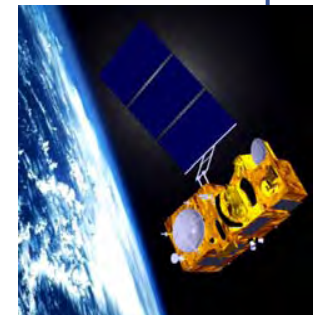
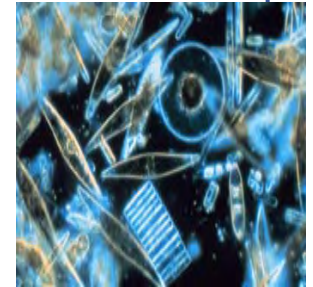
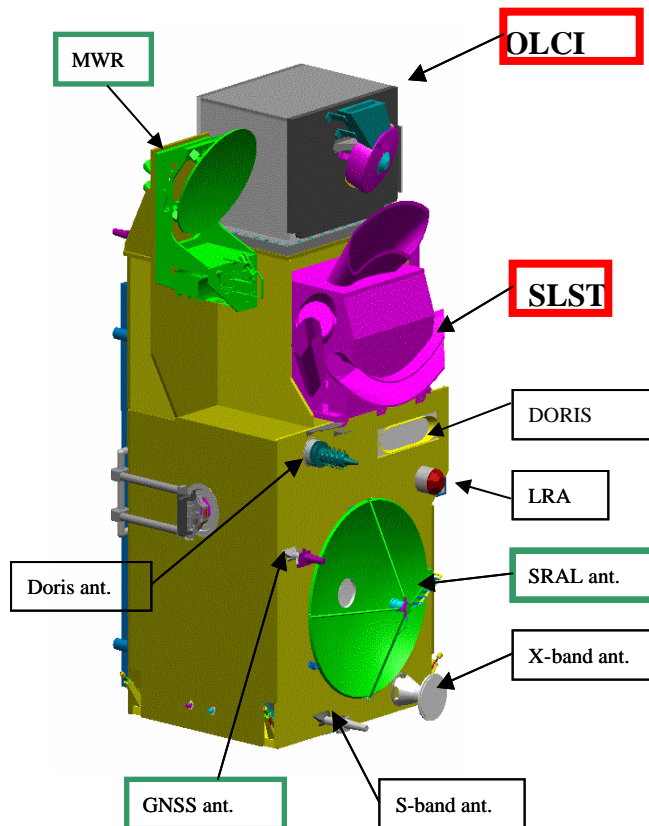




- Sentinel-3 is one element of the **GMES** system
- Sentinel-3 is an **operational mission** for oceanography & global land applications
- Provides **continuity** of existing missions, delivering:
 - **Sea/Land colour data** (at least MERIS quality)
 - **Sea/Land surface temperature** (at least AATSR quality)
 - **Sea surface topography data** (at least Envisat RA quality)
- Applicable Sentinel-3 user requirements identified through surveys conducted within the relevant user groups:
 - **Operational and Institutional Oceanography Groups**
 - **Oceanographic Research Users**
 - **Land Users**
- A series of satellites, each designed for a lifetime of 7 years, shall provide an operational service over 15 to 20 years
 - **Only 1 satellite is in development at this moment**





- **Topography Mission**

- Bi-frequency Ku/C Band SAR Radar Altimeter
- MicroWave Radiometer (2 or 3 frequencies)
- Precise Orbit Determination incl.
 - GNSS Receiver
 - Laser Retro-Reflector

- **Optical Payload**

- Ocean and Land Color Instrument (OLCI)
- Sea and Land Surface Temperature (SLST) Radiometer

