



**MySustainableForest:** Earth Observation services for silviculture.  
Developed by GMV UK

Stakeholders within the silvicultural and wood market chains face outdated forest inventories, uncertain biomass counts, CO<sub>2</sub> stocking and carbon accounting demands. My Sustainable Forest provides a specialised kit supporting operations from sustainable forest management procedures and the quality of wood entering sawmills and pulp mills, through to the assessment of vulnerability trends and planning for future climate change adaptation.

It supports a variety of operations to improve the management of Forest Provisioning Services (Timber Production) and Regulating Services (Climate/Hydrologic Changes).

**Current activity in relation to the UNFCCC Global Stocktake includes application contracts for:**

- Large scale low cost-per-tree reforestation monitoring
- Sustainable management of forest commodities (cocoa) for sustainable food security
- Vegetation management for electrical grids

**UK expertise:** A British company with expertise in devising space-based applications and technologies, as well as robotics and autonomy and ground segment for EO and Telecoms.

**International potential:** Features 6 European countries and 5 climatic regions (Atlantic, Mediterranean, Alpine, Oceanic, Continental).

**Links:** <http://www.space4climate.com/mysustainableforest/>

<https://mysustainableforest.com/>

**Funder:** Horizon 2020

**Platform:** (video) <https://www.youtube.com/watch?v=ACAgKoP-z5Q>

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## VIEWpoint Climate Science for Service Partnership (CSSP) Brazil

– a UK-Brazil collaboration, led by the Met Office for the Newton Fund

CSSP Brazil produces collaborative science fundamental to the development of climate services, which support Brazil's carbon cycle and contribution to the Global Stocktake, as well as climate-resilient economic development and social welfare. VIEWpoint Brazil – by the Institute for Environmental Analytics based at Reading University - has produced easily accessible plain language resources and a central climate information hub, [www.viewpoint-brazil.org](http://www.viewpoint-brazil.org). This includes research to inform the Global Stocktake and Brazil's emissions contributions.

**Current activity in relation to the UNFCCC Global Stocktake:** Operational tools for wildfire forecasting, prevention and fighting fires; improvements in carbon emissions monitoring in Amazon Rainforest including degradation and secondary forests; tropical wetlands & methane emissions (Met Office case study); Attribution studies of extreme weather events in Brazil (Flooding & landslides);

**Potential future contributions to Global Stocktake:** High resolution modelling for Brazil and South America; Data demonstrator for earlier seasonal forecast of river levels in Brazil (Negro River);

**UK expertise:** CSSP Brazil (part of WCSSP) shares UK climate expertise and expands capabilities in the UK and Brazil. As well as world-leading scientific climate research, it has produced collaborative science that is fundamental to the development of climate services that support climate-resilient economic development and social welfare. UK organisations in the partnership are led by the Met Office, and include the UK Centre for Ecology and Hydrology, and the universities of Exeter, Reading, Leeds, Oxford and Edinburgh. Brazilian partners include the Brazilian National Space Agency (INPE), the National Institute of Amazonian Research (INPA), Brazil's national centre for monitoring and early warning of natural disasters (Cemaden), and academic partners in both countries.

**Link(s) to more:** <https://www.viewpoint-brazil.org/about>;  
<https://www.metoffice.gov.uk/research/approach/collaboration/newton/cssp-brazil>

**Funder:** Newton Fund

**Platform:** [www.viewpoint-brazil.org](http://www.viewpoint-brazil.org)

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## TreeView: Precision Forestry for a Nature Based Solution to Climate Change

TreeView will resolve individual tree canopies and obtain their spectral signatures to support classification on an unprecedented scale. The spatial resolution of the satellite is 2.2m in the current design. With this resolution we can detect the signatures from individual canopies of established trees. The data will provide new insights on biodiversity of the treescapes, monitor tree health, identify signs of stress and early onset of disease. The approach to gather data can be scaled and transferred to work with international partners.

**Potential contribution to UNFCCC Global Stocktake:** TreeView will monitor the forestry element of sustainable land management and natural capital, which in turn will track progress on the UN Sustainable Development Goals and support monitoring needs of the Taskforce for Nature-related Financial Disclosure and the Taskforce for Climate-related Financial Disclosure.

**UK expertise:** TreeView project is led by The Open University with nine partners from industry and government organisations; notably the UK Centre for Ecology and Hydrology (UKCEH) and Forest Research are supporting the development with their expertise. The UK has leading experts in the remote sensing of trees in universities, industry and government and has an opportunity to coordinate their efforts to support the UNFCCC Global Stocktake, to monitor the forestry element of sustainable land management and natural capital, which in turn will track progress on the UN Sustainable Development Goals and reporting for the Taskforce for Nature-related Financial Disclosure and the Taskforce for Climate-related Financial Disclosure.

