

Capabilities of the DMC Constellation and Applications of its Imagery for Tropical Forest Mapping and Monitoring

Katarzyna Wisniewska, Paul Stephens

*DMC International Imaging,
Tycho House, 20 Stephenson Road,
GU2 7YE Guildford, UK*

k.wisniewska@dmcii.com, p.stephens@dmcii.com

DMC International Imaging Ltd (DMCii) is a UK based supplier of remote sensing data products and services for international Earth Observation (EO) markets. DMCii supplies programmed and archived optical satellite imagery provided by the multi-satellite Disaster Monitoring Constellation (DMC). The Disaster Monitoring Constellation provides worldwide daily revisit capability and delivers high temporal resolution imagery for many applications including the forestry sector: monitoring of tropical forests, deforestation, degradation and illegal logging.

The medium resolution 22m and 32m imagery with 650km swath and up to 4100km along track allows repeated monitoring of vast areas. The daily revisit of the satellites of the DMC Constellation increases significantly the ability to reduce the cloud contamination in the imagery, which is extremely important in tropical regions. DMCii offers an end-to-end capability from reliable image acquisition to expert image analysis, to meet the forest monitoring requirements of government authorities, international organisations and private companies.

The paper presents the examples and ability of the Constellation to cover vast areas in the tropical regions with cloud free imagery, such as Amazon, Guyana, Democratic Republic of Congo, India and Malaysia.

The new capability of UK-DMC2 satellite, near-real-time acquisitions and direct delivery to any given ground station, is now used by INPE in Brazil, for the near-real-time illegal logging tracking. The new contract signed with INPE will enable them to downlink higher resolution than currently used MODIS- 22metre resolution data directly from the UK-DMC2 satellite to its groundstation at Cuiaba, Brazil. With approximately 130 times as many pixels per hectare as the MODIS images currently in use, the data will detect much smaller clearings and provide more detailed maps of deforested areas. The UK-DMC2 satellite will image the entire Amazon basin every two weeks, so that the authorities are alerted as soon as possible after logging is detected. In a unique agreement, the data covering Brazil will be made freely available on open licence through the INPE website so the general public can follow progress against deforestation.

The new satellites, that joined the DMC Constellation in 2011, NigeriaSat2 and NigeriaSatX, enhanced the spatial resolution of the Constellation to 2.5m, at the same time providing the medium resolution data continuity. Now it is possible to monitor the forest at the individual tree level.

Keywords: forestry, deforestation, optical satellite data, DMC Constellation, frequent revisit