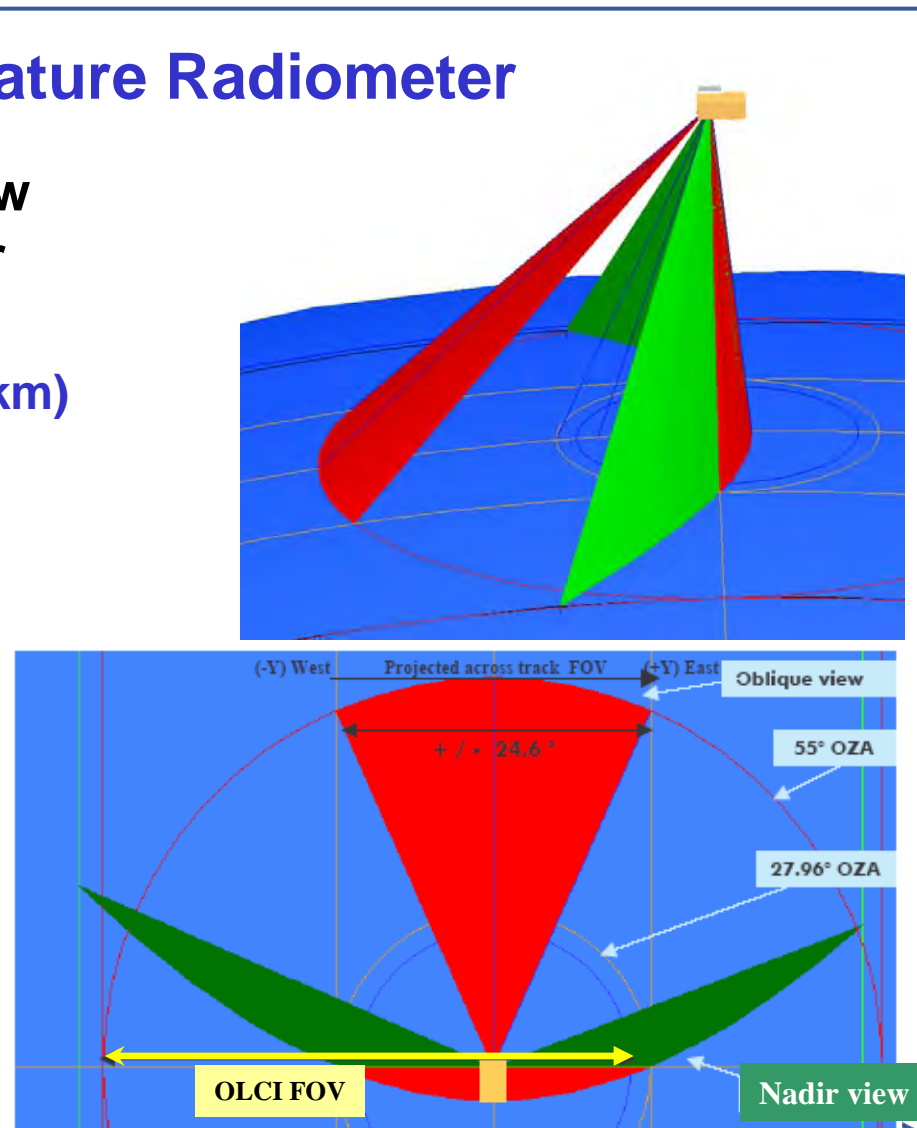
- **Optional Payload**

- FIRE Infrared Element

NOTE: Decision to embark FIRE to be taken by PDR July 2008

