The Web Application Server (WAS)

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INFORMATION SYSTEM ON THE EUTROPHICATION OF OUR COASTAL AREAS

2 Mers Seas Zeeën
INTERREG IV A
"Investing in your future"
Crossborder cooperation programme
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(European Regional Development Fund)

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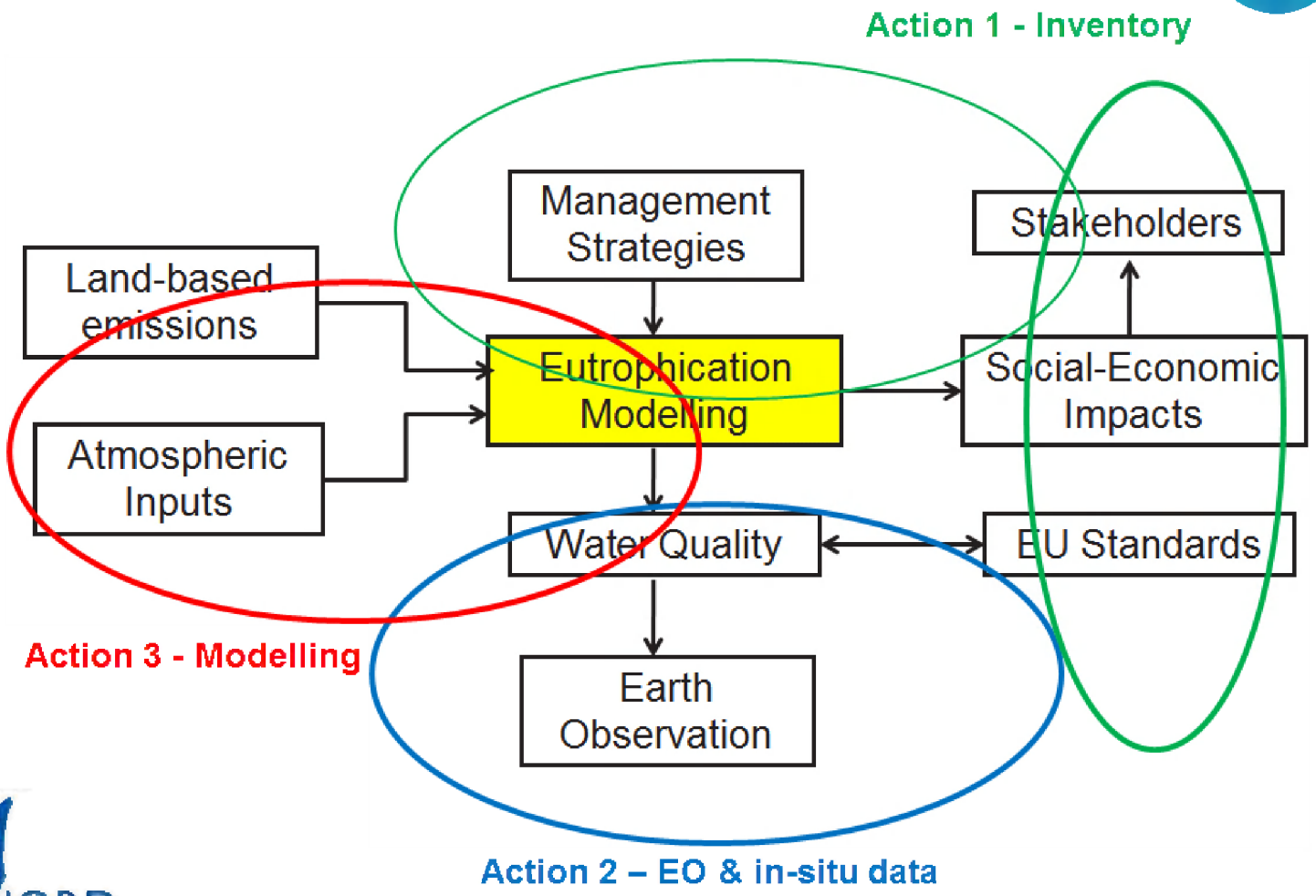
Part A – Scientific Background

Organization of the ISECA Project



Collaboration in the ISECA Project

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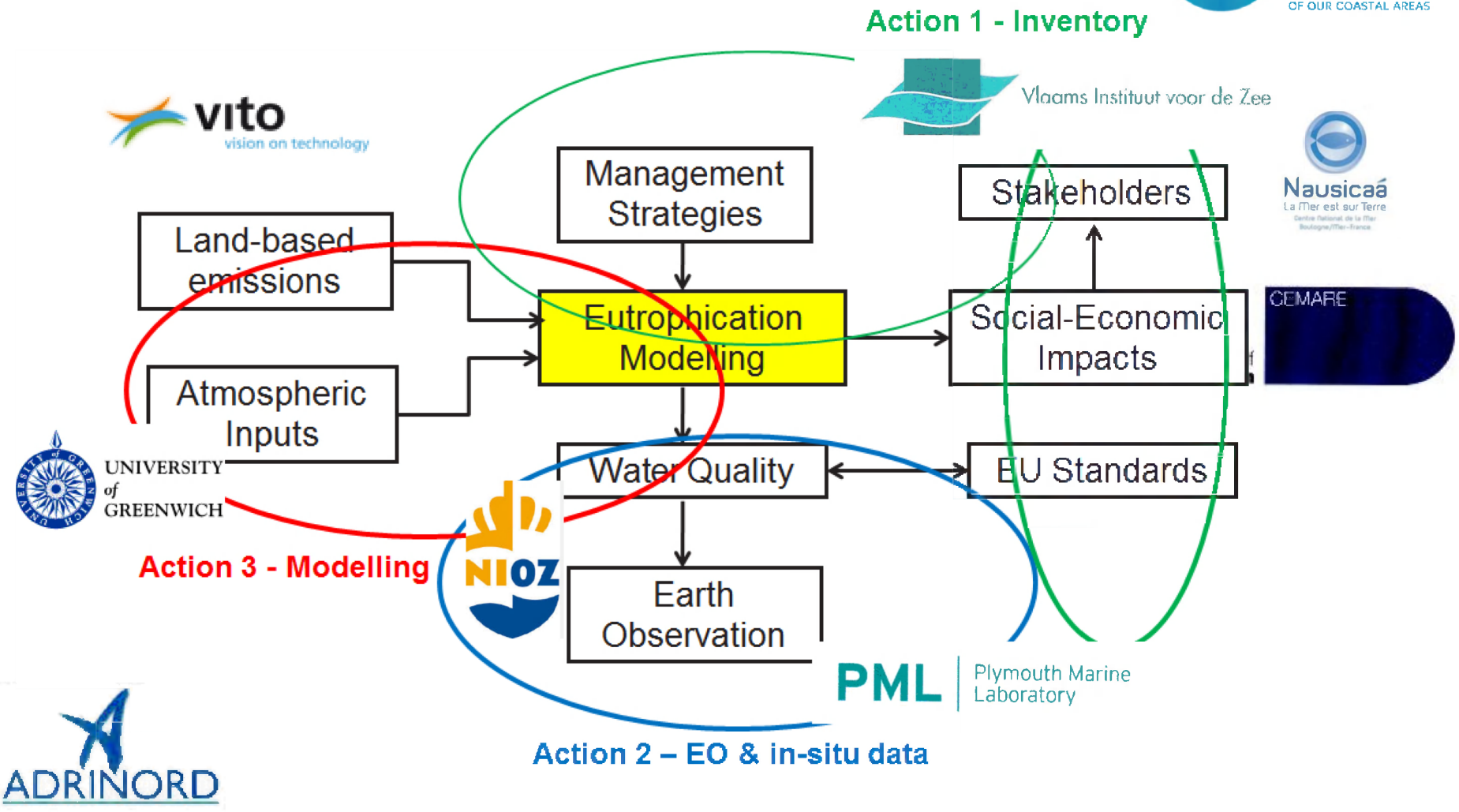
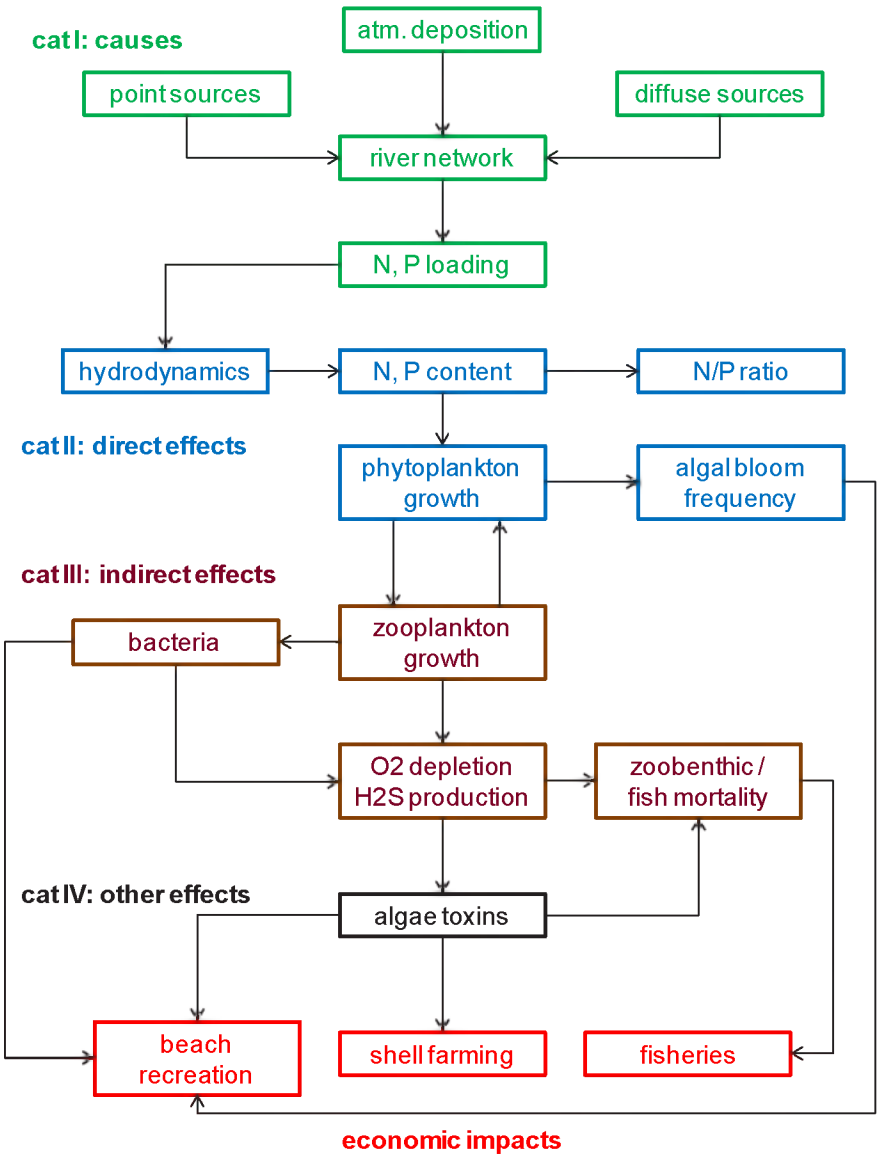


Eutrophication:

4 stages



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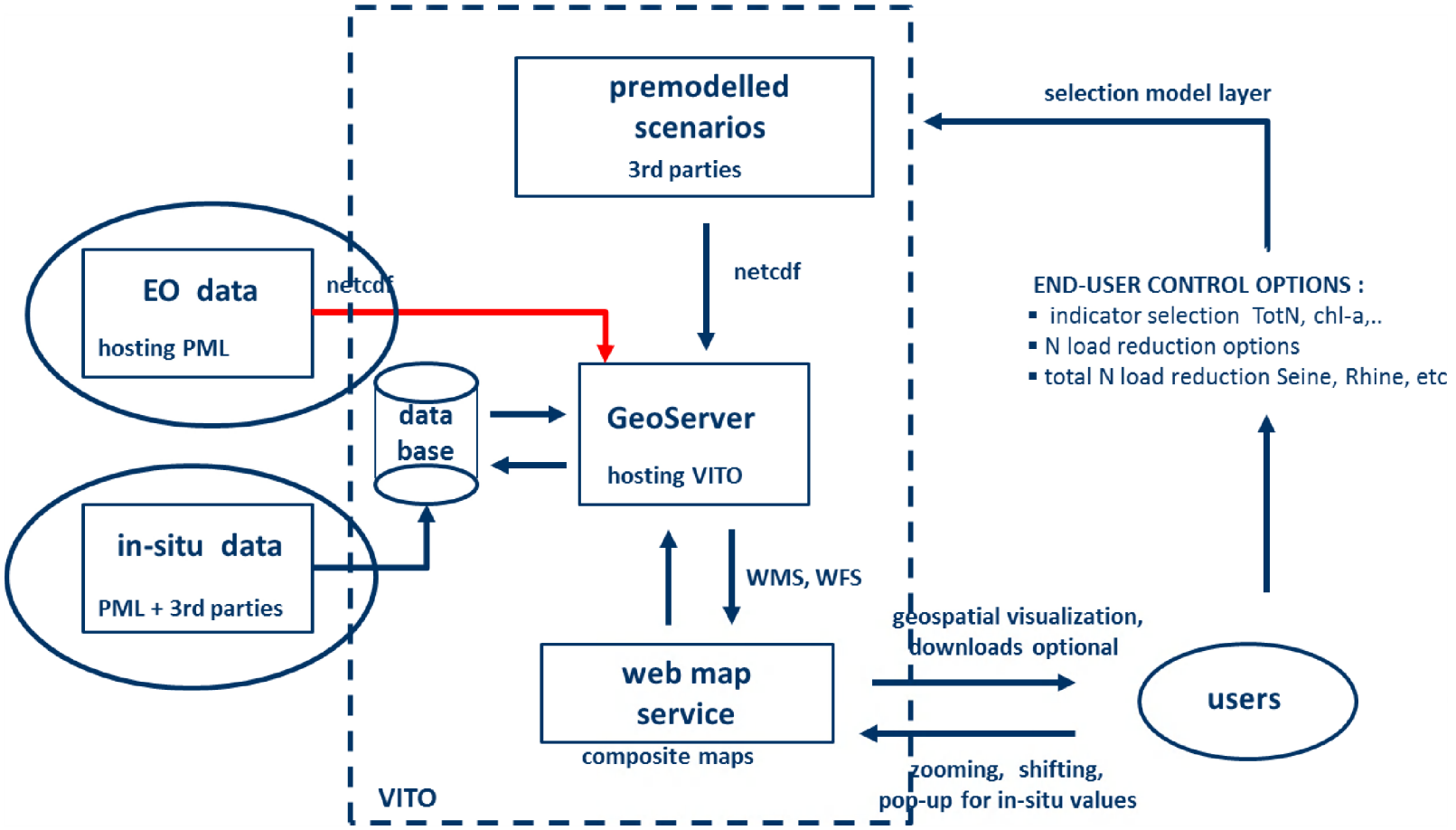
Adapted

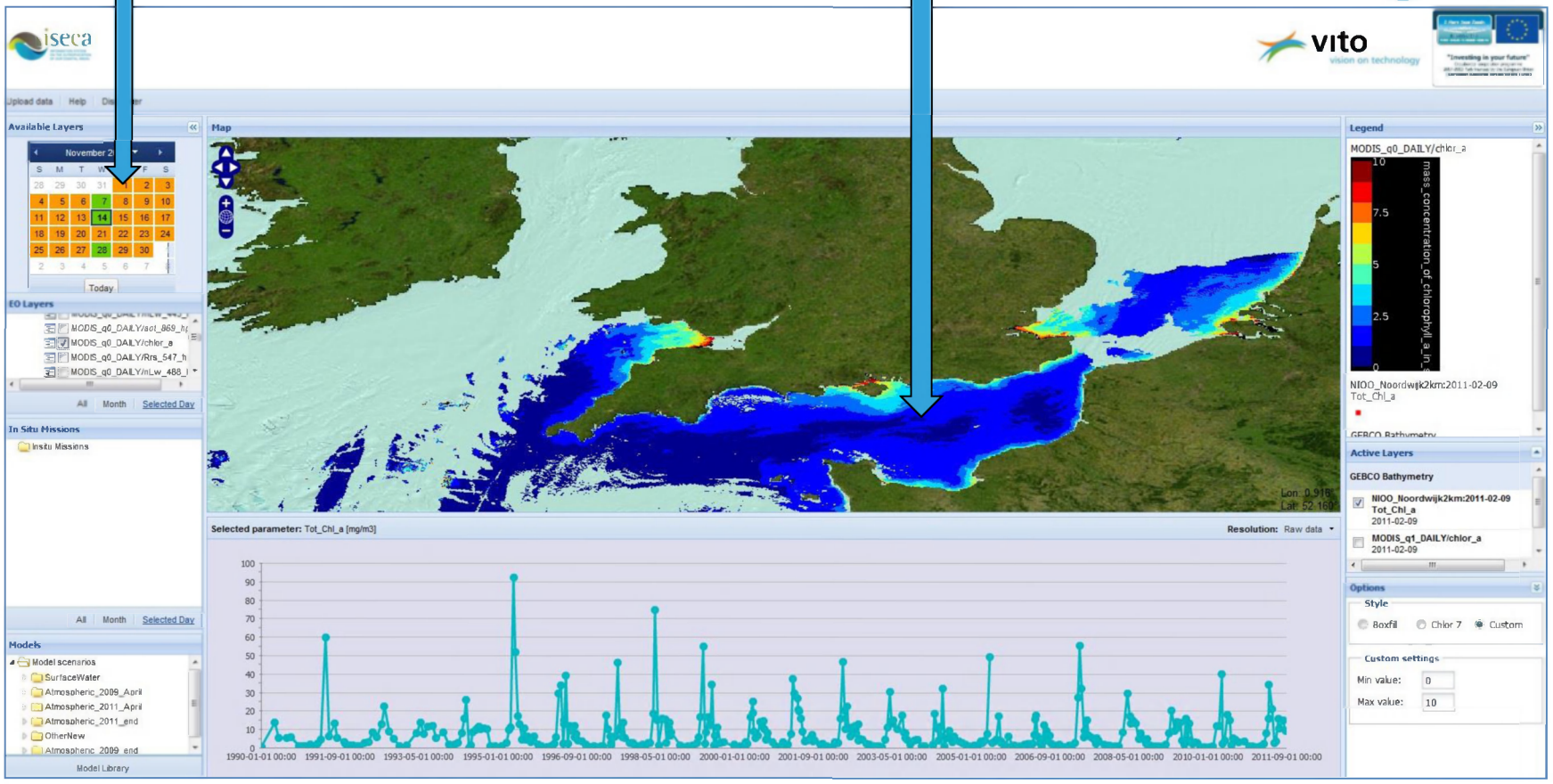
OSPAR (2005)

The Web Application Server (WAS)



