Blue-Cloud

Piloting innovative services for Marine Research & the Blue Economy

Demonstrator Prototype and Initial Marine Indicators

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Objective

Development of the service Marine Environmental Indicators

- To calculate and distribute online information and indicators on the environmental quality of the marine area
- Obtain new added value data applying big data analysis and machine learning methods on the multi-source data sets
- Enable users to perform on line and on the fly operations such as selecting portion of a dataset, to perform statistical analysis or display the data

Target Audience

EU Marine Strategy Framework Directive

- *criteria, target and monitoring activity*

- *Conserve and sustainably use the oceans*
- *Goals in 14 targets*

Blue-Cloud → Demonstrator 3 - Version 1 → Demonstrator 3 – Version 2

Marine Environmental Indicators VLab

- design based on requirements indicated by Environmental Agencies
- Bringing innovation, data, resources and expertise, into a unique service
- Prototype Web User Interface allows the user to :
  - select a portion of input data for a specific area and period of time
  - Generate new added value data
  - displaying the generated added value data by tables, map and graphics visualizations

Data Source

Data Source

Copernicus Marine Service

Product

Med REA 1/16

1987-2019

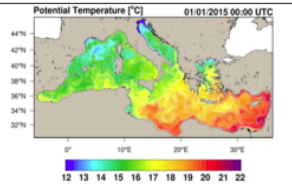
Dataset

Temperature

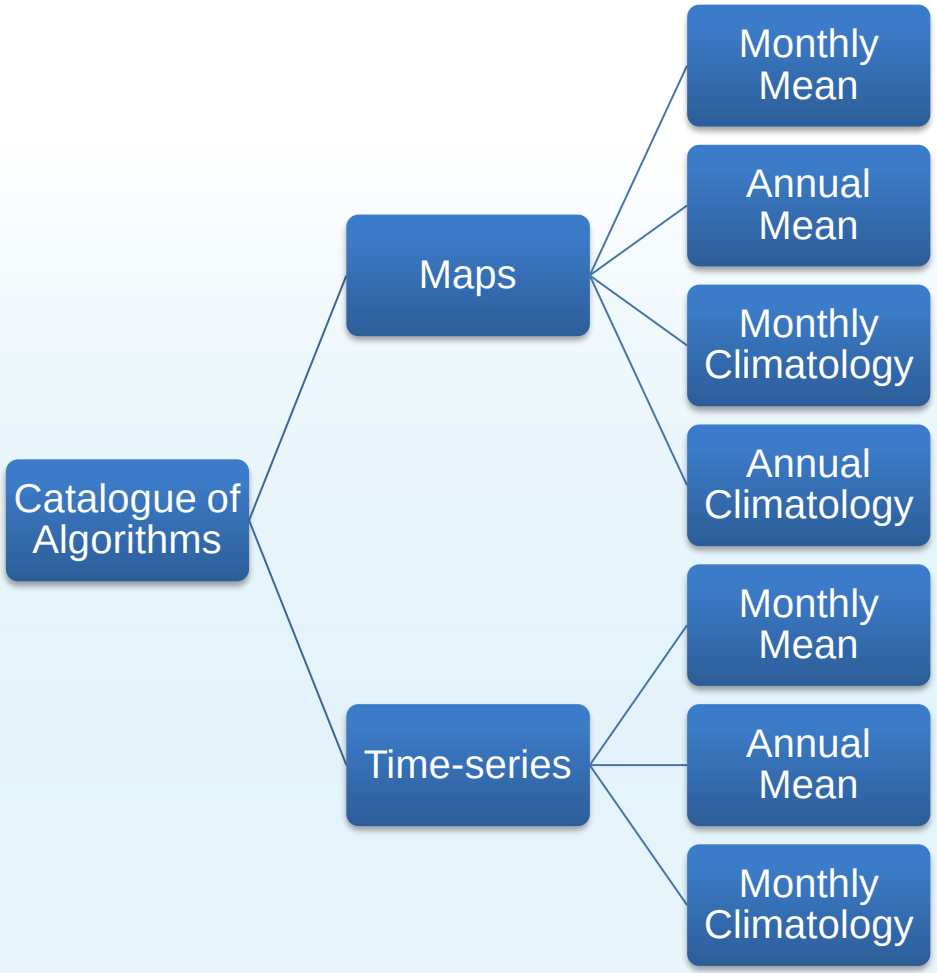
Salinity

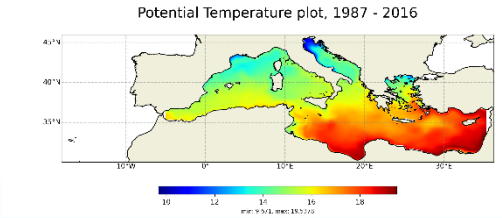
Currents

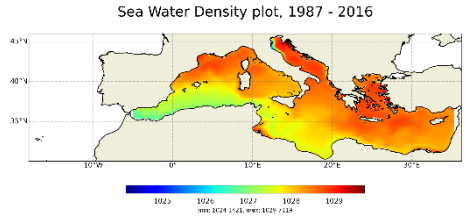
In the available prototype a sample input dataset is available for the period 1987-1989 – same data format of the CMEMS data source

MEDSEA_REANALYSIS_PHYS_006_004		
MEDITERRANEAN SEA PHYSICS REANALYSIS		
MODEL	• • • X	MED
T S SSH 3DUV		
0.063 degree x 0.063 degree (72 depth levels)		
From 1987-01-01 to 2018-12-31		
daily-mean,monthly-mean		
MORE INFO	ADD TO CART WMS Sub-setting	