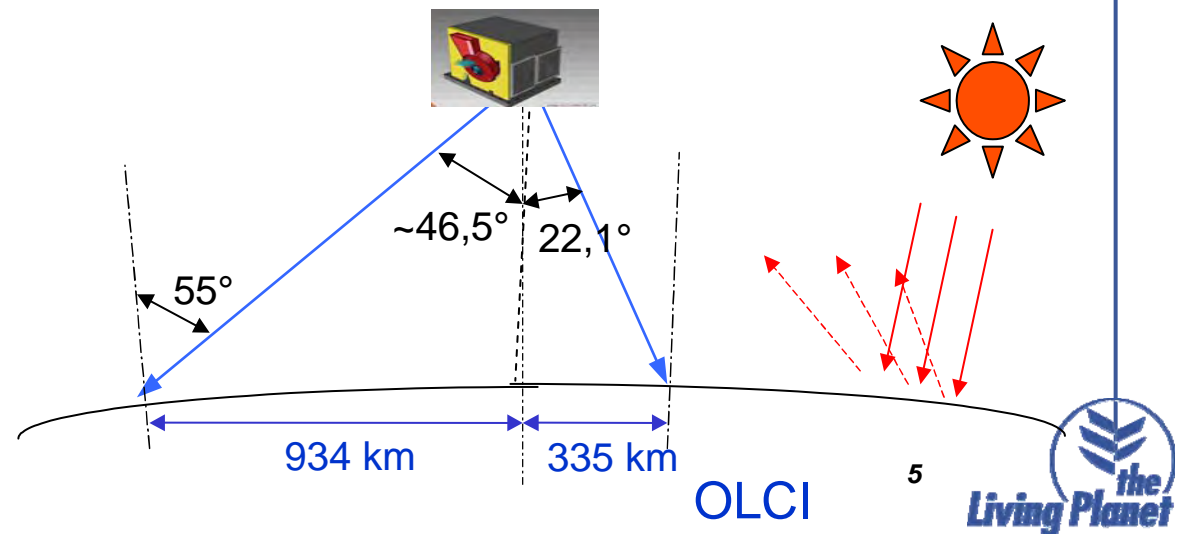
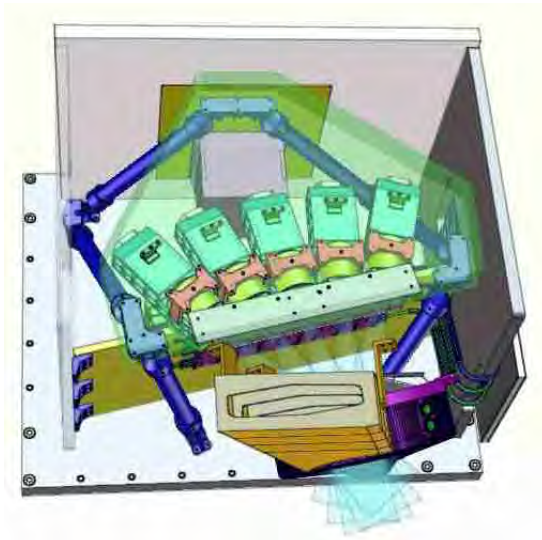
Sea & Land Surface Temperature Radiometer

