Geostationary ocean colour radiometery

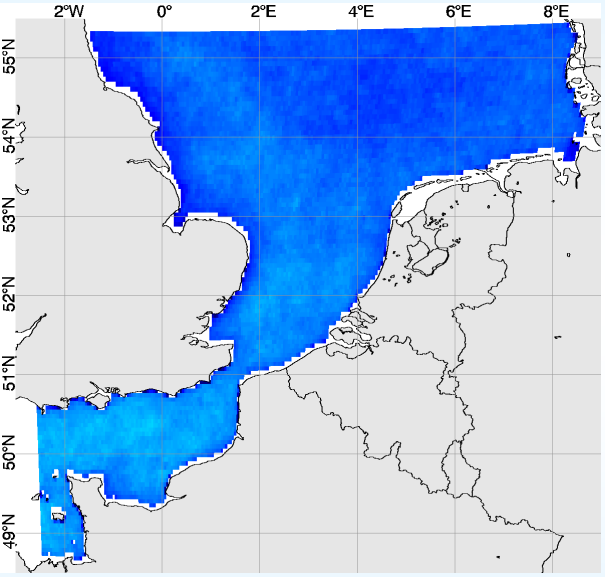
Discussion Session

Discussion Questions

- GEO products and applications:
  - What new products can be derived from GEO OC data?
  - What new processes can we describe
  - Do we have new users? Entirely new applications?
- GEO data processing techniques:
  - What are the new challenges for GEO data processing?
  - New opportunities? Multitemporal data processing?
  - What is the maximum air mass for atmospheric correction? 5? 8?
  - Is high air mass atmospheric correction best by direct ("Gordon-Wang") or indirect (e.g. neural network) methods?
  - Can we correct for air-sea interface at high sun/viewing zenith?
  - Can we correct for atmospheric "spherical shell" (earth curvature)?
- GEO new mission and synergy:
  - How should GEO and LEO be designed to optimise synergy?
  - Do we need a global GEO constellation? (Is it affordable?)

The advantages of GEO observations (North Sea)
a) scattered clouds, b) tidal variability)

#days with
12:30 image OK



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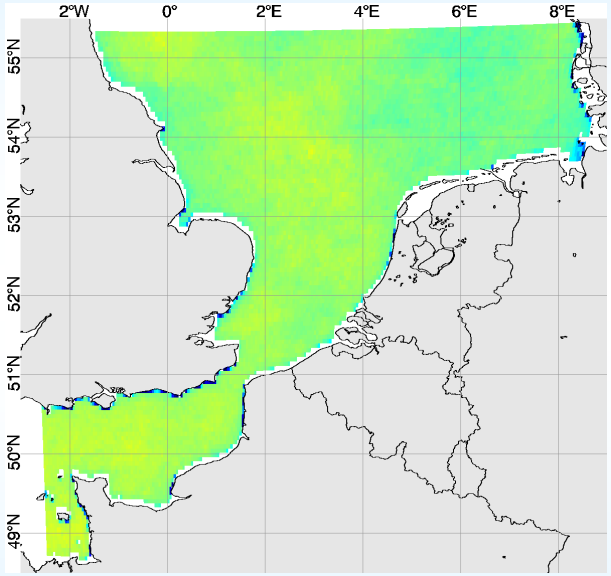

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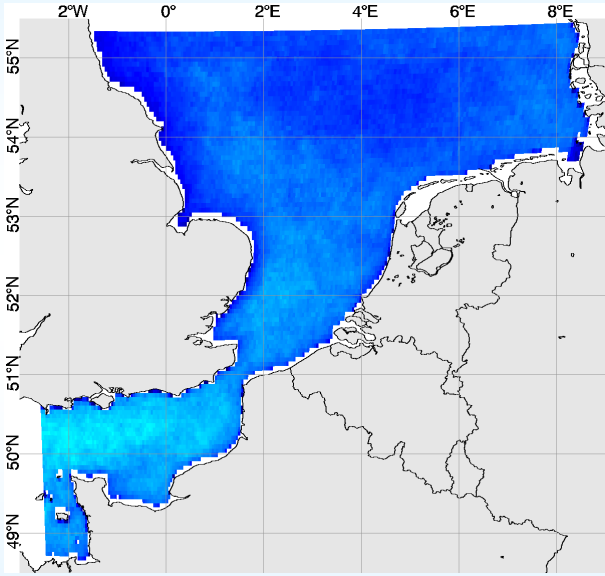
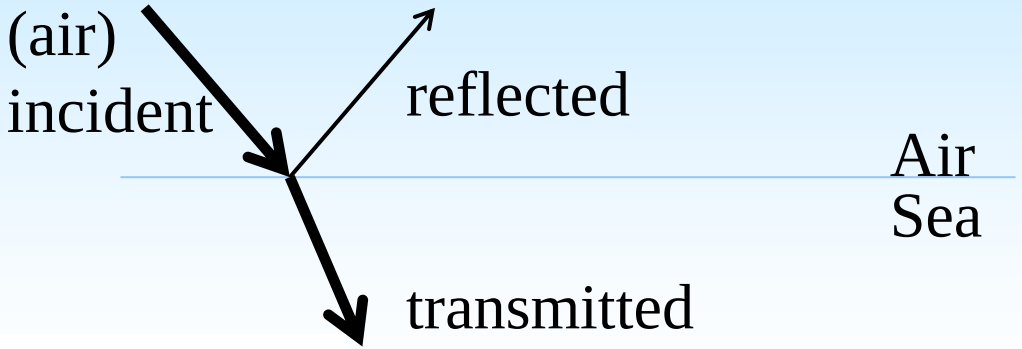


