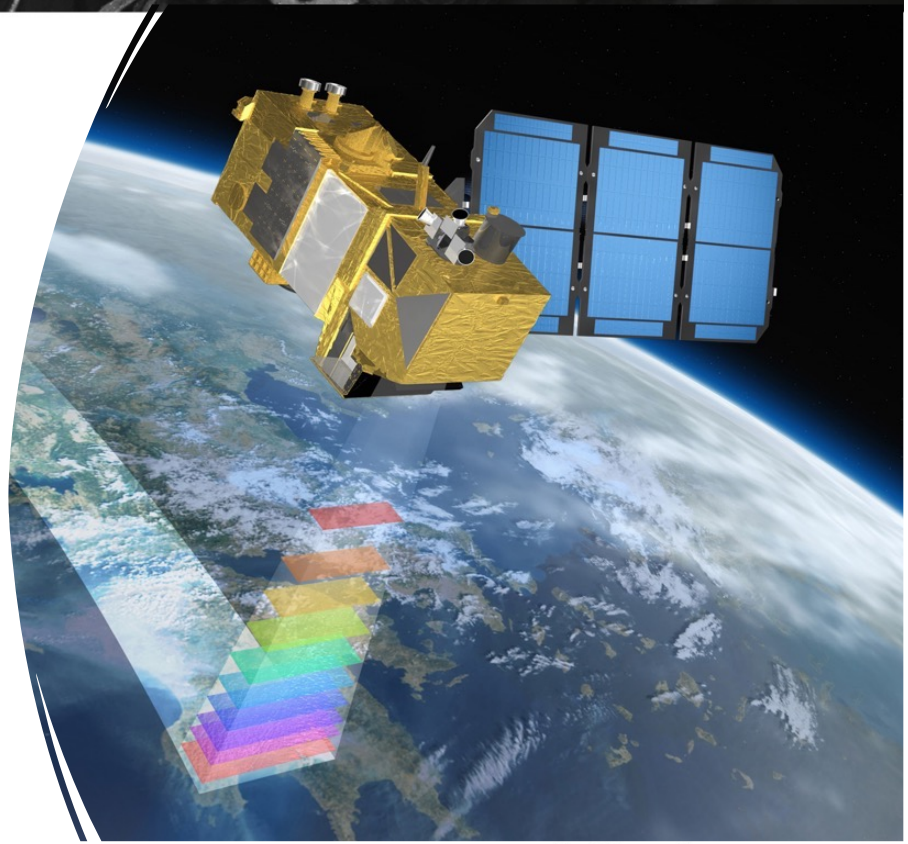
SPACE CLIMATE

Centre for Earth Observation Instrumentation

TOGETHER FOR OUR PLANET

- The CEOI is a partnership formed from 4 of the major space organisations in the UK, namely Airbus Defence and Space, the University of Leicester, QinetiQ, and STFC RAL Space.
- The CEOI has been charged by the UK Space Agency to assist national institutes, academia and companies to develop and prepare novel and powerful instrumentation for flight on the next generation of Earth observation satellites.
- The CEOI promotes instrumentation for scientific and commercial missions, and also operational missions as embodied in ESA's Copernicus programme.
- Many of these mission are aimed at improving our understanding of how the Earth's climate is changing and predicting extreme weather events.



