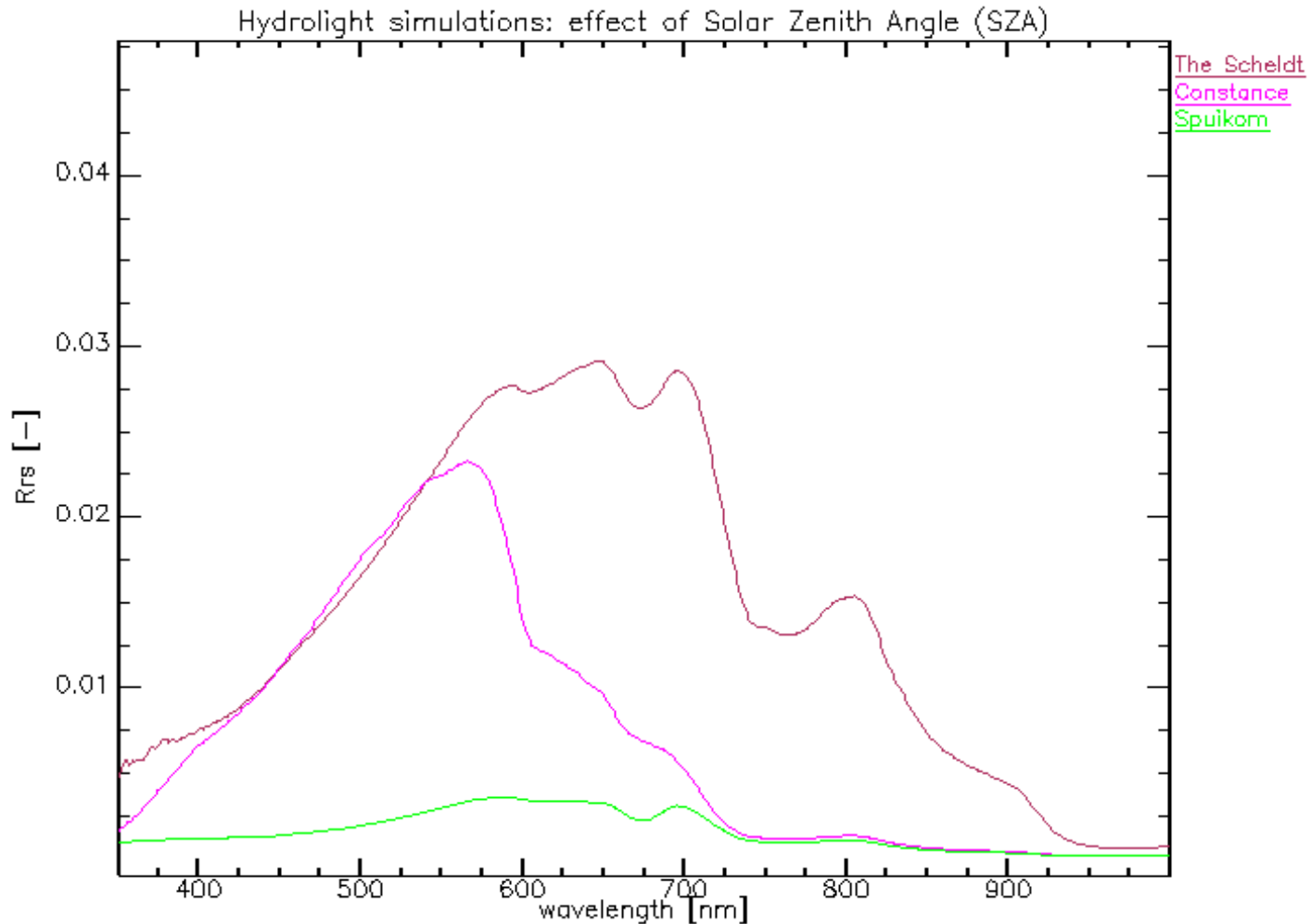


REMOTE SENSING OF TURBID WATERS. A CLOSER LOOK AT THE SWIR

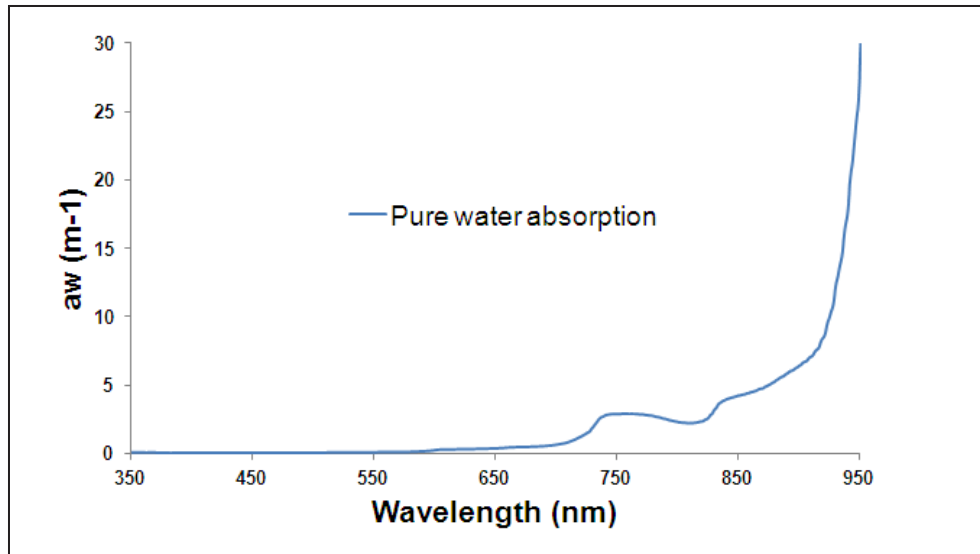
Els Knaeps (VITO, Belgium), Kevin Ruddick (MUMM, Belgium), Ana Dogliotti (IAFE, Argentina), David