Water turbidity retrieval from a geostationary meteorological satellite

Quinten Vanhellemont
RBINS/DO Nature

Presented at IOCS 16 June 2015

http://odnature.naturalsciences.be/remsem/
SEVIRI is a geostationary meteo sensor – not designed for water!
“full disk” image every 15’, GSD 3x3 km at nadir, ~3x6km at 50°N
two broad bands: VIS06 = 570 – 710 nm, VIS08 = 740 – 880 nm
southern North Sea
Bay of Biscay
German Bight
Gironde
Rhône
Po
Bay of Biscay 29 April 2013
coccolithophore bloom

SEVIRI/MSG3 (mean)  MODIS/Aqua
coccolithophore bloom

Gironde plume

2013-04-25

2008-02-11

2013-04-20

center

edge

low tide

high tide
Marine BRDF at 52°N 2°E for an observer at 0°N 0°E

Sun path

HL5 simulated reflectance for different mineral particle concentrations
Marine BRDF at 52°N 2°E for an observer at 0°N 0°E

Sun sensor geometry at 52°N, 2°E (2013/06/20)

Sun path

Reflectance normalized to:
- nadir viewing
- zenith sun
Reflectance normalized to:

Marine BRDF at 30°N 30°W for an observer at 0°N 0°E

Sun path

Reflectance normalized to:
  nadir viewing
  zenith sun