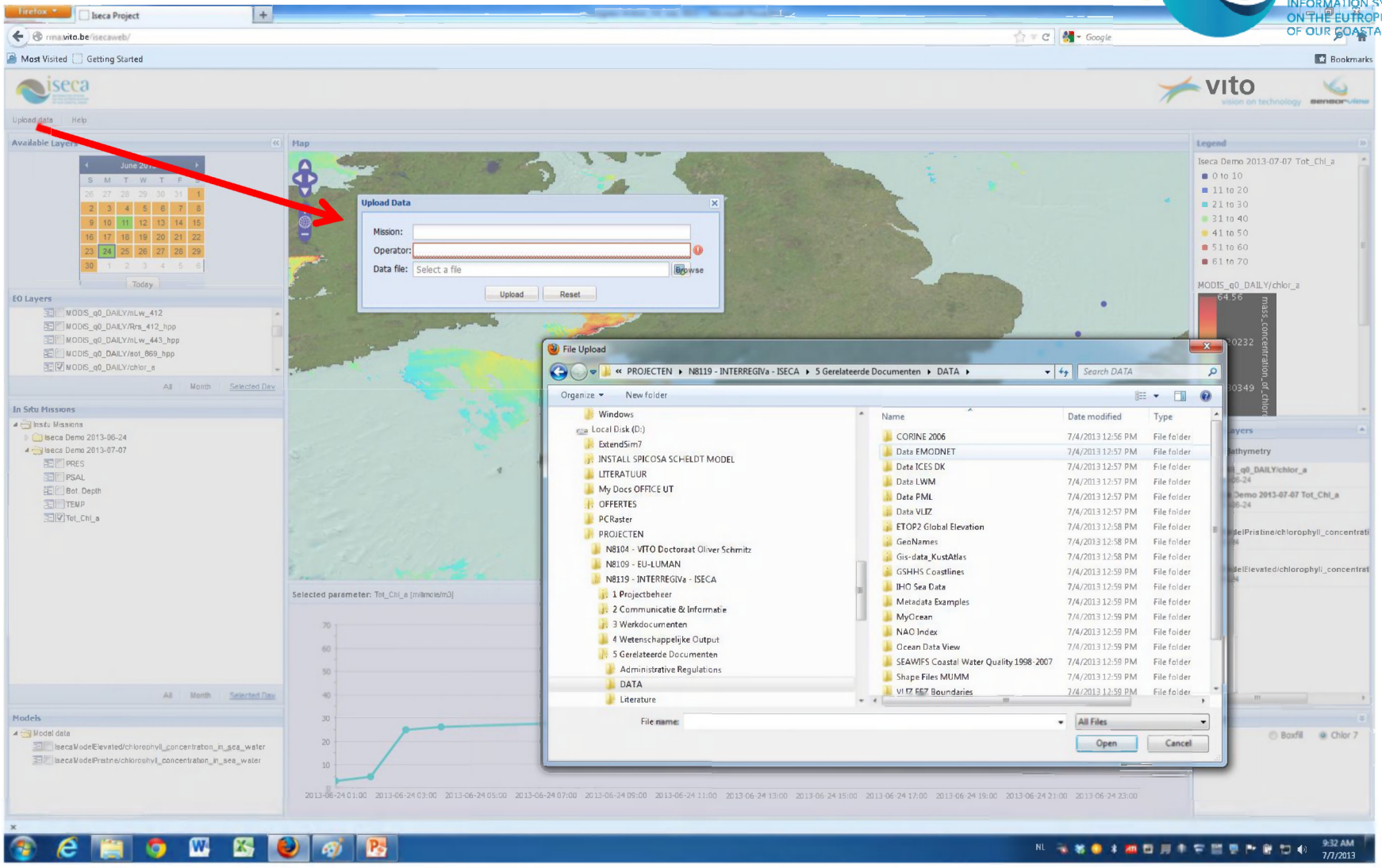
calendar navigation

A- Remote Sensing



Trend-analysis

B - In-situ data



C – Modelling

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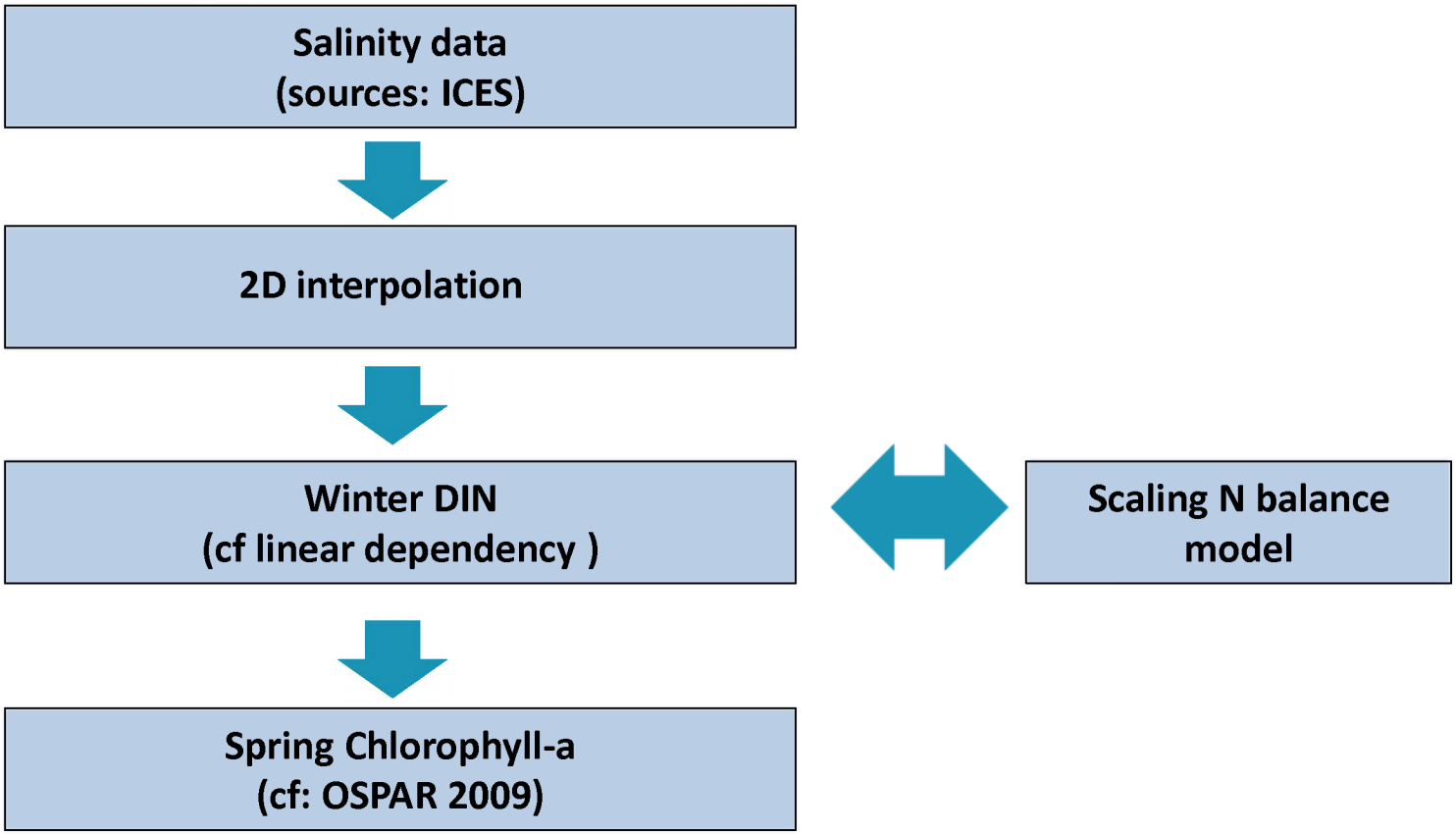

Salinity pattern:

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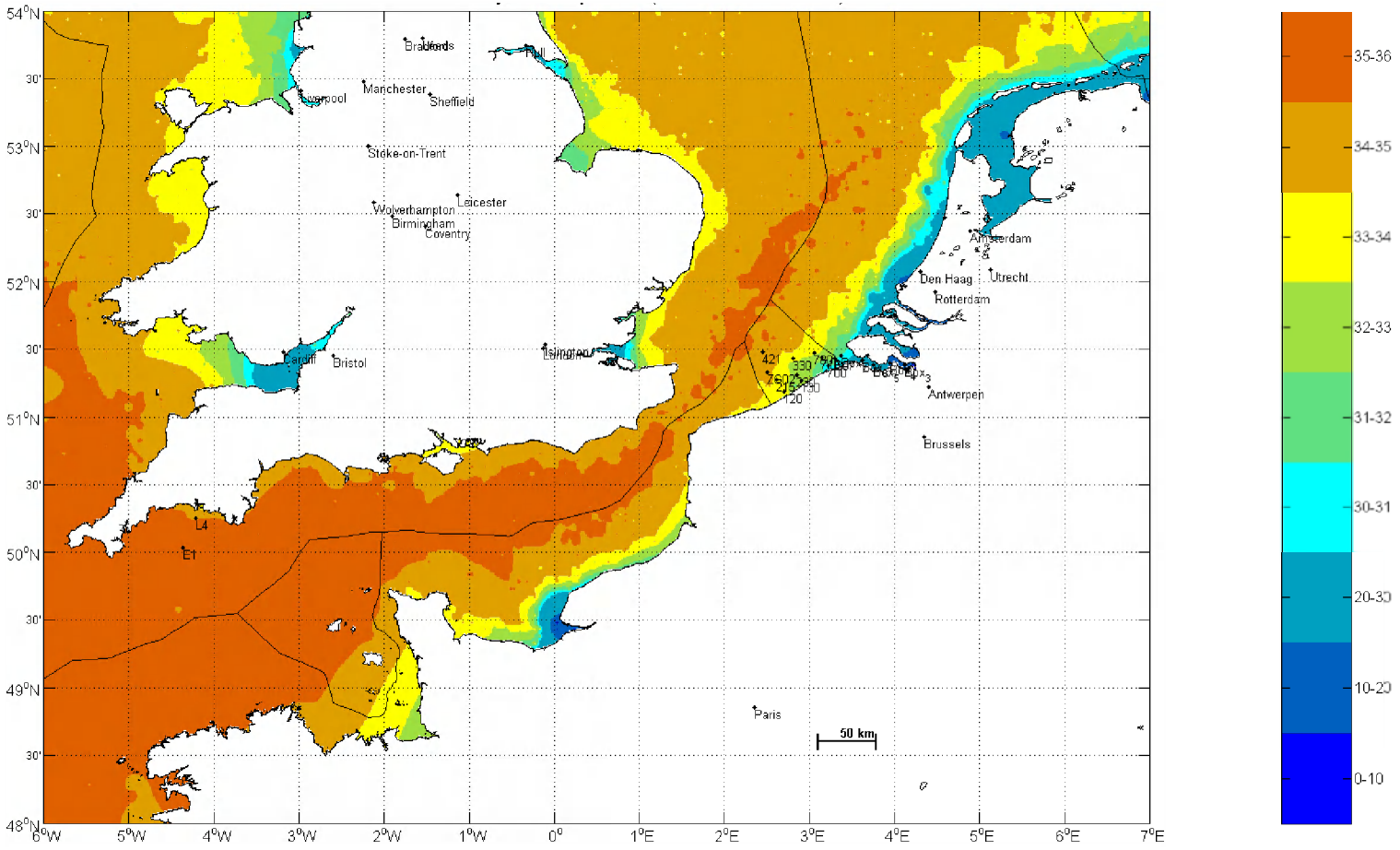


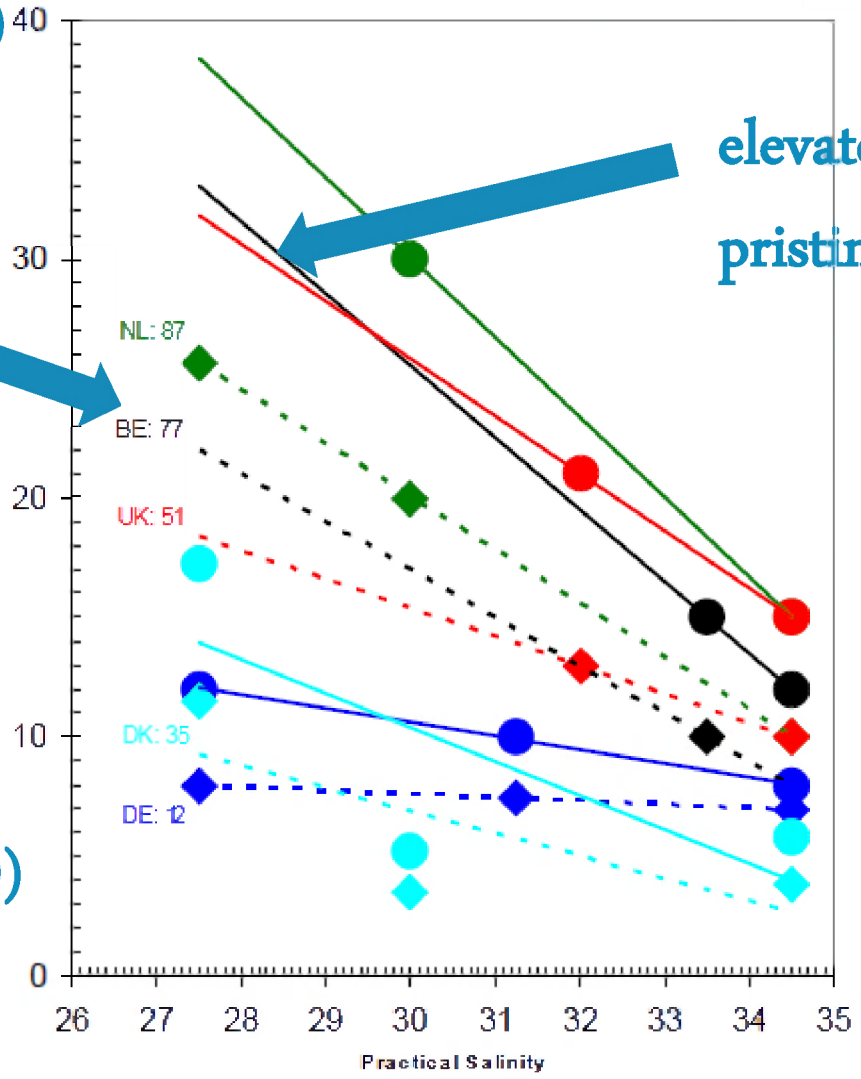
source data: GSHHS high-resolution coastline obtained from www.ngdc.noaa.gov
City coordinates obtained from www.geonames.org

Exclusive Economic Zone boundaries obtained from http://www.vliz.be/vmdcdata/marbound
Salinity data provided by ICES Data Centre www.ices.dk

Dependency salinity – winter concentration dissolved inorganic nitrogen (DIN)

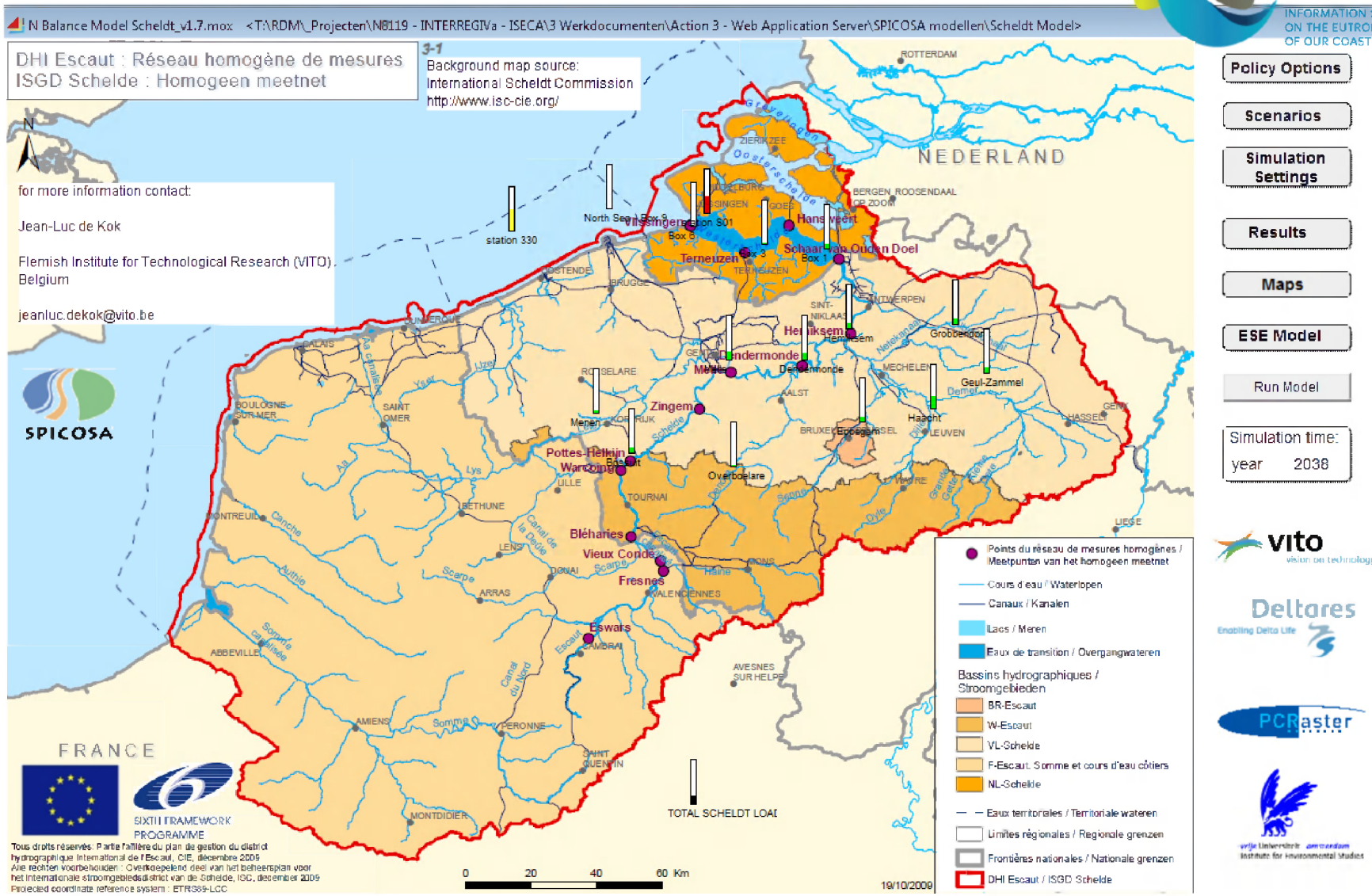
pristine level

elevated level = pristine + 50 %



OSPAR 2nd Report (2009)

