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*Your gateway to marine data in Europe*

## REPORTING ON DATA ADEQUACY

how different are  
EMODnet Sea-Basin Checkpoints' approaches?

**EMODnet Checkpoint Methods  
Workshop  
Rome, 12-13 September 2017**

Belén  
Martín  
Míguez

EMODnet  
Secretariat



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## EMODnet Sea-basin Checkpoints



ARCTIC



ATLANTIC



BALTIC



BLACK SEA



MED SEA



NORTH SEA

- 🎯 **Innovative** approach: change of perspective
- 🎯 Built around **challenges**
- 🎯 Literature survey + Challenges (products) + **Data Adequacy report**



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# EMODnet Sea-basin Checkpoints Data Adequacy Reports



**Are they comparable?**

- 1. Mediterranean Sea 2013
- 2. North Sea 2013
- 3. Arctic 2015
- 4. Atlantic 2015
- 5. Baltic 2015
- 6. Black Sea 2015



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# EMODnet Sea-basin Checkpoints Data Adequacy Reports



**Can we suggest a  
common way forward?**

- 1. Mediterranean 2013
- 2. Black Sea 2013
- 3. Arctic 2015
- 4. Atlantic 2015
- 5. Baltic 2015
- 6. Black Sea 2015



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# Where are the differences between approaches?



Method  
(concept)



- Workflow  
(process)



Presentation  
(results)



Figure 26. **Accessibility criteria** for the datasets used and considered for use in the 'marine protected areas challenge'. Color-codes of specific categories are presented above each indicator. Generic categories (i.e. relevant to all indicators) are presented at the bottom of the figure.

Variable	Data type	Accessibility	Completeness / coverage	Resolution	Precision	Data provider
MPA boundaries	Shapefile	Downloadable	Adquate	N/A	FFU	HELCOM MPA-DB
	File	Downloadable	Adquate	N/A	FFU	Marine 2000 Database
SCH categories	Dataset	Downloadable	Update needed	N/A	FFU	HELCOM MPA-DB
EMSD Programs of measures	Dataset	Downloadable	Adquate	N/A	Not adequate	Directorate of MGT
	Dataset	Downloadable	Adquate	N/A	Not adequate for accessibility	HELCOM MPA-DB



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## METHOD

# what does «data adequacy» mean?

📍 MedSea, Atlantic, Black Sea approach

**Data adequacy** = assessed through as a sum of **data availability** and **data appropriateness** (composed of **indicators**, 8 for availability and 8 for appropriateness): **SCORING**

The table below summarizes the relationships between the different concepts and terms.

Call for tender		ISO		Medsea / Black Sea / Atlantic	
Call term	Call synonym	ISO term	ISO synonym	Checkpoint terms	Checkpoint synonym
Data Adequacy	Fitness for purpose	Data quality (user's standpoint)	Usability (user's standpoint)	Appropriateness + Availability	Fitness for use



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# METHOD (*concept*): what does «data adequacy» mean?

## North Sea

Data adequacy = «value assessment **criteria**» TRUE/FALSE

Table 1.1: Criteria for user evaluation of datasets

Criteria	Description
Contribution	Were the parameters offered by the dataset useful for solving the challenge?
Location	Were the temporal and spatial locations relevant?
Commercial	Do the prices and licences enable solving the challenge?
Attributes	Is the accuracy, precision and resolution sufficient?
Delivery	Can the data be supplied in time?
Usability	Is the format usable and the supporting metadata sufficient?

