Sentinel 2

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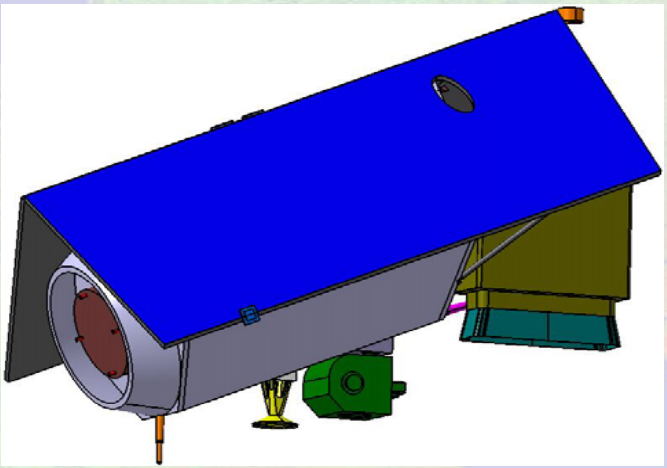
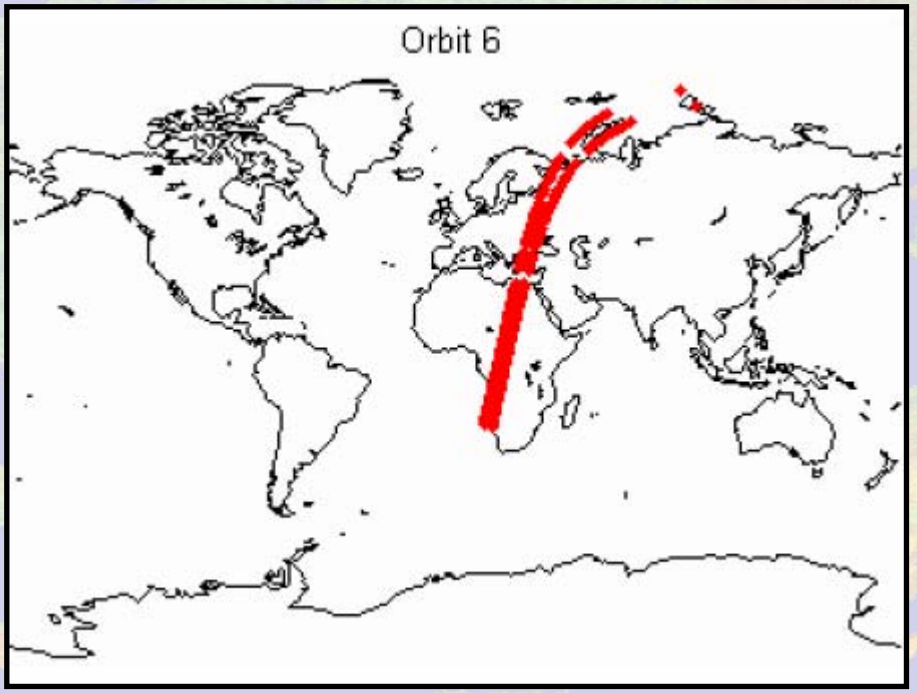
Sentinel 2 Requirements

- Optical Mission
- High Revisit Time
- Systematic Acquisition
- Global Land Coverage
- 20 years operational system
- Operations from 2012



Satellite Scenario

- 2 Satellites
- 786 Km altitude
- 180 deg. Phased in common orbital plane
- 14 orbit per day (desc. node 10:30 LT)
- 5-days Repeat Cycle (2 satellites)
- Observation limited to:
  - Land coverage
  - +83 ÷ -56 deg
  - Sun Zenith Angle > 75 deg
  - Fixed planning