Doxaran (LOV, France), Sindy Sterckx (VITO, Belgium)

A TYPICAL WATER SPECTRUM



The SWIR black pixel assumption

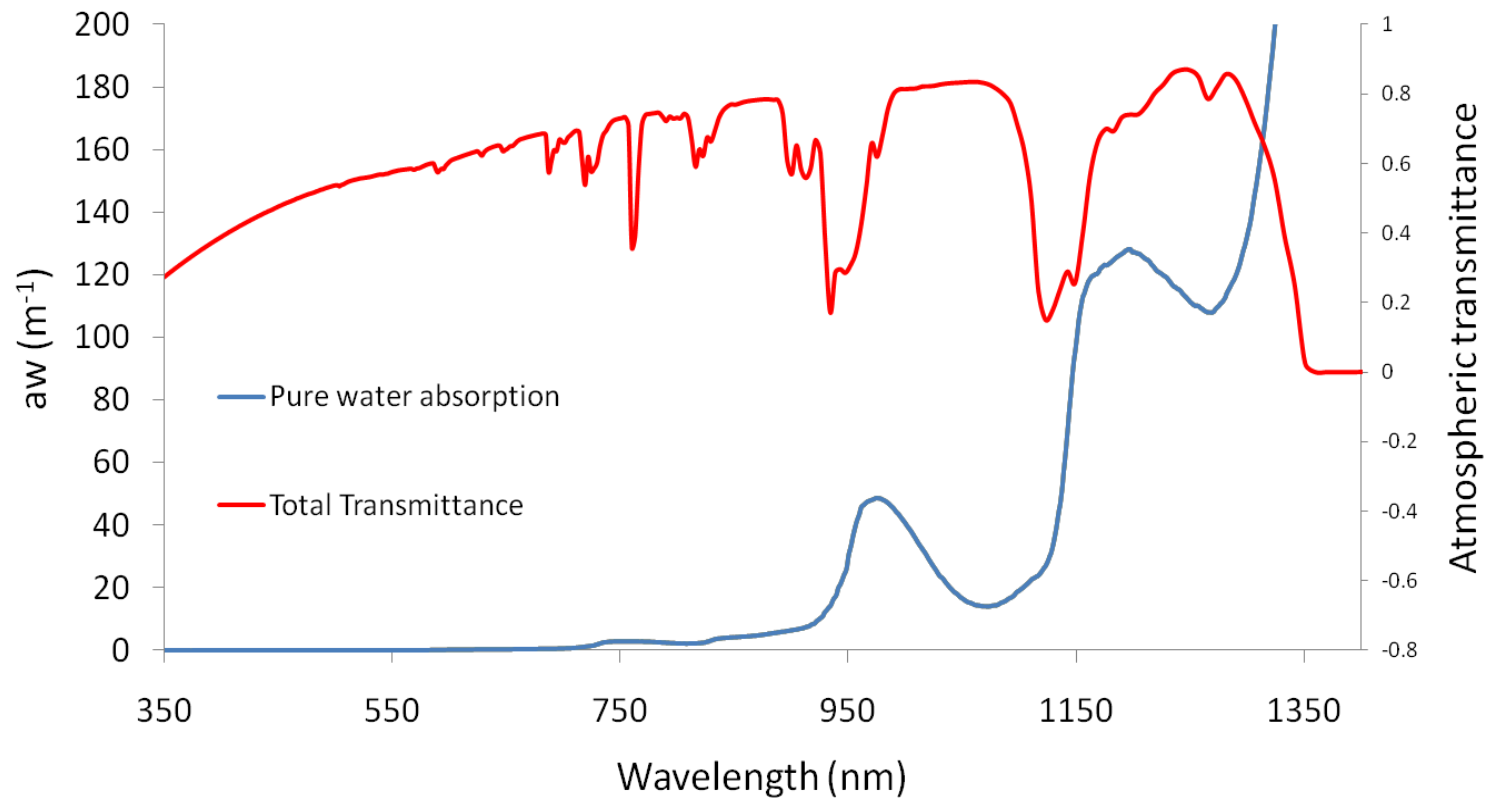
- Pure water absorption coefficient (Pope & Fry, 1997; Kou *et al.*, 1993)



