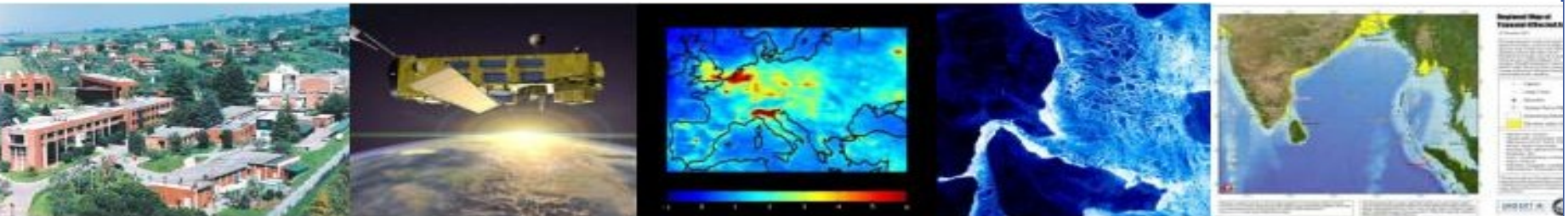


GMES Sentinel-3



From M. Drinkwater
European Space Agency
Earth Observation Programmes

Sentinel-3 Overview

- The Sentinel 3 Mission is part of the Global Monitoring for Environment and Security (GMES) initiative
- Sentinel- 3 is an operational mission in low earth orbit
- The Sentinel-3 implement 3 core missions in continuity of existing ones, delivering:
 - Sea and land colour data, at least at the level of quality of the MEdium Resolution Imaging Spectrometer (MERIS) instrument
 - Sea and Land surface temperature, at least at the level of quality of the Advanced Along-Track Scanning Radiometer (AATSR) instrument
 - Sea surface topography data, at least at the level of quality of the Envisat Radar Altimeter (RA) system
- In addition the foreseen payload will also allow a certain degree of continuity to the Vegetation instrument

Marine Services

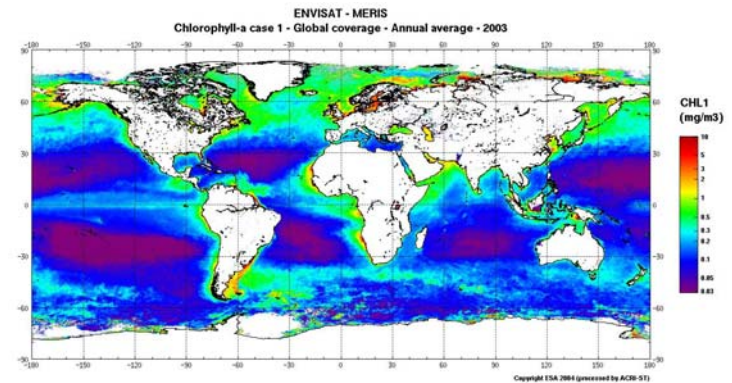
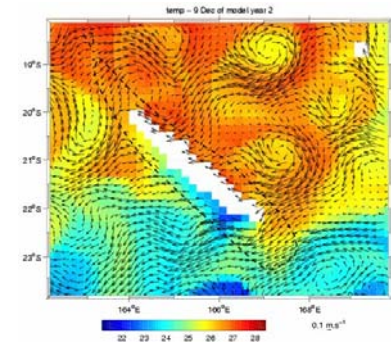
GMES Initial Service	S-3 Requirement
Marine and Coastal Environment	sea-surface topography mesoscale circulation water quality sea-surface temperature wave height and wind sediment load and transport eutrophication
Polar Environment monitoring	sea-ice thickness ice surface temperature
Maritime Security	ocean-current forecasting water transparency wind and wave height
Global Change Ocean	global sea-level rise global ocean warming ocean CO ₂ flux

Land Services

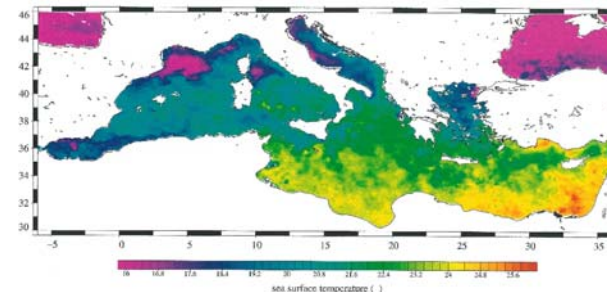
GMES Initial Service	S-3 Requirement
Global Change Land	forest cover change mapping soil degradation mapping
Land cover & Land use change	land use mapping Vegetation indices
Forest Monitoring	forest cover mapping
Food Security early warning	regional land-cover mapping drought monitoring
Humanitarian Aid	land use mapping
Air Pollution (local to regional scales)	aerosol concentration
Risk Management (flood and fires)	burned scar mapping fire detection

