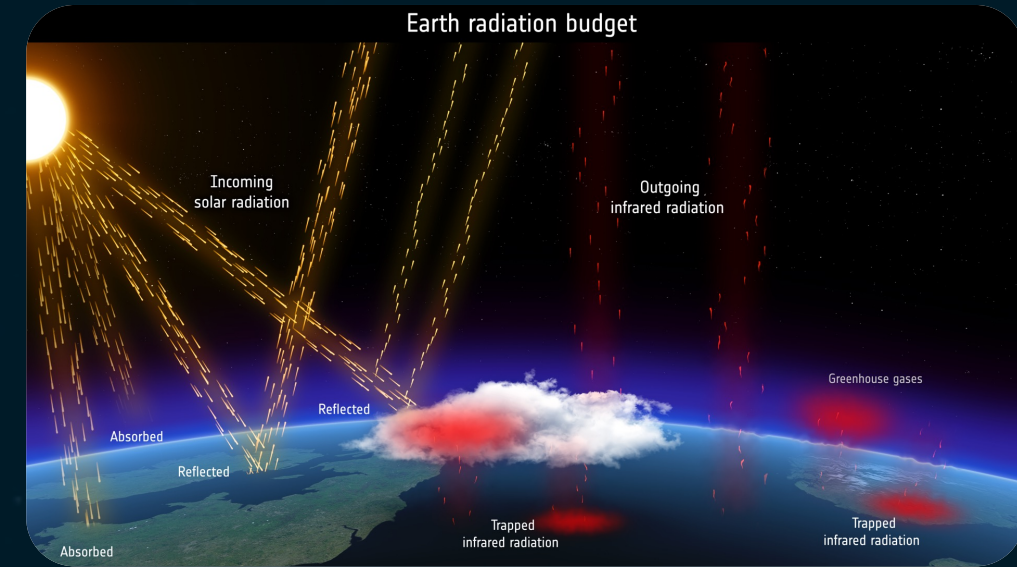




## EarthCARE Objective

How do aerosols and clouds, heat or cool the Earth?

- Largest uncertainty in projections of the future climate to be addressed in order to improve climate modelling and numerical weather prediction comes from cloud, aerosol and radiation interactions.
- EarthCARE will provide systematic provision of vertical profiles of clouds & aerosols, collated with measurements of solar & emitted thermal radiation
- Direct verification of impact of clouds & aerosols on atmospheric heating rates & radiative fluxes.



## EarthCARE Facts

- Scientific goals** To measure the 3D structure of cloud and aerosols, together with collocated observations of solar and terrestrial radiation
- Satellite size** 17.2 m long, 2.5 m wide and 3.5 m deep
- Mass** 2200 kg (including a maximum of 310 kg fuel)
- Instruments** Cloud Profiling Radar, Atmospheric Lidar, Multispectral Imager, Broadband Radiometer
- Orbit** Polar, dawn-dusk, Sun-synchronous with a descending node at 14:00, at altitude of 393 km inclined at 97°, repeat cycle of 25 days
- Life** Minimum of three years, with consumables to allow for at least one year extension of operation
- Prime contractor** Airbus (DE)

## Ready for Launch

EarthCARE will launch in May 2024 on SpaceX Falcon-9 from Vandenberg, California (US)

