



KU LEUVEN

Proba4Coast

COASTAL TURBIDITY MONITORING WITH PROBA-V

THE PROBA4COAST PROJECT

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A PROBA-V PROJECT

- Proba-V mission: small satellite for global vegetation monitoring
- Daily coverage at 300m, 5-daily at 100m
- 4 spectral bands Blue (438-486 nm), Red (615-696 nm), Near IR (772-914 nm), SWIR (1564-1634 nm)



the Small Satellite for
Global Vegetation Monitoring

NAmerica_USA_Yukon



Louisiana_Mississippi



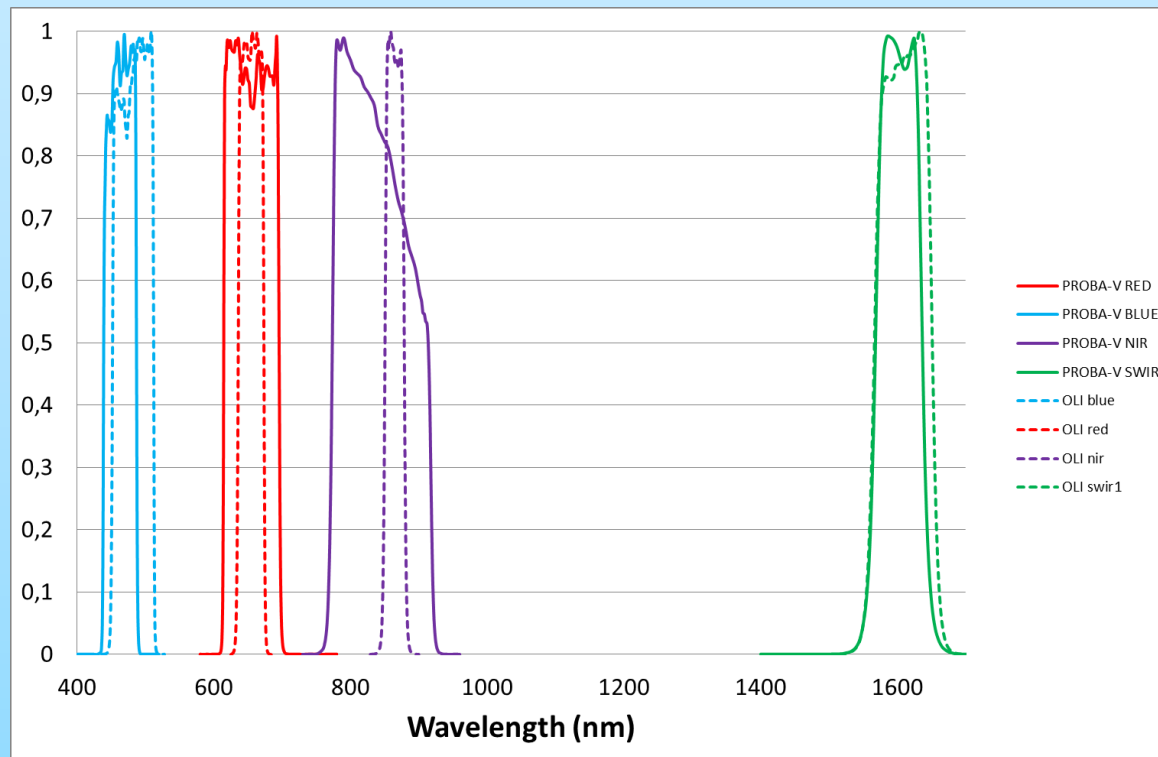
Asia_Russia_Volga

A satellite image showing the Volga River delta in the Caspian Sea. The river is depicted as a prominent red and yellow line flowing from the top left towards the center. The surrounding land is a mix of brown and yellow, indicating arid or semi-arid conditions. The Caspian Sea is visible on the right side, with a gradient from light blue near the coast to dark blue further out. The image highlights the extensive reach of the river's influence into the sea.

- records data up to at least 100 km away from the coastlines!
- image quality ! intercalibration against MERIS and Landsat-8 showed differences well below 3 %

-> Proba-V for coastal turbidity monitoring?