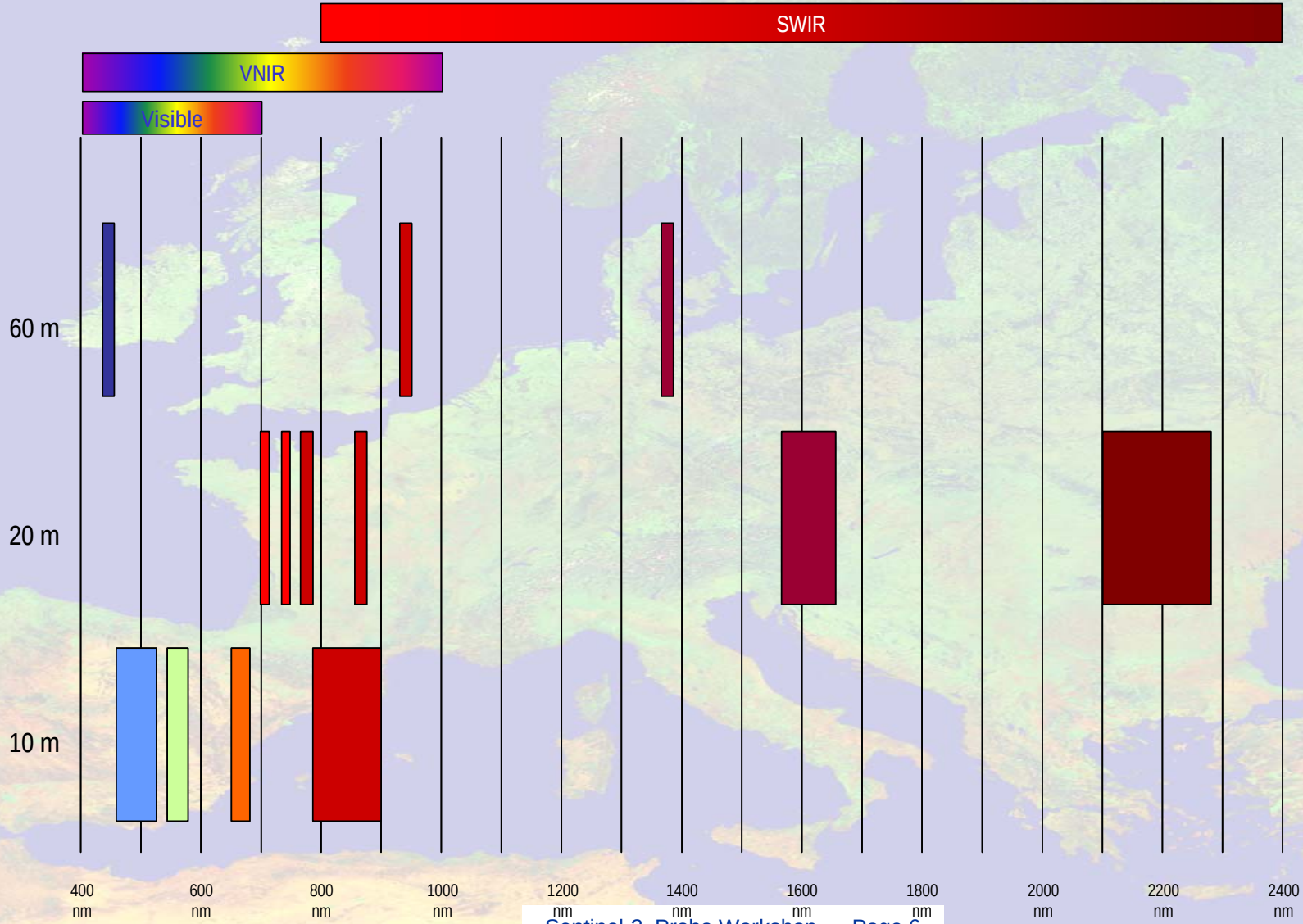
Instrument Specification

- Swath: 285 Km
- 4 Bands @ 10 m resolution
- 6 Bands @ 20 m
- 3 Bands @ 60 m for atmospheric corrections
- Radiometric Resolution 12 bit
- Pushbroom technology
- CMOS for VNIR, MCT for SWIR