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



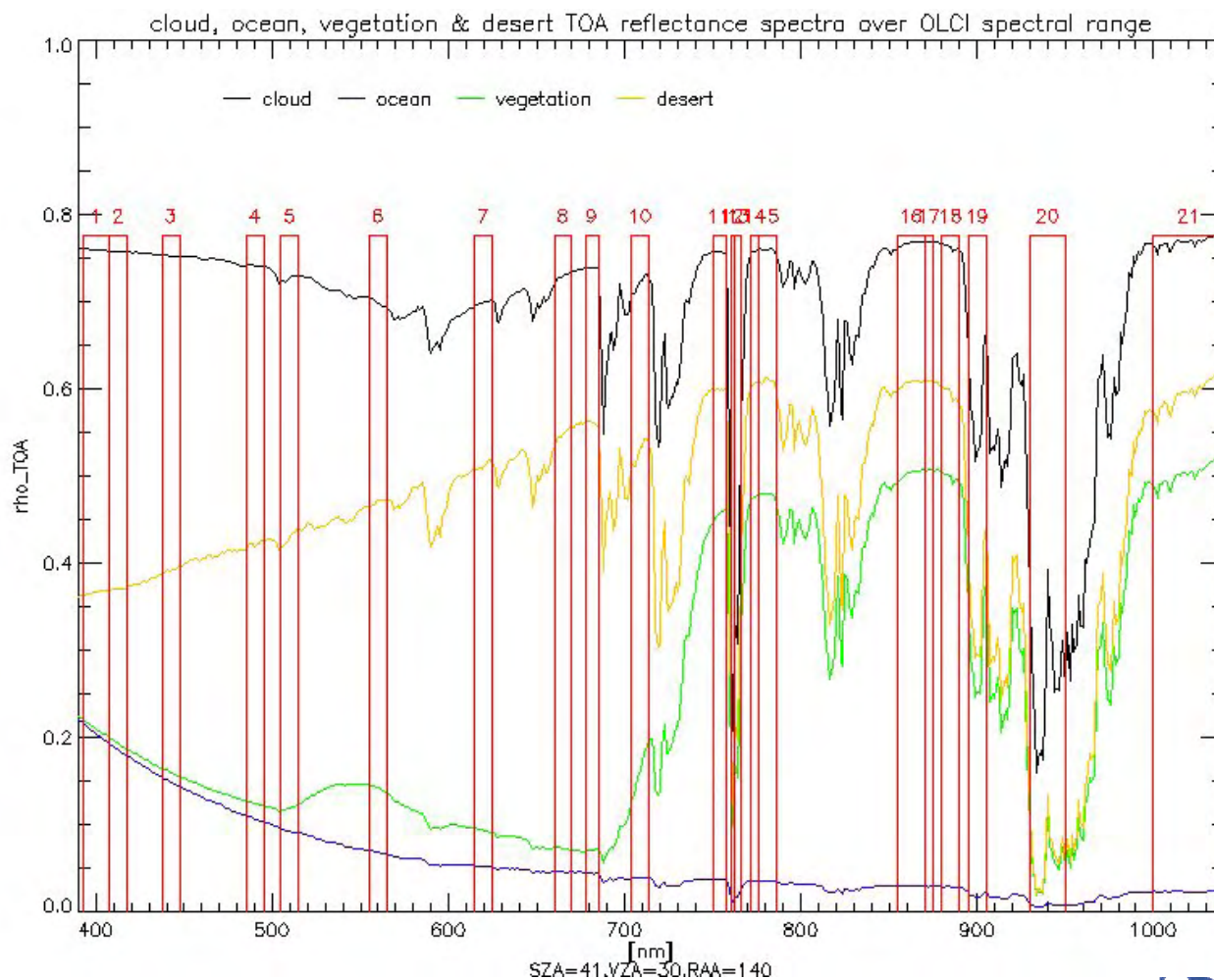
Ocean Land Colour Instrument

- Pushbroom-type imaging spectrometer similar to MERIS
- 5 cameras, arranged cross-track, with a de-pointing of 12.20°
- 21 programmable spectral bands [400-1020] nm
- FOV 68.6° , ~1250 km swath
- Swath covered by SLST (for atmospheric correction)
- Calibration based on 2 spectralon & 1 sun doped diffusers

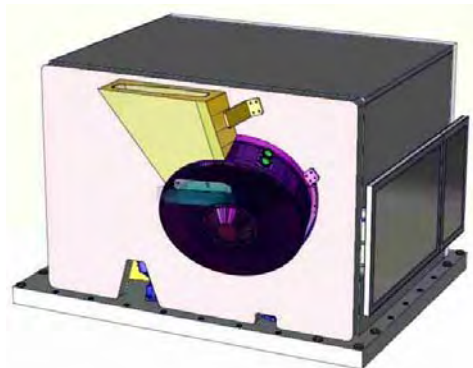


OLCI Spectral Channels

Channel	Central wavelength (nm)	Width (nm)
1	400	15
2	412.5	10
3	442.5	10
4	490	10
5	510	10
6	560	10
7	620	10
8	665	10
9	681.25	7.5
10	708.75	10
11	753.75	7.5
12	761.25	2.5
13	764.375	3.75
14	773.75	5
15	781.25	10
16	862.5	15
17	872.5	5
18	885	10
19	900	10
20	940	20
21	1020	40