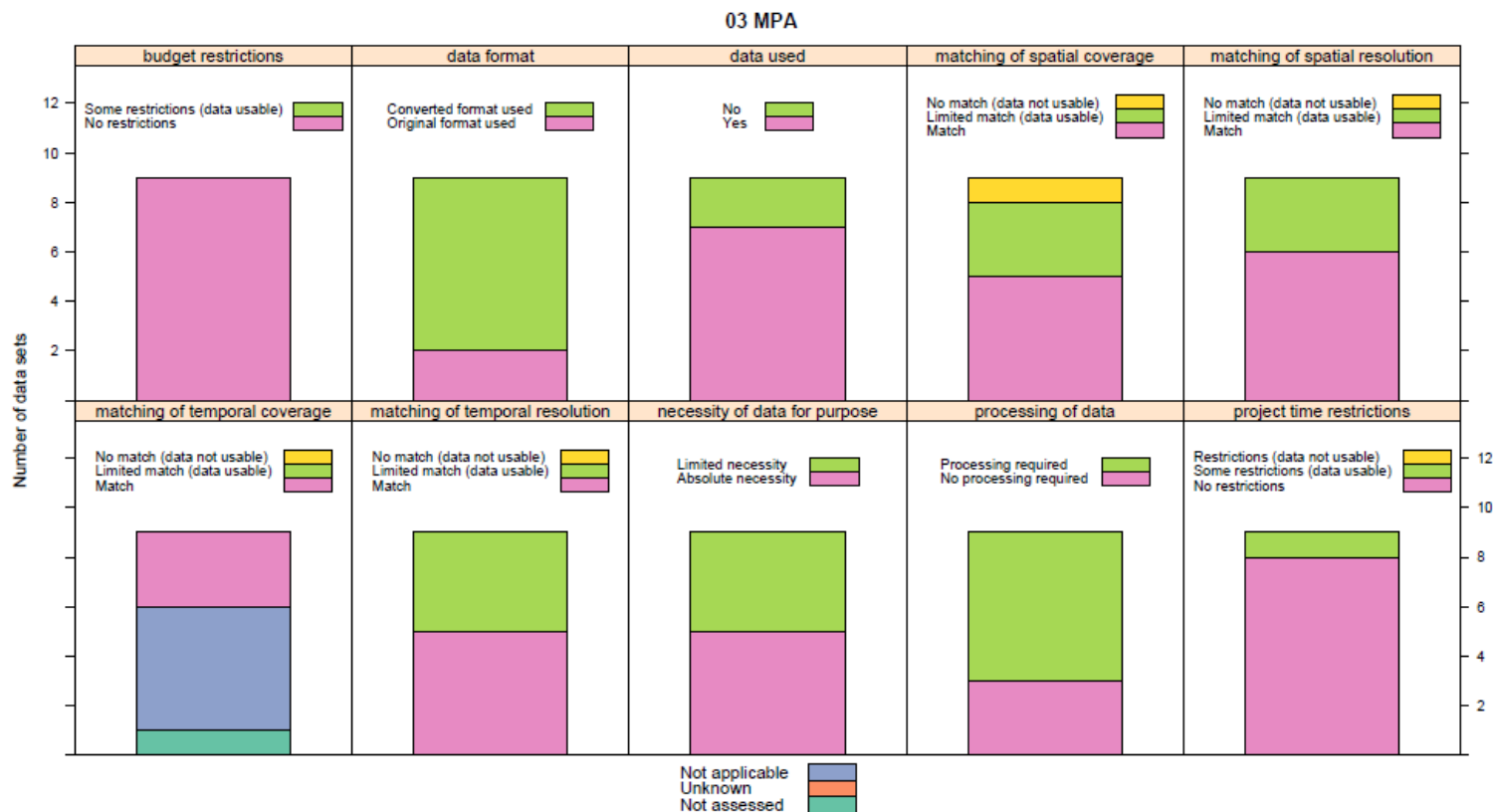


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# METHOD (*concept*):

## what does «data adequacy» mean?



**Figure 28.** Adequacy indicators for the datasets used and considered for use in the 'marine protected areas' challenge. Colour-codes of specific categories are presented above each indicator. Generic categories (i.e. relevant to all indicators) are presented at the bottom of this figure





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# METHOD (*concept*):

## what does «data adequacy» mean?

### Baltic Sea

Data adequacy = Fitness for use (FFU, binary) = assessed comparing the data requirements with the **data availability**

Table 4.2 Data requirements for MPA			Table 4.3 Data availability for "Marine Protected Areas"				Table 4.4. Data adequacy for "Marine Protected Areas"						
Variable	Data type	Delivery type/time	Variable	Data type	Accessibility	Spatial	Variable	Data type	Accessibility	Completeness / coverage	Resolution	Precision	Data provider
MPA boundaries	Legal boundaries	Open, online	MPA boundaries	Legal boundaries	Open, online	Ent. Balt.	MPA boundaries	Legal boundaries	Downloadable	Adequate	N/A	FFU*	HELCOM MPA-DB
IUCN categories	Derived		IUCN categories	Derived			MPA boundaries	Legal boundaries	Downloadable	Adequate	N/A	FFU	Natura 2000 database
MSFD Programs of measures	Legal document		MSFD Programs of measures	Legal document		All me. stat.	IUCN categories	Derived	Downloadable	Update needed	N/A	FFU	HELCOM MPA-DB
Bottom sediment	Model		Substrate	Model	Open, online, ready for	Ent. Balt.	MSFD Programs of measures	Legal document	Downloadable, English summaries available (except for LV)	Adequate	N/A	Not adequate	Websites of MS MoE
							Substrate	Model	Downloadable		Not adequate for analysis within	FFU	HELCOM DMS