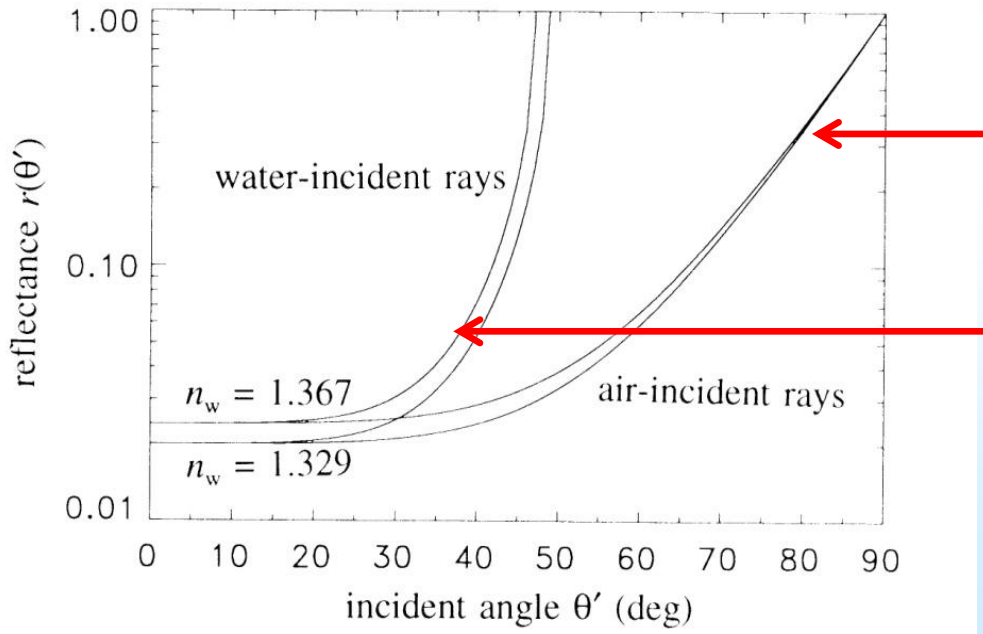
#days in 2008

Processing: Q. Vanhellemont

Extra GEO atm. Corr. Issues at air-sea interface

- Fresnel reflectance, Rf, of the sea surface!
- Rf=reflected/incident





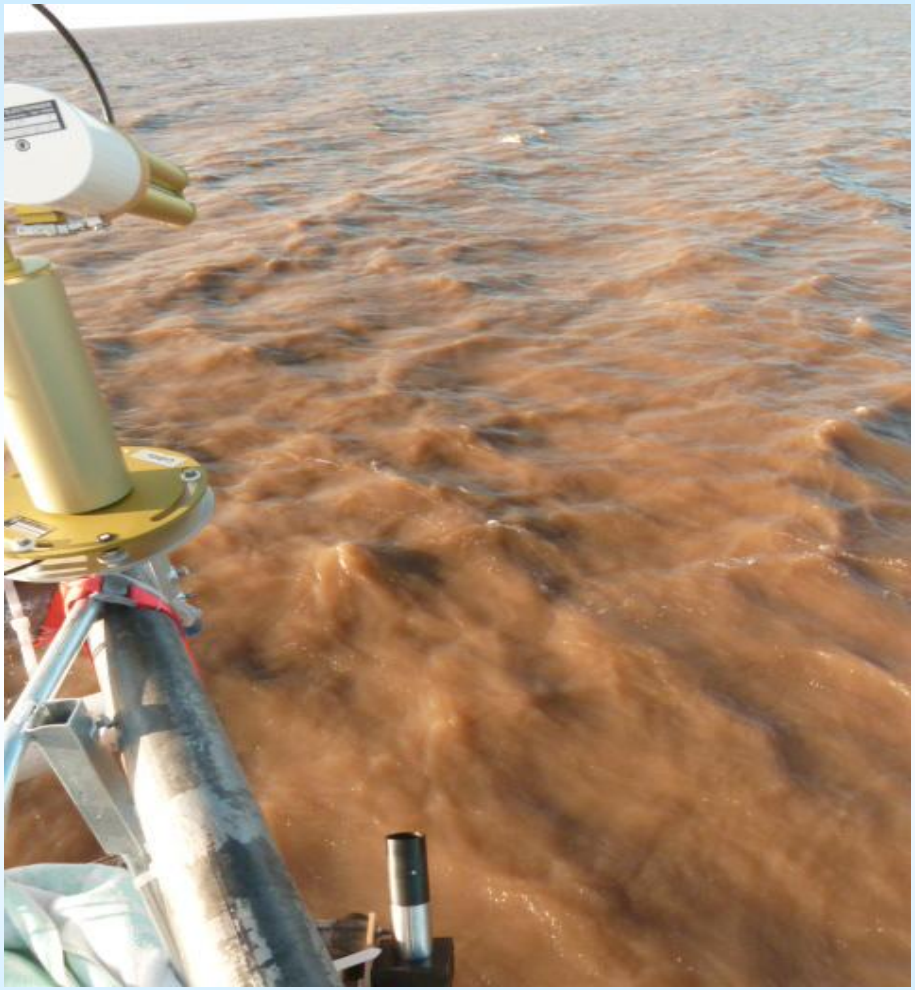
Strong sky/sun reflection at high VZA/SZA