QINETIQ

UNIVERSITY OF LEICESTER

AIRBUS

UKRI Science and Technology Facilities Council
RAL Space

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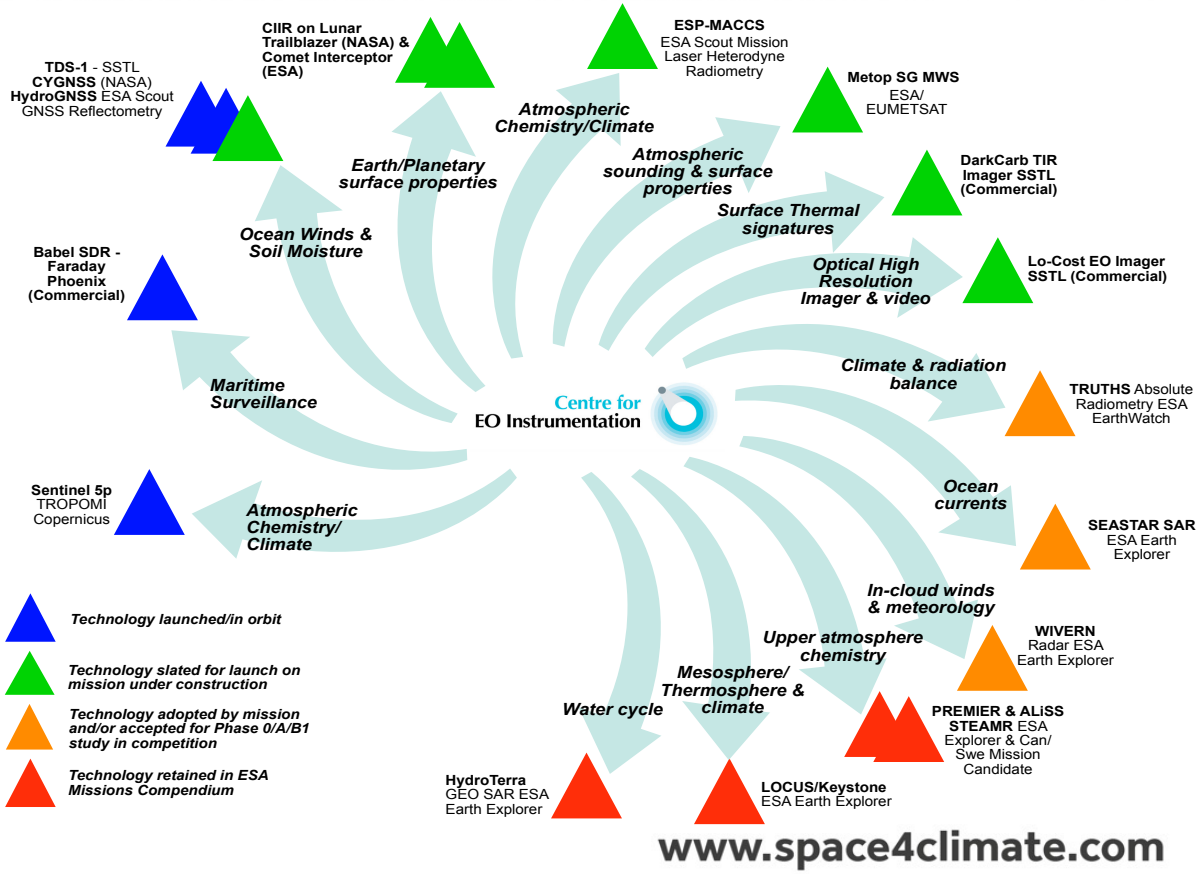
Access to Missions

- Since 2007, CEOI has assisted many UK teams to develop their instruments towards flight on an international or commercial mission.
- This chart shows some of the target missions and the applications they are addressing..
- Most of these missions are directly or indirectly involved in climate monitoring.



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Current themes in CEOI: Miniaturisation

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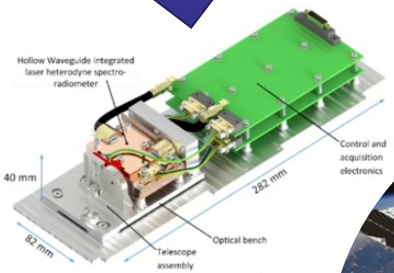
Miniaturisation of new and established EO technologies to:

- Develop novel small payload designs which can be carried by smaller spacecraft
- Reduce cost of launch
- Make constellations of 10's of satellites feasible for science, climate monitoring and commercial applications

Novel Instrument concept



Use of integrated optics techniques for miniaturisation

ESA Scout mission CubeMap

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Current themes in CEOI: New high-performance detectors