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# Where are the differences between approaches?



## Assessment framework



- **Attempt the challenge  
(workflow)**



## Presentation of results



Figure 26. **Algorithms selected** for the datasets used and considered for use in the 'marine protected areas challenge'. Codes/codes of specific categories are presented above each indicator. Generic categories (i.e., relevant to all indicators) are presented at the bottom of the figure.

Table 4.6. Data adequacy for "Marine Protected Areas"

Variable	Data type	Accessibility / Delivery timeline	Completeness / Coverage	Resolution	Precision	Data provider
MPA boundaries	Shapefile	Downloadable	Adquate	N/A	FFU	HELCOM MPA-DB
	File	Downloadable	Adquate	N/A	FFU	Marine 2000 Database
SICR categories	Dataset	Downloadable	Update needed	N/A	FFU	HELCOM MPA-DB
EMOD Programs of measures	Dataset	Downloadable, English summaries available (except for US)	Adquate	N/A	Not adequate	Database of EMOD
Substrata	Model	Downloadable	Not adequate for applications	FFU	HELCOM MPA-DB	



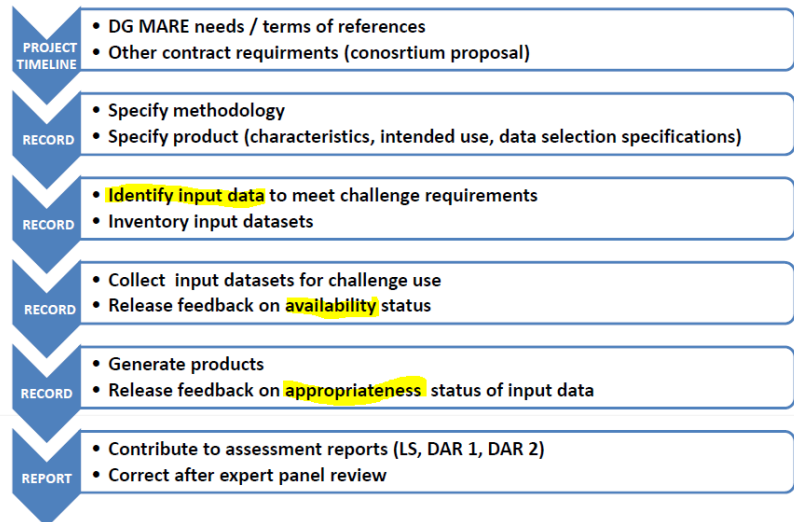
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# WORKFLOW (*process*): how do teams work?

📍 MedSea, Atlantic, Black Sea approach: metadata

## The process for contributors (challenges)



# Give the values of the measures

Component is covered?


Measure identification	Name of measure	Value	Value unit	Quality errors (%)	DPS value
TDPAP.1.1	Horizontal Spatial Coverage	<input type="text" value="10"/>	km**2	NaN	10 km**2
	Horizontal Spatial Coverage (Descriptive result)	<input type="text"/>			
TDPAP.1.2	Vertical Spatial Coverage	<input type="text" value="5"/>	meters	NaN	10 meters
	Vertical Spatial Coverage (Descriptive result)	<input type="text"/>			
TDPAP.1.3	Temporal Coverage	<input type="text" value="5"/>	days	NaN	10 days
	Temporal Coverage (Descriptive result)	<input type="text"/>			

\*CH1\*
ADMINISTRATION


Results 1 to 6 on 6 : 20 by page
Sort by : Title

MEDSEA\_CH1\_Product\_1 / Wind and wave data set from MARINA project




Today's normative and regulatory requirements to assess the producible energy from wind rely on in situ measurements (mast with anemometric sensors), which are extremely costly to implement offshore. However, ...

