

## Satellite sensor synergy for retrieval of surface current: The GlobCurrent Approach

An ESA funded project under DUE up to December 2016

www.globcurrent.org

The 36th International Symposium on Remote Sensing of Environment 11-15 May 2015, Berlin, Germany



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### **Content of Presentation**

- Background
- Objectives
- Products and Preliminary Results
- Summary and Outlook



### Background available document - <u>www.globcurrent.org</u>

ESA Data User Element (DUE) GlobCurrent User Requirement Document (URD)



### Background

#### Global surface current features from a 1/10<sup>th</sup> degree ocean model (courtesy R. Ferrari).



#### **CAN THIS BE ADEQUATELY VALIDATED??**



#### Partly similar structure in the monthly mean SST and SSH gradients





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# Objective

The overall objective is to advance the quantitative estimation of ocean surface currents from satellite sensor synergy and demonstrate impact in user led scientific, operational and commercial applications.

In turn, it is expected that the uptake of satellite measurements will significantly increase.







Ocean Colour

Gravity	
Argo	
PMW	
R	
Surface Drifters	
RA	
SCAL	
SAR	
HF Radar	
Spectrometer	
Sun Glint	

Geoid	
Mixed Layer Depth	
	Surface Geo Current
333	$\checkmark =$
SST	Ekman Current
SSH	$\times$
	Surface Current Boundaries
Surface Velocity	
Wind	Surface vorticity
Waves	Surface Tracer Velocity
$\rightarrow \rightarrow \rightarrow$	Range Doppler Velocity
Roughness Anomalies	Tidal Current
	Stokes Drift
Ocean Colour	Inertial Current





# GlobCurrent product

The first release of GlobCurrent product interpolated to a 10 km grid at 3 hour intervals covering 3-years from 2010 to 2012 include:

- Surface geostrophic current (Alt, GOCE, GRACE)
- Surface and 15 m Ekman current (Scatterometer, Argo)
- Stokes drift (Wave model)

Available at <u>www.globcurrent.org</u>



### **Global Product and Tentative validation sites**



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Rio et al. (2014)







Diurnal changes and motion that may be quantified South East of Japan (within coverage of GOCI)

- 5 GOCI images (350 x 400 km)
- 1 hour separation
- Chlorophyll product
- Will soon be joined with GlobCurrent Geo+ Ekman Current

(PML contribution)





The following (near) satellite based global data product

- Surface geostrophic current
- Surface and 15 m Ekman current
- Stokes drift
- collocated to a 10 km grid at a 3 hour temporal resolution can now be downloaded from <a href="https://www.globcurrent.org/products-data">www.globcurrent.org/products-data</a>.

Towards the end of the year the global data base will be extended to cover 2002-2015

It will also be combined with high resolution data from past and recent/new Sentinel mission data for selected intense current regimes

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Outlook

- A new framework for satellite sensor synergy is now emerging
- The goal is to ensure simple and easy access and use of the framework
- A User Consultation Meeting will take place at IFREMER, Brest 4-6 November following an ESA science conference on future current mission the same place from 2-3 November.

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