**Link(s) to more:** [www.precision-forestry.org](http://www.precision-forestry.org); [@TreeView\\_OU](https://www.linkedin.com/company/treeview-monitoring-trees-from-space)

<https://www.linkedin.com/company/treeview-monitoring-trees-from-space>

**Funder:** The UK Space Agency has funded the initial study and development of a satellite mission to monitor trees.

**Platform:** [www.precision-forestry.org](http://www.precision-forestry.org)

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### Assimila – modelling crop yields and risks using Earth Observation data

UK company Assimila has developed crop pest risk innovations including Pest Risk Information Service – PRISE - (funded by UKSA IPP), Modelling Crop Yield using EO Data (Newton Fund) & Modelling Crop Pest Risks in China (Newton Fund).

**Current activity in relation to the UNFCCC Global Stocktake:** Monitoring and modelling crop production to analyse use of inputs, GHG emissions, quality of production and losses to production in a changing climate.

**UK expertise:** Use of EO data, meteorological and in situ data to provide crop production analytics and risk forecasts and early warnings in an effective time frame for smallholder farmers, strategic and policy decision-makers

**International potential:** Assimila is working with partners in Colombia, China, Ghana, Kenya and Zambia.

**Partners:** CAB International, University College London, in-country partners including the Chinese Academy of Sciences, Chinese Academy of Agricultural Sciences, Kenya Agriculture and Livestock Research Organisation (KALRO)

**Funders:** UKSA IPP, Newton Fund

**Link to more:** <https://www.assimila.earth/services/data-solutions/>

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**GEOGLAM** – (Group on Earth Observations Global Agricultural Monitoring), a G20 initiative to increase food commodity market transparency and improve food security supported by Defra, UK Space Agency & National Centre for Earth Observation (NCEO).

GEOGLAM provides 2 global services – the [AMIS Crop Monitor](#) and the [Crop Monitor for Early Warning](#) – and supports numerous [national and regional](#) monitoring systems.

The **AMIS Crop Monitor** focuses on 4 major food types traded as commodities: wheat, maize, soybean and rice. It covers over 80% of global production in 49 countries. It has been operating since 2013.

The **Crop Monitor for Early Warning** focuses on countries at risk of famine and where advanced warning of potential food shortages provides the necessary time to trigger action by humanitarian and aid organisations. It was launched in 2016 and covers many of the countries not covered by the AMIS Crop Monitor.

**Current activity in relation to the UNFCCC Global Stocktake:** Supporting countries' National Adaptation Plans (NAP), a process established under the United Nation's Framework Convention on Climate Change (UNFCCC).

**UK expertise:** Defra supports GEOGLAM's climate adaptation work supporting the UNFCCC process. Defra has contributed to the development plan of the GEO Knowledge Hub and implementation of an agricultural monitoring service for South Africa. This latter service was developed by ESA building on the Sen2Agri system and using Amazon's cloud computing service. It is designed to be usable in settings with limited computing expertise and capacity.

**International potential:** GEOGLAM is supporting countries to develop guidance on using satellite data for agricultural monitoring. This guidance will contribute to a country's National Adaptation Plan (NAP), a process established under the United Nation's Framework Convention on Climate Change (UNFCCC).

**Link to more:** <http://www.space4climate.com/geoglam/>

**Partners:** Defra, UK Space Agency and the National Centre for Earth Observation (NCEO), University College London GEO, CEOS,

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## Mapping land cover using AI and satellite imagery - [Scotland Landcover, mapping tool](#)

Space Intelligence (based in Scotland) has developed a system that identifies and tracks changes in large and often remote sites year-on-year, providing evidence of environmental deterioration or recovery (e.g. peatlands, forests) that confirms if Scotland is on track to meet its climate change targets. Use of satellite monitoring and AI provides cost-effective monitoring in support of Nature-Based Solutions.

**Current activity in relation to the UNFCCC Global Stocktake:** Our Scotland Landcover dataset is used by the Scottish Government to understand their total area of different landcover types and how these are changing, which is one of the pieces of data that feeds into their submission to the UK government, which reports to the UNFCCC at a UK level.

**Potential future contributions to the UNFCCC Global Stocktake:** The datasets on landcover, carbon storage and their past and potential future changes, derived from satellite data and world-leading analytics, will, we hope, be used by many countries in future Global Stocktakes. Through our work with companies and governments implementing or funding Nature Based Solutions projects we also hope to be part of the solution, helping target, monitor and facilitate payment for results.

**UK expertise:** AI & EO for cost-effective Nature-Based Solution

**International potential:** Effective over large and remote sites.

**Link to more:** <https://www.scotlandaistrategy.com/case-studies-ai-and-satellite-imagery>; Global overview of carbon projects: <https://maps.space-intelligence.com/space-intelligence10293/maps/122300>

**Funder:** Scottish Government Can Do Innovation Challenge Fund

**NB:** In a similar project, Space Intelligence was funded by NESTA to use AI to map riverine forests with the Scottish Wildlife Trust, to support planning a Nature Recovery Network.

**Platform:** <https://www.space-intelligence.com/scotland-landcover/>

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## Windstorm Information Service (WISC) – extreme weather (windstorm) risk

Providing windstorm data in the form of storm tracks and footprints at 1km and 4km, this high-quality dataset can be used by the insurance and re-insurance industry at a range of scales within Europe to better understand the levels of risk from windstorms and to address increasing social and economic cost of severe windstorms. WISC also produced a synthetic event set of 22,980 storms based on recalibrations of 10m wind speed from the [Met Office HadGEM3 model for 1985 to 2011](#).