MEDSEA\_CH1\_Product\_2 / Suitability index of a wind farm in the NWMed concer...




The main aim of this product was to define the suitability of offshore sites in the area between the borders of France-Spain-Italy for wind farm development. The adopted approach classifies wind speed data by their level of ...

MEDSEA\_CH1\_Product\_3 / Suitability index of a wind farm in the NWMed concer...




Suitability index of a wind farm in the NWMed concerning the environmental resources, the natural barriers, human activities, MPA and fisheries.

MEDSEA\_CH1\_Specification\_1 / Wind and wave data set from MARINA project




Today's normative and regulatory requirements to assess the producible energy from wind rely on in situ measurements (mast with anemometric sensors), which are extremely costly to implement offshore. However, ...

MEDSEA\_CH1\_Specification\_2 / Suitability index of a wind farm in the NWMed ...



The main aim of this product was to define the suitability of offshore sites in the area between the borders of France-Spain-Italy for wind farm development. The adopted approach classifies wind speed data by their level of ...

MEDSEA\_CH1\_Specification\_3 / Suitability index of a wind farm in the NWMed ...



Suitability index of a wind farm in the NWMed concerning the environmental resources, the natural barriers, human activities, MPA and fisheries.

Temporal validity (Descriptive result)

Date 2017-06-01

Compute or update quality errors

Link to one or more upstream data



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# WORKFLOW (*process*): how do teams work?

Table 1.1: Criteria for user evaluation of datasets

Criteria	Description
Contribution	Were the parameters offered by the dataset useful for solving the challenge?
Location	Were the temporal and spatial locations relevant?
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Delivery	Can the data be supplied in time?
Usability	Is the format usable and the supporting metadata sufficient?

## North Sea approach: TR

Valuation of the data to solving a challenge (a sheet per challenge)

### NSC-001-Wind

Data Set	Consideration	ValueCriteria	VCFlag	ValueCriteriaReason
DT.Wind.NS001-ENTSO-E electroni	Used	Contribution	True	Map showing the locations of interconnected electrical network in Europe, including all sub-stations around the North sea
NSC-001-Wind		Location	True	All of Europe
		Commercial	True	Freely available - needed to be requested via an online form
		Attributes	True	Data was provided as a static map including a legend, showing plants, stations, existing high-voltage overhead lines and those under construction
		Delivery	True	Data was downloaded online via a link sent by email
		Usability	True	The map had to be georeferenced and the features of interest digitised. A shapefile or spreadsheet with co-ordinates would have been better.
DT.Wind.NS003-EMODNET Bathym	Considered	Contribution	True	Gridded bathymetry data need for windfarm siting
NSC-001-Wind		Location	True	Data set covers north sea region
		Commercial	True	Open government licence - no fee
		Attributes	True	Spatial resolution sufficient for windfarm siting
		Delivery	True	Data can be downloaded from website
		Usability	True	XYZ files - bulky to use but ok
DT.Wind.NS004-National Grid Sub-s	Suitable	Contribution	True	Shapefiles containing data on electrical grid for the UK.
NSC-001-Wind		Location	False	UK only. Better coverage was found via the information on the ENTSO-E website.
		Commercial	True	Freely available
		Attributes	True	Data included sub-stations, cables, gas sites, gas pipes, overhead lines and towers
		Delivery	True	Downloadable online
		Usability	True	Easy to use though when compared with the Entso-E data for the UK seemed incomplete
DT-NS007-23 Years of Wind Speed	NotConsidered	Contribution	True	Wind speed data available via the 4C Offshore website
NSChloe-001-Windfarm Siting		Location	True	global range unsure how many for the North Sea



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# WORKFLOW (*process*): how do teams work?

## Arctic approach: «matching»

Scoring «Quality» and «Adequacy» of data sets used to face the challenges. There are 10 indicators for each aspect and this is evaluated for each challenge



9/14/2017

Figure 28. Adequacy indicators for the datasets used and considered for use in the 'marine protected areas' challenge. Colour-codes of specific categories are presented above each



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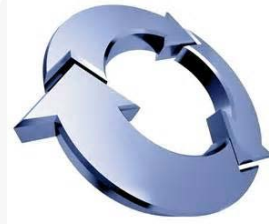
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# Where are the differences between approaches?

