Space, Satellites and Sustainability (SS101)

Conference Chair: Murray Collins, The Univ. of Edinburgh (United Kingdom)
Conference Co-Chair: Callum J. Norrie, Space Network Scotland (United Kingdom)
Organising Co-Chair: Kristina Tamane, The Univ. of Edinburgh (United Kingdom)

We face a series of unprecedented global challenges that threaten to undermine our socio-economic well-being and the persistence of biodiverse ecosystems, not least, Climate Change. Achieving sustainable development is the challenge of our age, as encapsulated in the Paris agreement in 2015. Global leaders agreed on 17 sustainable development goals and 169 associated targets to be met by 2030. To monitor these environmental targets effectively on a global scale requires major advances in satellite earth observation systems and associated data analytics.

This interdisciplinary meeting will highlight recently operational and forthcoming satellite systems providing new sensors supporting sustainability. Advances in the processing of big satellite data will be presented alongside novel analytics focused on delivering actionable sustainability intelligence. The meeting will also highlight advances in approaches to issues of sustainability in the building, launching and operation of satellite themselves.

We encourage contributions from researchers working in all aspects of satellite systems emphasizing sustainability. The themes and topics for this conference address the need for new performant sustainability systems, the critical elements of their performance and the technology for their implementation.

GLOBAL SUSTAINABILITY: CHALLENGES AND OPPORTUNITIES FOR SPACE AND SATELITES

• industry perspectives: implementation of analyses to support commercial demand for sustainability impact, and market opportunities
• identification of global hotspots for environmental stress/fragility, and response prioritisation
• satellite data-informed disaster preparation and response
• climate change-its impact on sustainability
• sustainability data solutions in areas such as agriculture, disease, humanitarian aid, re/afforestation.

SATELLITE MISSIONS FOR SUSTAINABILITY: NEW ASSETS AND CAPABILITY

• new and forthcoming missions with sustainability impact
• novel sensors used in quantifying sustainability action impact
• crop and forestry damage, stress and disease measurement
• monitoring of population and movement
• inspection of physical assets at risk from environmental change.

SATELLITE DATA FOR SUSTAINABILITY: SOLUTIONS AT SCALE

• combining satellite data with airborne/terrestrial data, including IOT
• visualization of large and complex multi-level data and analytical products (including VR / AR / MXR)
• artificial intelligence and machine learning supported applications
• sustainability data platforms-characteristics and applications
• open data structures for sustainability
• capacity building for innovative global applications.

SUSTAINABILITY ISSUES FOR SATELLITES: BUILD, LAUNCH AND ORBIT

• minimizing environmental impact from launch pad build
• green fuels and propulsion
• satellite capture, refueling and de-orbiting
• rocket stage capture
• launch and orbit regulations and their impact.

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