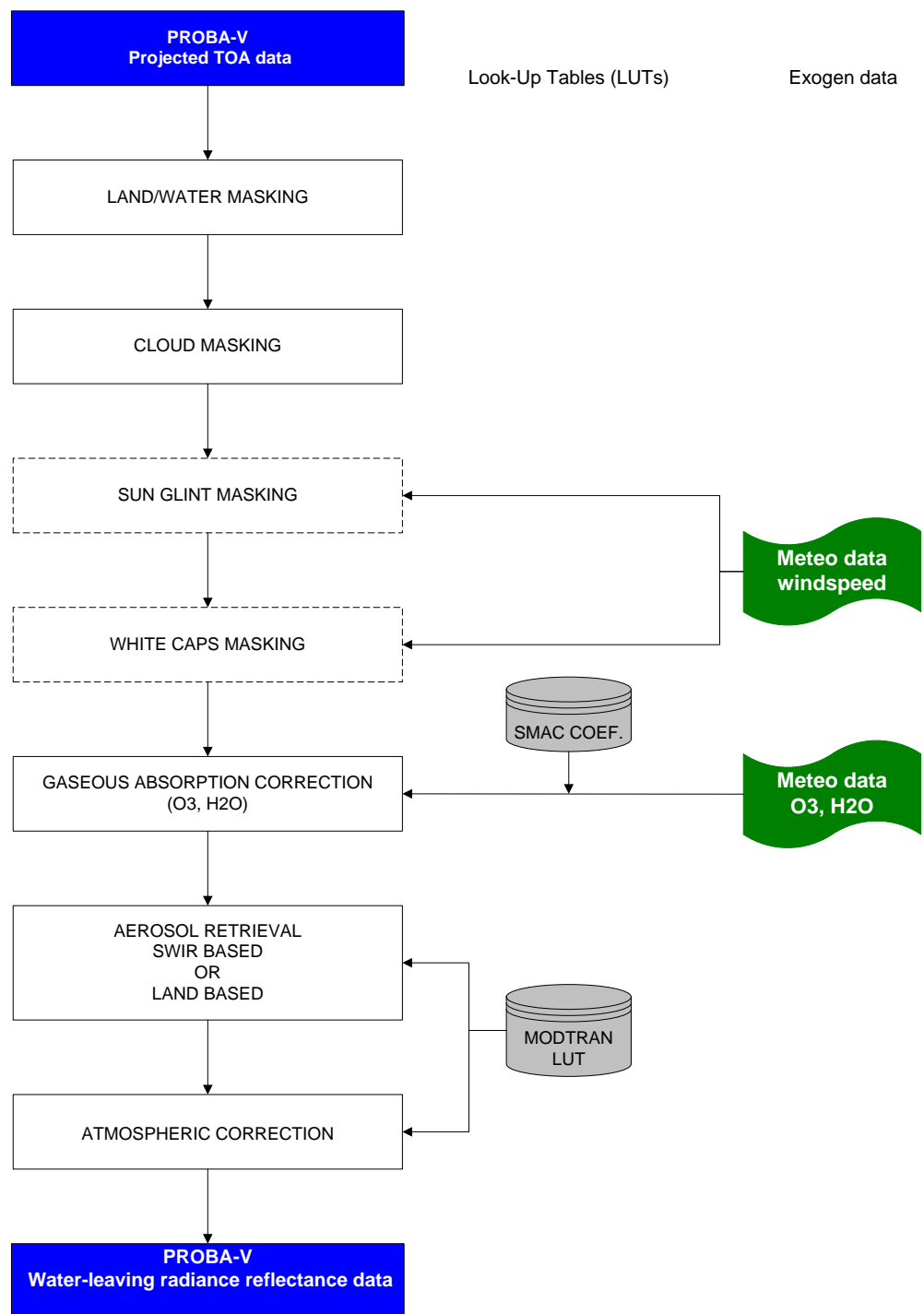
Are the Proba-V bands suited? What about the SNR?