- Method  
(*concept*)



- Workflow  
(*process*)



-  Presentation  
of results



Figure 26. **Algorithms selected** for the datasets used and considered for use in the marine protected areas challenge. Color-codes of specific categories are presented above each indicator. Generic categories (i.e., relevant to all indicators) are presented at the bottom of this figure.

Table 4.6. Data adequacy for "Marine Protected Areas"

Variable	Data type	Accessibility	Completeness / coverage	Resolution	Precision	Data provider
MPA boundaries	Shapefile	Downloadable	Adequate	N/A	FFU	HELCOM MPA-DB
	File	Downloadable	Adequate	N/A	FFU	Marine 2000 Database
SUR categories	Dataset	Downloadable	Updates needed	N/A	FFU	HELCOM MPA-DB
MPD Programs of measures	Dataset	Downloadable, English summaries available (except for US)	Adequate	N/A	Not adequate	Initiative of HELCOM
Substrata	Model	Downloadable	Not adequate for applications	FFU	HELCOM MPA-DB	



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# PRESENTATION

## how to communicate results?

### .....In the DAR

MedSea Atlantic Black S  
DAR

Table 5.4: Scores for the AV-AC-2 'Delivery mechanism' function of Challenges for all input data

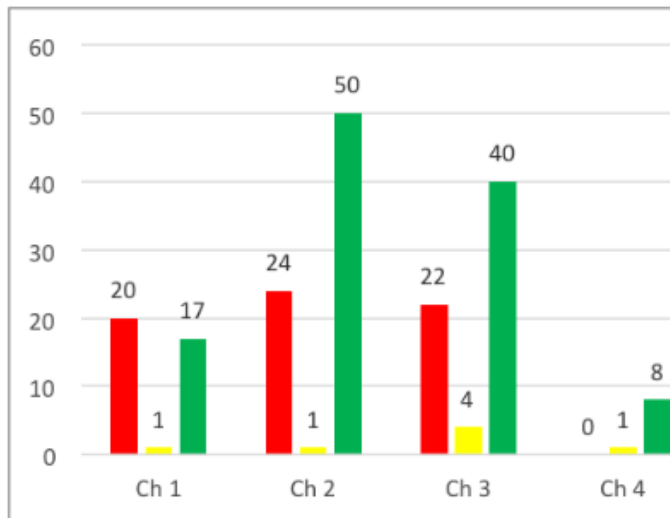


Figure 5.4: AV-AC-2 'Delivery mechanism'

P02 characteristic category	# of data sets	Easily found	INSPIRE catalog service	Visibility of Data policy	Data delivery	Data policy	Pricing	Readiness	Responsiveness
1. Sedimentary structure	1	Green	Yellow	Green	Green	Red	Red	Red	Yellow
2. Spectral wave data parameters	1	Red	Red	Green	Yellow	Yellow	Red	Green	Red
3. Wave direction	8	Green	Red	Red	Green	Yellow	Red	Green	Green
4. Wave height and period statistics	19	Green	Red	Red	Green	Yellow	Green	Green	Green
5. Pollution events	1	Red	Red	Red	Yellow	Red	Red	Red	Red
6. Bird reproduction	1	Red	Yellow	Green	Green	Green	Green	Red	Green
7. Fauna abundance per unit area of the bed	4	Red	Yellow	Red	Green	Green	Green	Green	Green
8. Fish abundance in water bodies	3	Red	Yellow	Red	Green	Green	Green	Green	Green
9. Fish behaviour	1	Green	Green	Green	Yellow	Red	Green	Green	Red
10. Fish reproduction	1	Red	Yellow	Red	Green	Green	Green	Green	Green
11. Habitat extent	17	Green	Green	Green	Yellow	Red	Green	Green	Red
12. Fish and shellfish catch statistics	6	Red	Red	Green	Yellow	Yellow	Green	Red	Green
13. Fishing by-catch	1	Red	Red	Green	Yellow	Yellow	Green	Green	Yellow
14. Horizontal platform movement	8	Red	Red	Yellow	Yellow	Yellow	Green	Green	Red
15. Marine archaeology	1	Red	Yellow	Green	Green	Red	Red	Yellow	Green
16. Marine environment leisure usage	2	Red	Yellow	Red	Yellow	Yellow	Green	Green	Yellow
17. Air pressure	1	Red	Red	Yellow	Yellow	Yellow	Yellow	Green	Yellow
18. Air temperature	1	Red	Red	Yellow	Yellow	Yellow	Yellow	Green	Yellow





