

## Cyclone Monitoring Service with Sentinel-1

EODA web GIS user guide <u>https://eoda.cls.fr/cyms</u>

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- EODA in a nutshell
- Main functionalities
- Some study cases
  - Fani in 2019
  - Idai in 2019
  - Dumazile in 2018
- <u>FAQ</u>





## **EODA in a nutshell**





Acces

## Earth Observation Data Access (EODA) by CLS

- Visualization tool to check high resolution SAR data and retrieved wind fields
- •Download capabilities for generated wind field products
- Secured or non-secured dissemination tool to showcase demonstration cases for potential end users.
- Integration/visualization of ancillary data provided by end-users or of interest to assess SAR-based measurements.





### Functionalities

Easy and secured visualization of radar data

WebGIS available without any installation procedure, anywhere/anytime by internet

Fast and on-the-fly display of products

OGC compliant WMS server to generate fast display of products without any intermediate gridding process

Integration/visualization of ancillary data provided by end-users, and of interest to assess SAR-based measurements.

Many metocean data from altimeter/scatterometer/radiometer space missions or model (ECMWF, NCEP, WW3) Dedicated Human–machine Interaction (HMI) and generic functionalities enabling the most effective use of multi-layer display









## **Main functionalities**





## 2 Processing chains







### Filter SAR images by criteria

Query data by Area of Interest



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Filter data by specific SAR criteria (plateform, mode, product type...)









### **Display SAR-based TC wind**



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## Display cross-pol SAR channel

By default, co-pol channel is display, cross-pol channel can be displayed



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### Add contextual static information















#### Available ancillary data

- Wind field measurements from scatterometers (ASCAT-A et -B)
- Wind field measurements from radiometers (eg: AMSR-2, SMAP)
- Wind field from SSMIS radiometers: f16-17-18 + rain rate, cloud, vapor

--> data colocated within a +/- 3h limit from SAR image

- Surface wind field from Atmospheric model (ECMWF and NCEP)
- WW3 Wave model (Hs, integral parameters for wave systems...)
- --> closest data colocated within a +/- 3h limit from SAR image
- Tropical Cyclone best-track





## Some study cases Fani in 2019



# Study case: Fani in 2019 (2019-05-02 T 00H22)

Roughness maps as "Nice display": Co- and cross-polarization channels available



# Study case: Fani in 2019 (2019-05-02 T 00H22)

### Surface wind field estimated from the dual-pol SAR measurements





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Ifremer CLS



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## Study case: Fani in 2019 (2019-05-03 T 00H15)

Roughness maps as "Nice display": Co- and cross-polarization channels available



# Study case: Fani in 2019 (2019-05-03 T 00H15)

### Surface wind field estimated from the dual-pol SAR measurements





## Some study cases Idai in 2019





## Study case: Idai in 2019





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### Surface wind field estimated from the dual-pol SAR measurements



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### Add colocated wind speed

Add collocated SMAP wind field

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### SAR-based wind direction

Independent wind direction from SAR image: analysis using co-pol or crosspol channel available

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#### Colocated rain observation

**Colocated GPMIMERG rain product** 

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## Some study cases Dumazile in 2018





#### Strong rain spashes observed off the hurricane path



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### Strong rain spashes observed off the hurricane path, collocated with GPMIMERG



CLS



#### SAR-based heterogeneity mask











Selection of SAR images

How can I select a specific tropical cyclone?

How can I select a specific SAR product?

How can I display a SAR frame or a section of orbit?

Where can I see some characteristics of the SAR image?

How can I filter a set of SAR images? Depending on spatio-temporal criteria for example

How can I download a L2 wind product ?





Using the GUI as WebGIS

How can I add specific layers?

How can I change the order of layers for vizualisation?

Can I change the layer opacity?

Can I change the colorbar?





Display SAR-based wind field

Can I see different roughness in the case of dual-pol SAR data?

How can I see SAR-retrieved wind field?

Do you provide other information from SAR image? - Yes, see <u>here</u> or <u>there</u>

Can I see collocated information from models or observations?

- Yes, a set of data are available. See <u>here</u> the list, or the <u>study cases</u> illustrating the synergies between SAR observation and other available model of spaceborne observations.
- You do not find your favorite data, please contact us at <u>contact@esa-cyms.org</u>