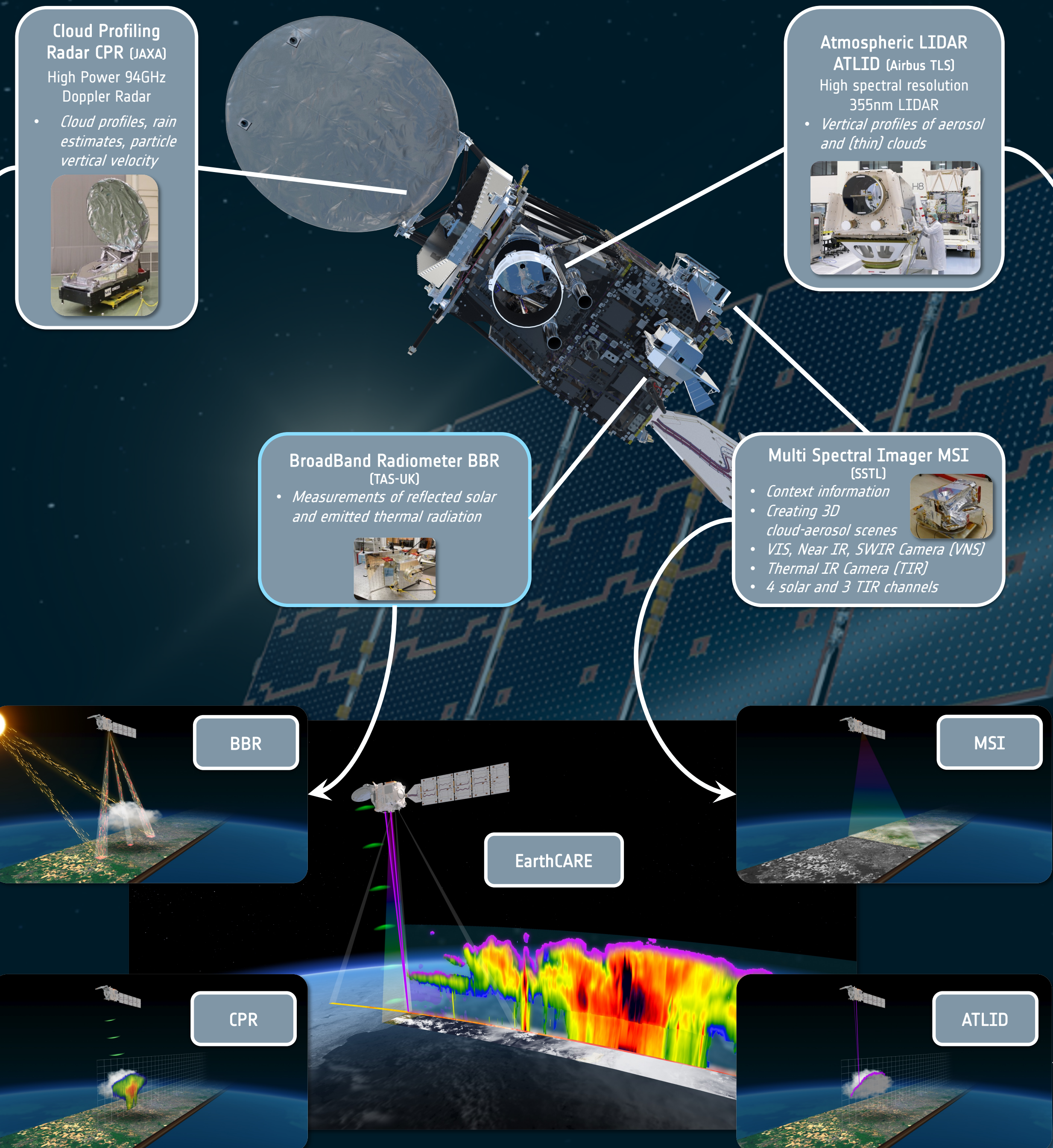
- Satellite has been transported on an Antonov aircraft from Munich (DE) to the launch site with preparations for the launch ongoing
- Satellite Launch and Early Operations Phase Flight Simulations ongoing
- Instrument Commissioning being prepared
- Final updates on the processors currently being implemented
- Communications campaign ongoing
- Science Community ready



Everything on track for the launch!