**Potential contribution to the UNFCCC Global Stocktake:** WISC has generated a number of historic datasets that can be used to analyse the range and severity of windstorms in the past, their impact and decadal variability. WISC has produced key indicators such as number of European winter windstorms per year, average maximum wind speed of winter windstorms and average storm severity.

**UK expertise:** A Copernicus Climate Change Service (C3S) in a meaningful and accessible data visualisation platform co-designed with the industries and people who use it to make better-informed climate decisions. The 4km dynamically downscaled footprints from WISC were subsequently complemented by 1km statistically downscaled footprints based on ERA5 as part of a follow-on project led by KNMI and involving CGI (UK), University of Reading and VU Amsterdam.

**International potential:** European insurance and re-insurance businesses and for other sectors such as energy, transport and civil engineering.

**Links:** <http://www.space4climate.com/wisc/>;  
<https://climate.copernicus.eu/windstorm-information-service?q=wisc-windstorm-information-service>

**Partners:** Led by CGI (UK) with UK partners Met Office, University of Reading, OASIS, Institute for Environmental Analytics and Telespazio UK, International partners KNMI (Netherlands Met Office), VU (Amsterdam), Swiss Re.

**Funder:** C3S SIS Service

**Platform:** <https://cds.climate.copernicus.eu/cdsapp#!/dataset/sis-european-wind-storm-indicators?tab=overview> (CDS Windstorm Data)

<https://cds.climate.copernicus.eu/cdsapp#!/dataset/sis-european-wind-storm-synthetic-events?tab=overview> (Synthetic Event Set)

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## Earth Observation Peatland Observatory for assuring and targeting peatland restoration

Space4Climate members **Assimila**, **Ordnance Survey** and the **National Centre of Earth Observation (NCEO)** are working with peatland scientist Prof Fred Worrall, **University of Durham**, and UK peatland land managers to use EO data to monitor peatlands and restoration actions to reduce carbon emissions.

**Potential contribution to the UNFCCC Global Stocktake:** The Observatory will provide data services for restoration across UK peatlands (~1800000 ha) and help land managers target future restoration to ensure the UK gains maximum greenhouse gas sinks and to support UK climate resilience. It will also test scientific hypotheses on the role of peatland restoration in combatting the impacts of climate change at microclimate level.

**UK expertise:** DataCube facilities, user interface, algorithms and analytics services including a peatland recovery tracker developed by Assimila UK, EO datasets and analysis, particularly Land Surface Temperature (LST), by NCEO. Durham is leading on calibration of data based on field data from peatland sites and user requirements. Ordnance Survey lead the collaboration and are providing geospatial expertise and ensuring interoperability with Crown data, ensuring compatibility with OS data to support decision-making that integrates with local government and many peatland land managers' processes.

**International potential:** Applicable to peatlands in temperate climates and can be adapted and scaled to be relevant globally.

**Link to more:** <https://space4climate.com/peatlandobservatory/>

**Funder:** Ordnance Survey with previous funding of phase 1 of the Demo and LST algorithm development by Space4Climate.

**Phase 1 platform:** Jupyter Notebooks available via Assimila and Peatland Observatory Storymap.

**Current Activity:** Exploring potential application to support SDG 15 reporting for land degradation for the UK, creating an Academic paper on the methodology for peer review and testing with overseas partners for international application.

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**CO\$TINGNATURE** – allows policy-makers to assess conservation and development priority on the basis of biodiversity, 18 ecosystem services, pressure and threat for current scenarios and user-defined 'Business-As-Usual' land use change and restoration scenarios, including analysis of co-benefits of natural climate solutions

Co\$tingNature uses the best available global datasets on land, climate, water and human activity from ESA, NASA, JAXA and elsewhere to map ecosystem services (the benefits provided by nature) and tie these to the Sustainable Development Goals (SDGs) at the goal level. The map shows for each pixel the SDG to which nature in that pixel provides the greatest support.

**Current contribution to the UNFCCC Global Stocktake:**

Co\$tingNature calculates a baseline for current ecosystem service provision and allows a series of interventions (policy options) or scenarios of change to be used to understand their impact on ecosystem service delivery. The tool is already used all over the world (>3500 orgs over 180 countries) by conservation and development NGOs, policy analysts, various sectors and for academic research.

**UK expertise:** King's College London is bridging the gap between scientific data and knowledge to support policy and management decision-making by building and deploying data-intensive, science-based spatial policy support systems in support of UN Sustainable Development Goals.

**Links:** <http://www.space4climate.com/costingnature/> ;  
<http://www.policysupport.org/costingnature>

**Partners:** Kings College London, AmbioTEK & UNEP-WCMC (IIED for economic valuation functionality)

**Audience:** Conservation and development NGOs, GO and NGO Policy analysts, agriculture and industry (e.g. extractives), education and academic research.

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