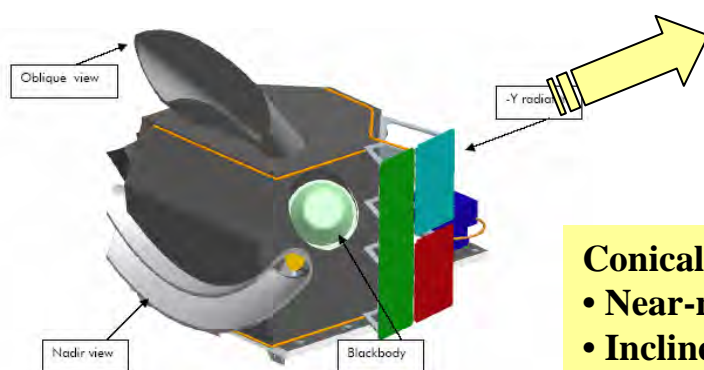
Resolution of optical instruments



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



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



Conical scanning imaging radiometer with dual view capability:

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

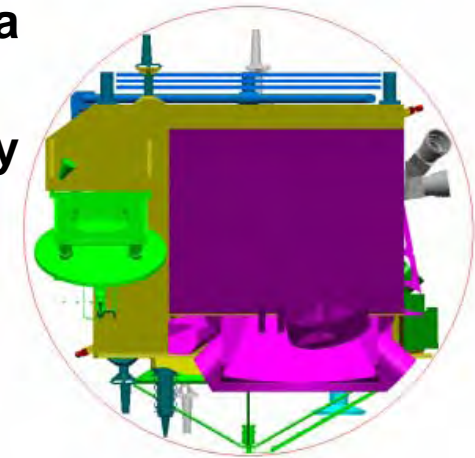
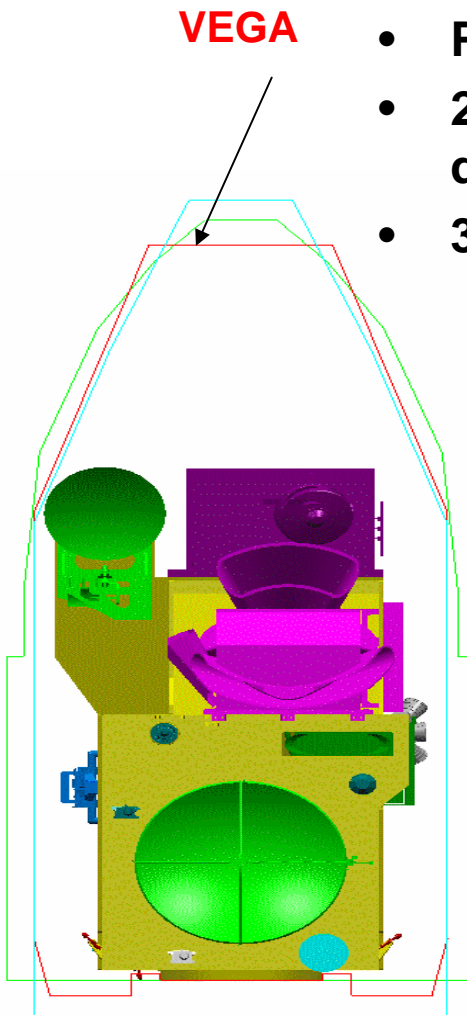
9 Spectral Channels + 2 (option) for Active FIRE

Type: Frozen, sun-synchronous low earth orbit
Repeat cycle: 27 days (14+7/27 orbits per day)
Average altitude: 814.5 km over geoid
Mean solar time: 10:00 at descending node
Inclination: 98.65°

		Revisit at Equator	Revisit for latitude >30°	Requirement
OC (Sun-glint free)	1 Satellite	< 3.8 days	< 2.8 days	< 2 days
	2 Satellite	< 1.9 days	< 1.4 days	
Land Colour	1 Satellite	< 2.2 days	< 1.8 days	< 2 days
	2 Satellite	< 1.1 day	< 0.9 day	
SLST dual view	1 Satellite	< 1.8 days	< 1.5 days	< 4 days
	2 Satellite	< 0.9 day	< 0.8 day	

To meet the full operational service requirements a two-satellite constellation is required

