Generation of operational forecasts on demand:

The OPENCoastS platform hands-on course

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Goals: What should you know at the end of the course

Service access, registration, users manual and everything you need to get to the “pole position”

The OPENCoasts platform hands-on tutorial
  - Configuration assistant step by step
  - Forecast manager – what can we do
  - Outputs Viewer and more

Where are we going from here: our plans and your suggestions
What is OPENCoastS?
What do I need to use OPENCoastS?
How do I use this platform?
Are there limits on the forecasts? Are they confidential?
What resources are included in EOSC-HUB project
(I liked this platform and I would like to help the development team by ...proposing new features, evaluate new versions, contribute with my data/forcing models,...)
A platform to:

- Implement forecast systems for a system chosen by the user, using a browser-based, user-friendly, interface
- Allow the choice of the processes, model and forcings
- Allow the replication and change of forecast systems
- Avoid the need of a large team to generate forecast systems
- Take advantage of the European Open Science Cloud (EOSC) to provide the required computational resources (EOSC-hub project)
First, you need to register at
- https://opencoasts.ncg.ingrid.pt/register/
- After filling in the info (confidential, not be shared, anonymous, only used to compute resources usage/country)

Then you will get an email acknowledging your registration request that you need to confirm through the provided link (so we know you are not a computer...)

After your confirmation, an email is sent granting the access to the service. From that point onward, the user can login and start using the OPENCoastS service.
Where can I get more information on this tool?
- Learn more about the EOSC-Hub project at: [https://eosc-hub.eu/](https://eosc-hub.eu/)

Is there a users manual?
- If you have additional questions or suggestions email us: aoliveira@lnec.pt
Login at https://opencoasts.ncg.ingrid.pt/

Configuration assistant step by step

- Step 1: Select the model and the duration
- Step 2: Upload and verify the grid - time to answer questions
- Step 3: Specify boundary conditions
- Step 4: Define output stations
- Step 5: Define physical and numerical parameters
- Step 6: Define space-dependent parameters
- Step 7: Review and submit
First time usage:
- Accept usage conditions
- guided tour on the configuration assistant is proposed (to skip it, just hit “close”)
- Help always present:
  - button
  - button

Hands-on tutorial – first use
Step 1: Select the model and the duration

- Only one option for the model (and its version) – other versions and other models are planned
- Extension to 72 h also planned
- After, just hit “Complete step” and a new deployment is created
Step 2: Upload and verify the grid

- **Grid format**
  SCHISM/SELFE/ADCIRC

- **WGS84 is the simplest format if you have trouble finding your grid’s EPSG/coordinate system**

- **Vertical reference**: we run the forecasts at MSL; this info is needed for model/data comparison
Step 2: Upload and verify the grid

Intermediate step to verify the grid and its boundaries

Questions? Trouble getting here? Just ask us!
### Step 3: Specify boundary conditions

In this step, the user has to define the forcing sources for the ocean, river, and atmospheric boundaries from the available options.

<table>
<thead>
<tr>
<th>Type</th>
<th>Forcing</th>
<th>Source Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ocean</td>
<td>FES2014 - Finite Element Solution</td>
<td>FES2014 - Finite Element Solution</td>
</tr>
<tr>
<td>River</td>
<td>GFS - Global Forecast System NOAA/NCEP</td>
<td>GFS - Global Forecast System NOAA/NCEP</td>
</tr>
</tbody>
</table>

- **Select boundary by clicking on the toggle box**
- **Multiple boxes allow for equal conditions in the several selected Boundaries**
- **For ocean and meteo, the user needs to specify sources below**
- **Same source for all ocean bc.**
- **For river, monthly values need to be specified.**
- **BCs: elevation at ocean, river flow at rivers**

### Questions? Trouble getting here? STOP
Step 4: Define output stations

- Selected stations in EMODNet Physics are automatically proposed (just select the ones you want)
- A limit of 5 stations per forecast is allowed
- Real stations/Virtual stations can be added and will show up automatically in the VIEWER
Step 5: Define physical and numerical parameters

- Default based on LNEC’s experience with SCHISM
- A few parameters can be set by the user – limited for robustness
Step 6: Define space-dependent parameters

- Possibility to define spatial variability
- In the future, validation procedures will be added to minimize model failure due to poor parameter choice
Step 7: Review and submit

- Possibility to download input files for outside check
- Possibility to go back to any step (after step 2) and correct everything

2018-10-02
After activating the system

**Step 7: Review and submit**

- **5 deployments/user**
- **Resources – EOSC/European Grid Initiative**
- **European institutions use – covered by EOSC-Hub until end of 2020**

2018-10-02
Forecast System Manager: monitor and make changes to my forecasts – confidentiality

Outputs viewer (follow my demo)

Rate this service – your evaluation (and comments) are the path for our improvement
Forecast Systems Manager

Checking the status and the settings of my runs

Clone it – duplicate to change: b.c., parameters, outputs

Re-activate a deactivated system or eliminate it

Many states are possible:
- “step k” – in construction, we can continue later or just eliminate it
- Active – we can deactivate, clone it, check it,…
- Deactivated – we can activate it again or eliminate it

Return to C.Assist. to continue to setup my forecast
Warnings either through the interface or by email help the user to: 1) make sure he/she is doing the intended action 2) follow their deployments closely

Examples:
- When a system runs for the 1\textsuperscript{st} time
- When a status change is requested
Hands-on only if you tested OPENCoastS before (and already have simulations available)

If not, just follow my demo

Later, you can browse your results and/or you can check the recorded hands-on tutorial on youtube: https://www.youtube.com/watch?v=TRomoXBxdOc&feature=youtu.be

Viewer: 3 areas
Example: flow and time series in the Leixões Harbour
Example: elevation and time series in La Rochelle region

- Adding points on the fly
- Saving time series and model outputs in your PC

- We can see Time Series from several forecasts at the same time
3D baroclinic physics (SCHISM)
Improved viewer
Improved and extended NE Atlantic model for boundary conditions (PRISM2018)
Atmospheric forcings from METEO-FRANCE
Coupled wave-current model (SCHISM-WWM), including forcing by WW3
Perform 72 hour forecasts
Include more EMODnet stations
Open code at the end of the project (2021)

Stay tuned for new developments!
Send us your comments and suggestions (aoliveira@lnec.pt or through the rating service)
If you would like to participate in the development, send us a proposal

If your institution is outside Europe and you would like to use OPENCoastS beyond testing and evaluation, we will be glad to evaluate with you the possibility to link to other resources providers
Thank you for your attention!
Please fill-in the evaluation report and leave it on the box before you leave the room.
If you need a certificate for the course, request at aoliveira@lnec.pt.

The trainers would like to thank the IMUM 2018 organizers for providing the opportunity and all conditions for the OPENCoasts course.

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