N balance model 2010 – 2050 (Vermaat et al., 2012)



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Policy Options

Scenarios

Simulation Settings

Results

Maps

ESE Model

Run Model

Simulation time:
year 2038

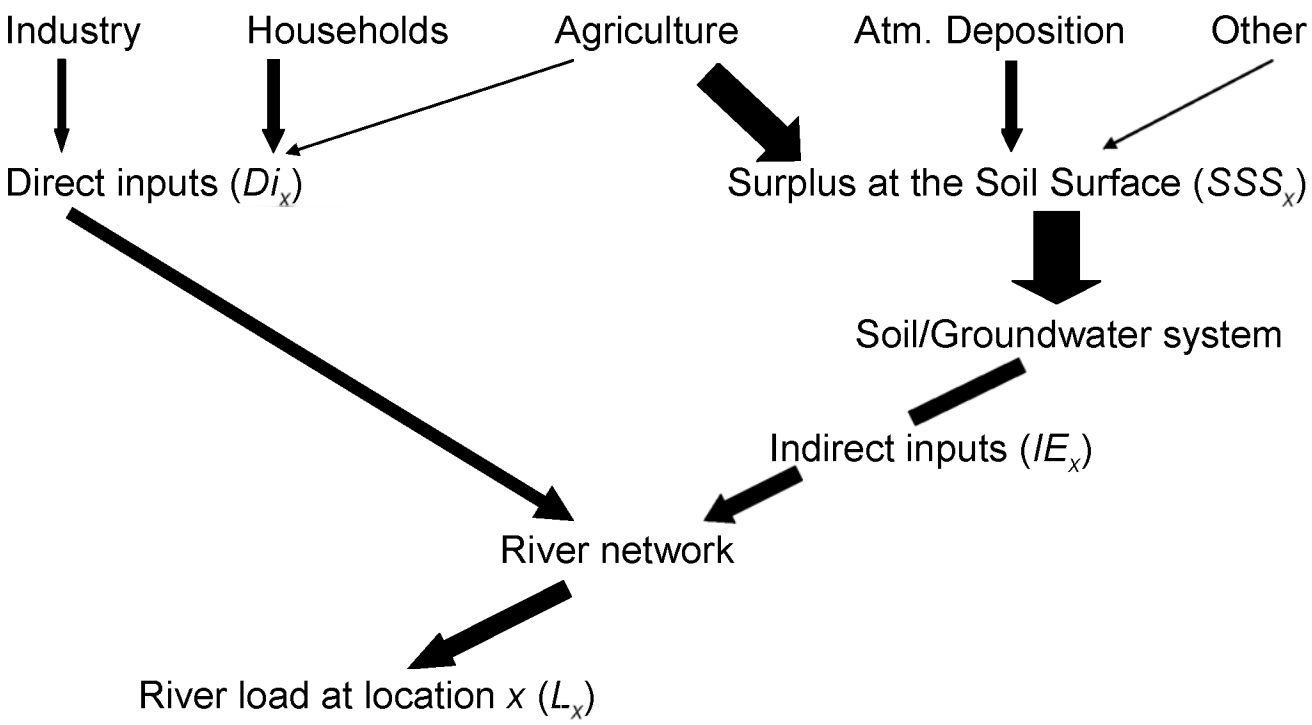
vito vision on technology

Deltares Enabling Delta Life

PCRaster

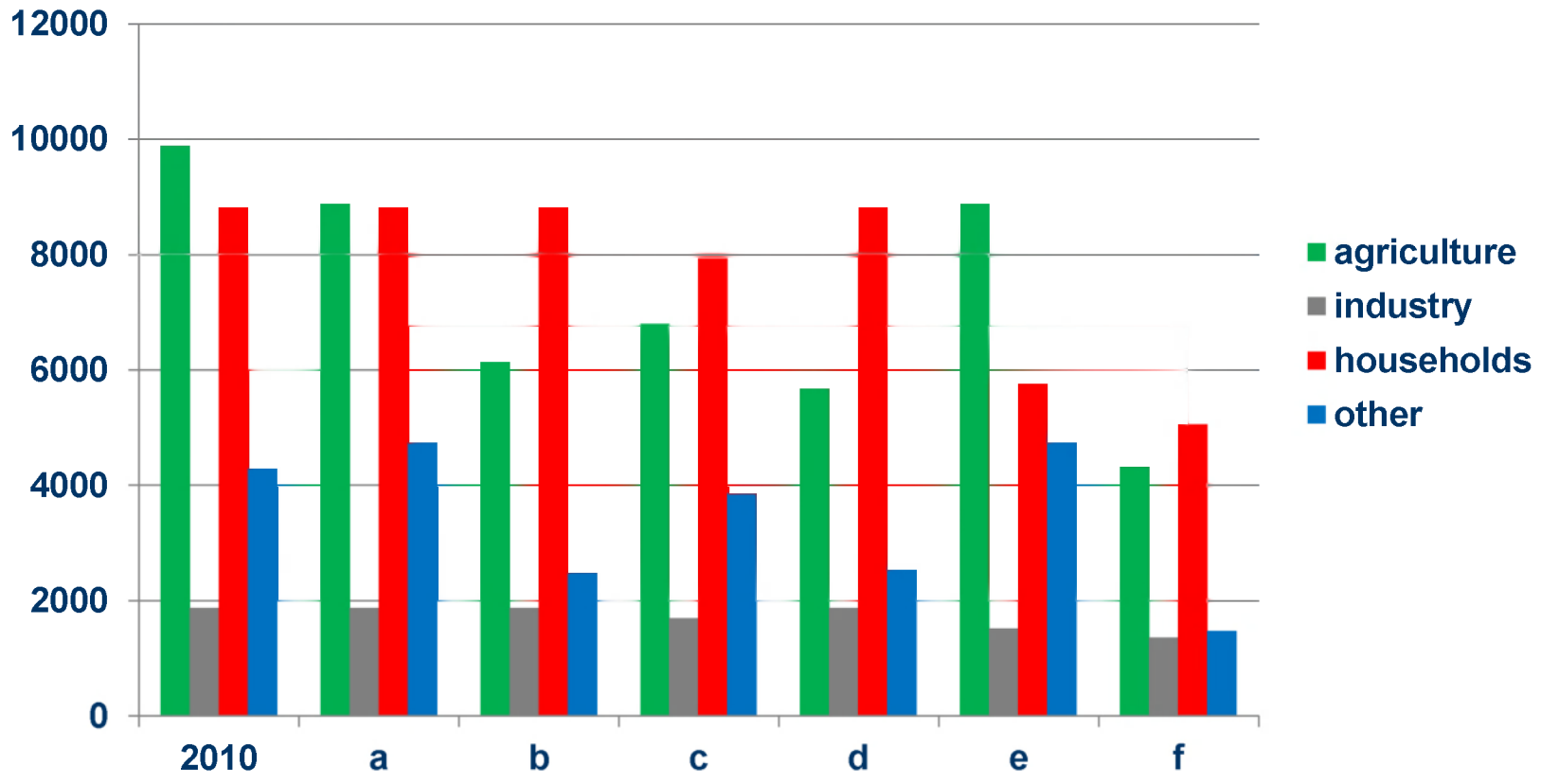
vrije Universiteit amsterdam Institute for Environmental Studies

Different pathways:



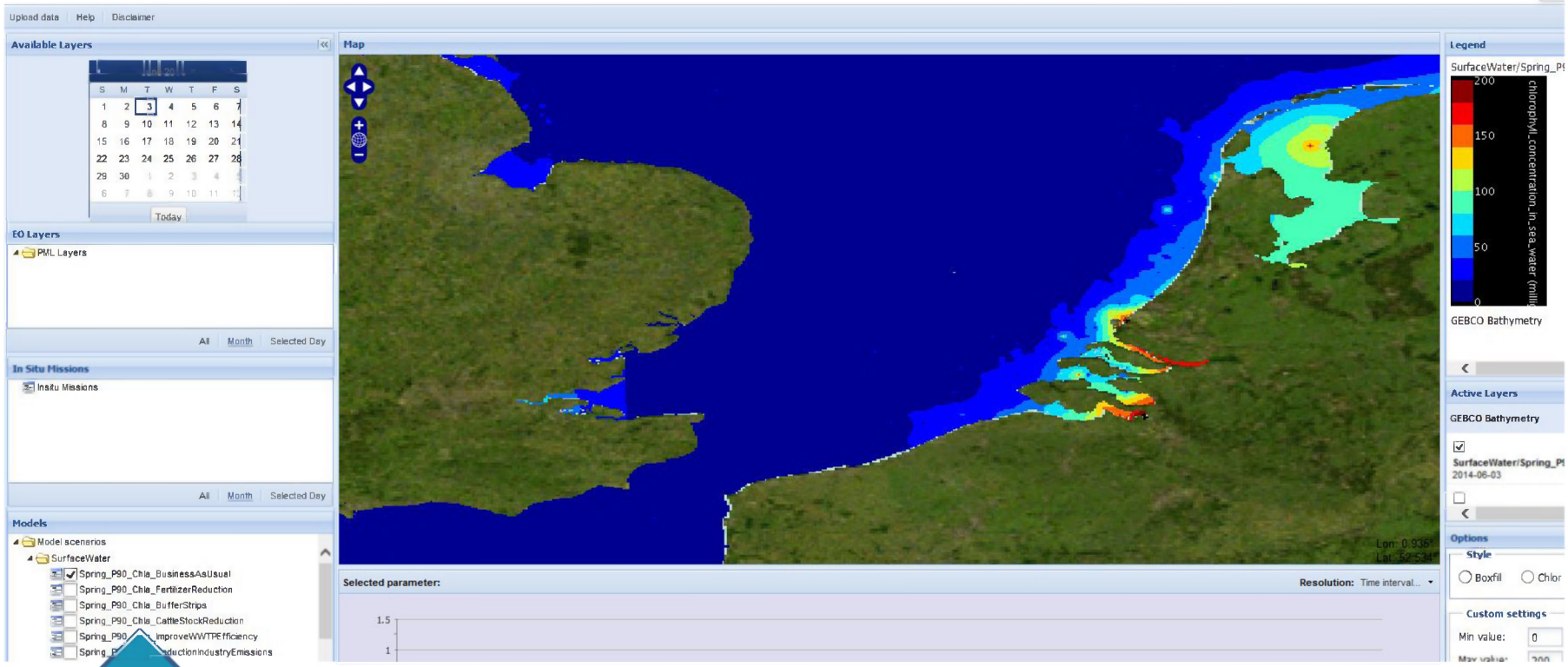
De Wit (2001)

Example emission reduction scenarios



Comparison modelled scenarios N load Scheldt:

Business-as-usual 2010-2050



Scenario selection

50 % reduction fertilizer use by 2050

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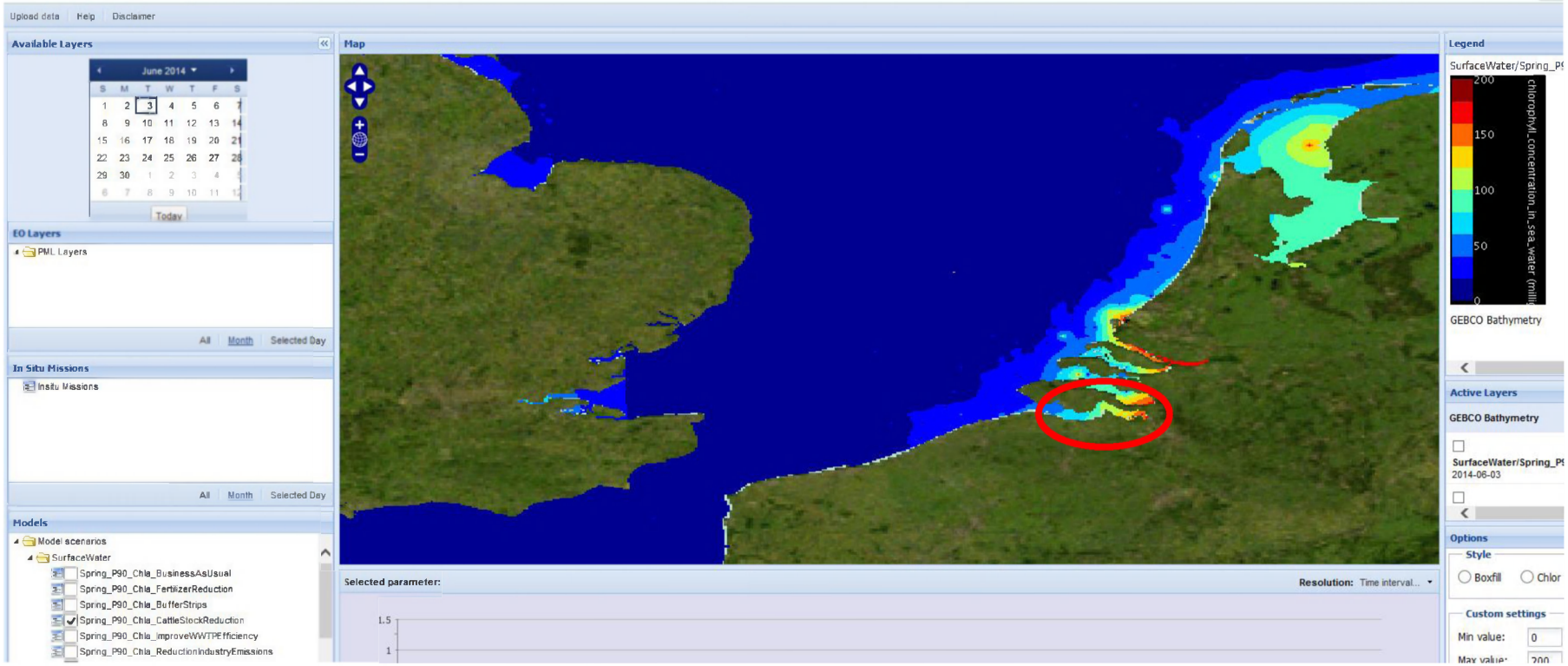

Combination of measures (80 % reduction in N load)

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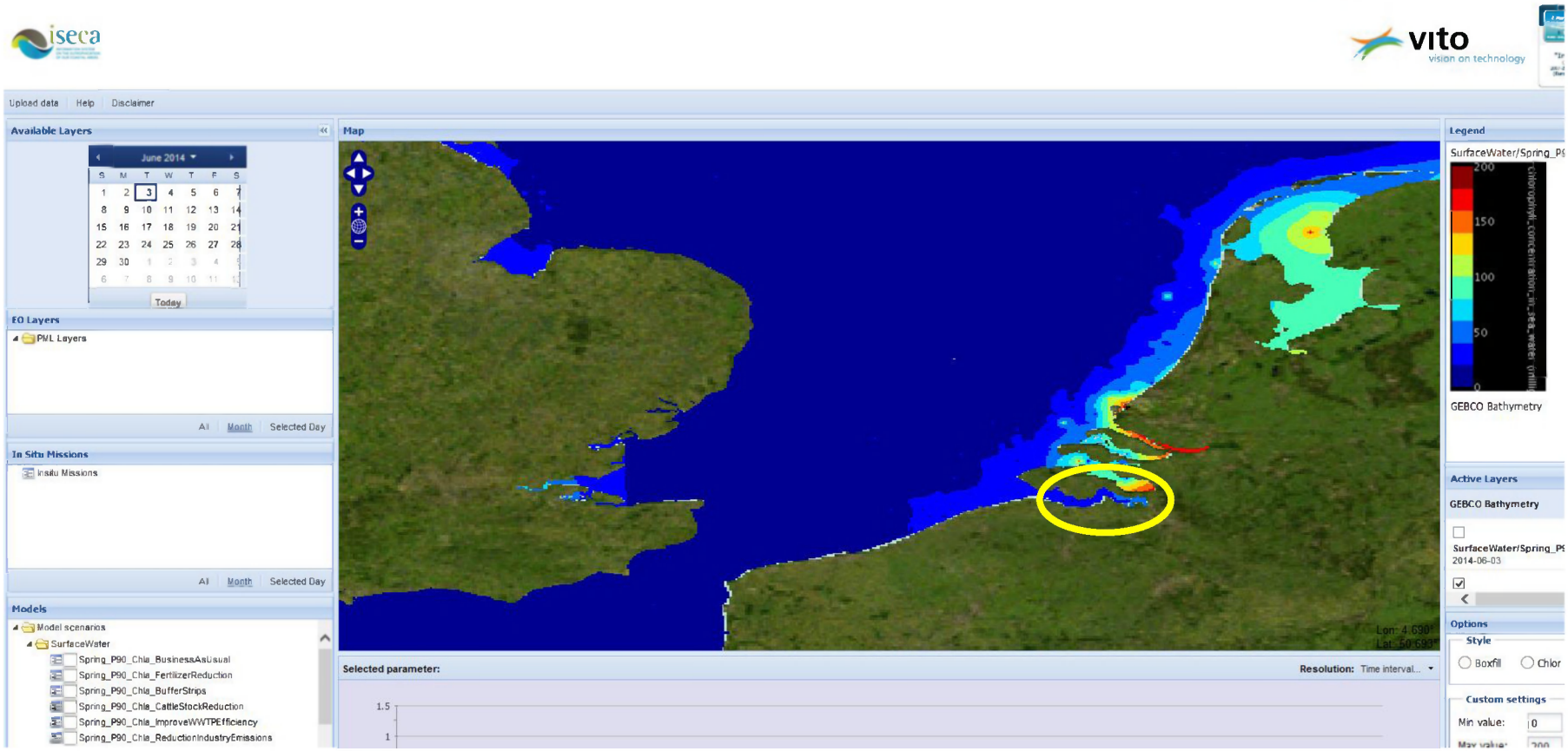
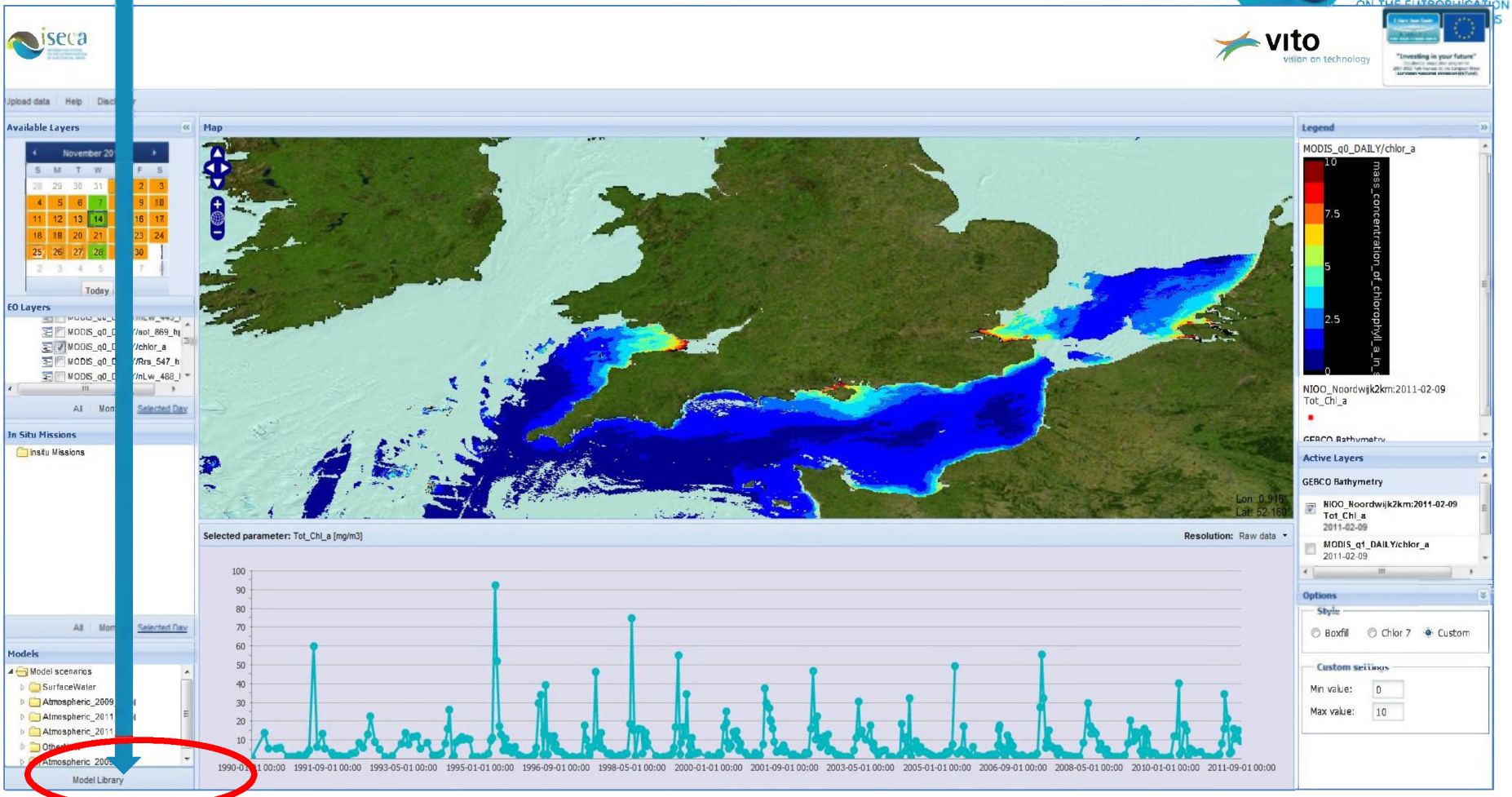
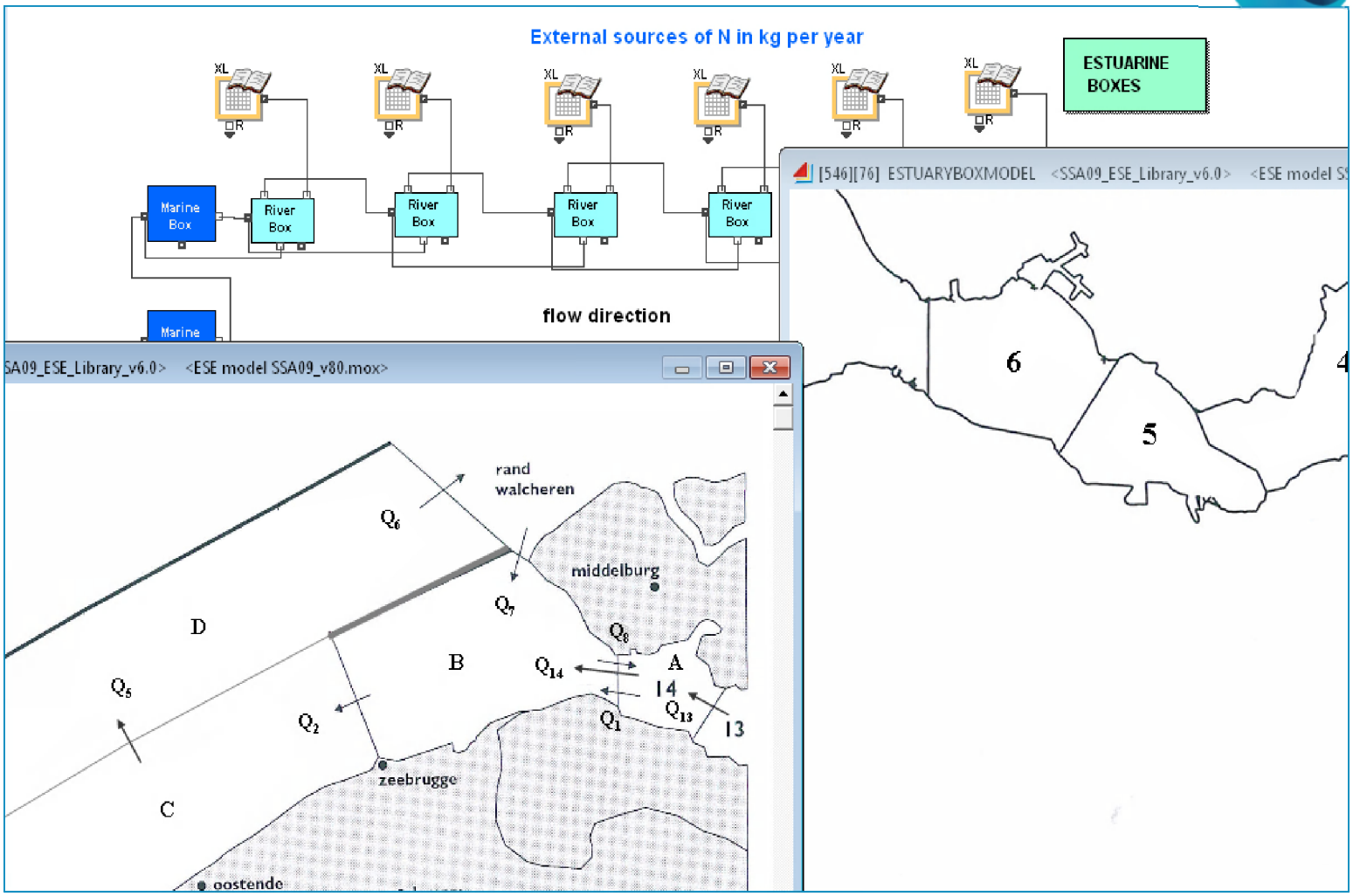


