



Powering Climate Action with Space Technology, Data and People.

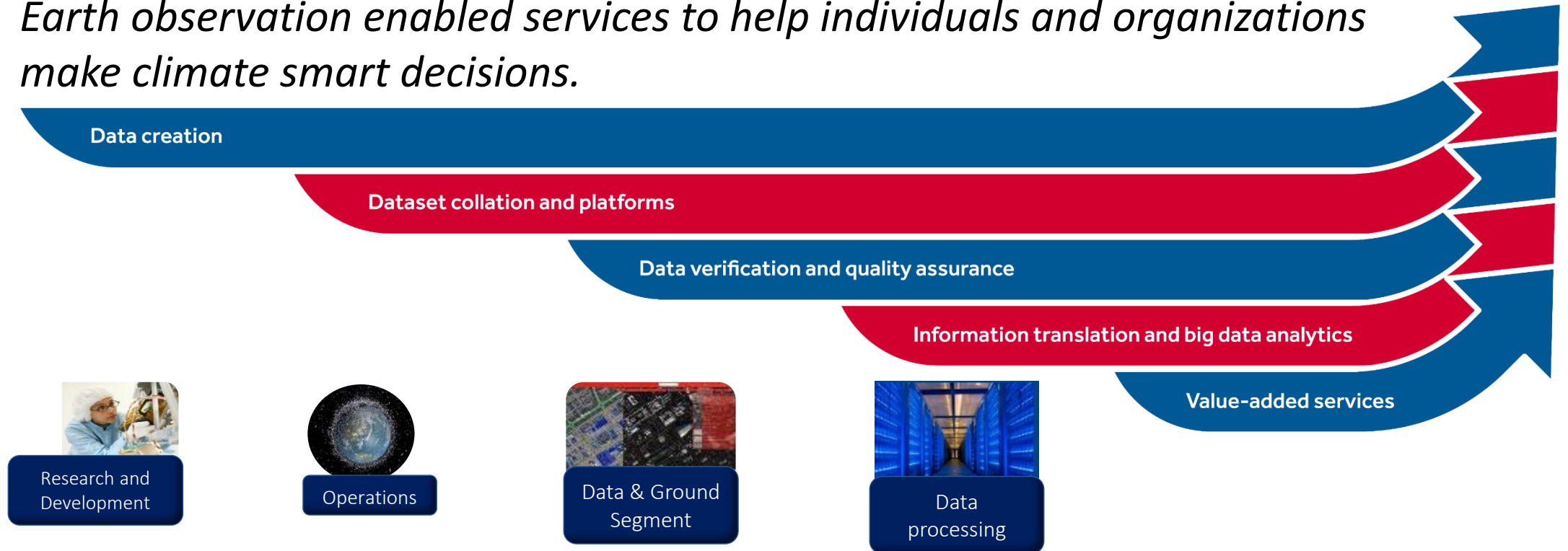
Beth Greenaway,
Head of EO and Climate, UKSA

WSF 7th December 2021



Earth Observation for Climate Services

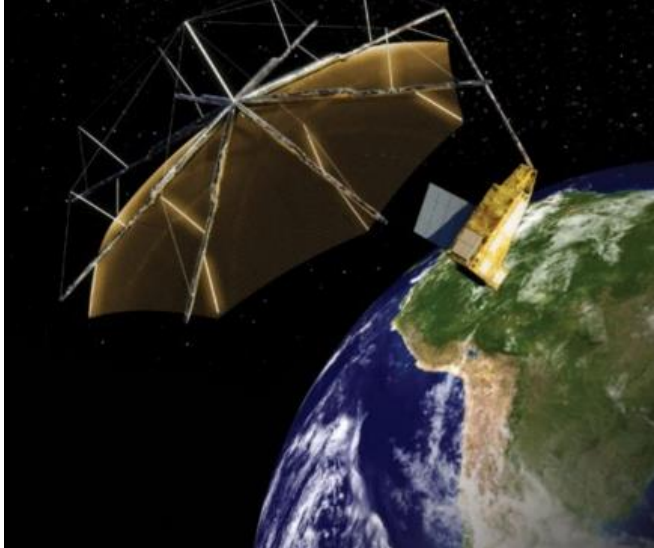
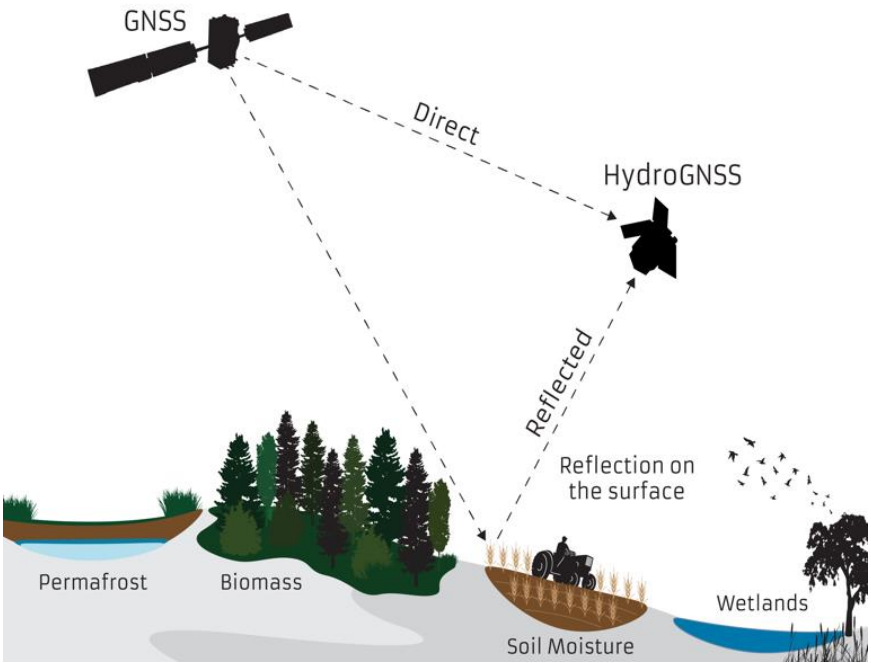
UKSA supports the entire value chain underpinning the creation of satellite Earth observation enabled services to help individuals and organizations make climate smart decisions.