Generated Added Value Data

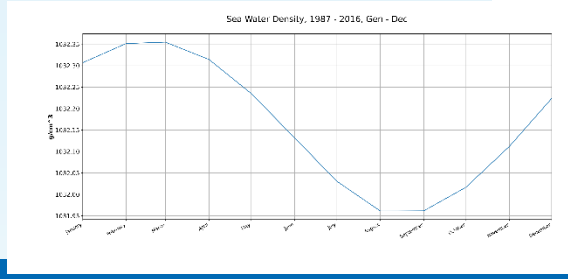


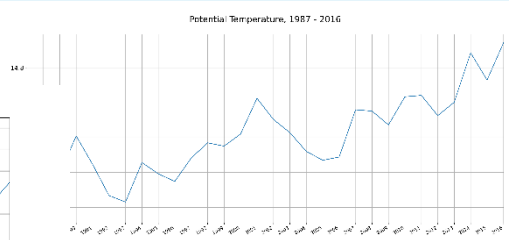




Output Environmental Fields

- Temperature
- Salinity
- Water Density
- Kinetic Energy
- Currents



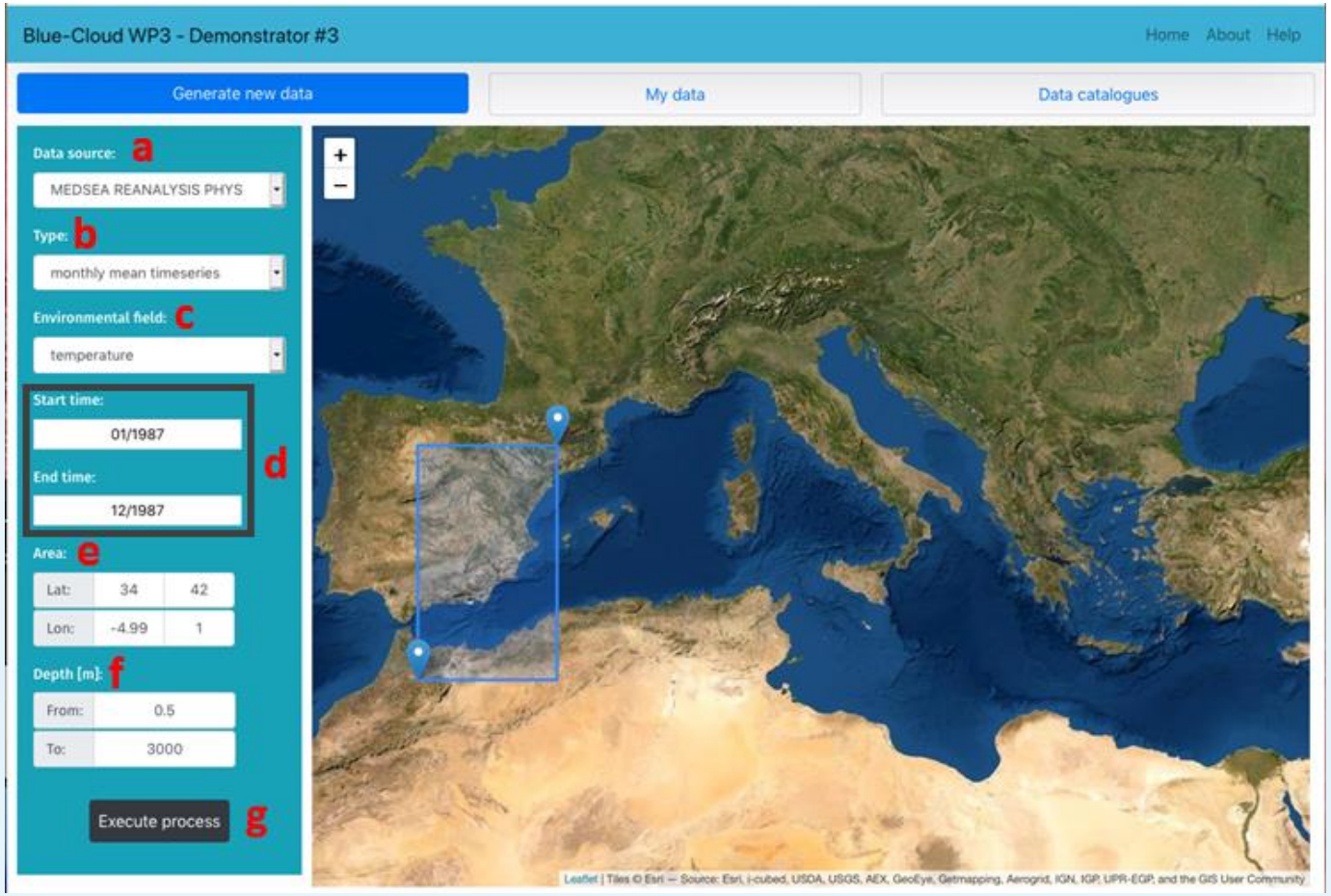


Access to the VLab

Marine Environmental Indicators

https://blue-cloud.d4science.org/web/marineenvironmentalindicators/

