

**An new medium resolution datasets of seasonal wetland dynamics from ENVISAT  
ASAR for northern Eurasia**

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Active microwave satellite data can provide information on surface hydrology dynamics on local to global scale. Information includes inundation, surface wetness and status regarding frozen or thawed condition. The European platform ENVISAT carries an advanced SAR (ASAR) which provides C-band data in ScanSAR mode. These data can be used for update of inundation status with 150m spatial resolution at frequent intervals (several times per month depending on actual acquisitions). This complements regional to global wetland datasets with coarser scale (~25km). Smaller permanent and seasonal features as abundant in high latitudes and which are usually not captured with even medium resolution datasets can be identified. Continuation of C-band records is assured because of the future plans of the European Space Agency (ESA) with respect to the Sentinel series of satellites. The wavelength is between 5–6 cm, which means that even moderate wind action on the water surface can impede the specular reflection. Longer wavelengths such as L-band (>20 cm) would be therefore preferable for this application but their availability is limited at present, as well as in the near future. A further problem related to the use of C-band radar is the very limited penetration of the signal through emerging vegetation, for example along lake shores. The ENVISAT archive provides nevertheless a unique opportunity for medium resolution inundation dynamics mapping.

Land surface hydrology especially wetlands need to be considered for land ecosystem-atmosphere modeling at high latitudes. The suitability of active microwave data to help validate or constrain relevant models is investigated within the European Space Agency (ESA) funded project STSE ALANIS-Methane (Atmosphere-LANd Interactions Study, in collaboration with the Integrated Land Ecosystem-Atmosphere Processes Study (iLEAPS), [www.alanis-methane.info](http://www.alanis-methane.info), lead by CEH Wallingford UK).

A freely available experimental dataset of inundation dynamics and saturated areas with 150 m resolution has been developed for the years 2007 and 2008. It covers the majority of Russian lowlands north of 55° latitude and is based on ENVISAT ASAR. The temporary open water information is provided for 10-day periods. Data availability is however constrained for many regions. Additional information is therefore provided for the number of available acquisitions during the 10-day period and the number of days since last update. Additional products are maximum extent of open water bodies and permanently high saturated areas.

These datasets complement the circumpolar free database (land surface temperature, surface soil moisture, land cover and terrain) which has been set up as part of the ESA DUE Permafrost project ([www.ipf.tuwien.ac.at/permafrost](http://www.ipf.tuwien.ac.at/permafrost)).