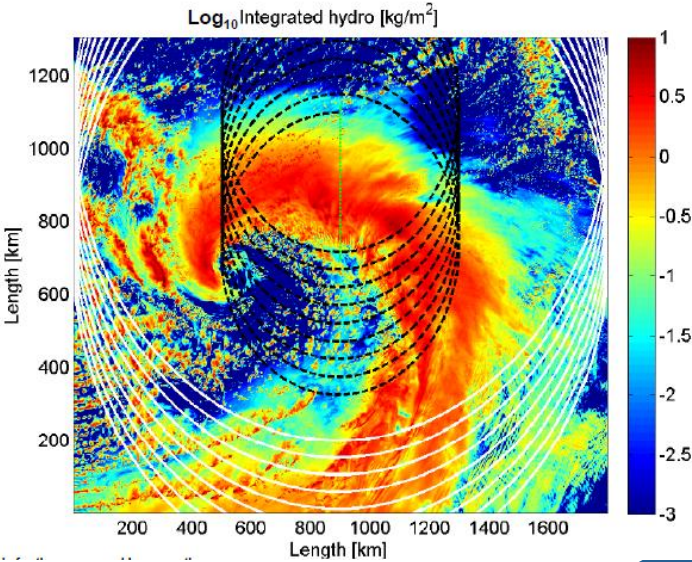
New Technology for Climate Action

BIOMASS

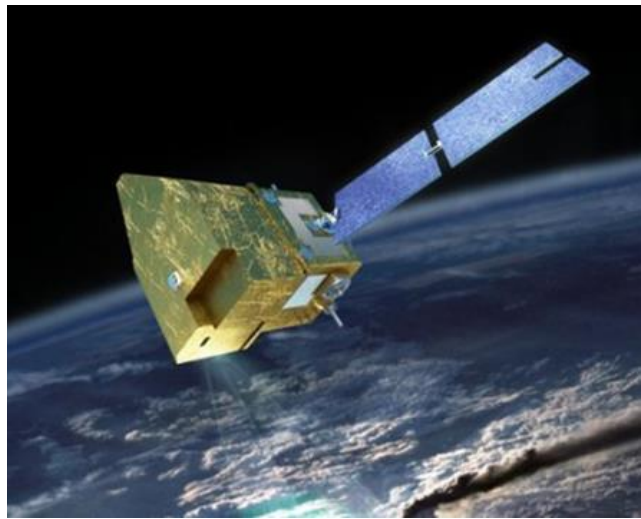
HydroGNSS



TRUTHS



MicroCarb



Wivern

UK Space Agency's International Partnership Programme

IPP:

- ▶ forges **international partnerships** to deliver satellite solutions for global **sustainable development**
- ▶ grant-funds projects which use cutting-edge UK satellite expertise to deliver **real benefits to people on the ground**
- ▶ demonstrates the economic / societal / environmental **value of space-based tools and services** (the 'case for space')



>£150m funding since 2016 (GCRF) UKSA investment plus **additional** partnership co-funding finance and support

Applying to **10 SDGs**

43 projects across **47 ODA countries**

New partnerships between **~350 UK and international organisations**

The majority of IPP projects support climate mitigation and adaptation



**TOGETHER
FOR OUR
PLANET**

UKSA fund and chair S4C – and asked them to help deliver a successful COP26

The UK space sector is at the forefront of global efforts to create and use trusted satellite data for climate action for all.