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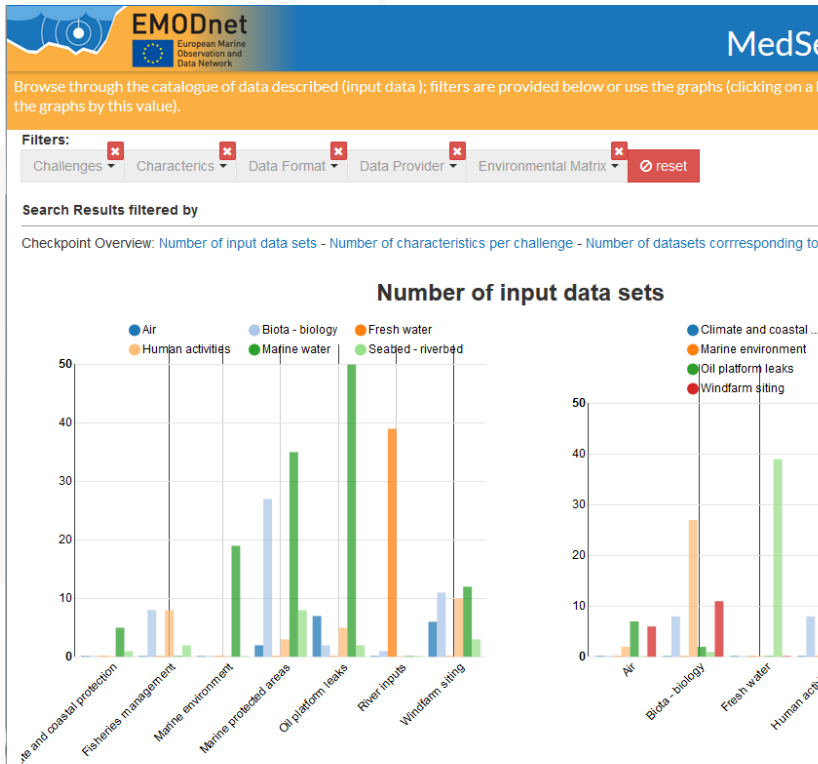


# PRESENTATION

## how to communicate results?

### ... On the Web (browser, dashboard)

#### MedSea, Atlantic, Black Sea approach



#### Checkpoint Dashboard

The Emodnet MedSea CheckPoint Dashboard is under major review.

Soon we will come back with a new version!



Sea.



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# Harmonising Methods 'Data Advisor' Prototype

## Data advisor for North Sea Checkpoint

### Usage

- All
- Considered
- Suitable

Clear query

Go...

### Challenges

- Climate and Coastal Protection
- Marine Protected Areas
- Oil Platform Leaks
- Literature Review
- River Inputs
- Windfarm Siting
- Fisheries Management
- Marine Environment

### Inspire Themes

- 1.1 Coordinate reference systems
- 1.2 Geographical grid systems
- 1.3 Geographical names
- 1.4 Administrative units
- 1.5 Addresses
- 1.6 Cadastral parcels
- 1.7 Transport networks
- 1.8 Hydrography
- 1.9 Protected sites

### Dataset Search Results

NS608 - NS608-EEA-EIONET\_Annual-RiverineInputs-and-OSPARDirectDischarges

[view data source](#)

NS609 - NS609-Badach-and-Datsch-Hamburg-Uni-Continental-river-inputs

[view data source](#)



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# PRESENTATION

## how to communicate results?

### .....On the web: dashboard

#### Arctic approach

Home > Maps and services > Dashboard

Dashboard

Assessment reports

ASSESSMENT REPORTS

757

View all assessment reports

Dataset quality

265

View all datasets

#### Dataset adequacy reporting

Dataset quality

266

View all data adequacy i

6σ Analysis

266

View all datasets

- Adequacy reported for
- Adequacy reported for
- Datasets per parameter group
  - Datasets per purpose
  - Accessibility of data
  - Costs of datasets
  - Temporal coverage of datasets
  - Responsiveness for datasets
  - Spatial resolution
  - Processing level
  - Temporal resolution
  - Temporal window
  - Vertical resolution