- SWIR based atmospheric correction for MODIS (Wang and Shi, 2007)

Remote sensing of turbid waters in the Short Wave Infrared (SWIR: 1-3 μm)

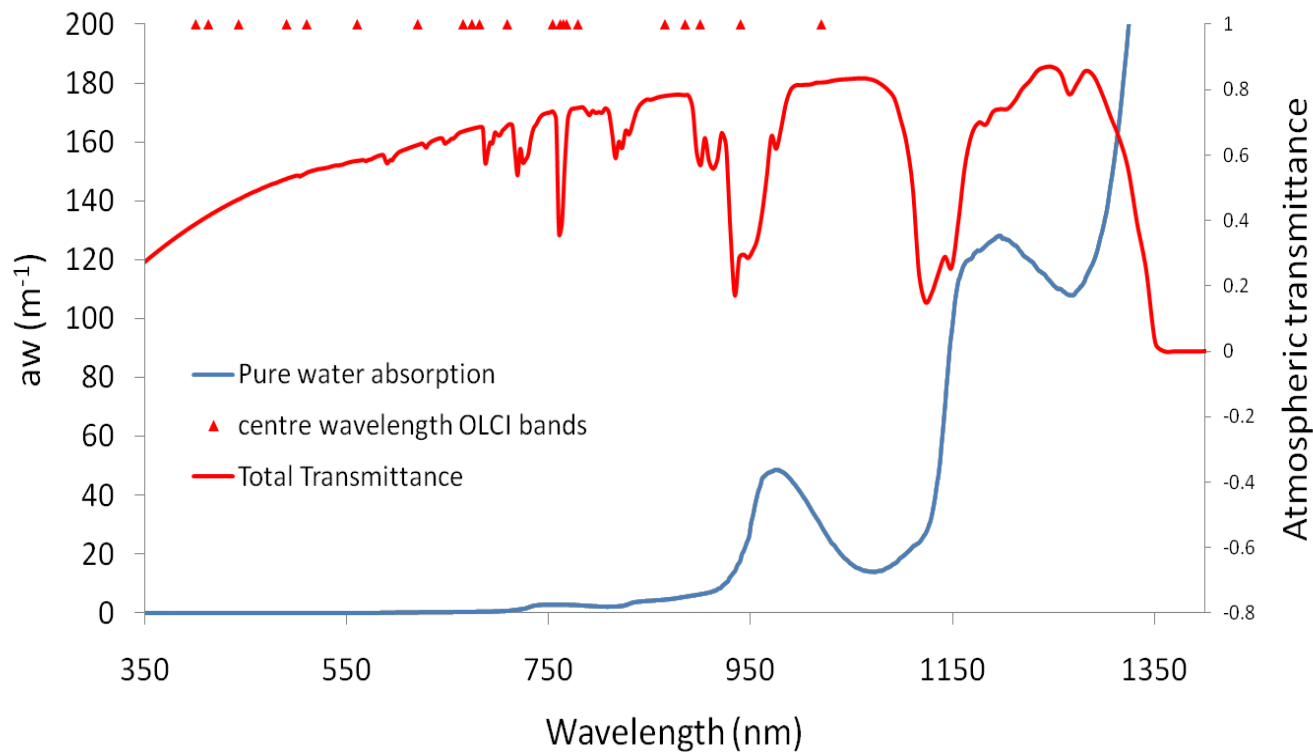
➤ Pure water absorption coefficient (Pope & Fry, 1997; Kou *et al.*, 1993)