Weaker water-leaving radiance for high VZA (marine BRDF)

[Mobley, 1994]

Some new problems

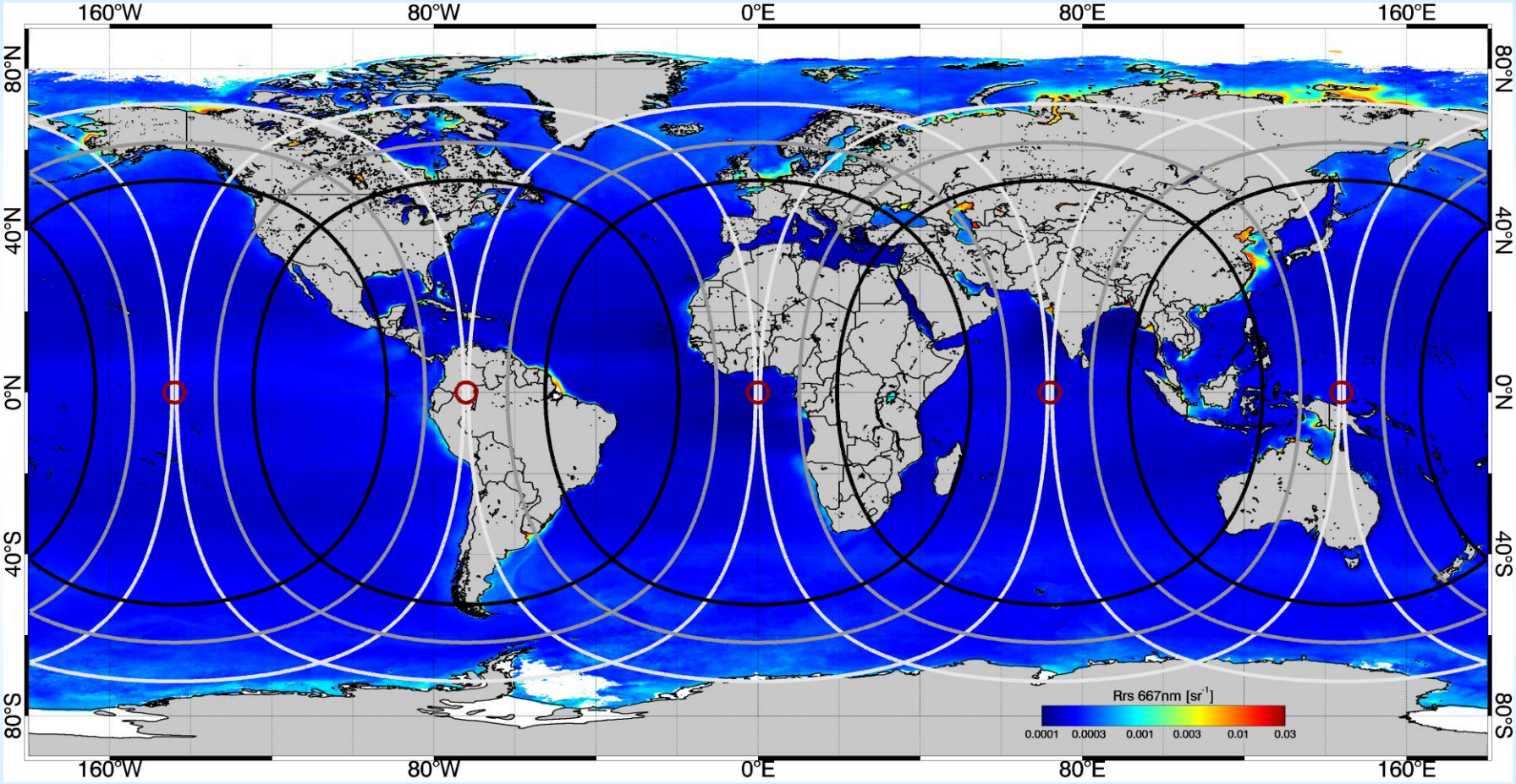
- E.g. Wave shadowing



SeaSWIR campaign
Rio de la Plata, Nov2012
SZA=75°, wave height=10-20cm
Photo: K.Ruddick

Viewing Zenith Angle (VZA) and Geographic coverage

5 GEO coverage for VZA=60° (black), 70° (grey), 80° (white)



This is the challenge!

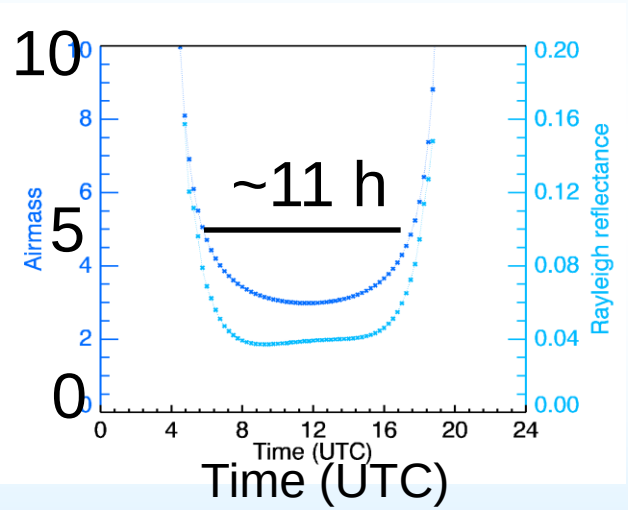
