps of <i>M</i> abundance distrib	nemiospsis leidyi alien species oution in the Black sea (1991-201	shapefile	ind/m2	
BLACKSEA_CH11_produ	ict_3 Digital maps of <i>M</i> biomass distributi	nemiospsis leidyi alien species on in the Black sea (1991-2015)	shapefile	g/m2	
BLACKSEA_ CH11_prod	ct_4 Table of <i>Beroe ove</i> biomass distributi	ata alien species abundance and on in the Black sea (2012-2015)	ascii	ind/m2 g/m2	
BLACKSEA_ CH11_produ	time series datase (1989-1995)	<i>spsis leidyi</i> alien species biomass et in Gelendzhik Blue Bay , Black	s Excel sea	g/m2	
BLACKSEA_ CH11_produ	ict_6 Figure of <i>Mnemic</i> time series datase	ospsis leidyi alien species biomas et in Gelendzhik Blue Bay , Black	is Jpeg sea	g/m2	

Upstream data identified in Sextant

	env. matrix	Characteristics (P02)	Sources (data provider)	input data	isets Ai	Biota/Biolog	y Ice	Fresh Water	Marine Water	Riverbed /Seabed	Human activities
B	2 Iack Sea Che	8 ckpoint	16	71				32	39		



(11) Alien Species Example







Black Sea Checkpoint

Products overview

		Number of Products	FORMAT			Prepared		
Chalange	Number of Data sets		GIS	Excell	Other	Yes	No	Why can not prepared
CH01: WINDFARM SITTING	44	3	3	0	2	3	0	
CH02: MARINE PROTECTED AREAS	41	4	4	0	0	4	0	
CH03: OIL PLATFORM LEAKS	19	2	0	0	2	2	0	
CH04: CLIMATE	121	18	12	6	0	10	8	No enough long data series
CH05: COASTS	46	10	4	7	0	7	3	No enough long data series
CH06: FISHERIES MANAGEMENT	3	3	0	7	0	3	0	
CH07: FISHERIES IMPACT	7	2	2	0	0	2	0	
CH08: EUTROPHICATION	45	1	1	0	0	1	0	
CH09: RIVER INPUTS	71	7	0	5	0	5	2	Not relevant for Black Sea
CH10: BATHYMETRY	42	4	4	0	0	4	0	
CH11: ALIEN SPECIES	71	6	2	1	5	6	0	
TOTAL	510	60	32	26	9	47	13	



Evaluation with Sextant

Assessment process



Quality results (by product component):

- TDP against DPS
- UDs used by TDP against DPS

NDLR: Rating scale

Indicators are designed to draw attention on critical factors. A color rating scale is associated to them to help discovery and viewing of the quality information in the reports and on the portal using the DB.

> Not at all adequate :

errors between -100% and -10%

Adequate

errors betwen-10% and +10%

> More than adequate :

Errors between +100% and +10%



Black Sea Checkpoint











HELLENIC REPUBLIC National and Kapodistrian University of Athens





