Remote sensing of turbid waters in the Short Wave Infrared (SWIR: 1-3 μm)

SWIR potentially interesting (atmospheric transmittance; OLCI, APEX)

MERIS	OLCI
412.5	400
442.5	412.5
510	442.5
560	510
620	560
665	620
681.25	665
708.75	673.75
753.75	681.25
761.25	708.75
778.75	753.75
865	761.25
885	764.375
900	767.5
	778.75
	865
	885
	900
	940
	1020



Remote sensing of turbid waters **in the Short Wave Infrared (SWIR: 1-3 μ m)**

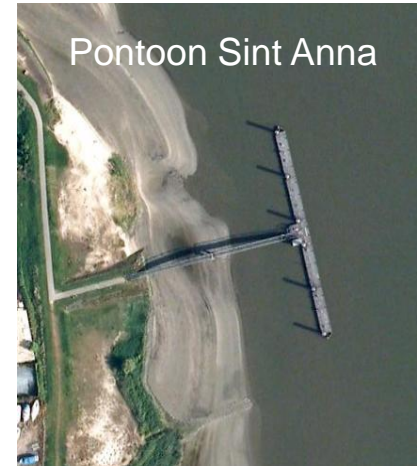
SWIR potentially interesting !

BUT

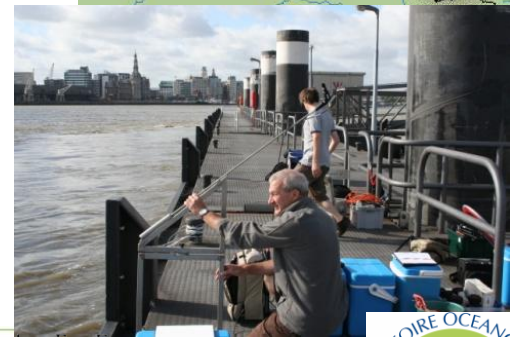
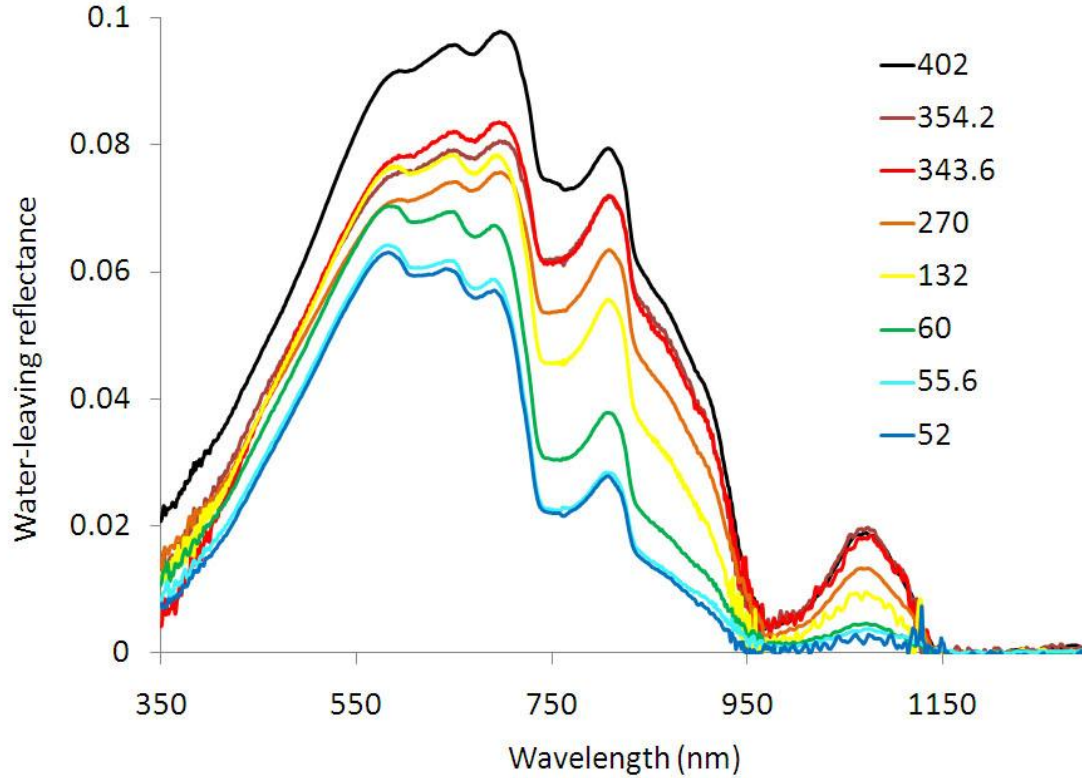
- only little knowledge available
- instrumentation lacking
 - to measure IOPS in the SWIR
 - to measure water reflectance in the SWIR