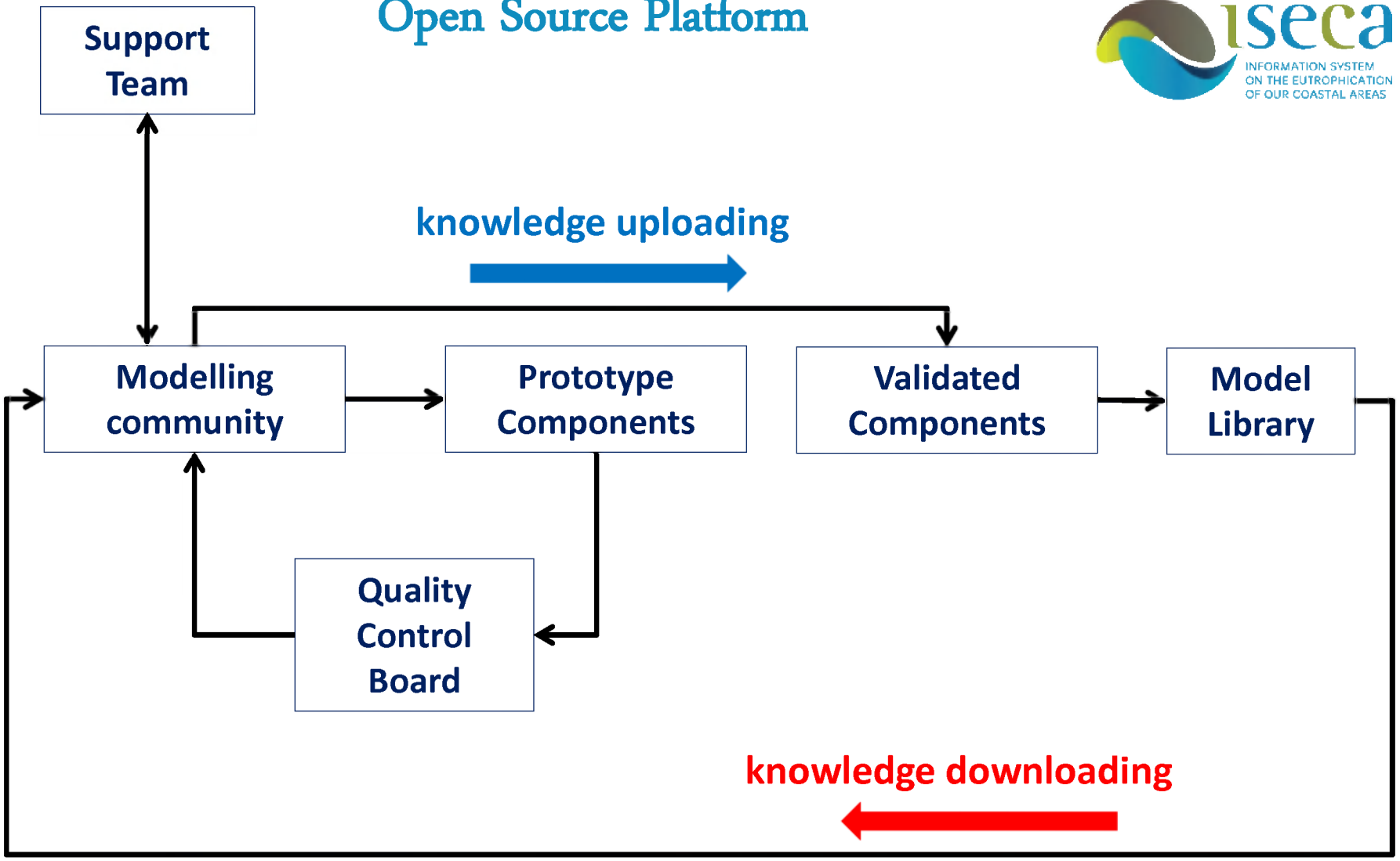
Access generic model library



Example reusable model components N transport



Open Source Platform



Other examples of fisheries management : [Access Model library]
SSA01 - Gulf of Riga, Latvia - Age-structured fish population model for pikeperch stock management.

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▸ Quantitative water management

SSA10 - Pertuis Charentais, France:
The Charente river catchment has been subjected to recurrent events of low summer river flows attributed to the increase of irrigated areas, threatening the good ecological status of the watershed and conflicting with the need of freshwater input in the coastal waters for oyster farming. The model represents the irrigated agriculture production, the irrigation governance regulation on the watershed and its downstream impacts in coastal waters on primary production and oyster farming.

DOWNLOAD SSA 10 Model

▸ Eutrophication

SSA04 - Himmerfjarden, Sweden:
The model is based on several policy options for nitrogen management in Himmerfjärden drainage basin, for the three main human activities causing nitrogen leakage; a large-scale sewage treatment plant (STP), agriculture and private sewers.

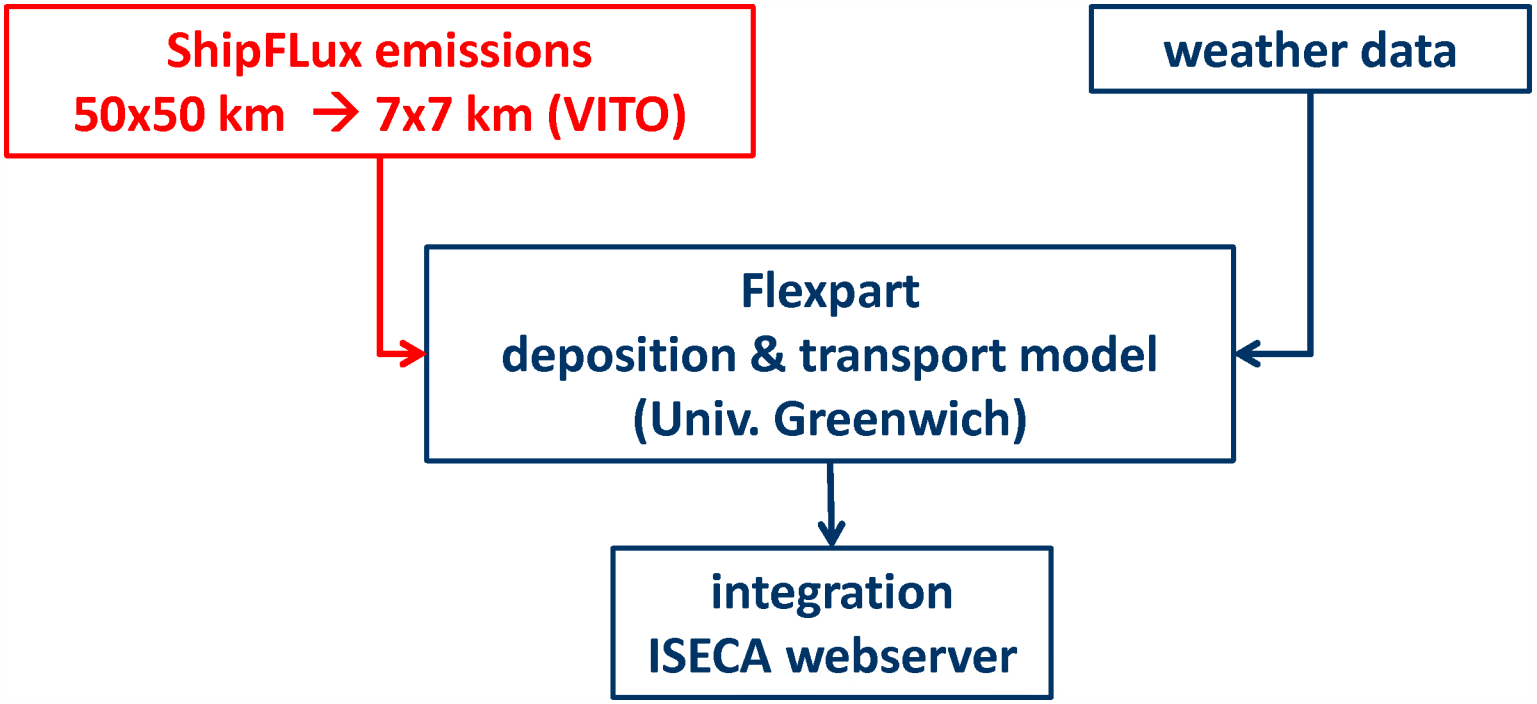
DOWNLOAD SSA 04 Model

Other examples of nitrogen management : [Access Model library]
SSA09 - Scheldt Delta, Belgium, The Netherlands - Nitrogen source apportionment for the catchment, estuary and adjacent coastal waters.
SSA03 - Oder Estuary, Germany - Poor water quality in the Oder lagoon and highly eutrophic state: temporal anoxia, fish kills, algae bloom and poor water transparency.