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# PRESENTATION

## how to communicate results?

### .....In the DARs

#### Baltic approach: TABLES

Table 11.2. Data requirem

Variable	Data type	Acc
		Del Del
River temperature	Obs.	Ope dow
	Model	
Discharge	Obs.	
	Model	
Nutrients	Obs.	
	Model	

Table 11.3. Data availability for Riverine inputs

Variable	Data type	Accessibility	Completeness/	Resolution	Precision	Data
River temperature	Obs.					
	Mode					
Dis-charge	Obs.					
	Mode					
Nutrient	Obs.					
	Model					

Table 11.4 Data adequacy for Riverine inputs

Variable	Data type	Accessibility	Completeness/ coverage	Resolution	Precision	Data provider
		Delivery type/time	Spatial/ Temporal	Hor./Ver./Temp.		
River temperature	Obs.	FFU*	More observations needed	More data needed	FFU	UNEP GEMS Water
	Model	FFU	FFU	FFU	To be improved	SMHI
Discharge	Obs.	FFU	More observations needed	More data needed	FFU	GRDC, EVA Baltex BHDC
	Model	FFU	FFU	FFU	Fit for use	SMHI
Nutrients	Obs.	FFU	More observations needed	More data needed	Quality needs to be improved	HELCOM, EEA
	Model	FFU	FFU	FFU	Data usable but quality to be improved	SMHI

\*FFU: Fit-for-the-use



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# Where are the differences between approaches?

- Method  
(*concept*)



- Workflow  
(*process*)



- Presentation  
of results



Figure 26. **Alternative indicators** for the datasets used and considered for use in the marine protected areas challenge. Color-codes of specific categories are presented above each indicator. Generic categories (i.e., relevant to all indicators) are presented at the bottom of this figure.

Table 4.6. Data adequacy for "Marine Protected Areas"

Variable	Data type	Accessibility	Completeness / coverage	Resolution	Precision	Data provider
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SUR categories	Dataset	Downloadable	Updates needed	N/A	FFU	HELCOM MPA-DB
MPD Programs of measures	Dataset	Downloadable, English summaries available (except for US)	Adequate	N/A	Not adequate	Database of HELCOM
Substrata	Model	Downloadable	Not adequate for applications	FFU	HELCOM MPA-DB	



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# SUGGESTIONS FOR STREAMLINING – METHODS

- ① Using the same indicators: can we agree on a list? How impenetrable is ISO? Answering Questions + Detailed List of Indicators
- ① Vocabulary can be misleading (adequacy, availability...): some harmonisations is possible and desirable

***Secretariat???***



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## SUGGESTIONS FOR STREAMLINING – WORKFLOW

- ⦿ Better definition of the products :
  - Include more challenges
  - **Be more specific about the product requirements (templates)**
  - **Time dimension**
  - Get to a sub-basin level
- ⦿ Training is essential and must be considered **New call for tenders/DG MARE???**



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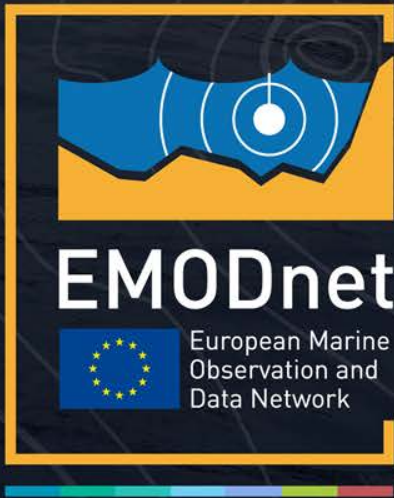
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# SUGGESTIONS FOR STREAMLINING – PRESENTATION

- 🕒 **Recording/giving access to intermediate and final results (database, catalogue, viewer, dashboard)**
- 🕒 **Showing results by challenge helps understanding the results**
- 🕒 **Reportable by EMODnet themes/characteristics/parameters (P02, P03)**
- 🕒 **Key messages/anecdotes + Gaps are not highlighted enough**
- 🕒 **“Virtuous circle”: reach the data providers and the project managers How??? --Papers/Newsletters/-questionnaire...**

***Checkpoints?***





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# Fleeze Competition