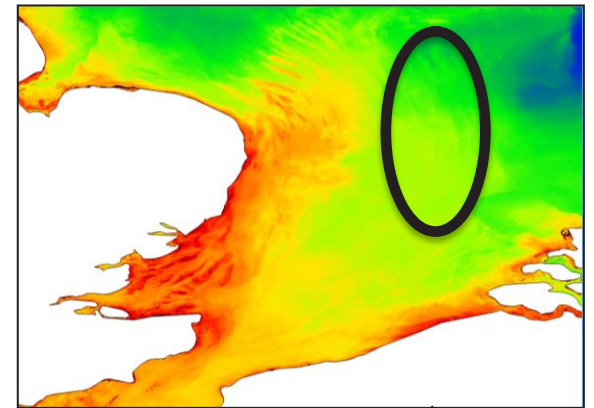
Sensitivity analysis -> Analyze the effects of the Proba-V bandwidth, spectral response shape and SNR on TSM/T retrieval

Product type	Band	Detection limit (SeaSWIR data)
reflectance	red	0,0015
	NiR	0,0022
TSM (Nechad 2010) mg.l-1	Red (non-Switch)	0,47
	NiR(non-Switch)	4

Is the atmospheric correction suited?

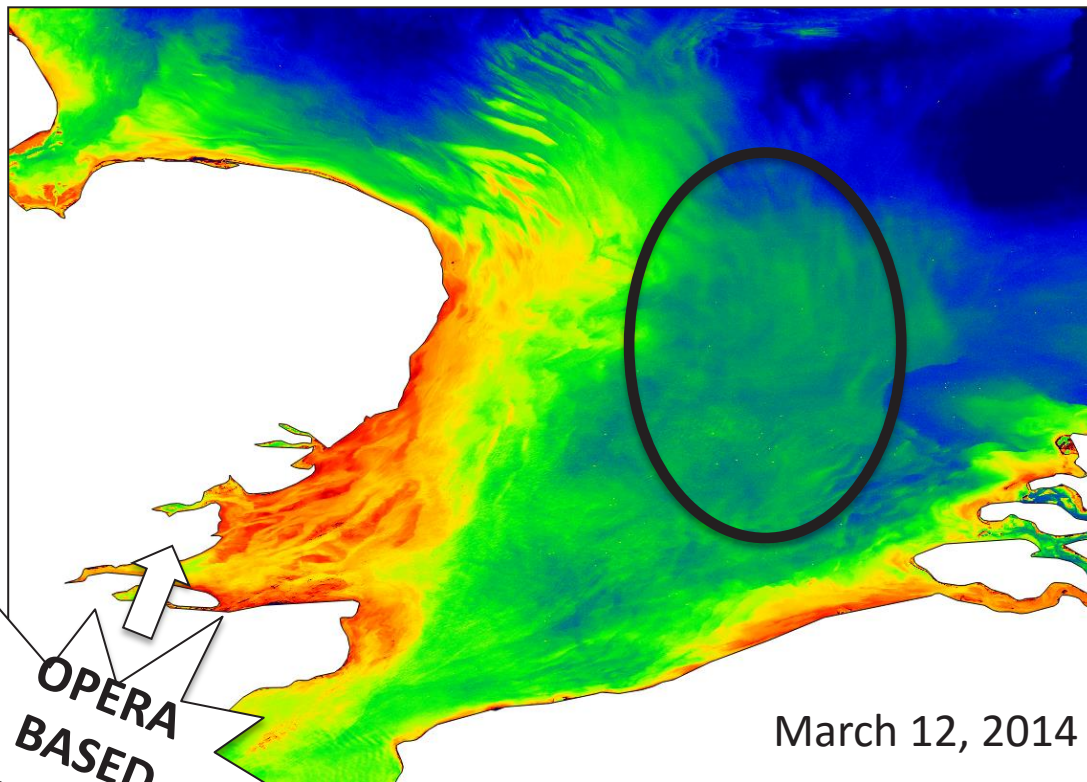
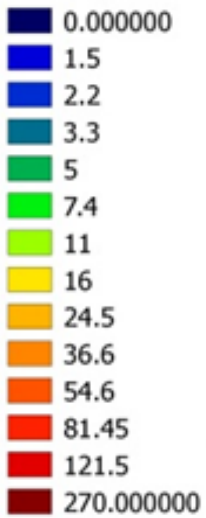


$$T = \frac{A_T^\rho \cdot \rho_w(\lambda)}{\left(1 - \frac{\rho_w(\lambda)}{C_T^\rho}\right)}$$



↑
**SMAC
 BASED
 Turbidity**

Turbidity (FNU)



↑
**OPERA
 BASED
 Turbidity**

March 12, 2014

Does this provide the full picture?