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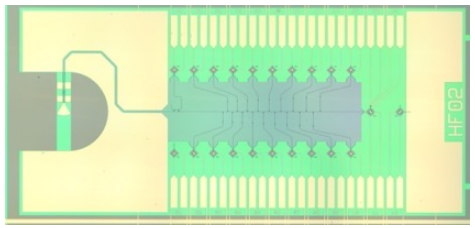
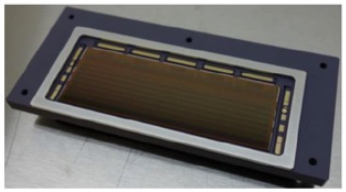
- Top: Leonardo's Superhawk infrared detector is being upgraded for space use in a project with SSTL. It will allow imaging of thermal signatures from space.

- Middle: The HYMAS integrated filter bank detector for microwave radiation, enabling high-definition profiling of the atmosphere. Under development by Universities of Cambridge and Cardiff.



- Bottom: A new high-resolution CMOS detector for optical imaging under development by Teledyne e2V.



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Current themes in CEOI: Deployable systems

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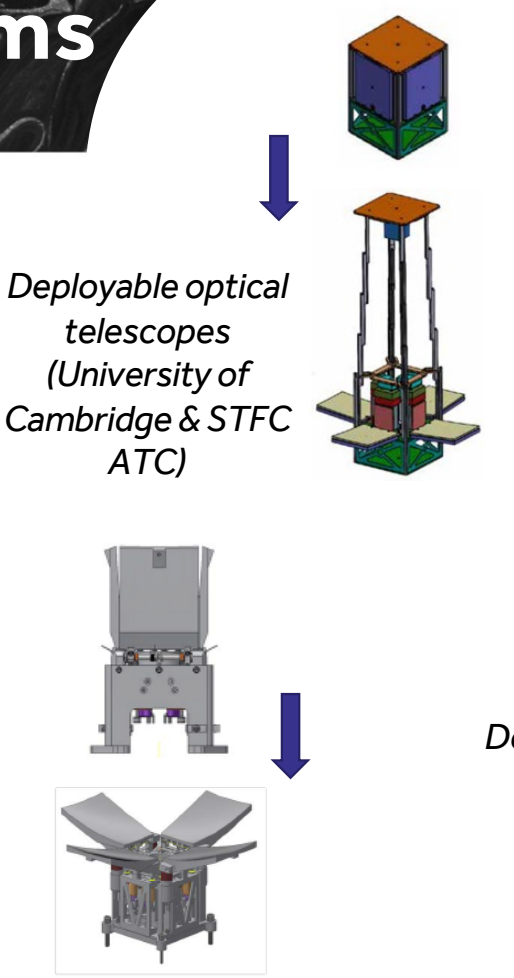
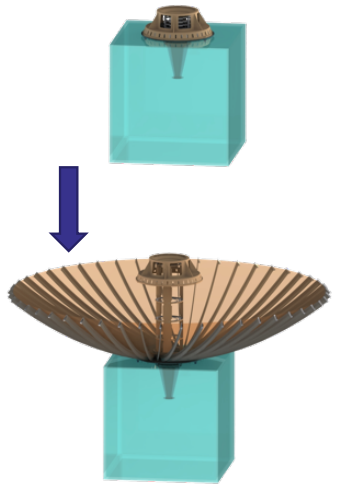
- A limitation of very small spacecraft is that high resolution imaging and detection requires large aperture telescopes or antennae which are difficult to accommodate in the spacecraft. This is a limitation of the physics of imaging etc., and not a limitation of the spacecraft engineering.
- One solution is to use lightweight deployable telescopes and antennae which are folded up for launch, and then unfurled in orbit.
- CEOI has been supporting deployable telescope projects from the University of Surrey, Oxford Space Systems, Cambridge University, and the STFC Astronomy Technology Centre in Edinburgh



Deployable optical telescopes (University of Cambridge & STFC ATC)



Deployable microwave antenna (Oxford Space Systems)

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Further information

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More information

www.space4climate.com