Spectral Bands

Centre wavelength [nm]	Spectral Width [nm]	SSD [m]	Application
443	30	60	Atmospheric correction (aerosol scat.)
490	30	20	vegetation senescing, carotenoid, browning and soil background; atmospheric correction (aerosol scat.)
560	20	20	Green peak, sensitive to total chlorophyll in vegetation.
665	20	20	Max. chlorophyll absorption.
705	20	20	Position of red edge; consolidation of atmospheric corrections / fluorescence baseline.
740	20	20	Position of red edge, atmospheric correction, retrieval of aerosol load.
775	20	20	LAI, edge of the NIR plateau
865	20	20	NIR plateau, sensitive to total chlorophyll, biomass, LAI and protein; water vapor absorption reference; retrieval of aerosol load and type.
940	20	60	Water vapor absorption, atmospheric correction
1375	30	60	Detection of thin cirrus for atmospheric correction.
1610	100	20	Vegetation

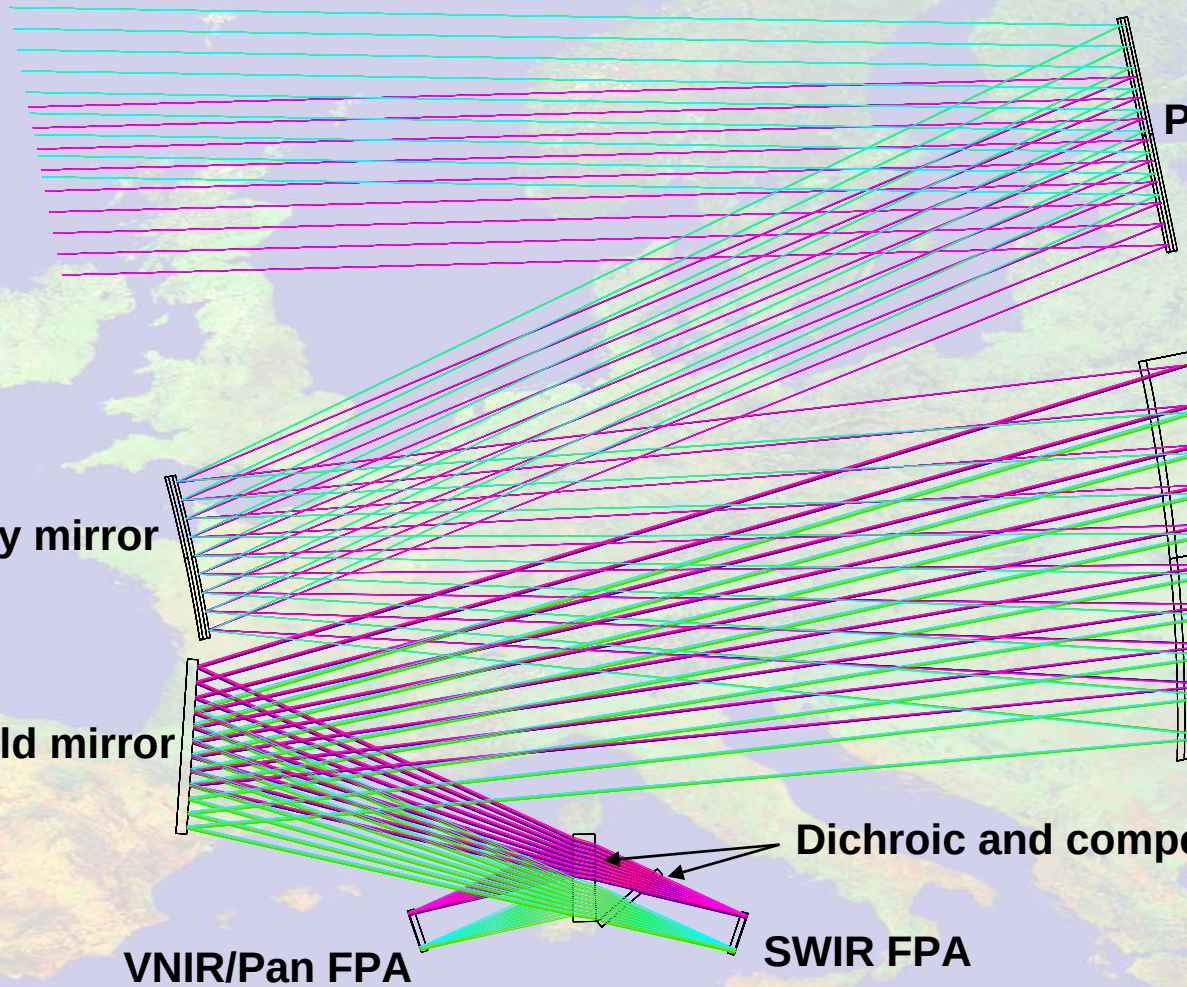
Spectral Bands cond't



Instrument data flow

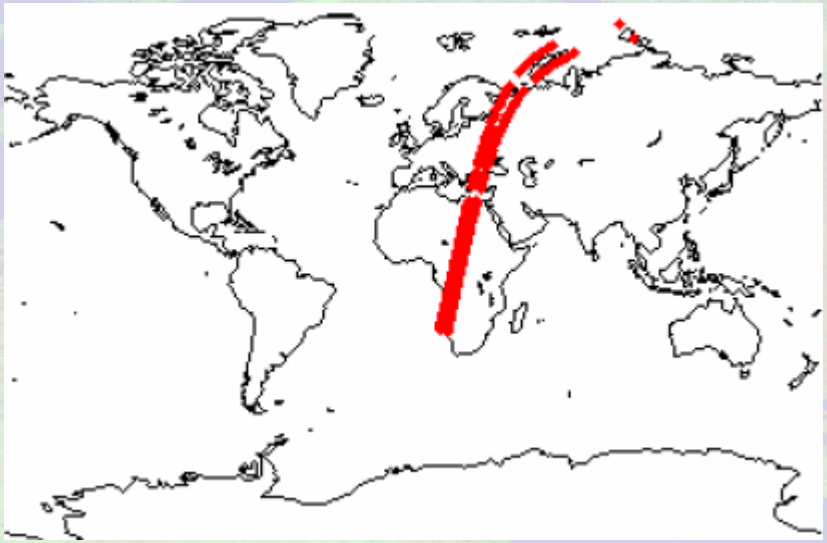
Band	Raw [m]	binned [m]	Raw [ms]	binned [ms]	Radiometric Resolution	Compr. Ratio	Raw [Mbps]	Binned [Mbps]	Compr. [Mbps]
1	20	60	3,02	9,05	12	2	61,3	6,8	3,5