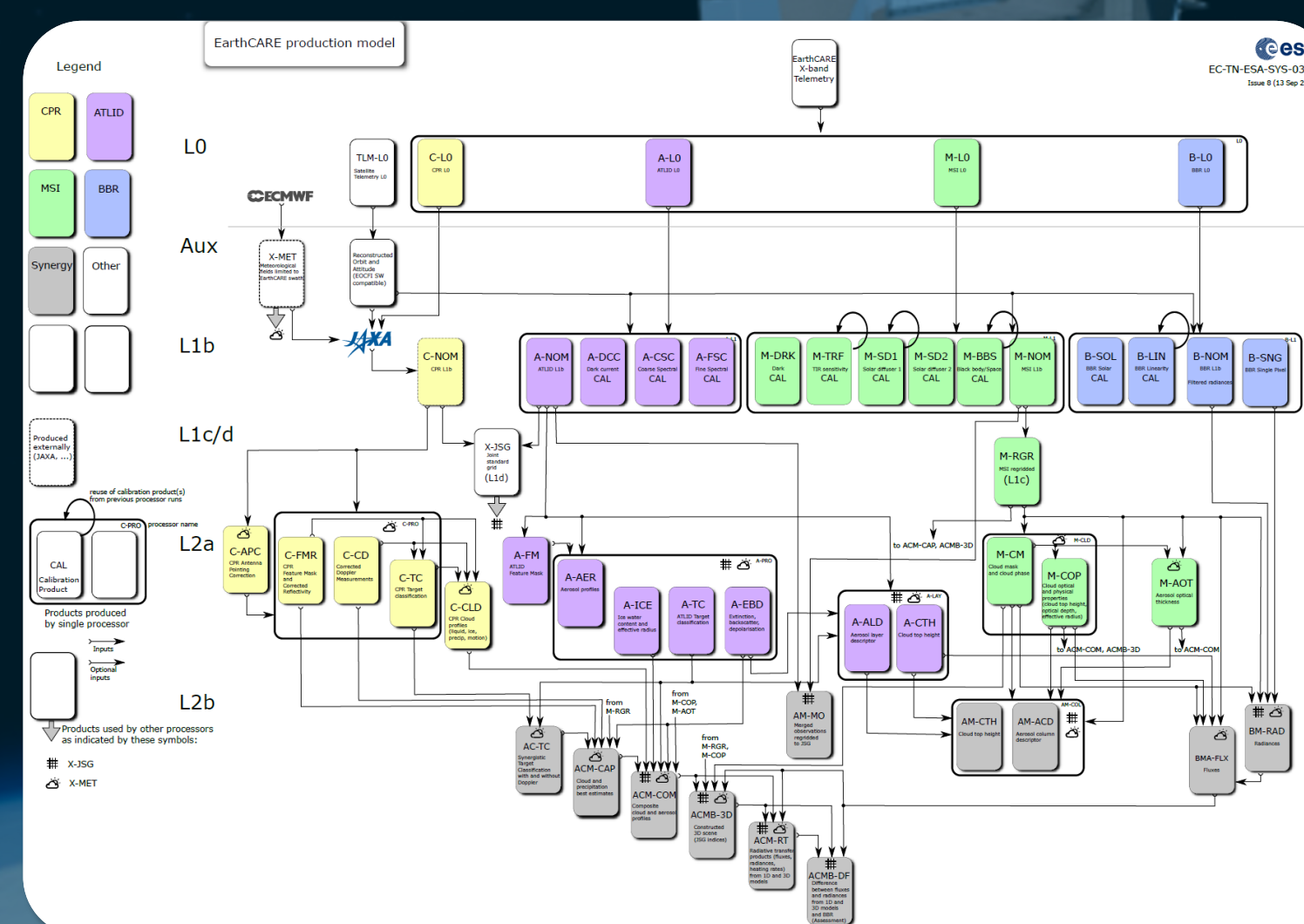