Image: Q. Vanhellemont

Sun zenith angle and diurnal coverage

Two-way air mass and Rayleigh reflectance 0.6µm for SEVIRI (0°,0°) for location (5°E, 50°N)

- Suppose we limit to total air mass=5

20 June



Time (UTC)

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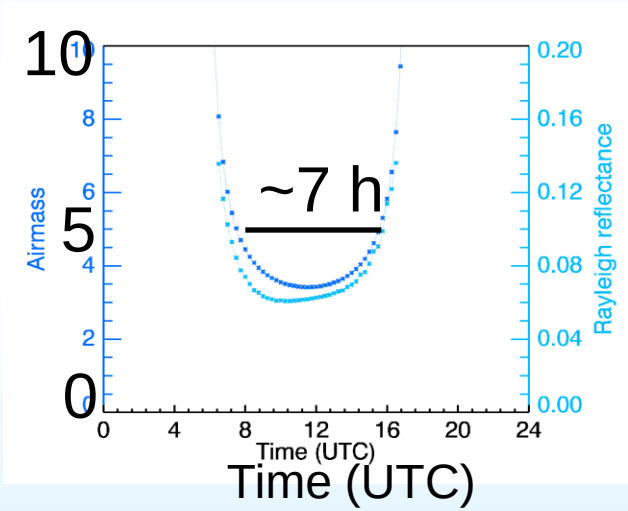

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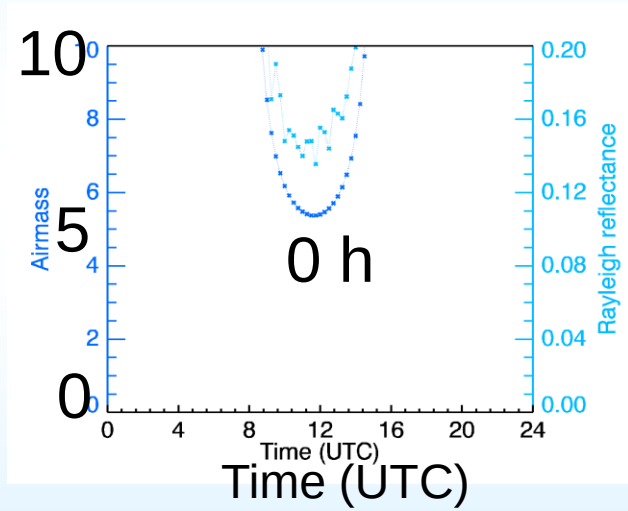

Time (UTC)

Data: Q. Vanhellemont