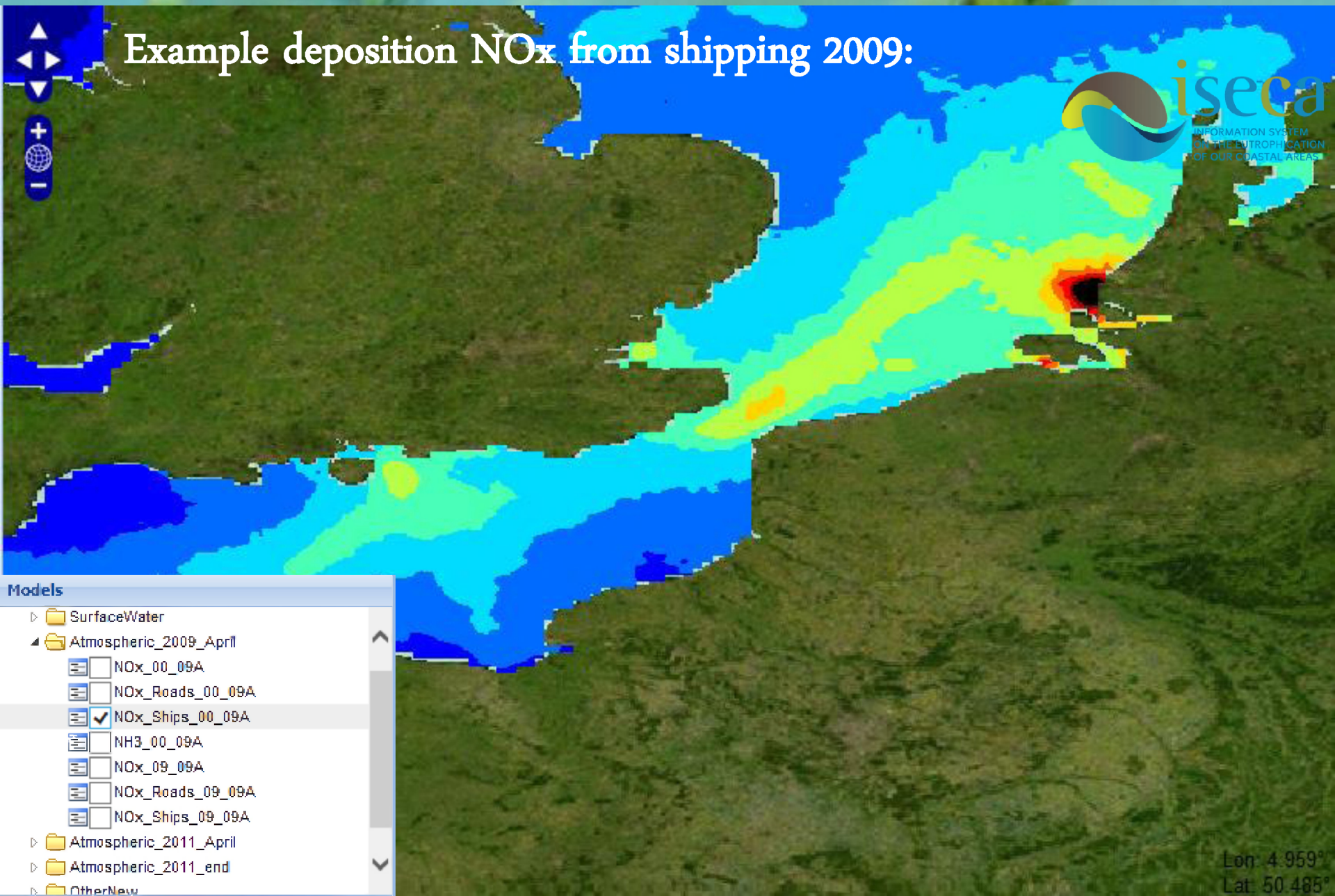
▸ Shellfish, fishing and aquaculture

SSA15 - Venice Lagoon, Italy:
The sustainability of clam production in the Venice lagoon is becoming uncertain: over-fishing, 'fishing down the foodweb', sediment resuspension, damage to benthos and habitat destruction are recurrent problems. The model evaluates the social carrying capacity of the lagoon of Venice clam farming system -given ecological and physical constrains- preserving the lagoon environment and ensuring high food safety standards to consumers.

Atmospheric depositions (30 – 40 %)



Example deposition NOx from shipping 2009:



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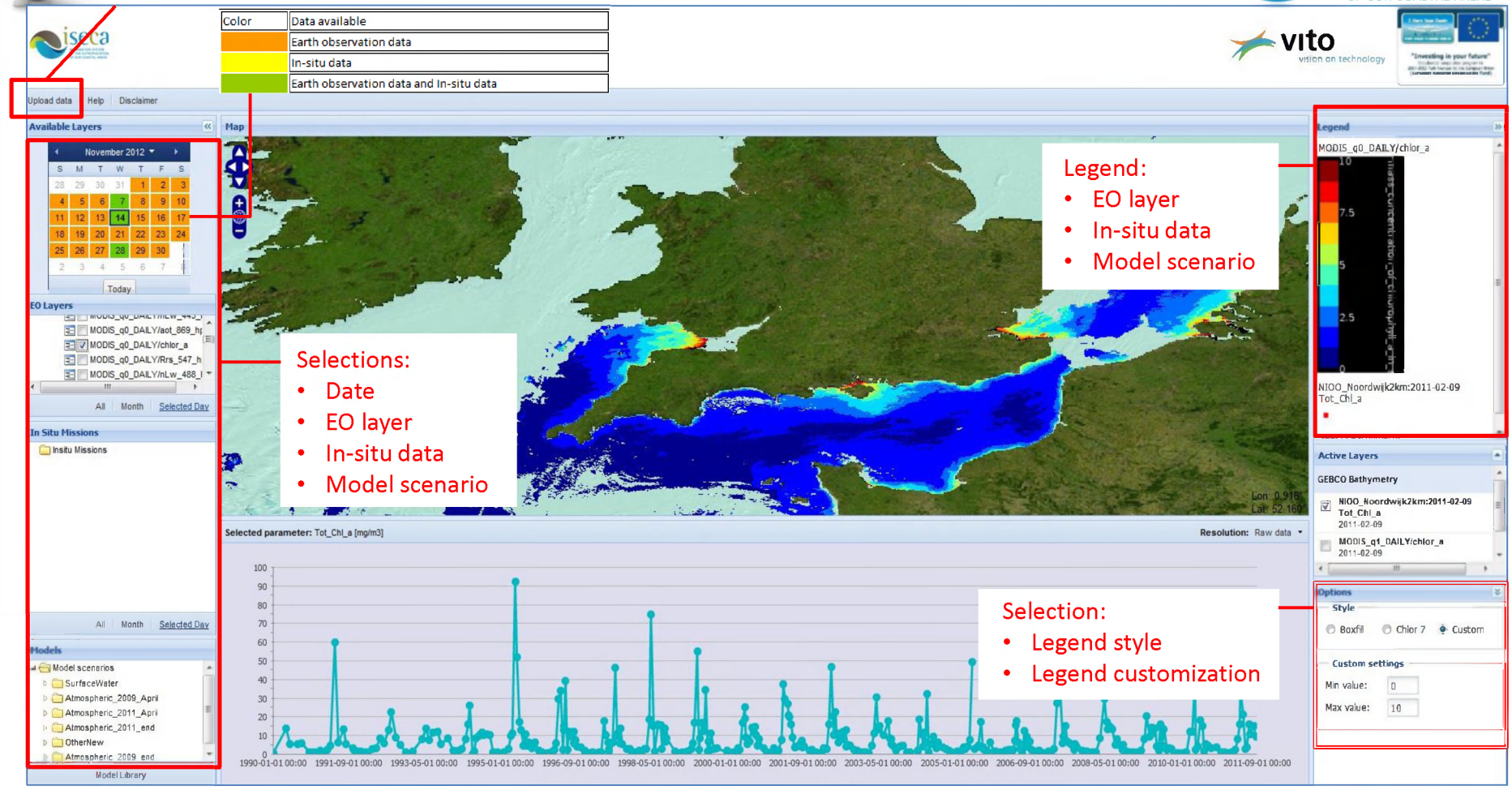
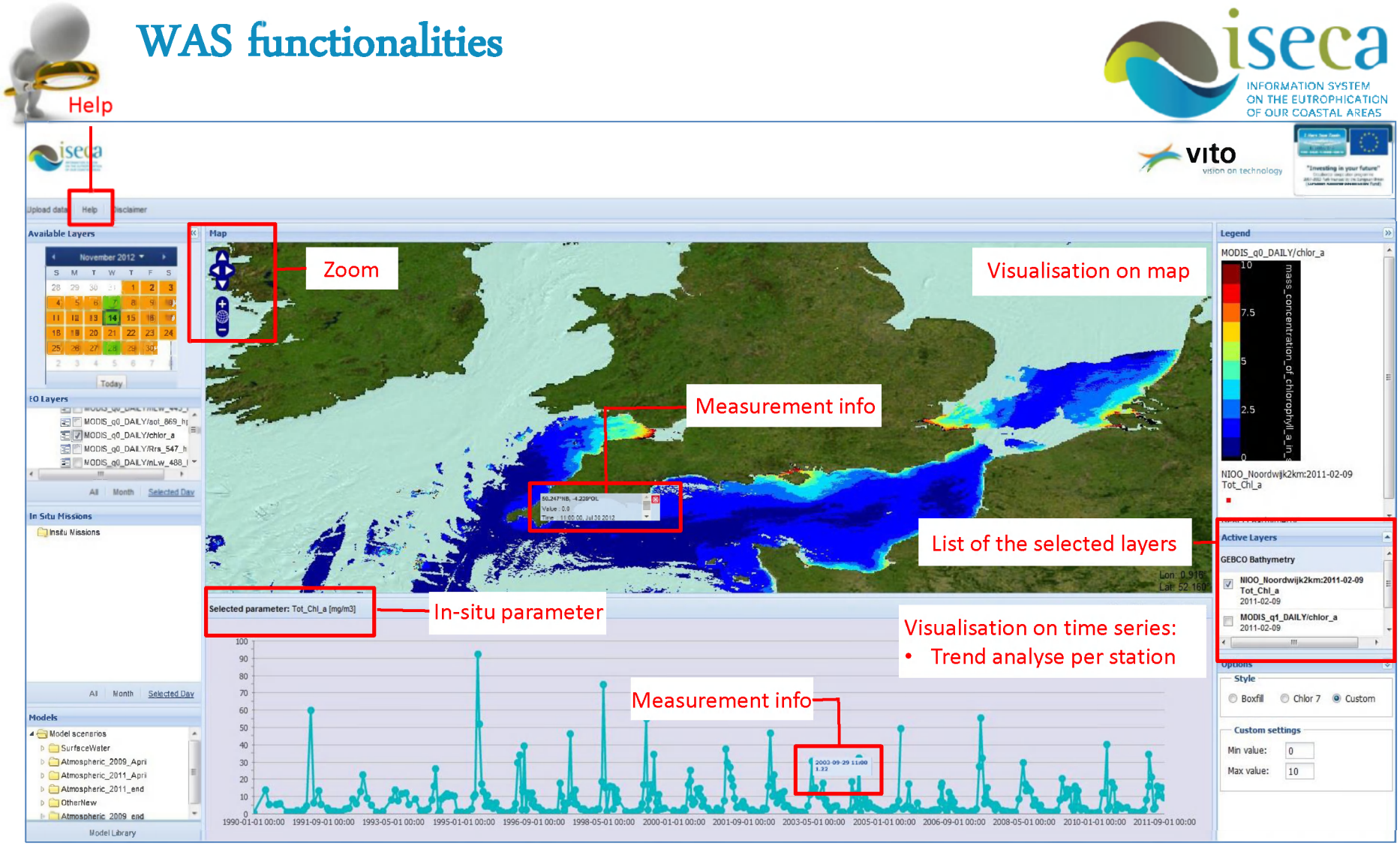
Part B – How to use the WAS ?

WAS functionalities

Upload in-situ data



WAS functionalities



Upload in-situ data

Preparing the upload file.

- **Only registered in-situ parameters are allowed.**

In-situ parameter	*Unit*
Tot_Chl_a	Mg/m3
TSM	g/m3
TURB_TNU	NTU
NO2	Millimole/m3
NO2+N03	Millimole/m3
PO4	Milliemole/m3
NH4	Mg/m3
Si02	Milliemole/m3
P90_Chl_a	Mg/m3
Phaeocystis_globosa	Billioncello/m3
Phaeocystis_all	Billioncello/m3
Bot.Depth	decibar
PSAL	P.S.U.
Pres.	P.S.U.
Temperature	°C
SPM	g/m3

Upload in-situ data: tips & tricks

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Preparing the upload file.

- **Provide one upload file per fixed measurement location (station).**
  This is important for the visualization of the trend analysis per fixed station.

- **The data must be sorted in descending order by time**

- **The upload file must be in accordance with the template file.**
  The upload file must contain at least the columns Cruise, station, Type, Time, Lon, Lat and Source. The in-situ parameters must be in accordance with the registered in-situ parameters.

