



**National Centre for
Earth Observation**
NATURAL ENVIRONMENT RESEARCH COUNCIL



**Centre for
EO Instrumentation**

Earth Observation Conference - Science and Technologies

02 – 05 September 2019

CALL FOR ABSTRACTS & PARALLEL SESSION TOPICS

We invite abstract submissions – on science, missions and/or technology – for talks, posters, demonstrations and exhibits, in the following categories:

1. Climate Data and Climate Services, Chair Briony Turner – The UK science community are world leading in designing, delivering and exploiting high-quality climate observations from satellites. These observations offer evidence and assurance, for societal understanding of environmental change. This session will showcase how the science community both plans to, and is already exploiting these observations through big data analytics and machine learning, dimensionality reducing the datasets for wider societal and commercial uptake for change monitoring, enhancing land management regimes and aiding assessment of exposed assets and populations, their vulnerabilities now and as the climate changes. For this session we are seeking abstracts demonstrating forefront of UK research in designing, exploiting and/or quality assurance of services derived from space-based climate data. We are particularly seeking talks/posters providing insight into new retrieval methods and technologies, underpinning infrastructure, new forms of systems and software architecture, novel uses of ensemble output to develop new parameterisations, forthcoming datasets from planned missions and launches, as well as analysis of, and decision support tools developed from, existing EO climate data. We also welcome mission concepts which will improve or extend the current suite of climate satellites which are fundamental to climate data provision.
2. Data Assimilation, from theory to applications, Chair Amos Lawless - Data assimilation is being used throughout NCEO to combine data with models, in order to estimate either the state of an environmental system or model parameters. In this session we wish to highlight advances in both data assimilation (DA) theory and the applications of DA throughout NCEO, as well as the link between theory and applications. The session will include (i) DA in different application areas (e.g. land surface DA, chemical species DA), where new approaches to the DA problem are being developed; and (ii) new developments in DA theory that could be beneficial to the application areas. The aim is to give an overview of the broad range of DA work being carried out in NCEO and to demonstrate how theoretical advances in DA are being used to enhance the exploitation of Earth Observation data for different applications.
3. The Energy and Water Cycle, Chair Helen Brindley - This session welcomes contributions concerned with all aspects of the Earth's energy and water cycles, including future concepts and developments of instrumentation and missions. We particularly encourage contributions that seek to observe and quantify different components of the water cycle

(e.g. clouds, precipitation, snow, soil moisture, water vapour) and elucidate their coupling with the flows of energy into, out of, and within the Earth system.

4. Exploring Atmosphere-Biosphere Interactions using Earth Observation Datasets– Chair Maggie Marvin - The wide variety of available data products, combined with the expansive spatio-temporal coverage of remote observational techniques, renders Earth observation datasets as valuable tools in the exploration of complex atmosphere-biosphere systems. This session presents results from a range of recent studies that apply Earth observation datasets to advance the scientific understanding of terrestrial atmosphere-biosphere interactions. Featured studies may meet this objective through the development and validation of new chemical, physical, or meteorological Earth observation datasets, the analysis of relevant trends in existing Earth observation datasets, and/or the integration of Earth observation datasets with coupled land-atmosphere models. Topics currently investigated by the National Centre for Earth Observation include but are not limited to fire in the Earth system, the co-dependence of anthropogenic emissions and natural ecosystems, and atmospheric variations of greenhouse gases. We welcome abstracts for studies, related to these and other topics that expand our understanding of terrestrial atmosphere-biosphere interactions through the application of Earth observation datasets. We also welcome abstracts for planned or new mission concepts that could radically improve our ability to observe land-atmosphere interactions.
5. Earth Observation for International Development – Chair Heiko Balzter - In this session, applications of satellite data and other Earth observation data in the context of international development will be presented. Talks may include operational applications of Earth observations for Official Development Assistance (ODA) and research intended to advance knowledge that is relevant to ODA and is empowered by Earth observation data. Particular attention will be given to the United Nations Sustainable Development Goals. The session will include presentations from the NCEO ODA programme.
6. Space 4.0 – Chair Tianran Zhang - Developments in software associated in Deep Learning, and other forms of Artificial intelligence, are leading to new ways of processing EO data - even sometimes onboard prior to Earth downlink. Similarly new airborne demonstrators are proving the way for the next generation of satellite EO instruments, whilst trends in miniaturization and less stringent restrictions with regards to e.g. 'space qualified' hardware has led to an explosive growth in the numbers of EO satellites, including those costing many orders of magnitude less than large science missions and those with more commercially-orientated build models. This session encourages abstracts covering new methods and applications in EO data processing, use of airborne demonstrators for supporting future missions or new technique development, and developments in the planning, technology or use of smaller, alternative, “lower cost” EO technology in orbit.
7. The Carbon Cycle – Chair Joao Carreiras - This session focusses on the regional to global carbon cycle including the marine, terrestrial and atmospheric domain. Especially welcome are contributions across domains. Presentations may cover science results obtained from linking observations to models, integrating EO and non-EO datasets or by exploiting new EO methods and datasets and contributions presenting results from new carbon missions (OCO-3, GOSAT-2, GEDI etc.) are encouraged. The session is also open to presentations dealing with upcoming missions, future mission concepts, or instrumentation developments.
8. Oceans – Chair Chris Banks - Remote sensing (from satellites, ground-based and airborne platforms) offers a unique perspective on the world’s oceans. Recent developments offer the ability to assess a range of variables at improved temporal resolutions and at scales extending from inland waters to the open sea. Active and passive sensors, with improved radiometric performance and spatial, spectral, and temporal resolutions help facilitate better understanding of physical and/or biogeochemical processes. Submissions are invited on recent advances in remote sensing including missions, instrumentation,

algorithm development, synergies, and applications as well as those illustrating innovative processing or applications.

9. Other related topics not listed above. We welcome abstracts covering science, data (retrievals, datasets), missions and technologies which do not fit with the above topics, particularly where these represent breakthroughs into new capabilities or deliver new insights into science.

Details of abstract to be submitted for consideration:

Name	
Email address	
Mobile Telephone number	
Institute or Company	
Abstract title	
Abstract detail	(250 words maximum)
Category, 1-9 from the list above	
Are you submitting a talk, poster exhibit or equipment demonstration?	

We also invite submissions for 1.5 hour parallel topics: there will be one parallel session on Wednesday 04 September, and you are invited to submit a proposal to convene a session. We have a limited number of rooms available for these parallel sessions, and they will be selected based on session description and relevance to the conference:

Name of convener(s) and/ or Chair(s)	
Email address(es)	
Mobile Telephone number(s)	
Institute or Company	
Session title	
Session description	(250 words maximum)
Type of meeting room (such as lecture theatre, classroom-style layout, boardroom-style room)	
Equipment required, such as data projector....	

Complete the above details and return by email to: comms@nceo.ac.uk by 30 July 2019.

The draft, outline conference programme is available: <https://www.nceo.ac.uk/article/nceo-annual-conference-02-05-september-2019/>

Confirmed speakers, poster presenters, exhibitors and session conveners will be contacted by 09 August 2019.

All speakers, poster presenters, exhibitors and session conveners will need to register to attend the conference. Registration details are available: <https://www.nceo.ac.uk/article/nceo-annual-conference-02-05-september-2019/>. Please note that the closing date will be **09 August 2019** for conference registration which includes overnight accommodation – and **22 August 2019** for day delegates.