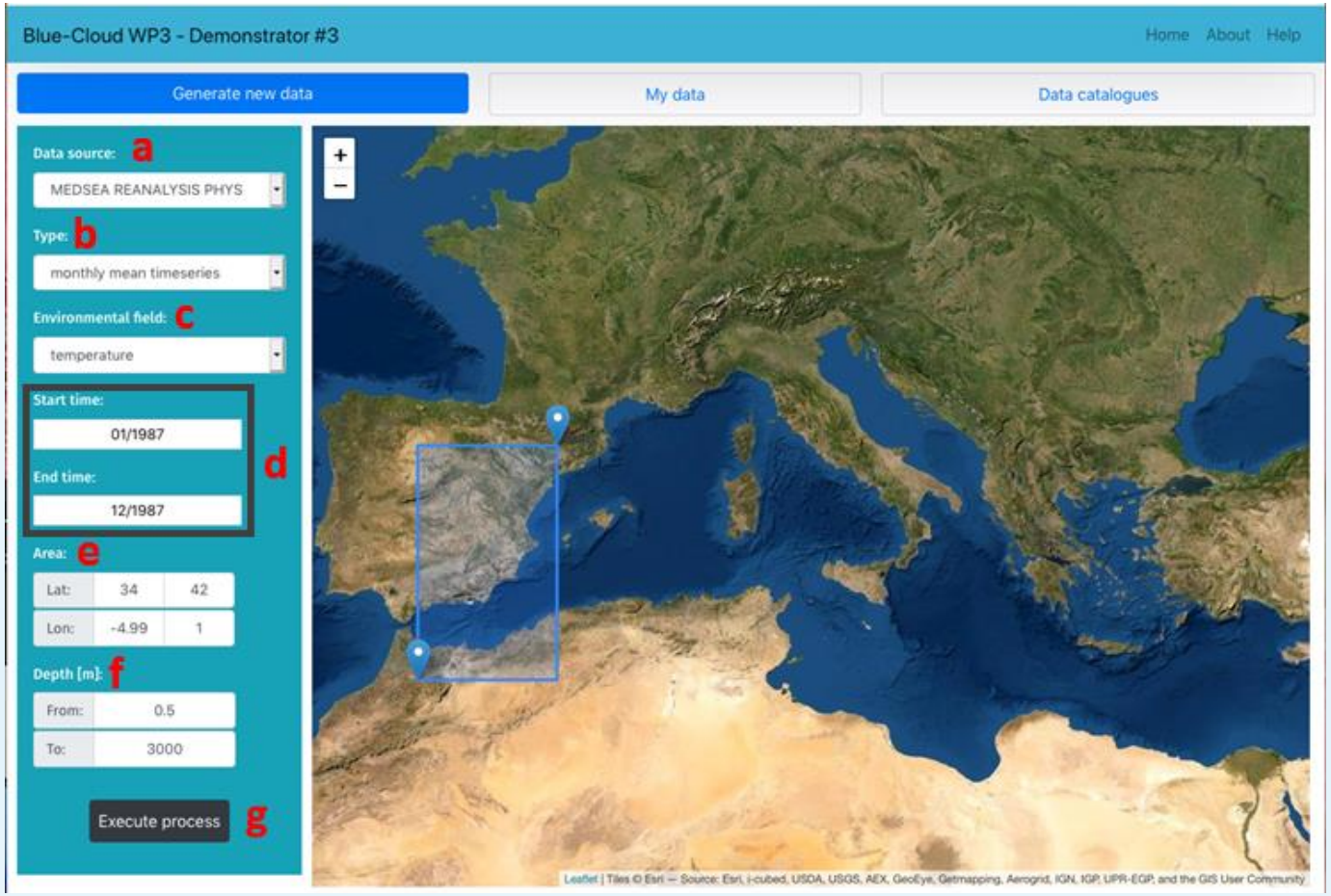
Selection of the Data Source



- Available data source are selectable in [a]

In this version the available data source is the product MEDSEA_REANALYSIS_PHYS_006_004 from CMESM catalogue. A local copy of a 3-year (1987-1989) sample input dataset is available inside the VRE