Sentinel-3

SEVIRI

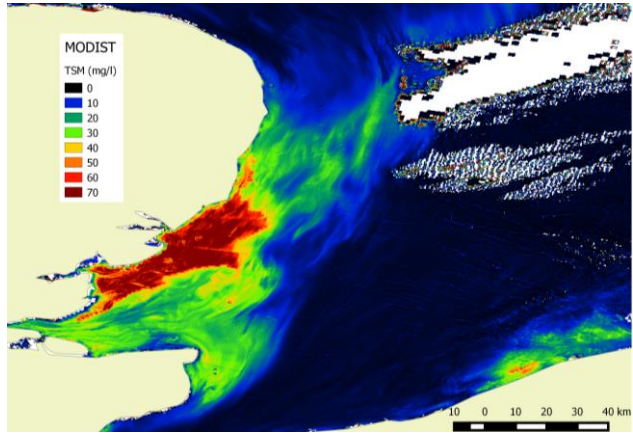
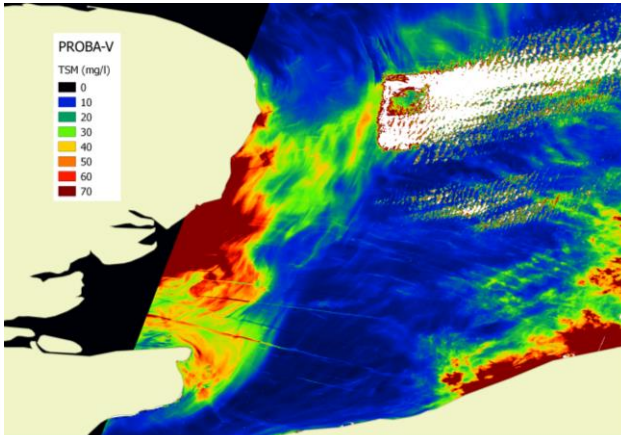
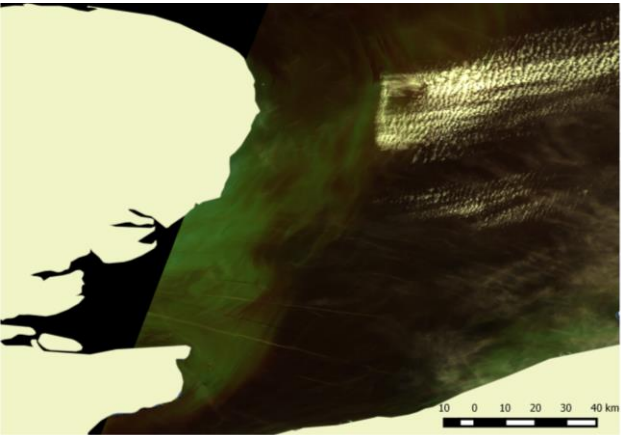
MODIS