Products

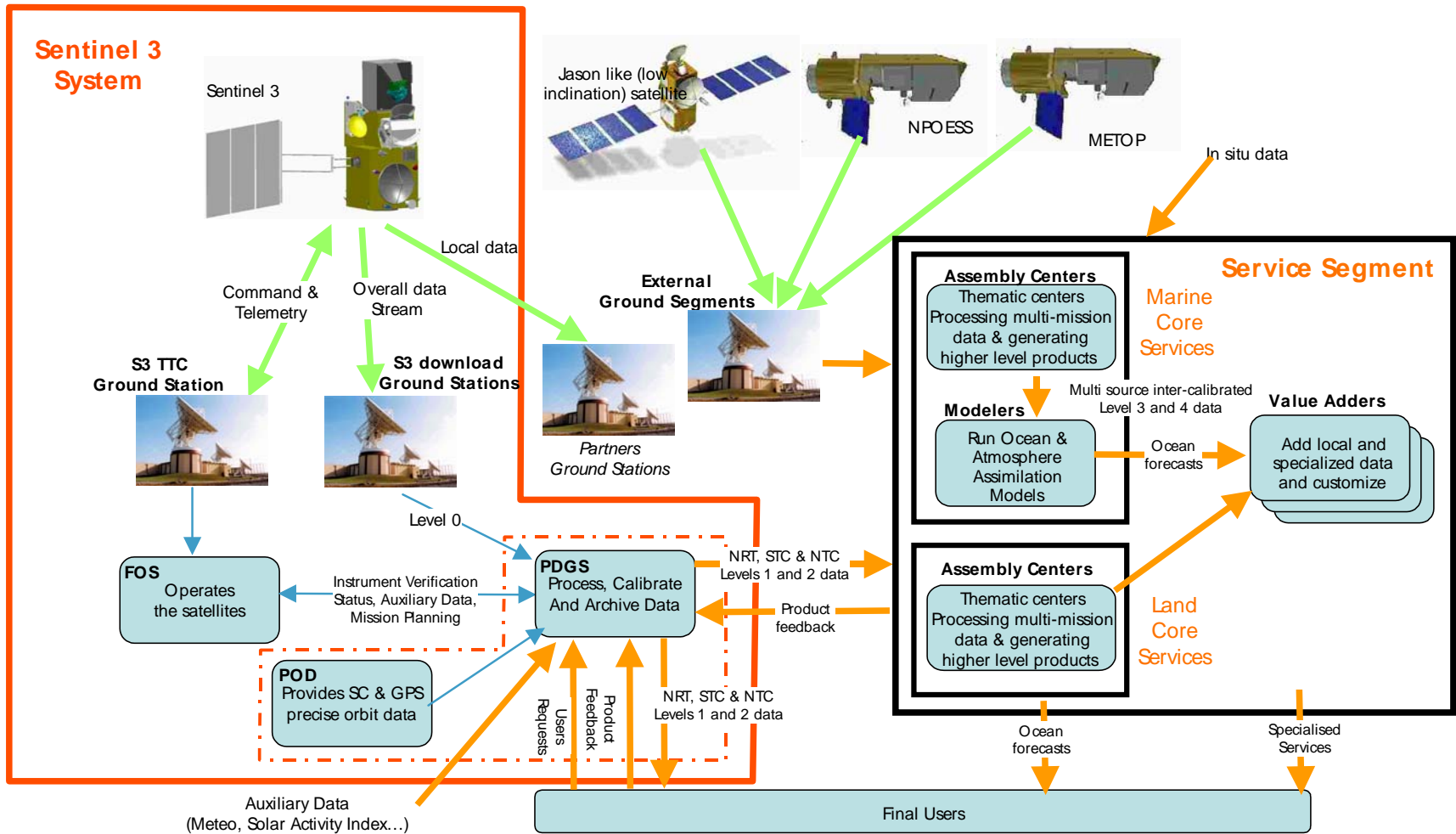
- **Surface Topography:**
 - SSH, SWH, Wind, Geostrophic Currents
 - Sea-ice thickness
- **Ocean Surface Colour**
 - Cla, PFTs, HAB, Transparency, Sediment loading, Turbidity
- **Land Cover and Vegetation**
 - NDVI, MGVI, MTCI, faPAR, LAI
- **Sea Surface Temp.**
- **Land Surface Temp.**
- **By-products:**
 - Atmospheric Aerosols
 - Clouds