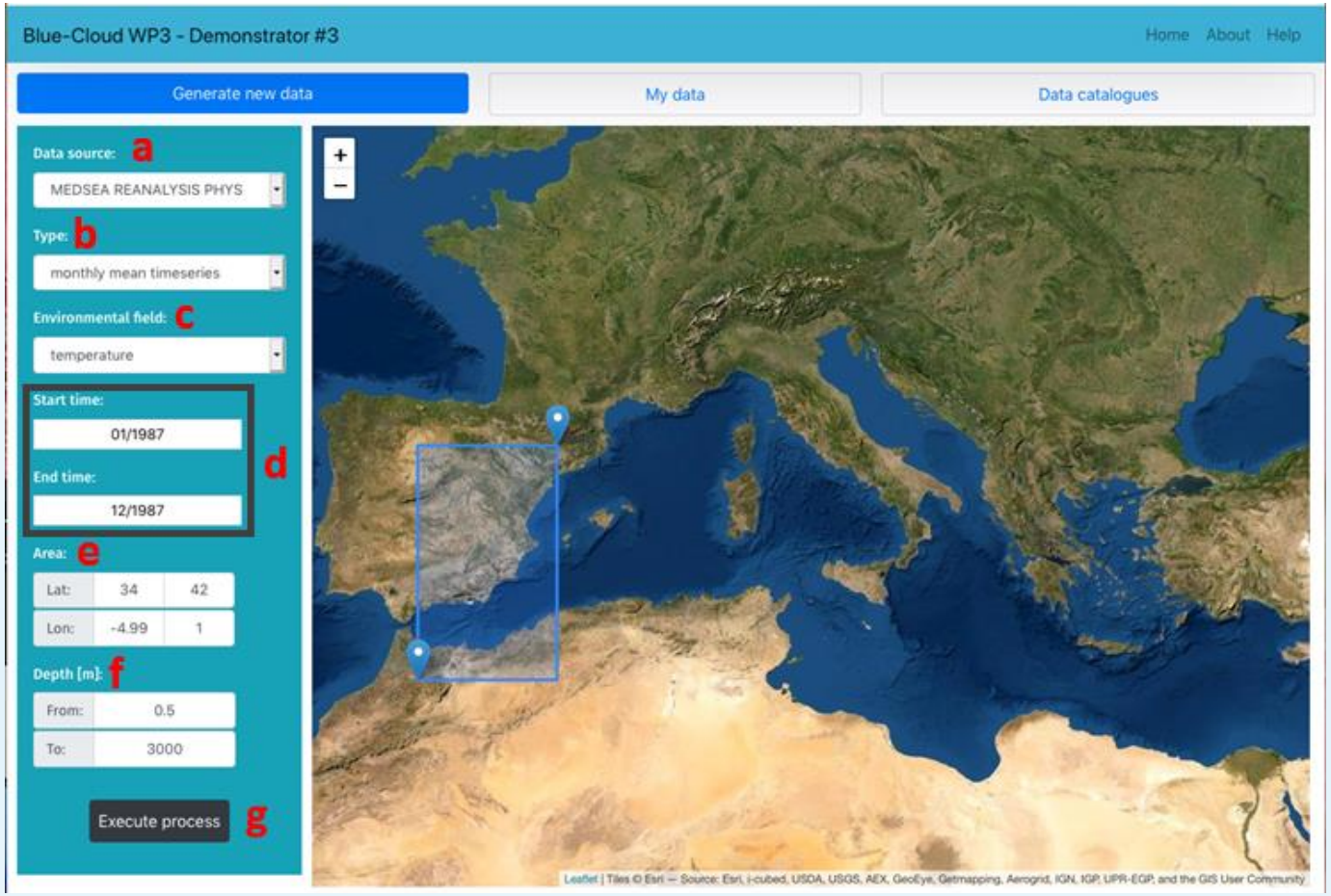
Selection of the Output Data



- Several output types are selectable in [b], while [c] presents the applicable output fields

The user can chose the type among the several possible mean maps, time-series and