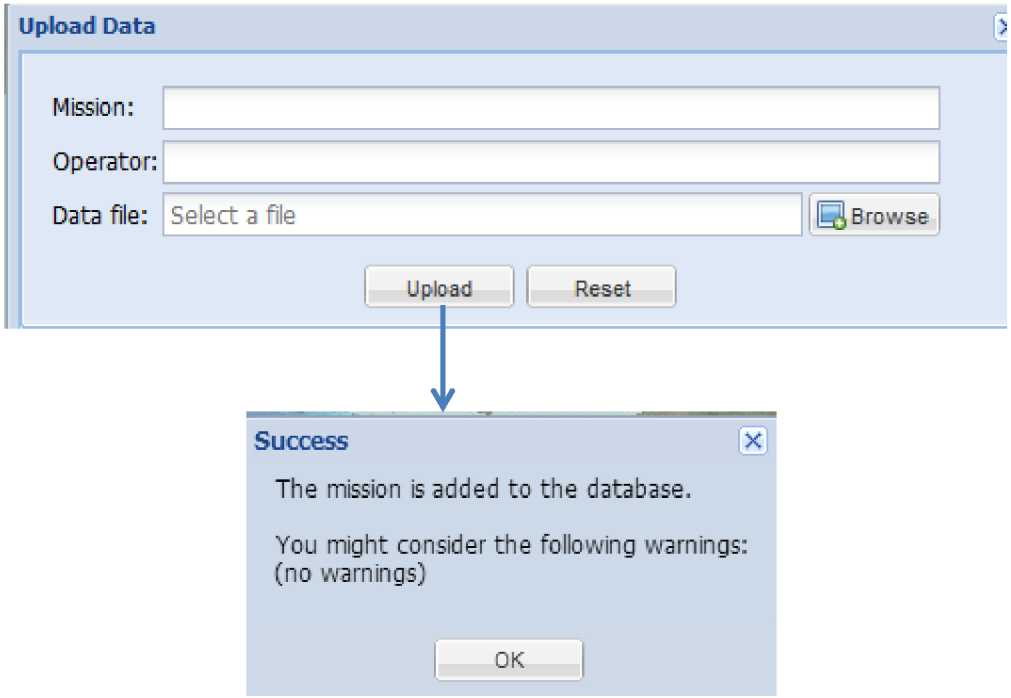
Cruise,Station,Type,Time,Lon,Lat,Temperature,Bot.Depth,Pres.,PSAL,SPM,Tot_Chl_a,NO2,NO2+NO3,NH4,SiO2,PO4,Phaeocystis_globosa,Phaeocystis_all,P90_Chl_a,Source

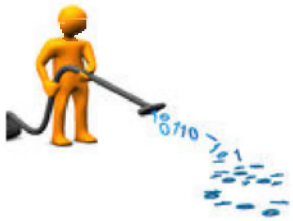
Obligated — Variable list of registered in-situ parameters — Obligated

Template file

Upload in-situ data

***Upload in-situ data*.**

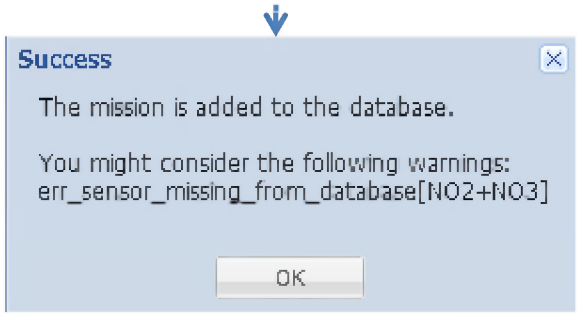




Upload in-situ data

Errors

Error	***Explanation***
Err_missing_metadataend	The word 'metadata_labels_end' is missing in the file. ***Please check the upload file.***
Decreasing line date at line [line number]	The data is not sorted in descending order by time. ***Please check the upload file.***
Source [Source value] not length 3 in line [line number]	The source can contain max. 3 characters. ***Please check the upload file.***
More items in line [line number] than in header	The header is missing one or more columns compared with the data. ***Please check the upload file.***
Wrong size createtimestamp for [timestamp] line [line number]	The time has a wrong format in line [line number]. ***Please check the upload file.***
Err_sensor_missing_from_database[in-situ parameter]	The in-situ parameter in the error message is not registered in the WAS application. ***Please contact VITO for registering the new in-situ parameter and mention the mission that you were loading into the WAS application.***



Legend styles

Boxfill

Boxfill is by default selected and is used to visualize the in-situ measurement points.

Chlor 7

Select Chlor 7 when you want to visualize the measurements related to the parameter Tot_Chlor_a

Custom

Select Custom when you want to visualize the measurements related to other parameters.

Here you define the min. and the max. value for generating the legend style.

Legend styles

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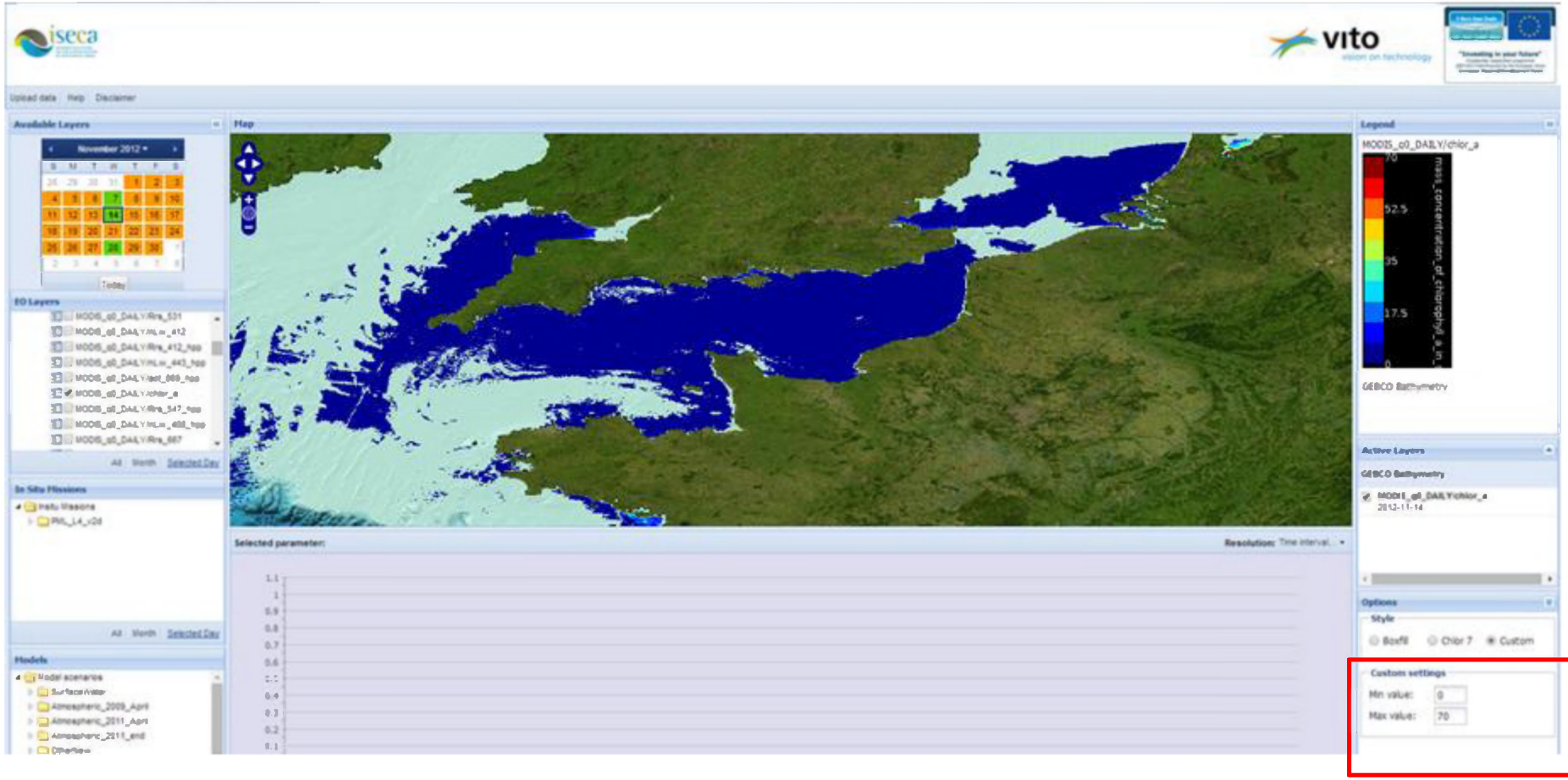

Legend styles

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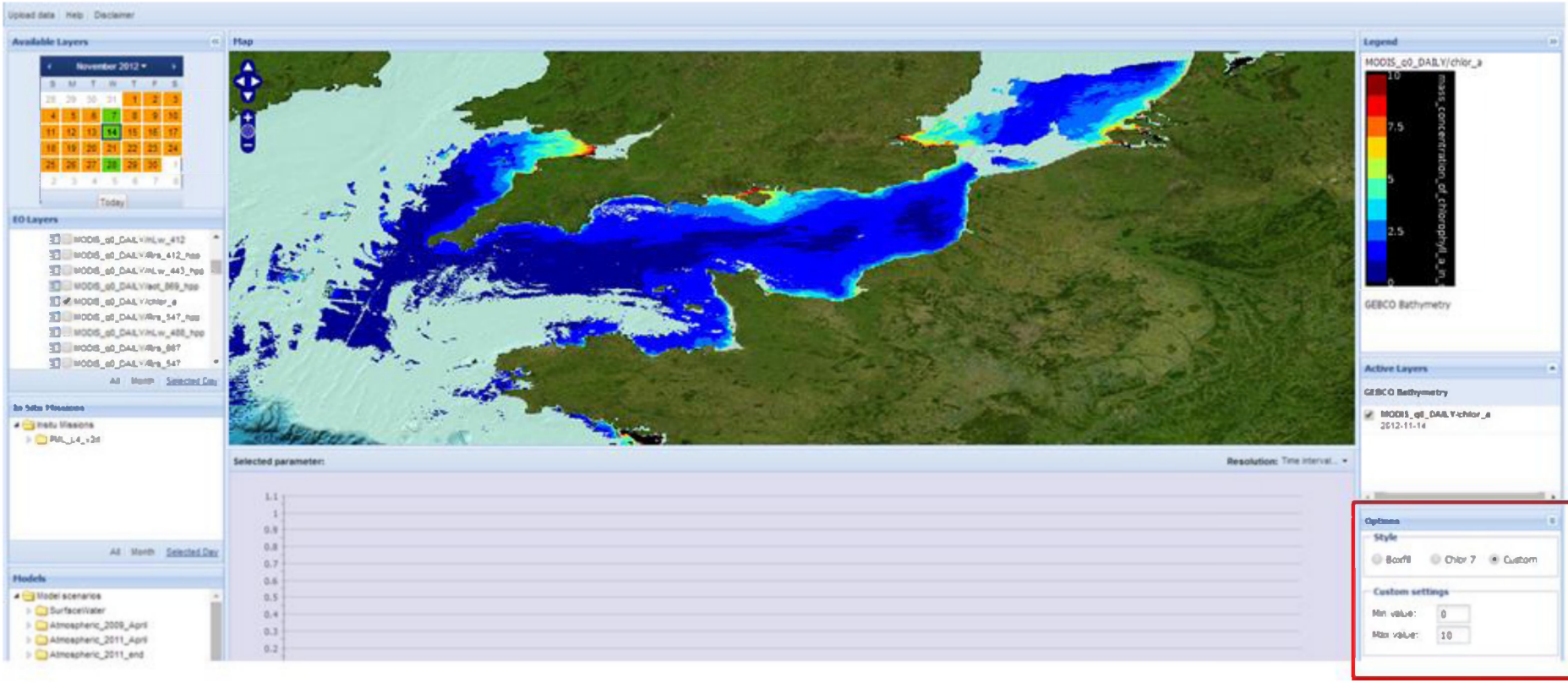

TIPS

- Every EO layer or in-situ layer that you select will be added to the Active Layers box. Here you select the layers that you want to visualize on the map.
- Press always **F5** when you start with a new selection related to other days or to the visualization of the model scenarios.
- When you've selected EO data and in-situ data and you cannot see the monitoring points. Change the order of the active layers by drag and drop.
- Select always first the legend style before you select the in-situ data layer.

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