

### Creating products and knowledge for the Mediterranean



ΔΗΜΟΚΡΙΤΕΙΟ ΠΑΝΕΠΙΣΤΗΜΙΟ ΘΡΑΚΗΣ ΟF THRACE

### **THE ODYSSEA PLATFORM**

2<sup>st</sup> ODYSSEA Summer School, Alonissos, 2-6/9/2019

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### **ODYSSEA** Platform



#### **ODYSSEA Platform integrates and processes marine data obtained from an expanded range of existing observation platforms**

- ✓ EMODnet
- ✓ Copernicus
- ✓ GEOSS
- ✓ GOOS
- ✓ ESFRI



Allows the end-user to search, retrieve, visualize and download data for each specific parameter within a certain time and space window for any region of the Mediterranean.

# User account management and

#### Link to the ODYSSEA Platform: <u>http://fs-141-0-</u> 206-225.fullsave.info/

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### **Platform Layout**





### Menu Bar





Main components of ODYSSEA Platform

- Catalogue: provides the user with a long list of datasets from various databases
- My Dashboards: end-users can create a personalised list of datasets

### Menu Bar – Time series data



#### **ODYSSEA**



### Menu Bar – Map data layers





### Chlorophyll



#### Chlorophyll

- Chlorophyll Historical -CMEMS – Satellite (L4) – Med 🕅 🛓
- Chlorophyll Historical and Today - CMEMS – Satellite (L4) - Med 🕅 🛓
- Chlorophyll Historical and Today - CMEMS - Satellite (L3) - Med 💓 🚣
- Chlorophyll Historical and Today - CMEMS – Model -Med 🛓

- ✓ CMEMS
- ✓ Level-3 and Level-4
- Mediterranean Sea, 1 km spatial resolution
- ✓ Level-4 product includes
  - time averaged (8-days and monthly) datasets
  - daily interpolated chlorophyll field with no data voids

### Chlorophyll



#### Chlorophyll – Historical and Today – CMEMS – L4 – Med

Available map layers (8 days, monthly)

- Chlorophyll concentration
- Standard deviation
- Number of observations

### Chlorophyll





### Legend





### Time series plot











Check the chlorophyll trend at any point of the South coastal area of Alonissos.

- <u>Add the map layer to your Dashboard.</u> Scroll down in the "Map Layer Manager" and click on "Add to dashboard / New Dashboard". Name it "**Patitiri – Map layer**".
- Add the chlorophyll time series at this location to your Dashboard. Click on "Add to dashboard/ New Dashboard" and name it "Patitiri – time series".
- When do you observe the peak chlorophyll concentration?
- Export the time series as CSV file.

### Currents





- ✓ Global Data Lower resolution
- ✓ Data for Mediterranean Sea Higher Resolution (~4 km)





### Currents – Historical, Today and Forecast – CMEMS – Model – Med

Available map layers (daily, hourly, monthly)

- Zonal current
- Meridional current
- Vector field composed of the u and v current
- Ocean mixed layer thickness
- Salinity
- Sea surface height
- Surface and bottom temperature

### Currents









Check the currents and the sea surface height for tomorrow near the port of Alonissos.

### Nutrients



#### Nutrients

Nutrients - Historical and Today - CMEMS – Model -Med 💓 🚣

Nutrients - Historical -CMEMS – Model - Med 🛤 ✓ CMEMS

- ✓ Historical and Today product
  - Physical-biogeochemical model
  - ~4 km resolution
  - Seven days of analysis/hindcast and ten days of forecast
- ✓ Historical product
  - ~7 km spatial resolution
  - Data from 1999-2017

### Nutrients



### Nutrients – Historical – CMEMS – Model – Med

Available map layers (monthly)

- Dissolved Oxygen (mmol/m<sup>3</sup>)
- Net Primary Production (mol/m<sup>3</sup>/s)
- Surface partial pressure of Carbon Dioxide (Pa)
- pH
- Nitrate (mmol/m<sup>3</sup>)
- Phosphate (mmol/m<sup>3</sup>)
- Phytoplankton (mol/m<sup>3</sup>)
- Chlorophyll (mg/m<sup>3</sup>)

### Nutrients - Nitrate





### Nutrients – Net Primary Production





### Salinity





- ✓ Global Data ~9km spatial resolution
- ✓ Data for Mediterranean Sea -CMEMS
  - Historical product ~7km horizontal grid resolution
  - Historical, today and Forecast product – coupled hydrodynamic - wave model, ~4km resolution

Salinity



# Salinity – Historical, Today and Forecast – HYCOM – Global

Available map layers (daily from 12/08/2019)

- Salinity (surface and bottom)
- Water Temperature (surface and bottom)

### Salinity









#### Check the concentration of dissolved oxygen and phosphate during 2016 at the point of your interest.

Check the salinity forecast for tomorrow.

### Waves





- ✓ Global Data
- Data for Mediterranean Sea ~4 km horizontal grid resolution
- ✓ Wave model





## Waves – Historical, Today and Forecast – CMEMS – Model – Med

Available map layers (hourly)

- Significant wave height (Hm0)
- Period (Tp)
- Mean wave direction (Mdir)

### Waves









Check the wave height and direction in the South coastline of Alonissos island the day after tomorrow.