We do this through:

Climate Science – research into understanding our world from space and how it is changing, the fundamental importance being to learn what is happening to our world, and to be able to manage the impacts.

Climate Technology – the instrumentation and infrastructure to objectively monitor and measure Earth from space, enabling consistent and innovative data analytics, quality assurance and capacity-building.

Climate Action – enabling people to utilise data from space, to make it visible and meaningful through real-world, useful climate services for all.

www.space4climate.com

A few highlights of COP 26:



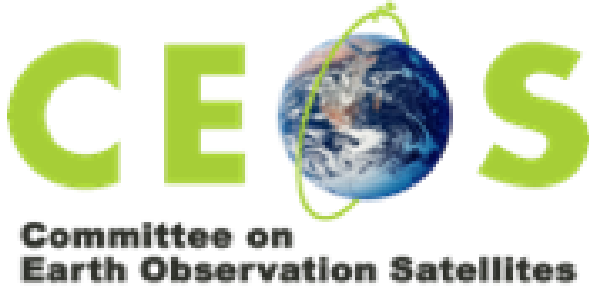
What did COP achieve and what next for EO?

- Glasgow Pact – Global agreement that completes the Paris Rule book and keeps 1.5C alive.
- All countries must now act
 - UK October 2021 UK Strategy for Net Zero – Plans for Transport , Aviation and Shipping, Industry
 - Earth Observations – “ We will strive to remain at the forefront of knowledge and knowhow” – for climate change and biodiversity impacts
 - National Space Strategy and UKSA priorities – EO high on the list. UNOSSA Climate mapping.
- Deforestation - Landmark pledge by over 100 leaders to end deforestation by 2030 and real impacts by 2025
 - Carbon in trees and forests matter in regards to climate change action.
 - UK Science and GEO session – how to measure the storage of carbon in the worlds forests
 - Critical that data from JAXA (ALOS), NASA (GEDI) ESA (Biomass) and ISRO / NASA (NISER) are shared and we collectively resolve these key questions.
- Global Methane Pledge – rapid impacts from short lived GHG. How do we monitor and show action
 - What tools do we have and how can we act to enable their use.
- Annual Reporting of Climate Risk
 - Eg Climate Risk Index demo with insurance industry

A Global Collaborative, Long Term Effort

Mission (Agency)	CO ₂	CH ₄	FOV	Orbit	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
ENVISAT SCIAMACHY (ESA)	•	•	30x60 km ²	SS LEO (10:30)	█														
GOSAT TANSO-FTS (JAXA-NIES-MOE)	•	•	10km (d)	SS LEO (13:00)	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
OCO-2 (NASA)	•		1.25x2.25 km ²	SS LEO (13:00)				█	█	█	█	█	█	█	█	█	█	█	█
TanSat CDS (CAS-MOST-CMA)	•		2x2 km ²	SS LEO (13:30)						█	█	█	█	█	█	█	█	█	█
Sentinel 5P TROPOMI (ESA)		•	7x7 km ²	SS LEO (13:30)							█	█	█	█	█	█	█	█	█
Feng Yun 3D GAMI (CMA, NRSCC)	•	•	10 km (d)	SS LEO (14:00)							█	█	█	█	█	█	█	█	█
Gaofen 5 GMI (CNSA)	•	•	10.5 km (d)	SS LEO (10:30)							█	█	█	█	█	█	█	█	█
GOSAT-2 TANSO FTS (JAXA-NIES-MOE)	•	•	9.7 (d)	SS LEO (13:00)							█	█	█	█	█	█	█	█	█
OCO-3 (NASA)	•		0.7x2.6 km ²	LEO (51.6° incl., prec.)								█	█	█	█	█	█	█	█
MicroCarb (CNES)	•		4.5x9 km ²	SS LEO (13:30)									█	█	█	█	█	█	█
MERLIN (DLR-CNES)		•	0.135 km (w)	SS LEO (06:00 or 18:00)										█	█	█	█	█	█
GeoCarb (NASA)	•	•	3x6 km ²	GEO (85° West)															█
MetOp-SG Sentinel 5 (ESA)		•	7x7 km ²	SS LEO (09:30)															█

█ in orbit █ extension █ planned



Conclusions



- Space assets are a unique and invaluable tool for climate actions
- Data is needed in a format suitable for global models AND for local action
- EO 'pictures' can inspire action

Space Agencies have to:

1. Invest in space assets to ensure international efforts create a long term supply of trusted data.
2. Invest in data management and product development for real user needs
3. Invest in people – the space skills, the data skills and the capacity of people across the world to use it.

We have one
planet Earth.



Collaboration
at all levels is
the only way.