TRIGGER FOR THE PROJECT (Belcolour – MICAS heritage)

Knaeps, E., Raymaekers, D., Sterckx, S, Ruddick, K., Dogliotti, A.I.. 2012. In situ evidence of non-zero reflectance in the OLCI 1020nm band for a turbid estuary, *Remote Sensing of Environment, Sentinel special issue*, 112



Pure water absorption coefficient (Pope & Fry, 1997; Kou et al. 1993)



Scheldt (Belgium)

up to 400 mg l⁻¹

Yangtze (China)

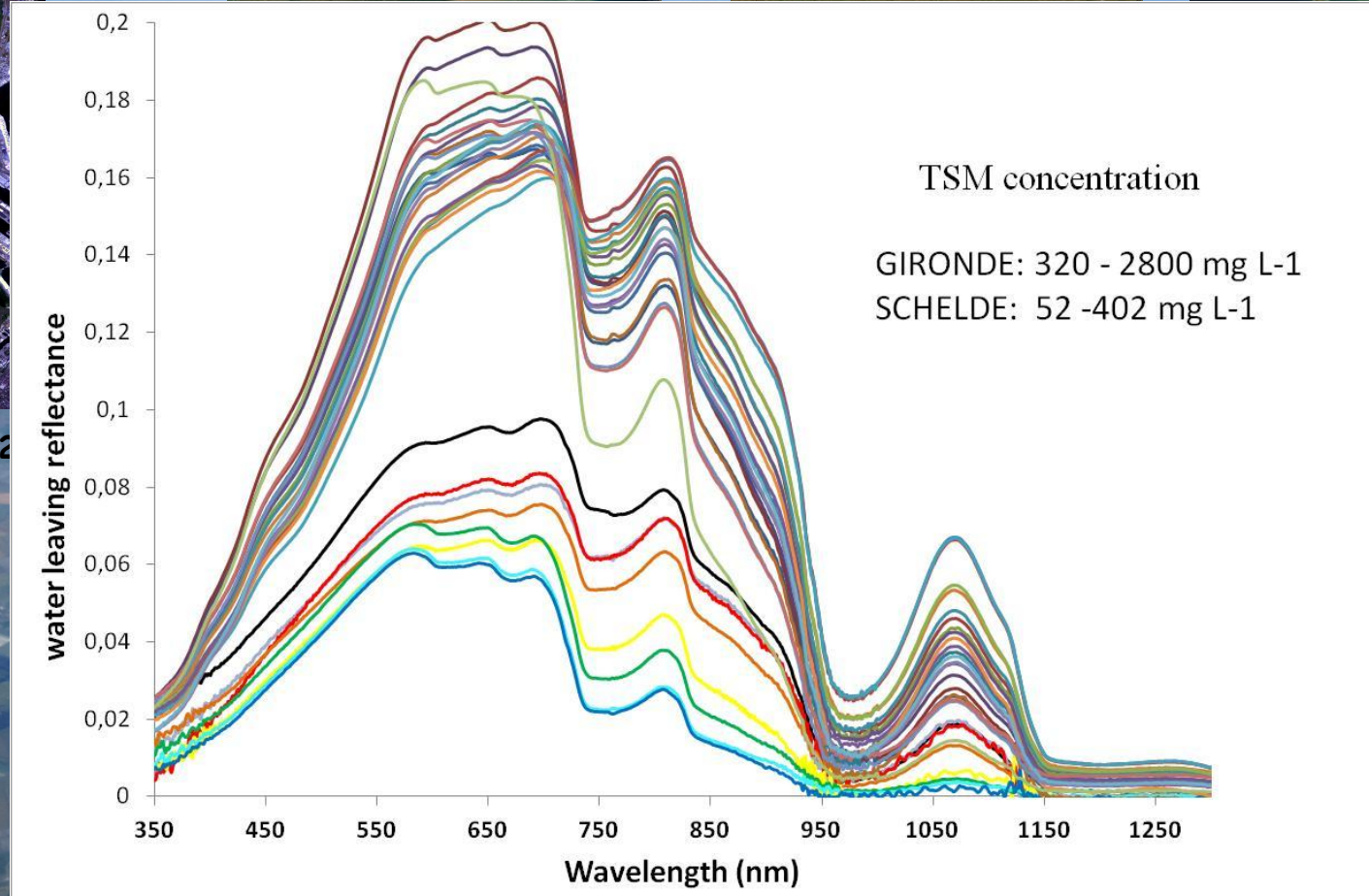
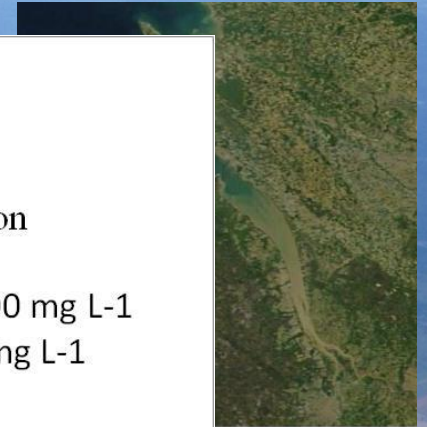
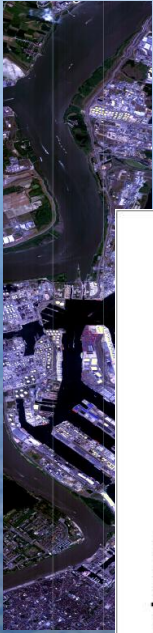
up to several g l⁻¹