### Weather





- ✓ Global Data
- ✓ Global Forecast System (GFS)
  - 27 km
  - 13 km horizontal resolution
- ✓ ERA-Interim
  - 80 km spatial resolution

### Weather



#### Weather- Historical, Today, Forecast – NOAA – Model – Glo

Available map layers (monthly, daily)

- Temperature at 2 m height
- u wind velocity at 10 m
- v wind velocity at 10 m
- Pressure at ground or water surface (Pa)
- Total cloud cover
- Precipitable water (kg/m<sup>2</sup>)
- Vectorized wind speed

### Weather









- Check the temperature and the wind speed for tomorrow at Patitiri.
- Check the wind speed a year ago at Patitiri.

Which product from the Weather list are you using?

### My Dashboard



- Open "My Dashboards". You have two Dashboards: "Patitiri Map layer" and "Patitiri – Time series".
- 2. Combine the two dashboards into a new one:
  - a. Under "My Dashboards" add New Dashboard. This will create an empty dashboard. Name it "Alonissos– Chlorophyll".
  - b. Open the "Patitiri Time series" dashboard, scroll down to "Add to dashboard" and choose the newly created "Alonissos– Chl" dashboard.
  - c. Open the "Patitiri Map layer" dashboard, make sure the "Map Layer Manager" is open, and within the "Map Layer Manager" scroll down to "Add to dashboard" and choose the newly created "Alonissos– Chl" dashboard.
  - d. The two Panels are now visible in the "Alonissos– Chl" dashboard.
  - e. If you wish delete the two original dashboards from the "My Dashboards" menu.

### My Dashboard



- 3. Change the dashboard panels:
  - a. Go to "Alonissos– Chl" dashboard.
  - b. Open the chlorophyll map panel, which will be called as the date of creation, and click on Edit.
  - c. Change the "Width" to "1/2 Width". If the map is distorted, you might have to refresh the page. You can hide the "Map Layer Manager" so that it does not cover the map.
  - d. Change the title to "Chlorophyll map 5 September 2019".
  - e. Now edit the time series panel with the same steps and make sure that is " $\frac{1}{2}$  Width" and change the title to "Patitiri Time series -2019".
  - f. Now you have the dashboard with two customized panels.

### My Dashboard



- 4. Share / Embed the dashboard into websites:
  - a. Next to the dashboard title "Alonissos– Chl" click on Embed icon (next to Edit icon).
  - b. Click on "Share & show embed". An html code will be generated which can be used to embed the maps into your own website of social media.
  - c. Try the generated embed code online:
    - i. Copy the generated embed code.
    - ii. Open <u>http://www.csgnetwork.com/htmlcodetest.html</u> or similar html code testers.
    - iii. Copy the embed code and click "Test the HTML Code".
    - iv. Your dashboard will be visible in a web browser window.



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Download



- Go to the Temperature data layer. Check the "Sea Surface Temperature – Historical and Today – CMEMS – Satellite (L3) – Med".
- 2. Click on the "Download" tab:
  - a. Note that the download information of data product is visible.
- 3. Click on the "Download" button. Options for sub setting will appear. (Comment: datasets by default cover the full Mediterranean basin with all timesteps, all depth layers (if the dataset is three dimensional), and all parameters. You probably don't need all this information. The sub setting tool helps you to select the relevant information to download.



- 4. Sub setting:
  - a. Select the time range: set to "01-07-2019 00:00:00" to "02-07-2019 00:00:00"
  - b. Choose depth (if available)
  - c. Choose region. Either type the corner coordinates or draw a box for data download:
    - i. Zoom to the Thracian Sea.
    - ii. Click on the top left corner, and bottom right corner. The coordinates will be filled in automatically.
  - d. Select Variables: Choose "Sea Surface Temperature".
- 5. Click on "Download". A netCDF file will be downloaded. Please observe the messages while downloading.
- 6. NetCDF files can be opened with a range of free tools and programming languages such as NetCDF4Excel.





 In 4 teams, develop a business case, and suggest a set of services and products for a marine user.

### Team 1 - Aquaculture



- A fish farm is located at the following location: 40.321092° N, 24.217894° E
- Use data from the ODYSSEA Platform and create your personal Dashboard.
- Use all on-line resources available to you (e.g. EMODNET, Satellite images etc.).
- At the end of the day you will deliver a presentation of up to 10 minutes to deliver your use case and solution.
- Go as far as possible with developing the services you will provide.

### Team 2 – Mussel Farm



- A mussel farm is located at the following location: 40.842020° N, 24.661765° E
- Use data from the ODYSSEA Platform and create your personal Dashboard.
- Use all on-line resources available to you (e.g. EMODNET, Satellite images etc.).
- At the end of the day you will deliver a presentation of up to 10 minutes to deliver your use case and solution.
- Go as far as possible with developing the services you will provide.





- A port is located at the following location: 40.823090° N, 25.883857° E
- Use data from the ODYSSEA Platform and create your personal Dashboard.
- Use all on-line resources available to you (e.g. EMODNET, Satellite images etc.).
- At the end of the day you will deliver a presentation of up to 10 minutes to deliver your use case and solution.
- Go as far as possible with developing the services you will provide.

### Team 4 – Oil and Gas Terminal



An oil and gas terminal is located at the following location:

40.735074° N, 25.202422° E

- Use data from the ODYSSEA Platform and create your personal Dashboard.
- Use all on-line resources available to you (e.g. EMODNET, Satellite images etc.).
- At the end of the day you will deliver a presentation of up to 10 minutes to deliver your use case and solution.
- Go as far as possible with developing the services you will provide.



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# THANK-YOU

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