

The ALOS Kyoto & Carbon Initiative: enabling the mapping, monitoring and assessment of globally important wetlands

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Published online: 13 January 2015
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This Special Issue of Wetland Ecology and Management highlights activities undertaken under the framework of the ALOS Kyoto and Carbon (K&C) Initiative, which is an international collaborative project led by the Japan Aerospace Exploration Agency (JAXA). The K&C Initiative currently involves some 30 researchers from 20 countries, and aims to stimulate the development of regional-scale applications pertaining to forestry and wetlands using space-borne Synthetic Aperture Radar (SAR), with specific focus on the medium-long wavelength (L-band, 23.5 cm wavelength) SAR, which is particularly sensitive to vegetation structure and for detecting inundated environments.

JAXA's Advanced Land Observing Satellite (ALOS) Phased Array L-band SAR (PALSAR) was in operation between 2006 and 2011 and the unique global systematic acquisition strategy developed for the PALSAR instrument facilitated consistent, repetitive and cloud-free wall-to-wall observations of the earth's surface at spatial resolutions as fine as 10–20 m. The ALOS PALSAR observations complemented those of its predecessor, the Japanese Earth Resources Satellite (JERS-1) SAR, which provided the first L-band SAR baseline for tropical and boreal forest monitoring in the 1990s. The rich archives of ALOS and JERS-1 data also provide key baselines against which to compare observations by the latest L-band sensor, ALOS-2 PALSAR-2, which was launched in May 2014.

The papers featured in this K&C Special Issue focus on applications relating to wetlands characterisation, mapping and monitoring. They discuss the application of space-borne radar to various different wetland types, ranging from freshwater to coastal, and natural to manmade. The research collectively illustrates the fundamental importance of systematic observations to accommodate monitoring of the environment at local, regional and global scales.

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