2	10	10	1,51	1,51	12	4	245,1	245,3	61,5
3	10	10	1,51	1,51	12	4	245,1	245,3	61,5
4	10	10	1,51	1,51	12	4	245,1	245,3	61,5
5	20	20	3,02	3,02	12	2	61,3	61,3	30,8
6	20	20	3,02	3,02	12	2	61,3	61,3	30,8
7	20	20	3,02	3,02	12	2	61,3	61,3	30,8
8	10	10	1,51	1,51	12	4	245,1	245,3	61,5
8a	20	20	3,02	3,02	12	2	61,3	61,3	30,8
9	20	60	3,02	9,05	12	2	61,3	6,8	3,5
10	20	60	3,02	9,05	12	2	61,3	6,8	3,5
11	20	20	3,02	3,02	12	2	61,3	61,3	30,8
12	20	20	3,02	3,02	12	2	61,3	61,3	30,8
Total							1532	1369,548333	441,03

Instrument Optics



Data Downlink

- Very high data volume (1400 Mbps)
- On-board compression ranging from 2 to 4 (450 Mbps to recorder)
- Estimated downlink rate 465 Mbps (3x155)
- Baseline scenario: 3 stations (2 near polar)
- SSR 2.000.000 Mbit
- Direct downlink
- Optional Data encryption



Products Geolocation

- A priori: 1 Km
- A posteriori (without restituted orbit): 50m
- A posteriori with DTM (5m): 10-20 m

Ground Segment

- Data Driven Processing
- NRT Processing (at stations)
- Long Term archive (LV.0 & Lv.1) > 1PB/year
- Preferred Dissemination: network
- Strips for Lv.0, Standard Scenes for Lv.1
- Around 8 TB per day acquired