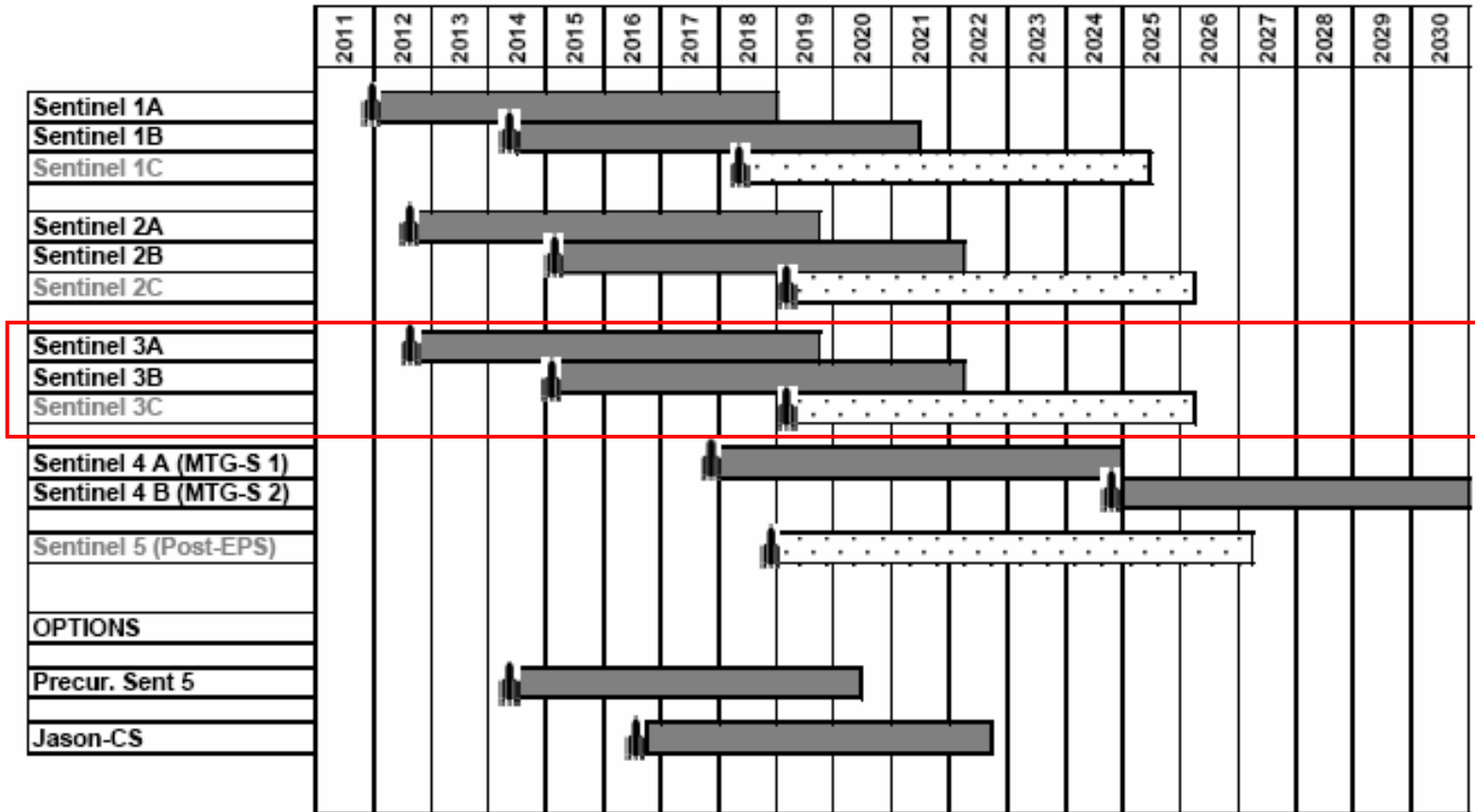
- Mass ~ 1270 Kg
- Power ~ 1100 W
- 2 x 225 Mbps X-band science data downlink
- 330 Gbit solid state mass memory



Compliance with small launcher fairings:

- VEGA nominal launcher (Kourou)
- Design lifetime: 7 years

Sentinel operations timelines overview



Launch of B-Sentinels at least within 30 months from their respective Proto-Flight Models