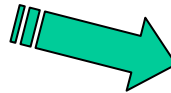
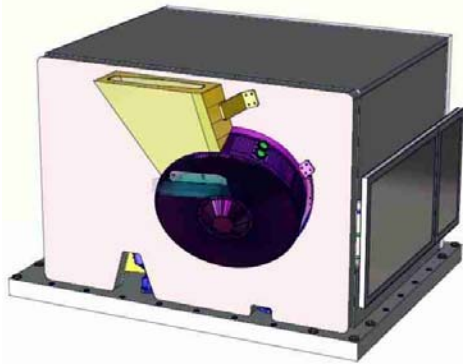
Objective Analysis result 20041109-EUR-L4UHFnd-MED-v01.nc



Mission Context

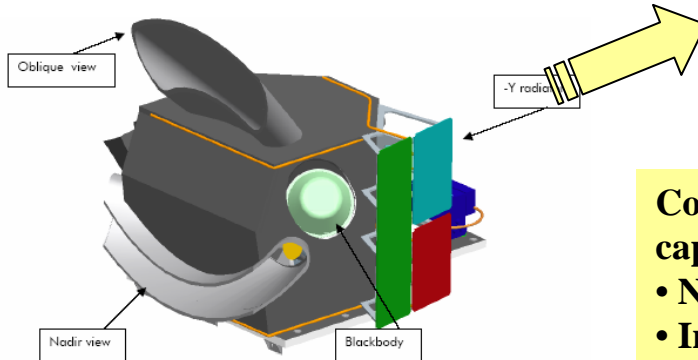


Resolution of optical instruments



OLCI – Open ocean	1.2 km
OLCI – Coastal ocean	300 m
OLCI - Land	300 m
SLST – solar channels	500 m
SLST – Thermal channels	1 km

Pushbroom type imager spectrometer
21 Spectral Channels
Full Resolution: Coastal/Land
Reduced Resolution: Open Ocean



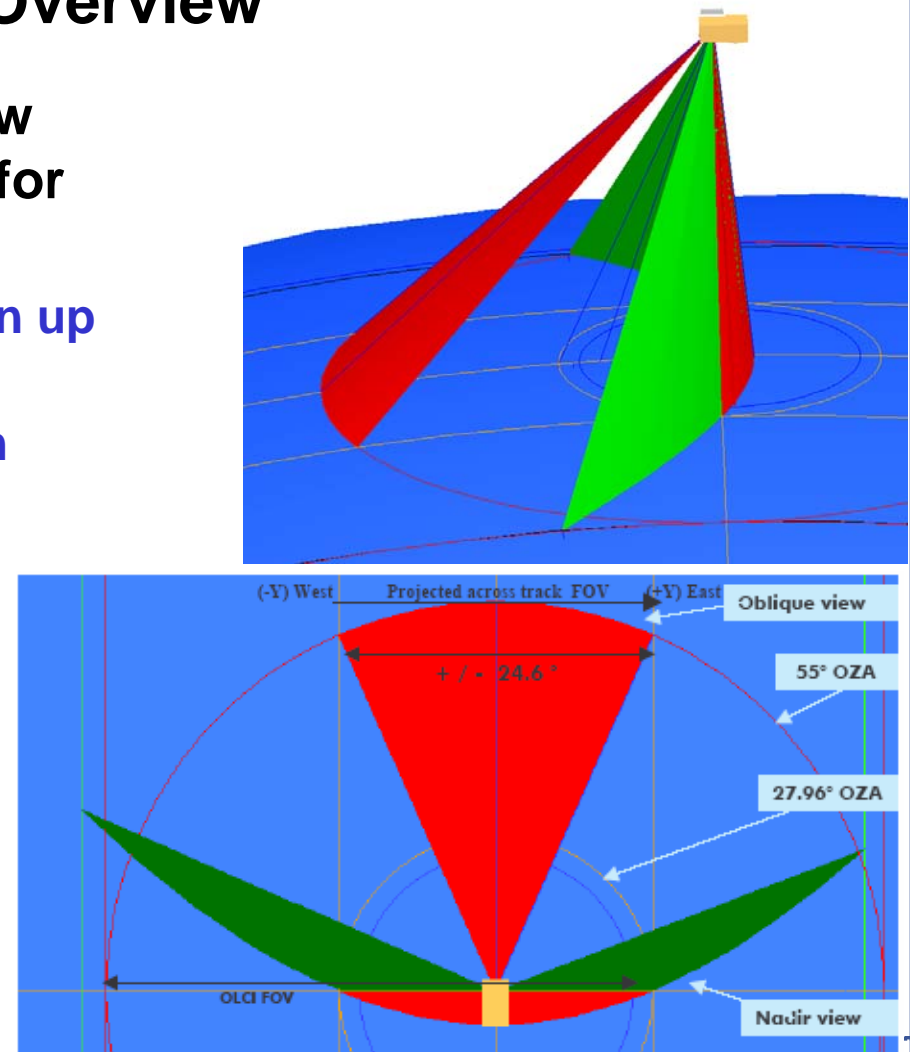
Conical scanning imaging radiometer with a dual view capability:

- Near-nadir view
- Inclined view with an OZA of $55^\circ \pm 0.1^\circ$

9 Spectral Channels + 2 (option) for Active FIRE

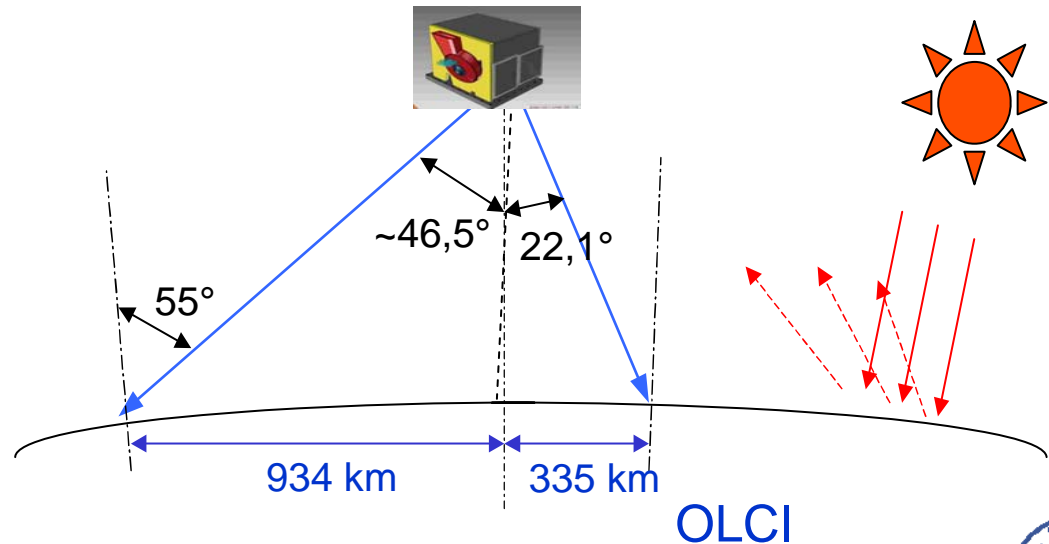
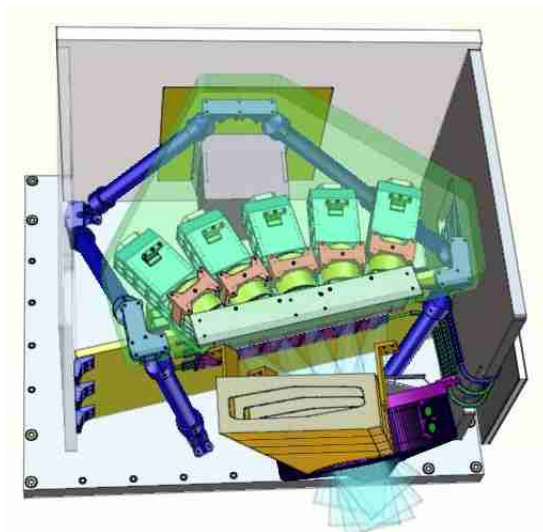
SLST Overview

- Heritage from AATSR, dual-view (nadir and backward) required for aerosol corrections:
 - Nadir swath $>74^\circ$ (1300 km min up to 1800 km)
 - Dual view swath 49° 750 km
 - Nadir swath covering OLCI
- 9 spectral bands:
 - Visible : 555 – 659 – 865 nm
 - SWIR : 1.38 – 1.61 – 2.25 μm
 - TIR : 3.74 – 10.85 – 12 μm
- One Vis/IR channel used for co-registration with OLCI



OLCI Overview

- Heritage from MERIS
- 5 cameras, 21 programmable spectral bands (incl. channels for MERIS & VGT legacy products)
- Low polarisation < 1%
- Sun Glint free configuration by design
- Swath covered by SLST for atmospheric correction



Sentinel-3 Programme Overview

- **Competitive Tender issued at beginning of 2005**
- **Kick-Off Phase A in Sept. 2005**
- **Preliminary Concept Review (PCR) in February 2006**
- **Preliminary Requirement Review (PRR), marking the end of Phase A and the start of Phase B1, in July-August 2006**
 - Performance of Payload Instruments re-assessed and baseline Instrument configurations selected.
 - Mission requirements confirmed based on preliminary Fast Tracks reports
- **System Requirement Review January 2007**
 - Confirmed satisfactory definition of Platform and Instrument, in line with mission requirements
- **ITT for Phase B2/C/D/E1 issued on 16th of February 2007**
 - Bidding period close 4th of May 2007
 - Contractor selection by End of June 2007

S3 Phase B2/C/D/E1 Contract Proposal to IPC with the goal to start B2 before end September 2007

S3 Project Development Schedule (at SRR)