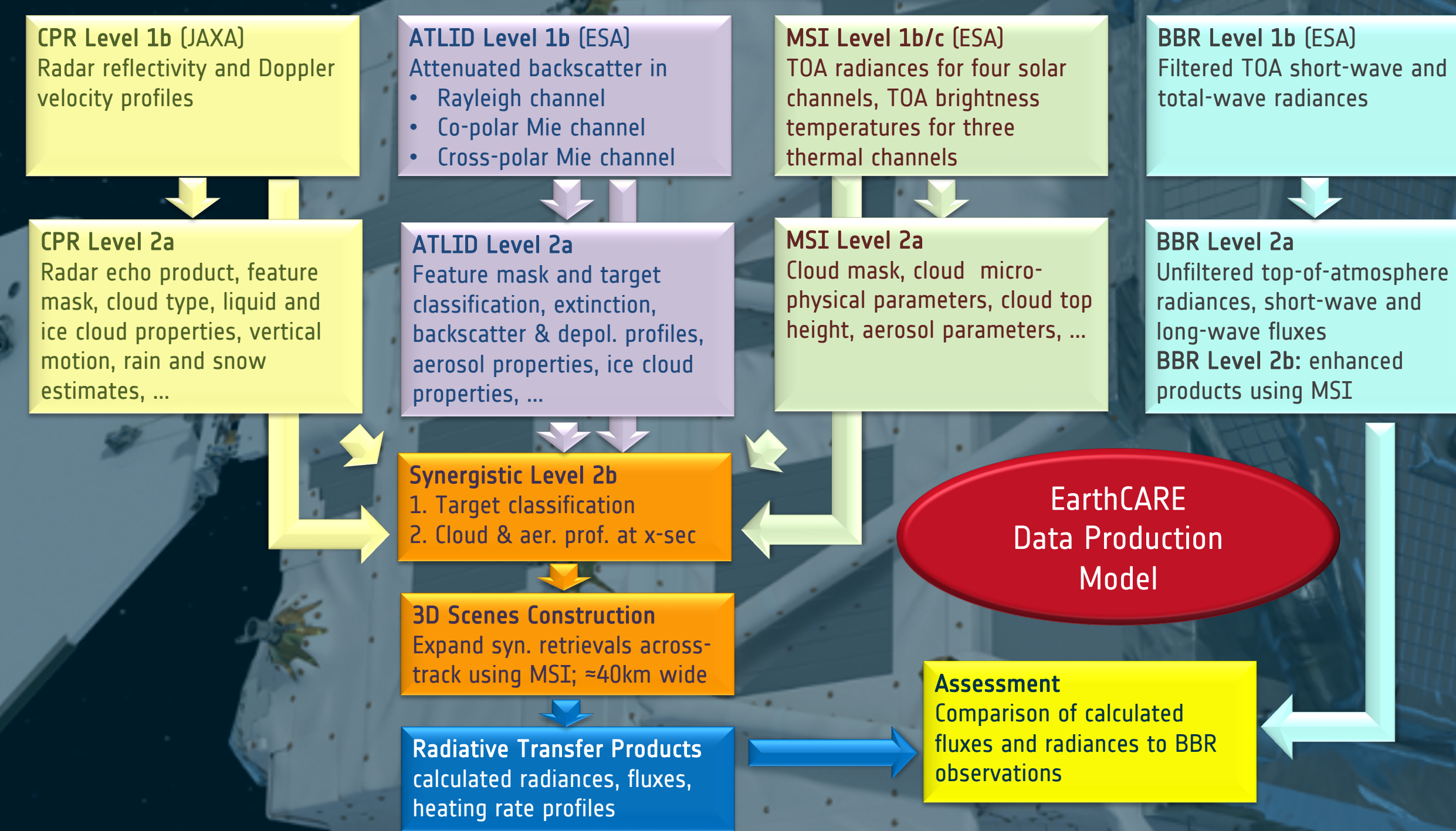
## Space Segment