Proba-V

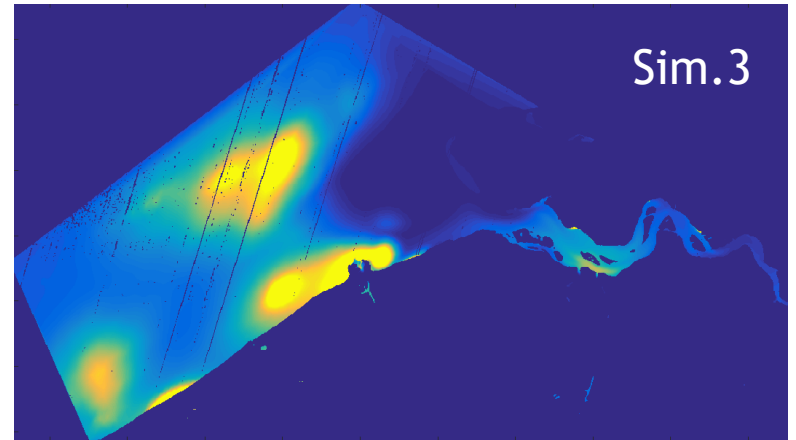
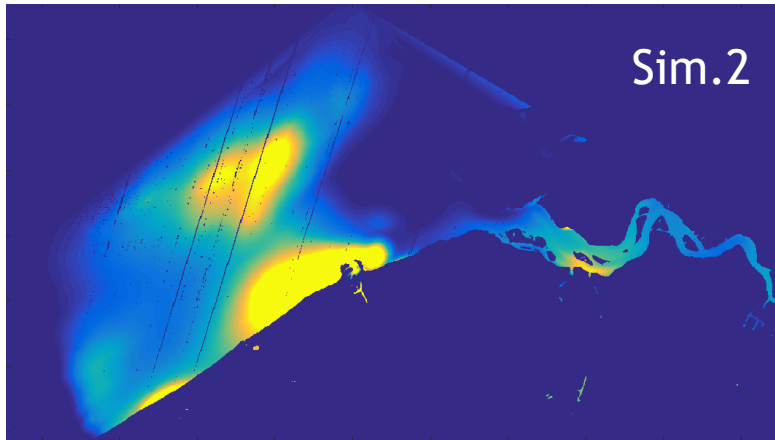
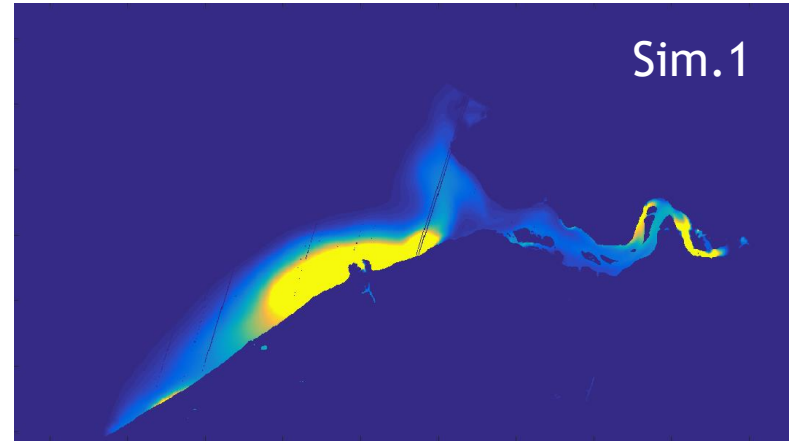
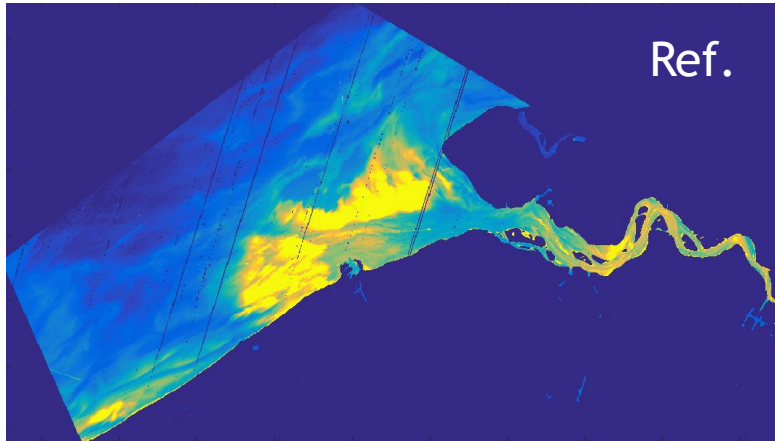
Landsat



Sentinel-2



TELEMAC System, The Belgian Coast Model



More information? els.knaeps@vito.be

THANK YOU

