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Operational land imaging; Europe's Copernicus Global Land Service

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ABSTRACT:

On 3rd April 2014 the European Union launched the first of six 'Sentinel' missions underpinning the EU's Earth Observing Program, Copernicus. An open data policy assures the imagery can be used by all nations to provide knowledge concerning natural resource management, for environmental assessments and for environmental treaty management among other applications. In 2015 Sentinel-2 will be launched. This 10 – 20 m resolution multispectral imaging system will be an effective complement to the US' Landsat program, and plans to support synergistic use of data from the two systems are advancing. Combining data from the two programmes will provide a strong basis for improved information flows concerning the state of the Earth environment. This paper discusses how these two new Earth Observing systems are an important tool for international co-operation and illustrates key areas where combined use is a priority. Scientific evidence gathering, plus monitoring, reporting and verification work for Multilateral Environmental Agreements such as the three Rio Conventions are typical foci. Concrete examples of Landsat / Sentinel 2 class data use for Protected Area management programs in Africa and reporting for the Convention on Biological Diversity are presented. The paper also introduces the Sentinel satellite program, describes the Copernicus Global Land Service in terms of data-access and product generation (typically biophysical variables at ca. 100m resolution such as the Fraction of Absorbed Photosynthetically Active Radiation, or environmental information such as burnt area and surface water), the migration from 100 meter resolution information to Sentinel-2 / Landsat 8 class products and the challenges faced in integrating divers data streams (including instrument calibration, alignment of algorithms used to generate higher order products and ancillary data such as digital elevation models).