Unique Combination of Instruments  
Most complex ESA Earth Explorer Mission



## Ground Segment

24 Data Processors, 47 Data Products  
25 Level 2 Science Products

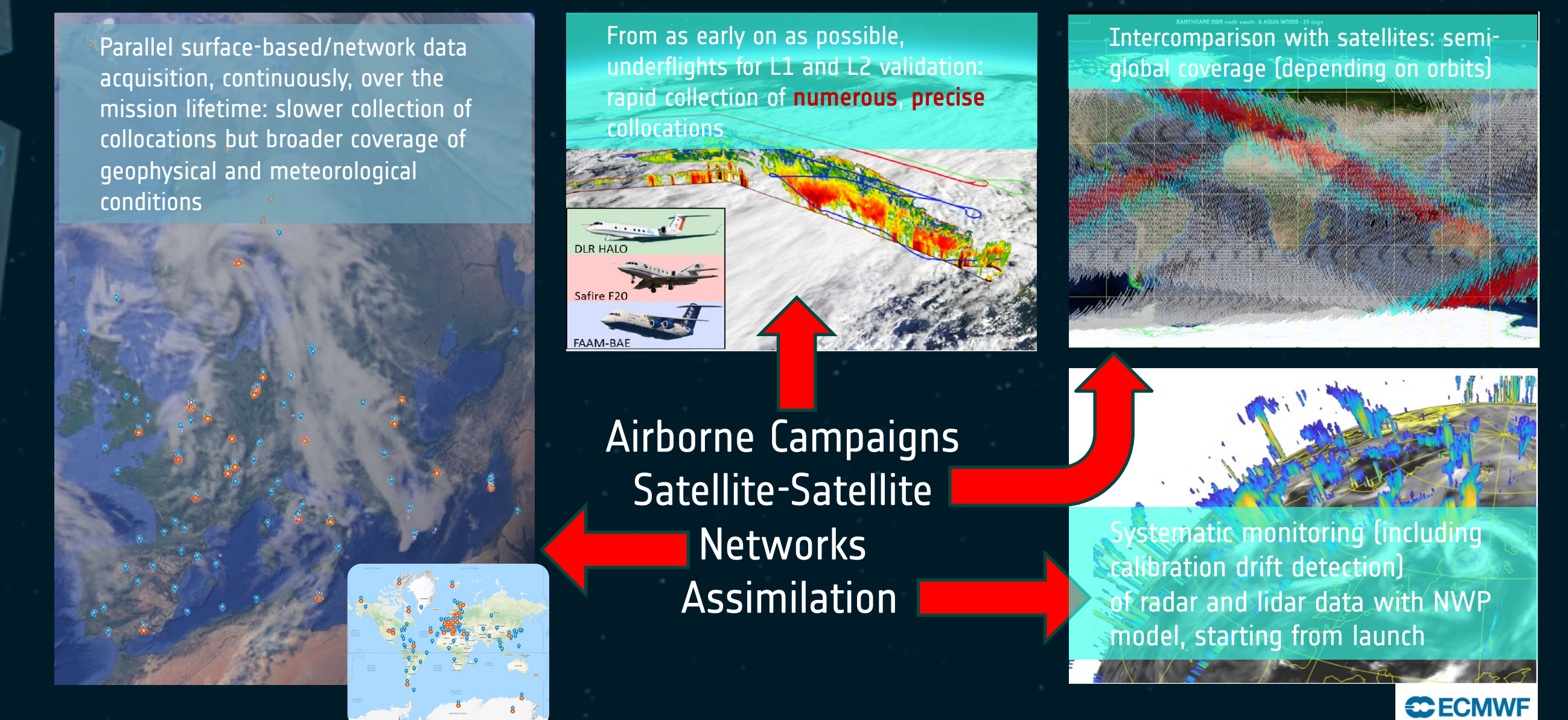


- Level 2 product chains at ESA and JAXA
  - L1 and L2 processors:
    - Ready with corrections and improvements ongoing
    - both in frame of CARDINAL and satellite contract
  - PDGS final updates upcoming
  - Target data release dates after launch (L):
 

Level	Level 1	Level 2a	Level 2b
	L + 6 months	L + 9 months	L + 18 months
	-Dec. 2024*	-March 2025*	-Dec. 2025*
- \* Assumption launch end May 2024
- EarthCARE Cal/Val and Science Workshops coordinated along with the data release

## Validation

EarthCARE ESA Validation Portal  
<https://earthcare-val.esa.int/>



2024		Airborne Campaign Opportunities					2025		
May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb
<b>Radar</b>	• Saire, LOAC balloons	• HALO	• FAAM	• INCAS (RO)	• NRC CONVAIR	• ER-2, CIRPAS Twin-Otter			
<b>Lidar</b>									
<b>In situ (micro-physics)</b>									

Legend: (Sub)Tropic, Mid-latitude, Arctic, (window of opportunity), Imager and/or polarimeter

\*25 and '26 collaborations in progress:

- HALO South & GO SOUTH (ground) & CAPE-K (ground) ('25)
- PONEX (NRC Convaair) ('26)
- Denman Glacier Voyage (Ship)
- COAST-K (Ship '25)

Tentative:

- FAAM MLU flights (TBC)
- CARES(FAAM, TBC)
- ARISTOTLE (P3 TBC '25, '26)
- CARINA (NRC Gulfstream TBC, AUG-OCT '25)
- ACAROA (Ship, JAN-FEB'26)
- Mediterranean campaign '25 or '26
- HALO tentative slot '26
- STEP-CHANGE, Palau '25 or '26
- CELLO-ARCTIC, '26