La Plata (Argentina)

up to 400 mg l⁻¹

Gironde (France)

up to several g l⁻¹

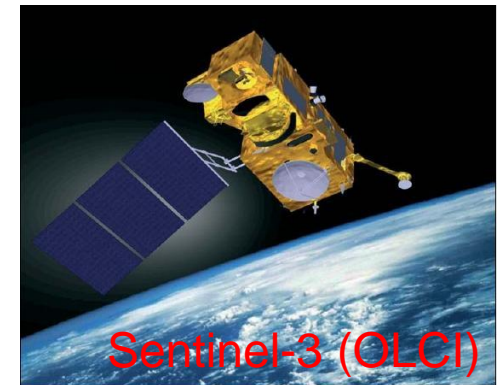
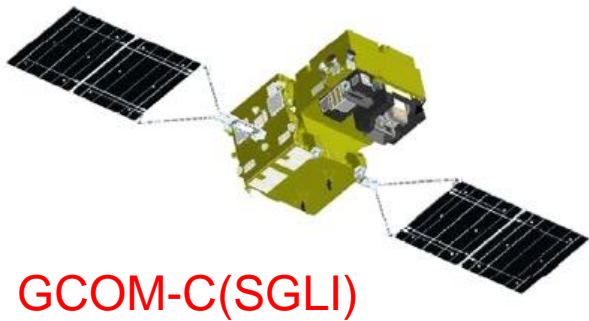


APEX 2

at 2000

SEASWIR - MAIN OBJECTIVES

- » Determine the variability of marine reflectance in SWIR
- » Analyze the effects misapplication of the SWIR black pixel assumption
- » Provide information for exploitation of SWIR bands on the next generation of ocean colour sensors



SEASWIR

Remote sensing of turbid waters in the Short Wave Infrared
(SWIR: 1-3 μ m)

Spin-off project

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