



United Kingdom and Ireland Section

Christmas lecture

Learning more about our Earth

An exploration of NASA's contributions to Earth science through remote sensing technologies

Francis Lindsay

Systems Engineer, NASA
(Goddard Space Flight Center)



Sponsored by
IEEE Systems Council
and GRS Chapters



This is a FREE event but
registration is essential
<https://goo.gl/nSTRGb>

Friday 8 December 2017 • 2–5pm

Regent Street Cinema • University of Westminster
309 Regent Street • London W1B 2UW

abstract

CELEBRATED for its pioneering work in space exploration and the technological advancements that made access to space possible, NASA is now increasingly known for the agency's research and technologies that support the Earth sciences.

IEEE UK and Ireland's 2017 Christmas lecture investigates these efforts, told mostly through the technological innovations NASA uses to achieve a greater understanding of the Earth as a system.

Enabling this science is NASA's fleet of over two dozen Earth science spacecraft, supported by aircraft, ships and ground observations. NASA's Earth Observing System

(EOS) is a coordinated series of polar-orbiting and low inclination satellites for long-term global observations of the land surface, biosphere, solid Earth, atmosphere, and oceans. The launch of the three flagship satellite missions since 1999 – *Terra*, *Aqua* and *Aura* – NASA's initial 'Mission to Planet Earth' made it possible to measure aspects of the environment that touch the lives of every person around the world.

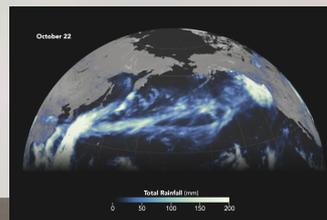
Over the past two decades NASA's Earth science program has been driving the development of new missions, investing in remote sensing instruments and technologies, and creating a

supporting data and information system infrastructure, EOSDIS, for ingesting, processing, archiving and distributing all of NASA's Earth science data.

Improvements in our abilities to measure and characterise aspects of the Earth's system through remote sensing have been augmented by underlying data and information systems, making it possible to share these critical Earth science data

and information products with the world. As NASA's remote sensing instruments have achieved greater precision and timeliness, the volume and complexity of these data have created a myriad of challenges for their accessibility and use.

NASA's data system teams have kept pace with the demands and technology sophistication of an ever-growing science and applications community. Now, recent challenges made plain by upcoming NASA satellite missions nearing launch have spurred a new technology paradigm shift in how the agency can support ever-larger Earth science Big Data challenges to come.



Francis E Lindsay, PhD **Systems engineer, Earth Science Data and Information System Project** **Goddard Space Flight Center - NASA**

DR LINDSAY is a systems engineer supporting NASA's Earth Science Data and Information System Project (ESDIS). ESDIS manages NASA's Earth Observation System Data and Information System (EOSDIS), a very large and distributed data information system responsible for processing, archiving and distributing NASA's 24-petabyte collection of satellite, airborne, in-situ and modeling data holdings.

Dr Lindsay joined NASA in 2003 as a program manager for the Earth Science Data System Program at NASA Headquarters and, in 2009, joined the ESDIS Project team based at the Goddard Space Flight Center supporting NASA's international data systems efforts within the Committee of Earth Observing Satellites (CEOS), GEO and long-term data system evolution activities. He supported NASA Headquarters as the Disasters Program manager in NASA's Applied Science Program from 2012–14.

Before joining NASA, Dr Lindsay helped create and manage the Global Land Cover

Facility (GLCF) at the Institute for Advanced Computer Studies at the University of Maryland and was an Assistant Professor of Geography at the University of New Hampshire. He has also worked extensively with the Earth Science Information Partnership (ESIP) Federation, an academic, private sector and applied science organisation helping ESIP craft its initial governance structure and mission.

He received a PhD in Geography from the University of Maryland, focusing on GIS and land cover change applications, and a Master's degree in Geography from the University of Massachusetts, Amherst.