climatologies, and the field of interest

Selection of the Time



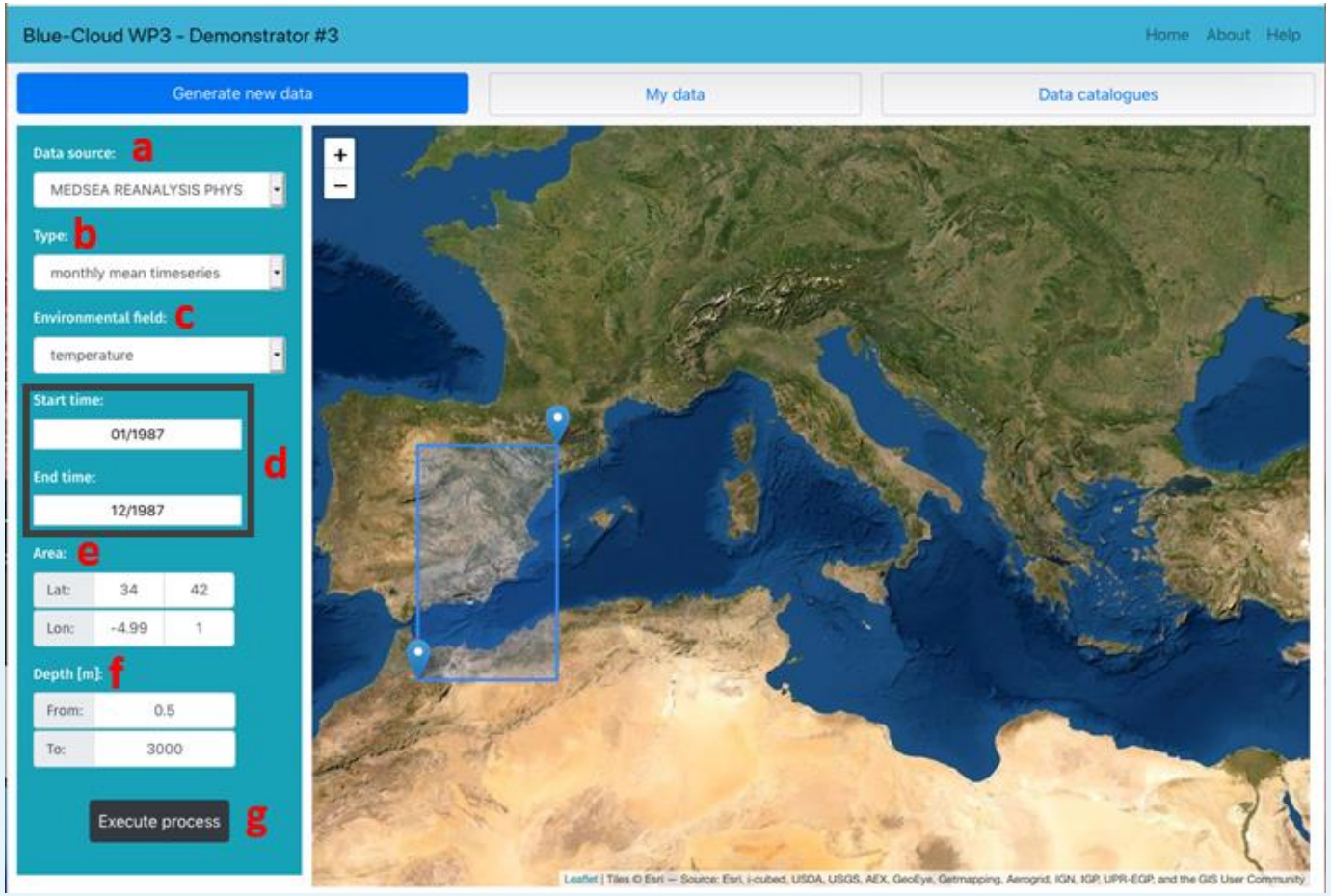
- Depending on the selected output type, the interface will require the insertion of specific information to define the time of interest in [d]

The example in this slide reports the insertion of a starting month/year and a final month/year

Time Specification

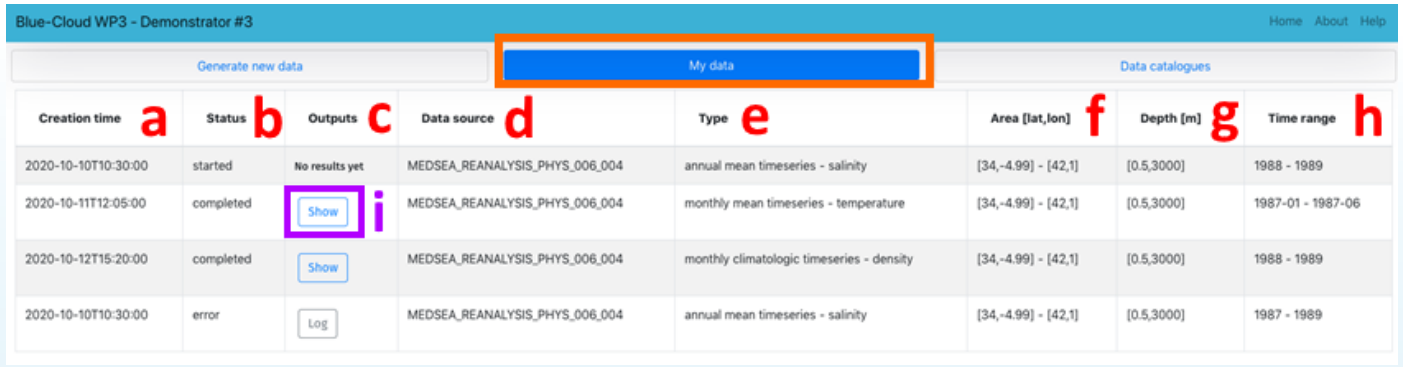
			Time Range	
	Month	**Year**	**MM/YYYY – MM/YYYY**	**YYYY - YYYY**
Monthly Mean Map	January	1987	n.a.	n.a.
Annual Mean Map	n.a.	1989	n.a.	n.a.
Monthly Climatology Map	February	n.a.	n.a.	1987 - 1989
Annual Climatology Map	n.a.	n.a.	n.a.	1987 - 1989
Monthly Mean Time-series	n.a.	n.a.	01/1987 – 12/1988	n.a.
Annual Mean Time-series	n.a.	n.a.	n.a.	1987 - 1989
Monthly Climatology Time-series	n.a.	n.a.	n.a.	1987 - 1989

Selection of the Geographical Domain



- Always possible to select the lon/lat area [e] and the depth layer [f] of interest
- Submission of the job [g]

My Data Section



Each User has a private MyData Section in which the submitted jobs are available. When a job execution is complete, from here [i] it is possible to access the new available data

Presented Information

Related the Job

- Creation time
- Status
- Output

Related the Output Data

- Data Source
- Type and Env. Field
- Area and Depth Layer
- Time Range

Access to the Data

When the execution is successful completed, it is possible to :

- See a static plot [a] of a map or a time-series
- Download the data as file in NetCDF format [b]
- Download the log information related the execution [c]

Conclusion

- Data from existing EU data sources are integrated into a unique service
- An online flexible analysis tool is facilitating the users to display and generate new added-value data to assess the environmental quality of marine areas

Perspective

- New data sources will be made available
- Additional scientific based algorithms will be developed and made available
- Further development of the interface for the user interaction and visualization of data