

## **Flood monitoring from tandem ERS phase coherence maps: Ob River, Siberia**

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### **Abstract**

A major difficulty with using ERS PRI products to map the extent of river flooding, lakes, and other water bodies is found where wind-roughening increases backscattering from the water surface. This problem is particularly severe for the Ob River, Siberia, where river inundation and floodplain lakes are clearly visible in only a small fraction of the many ERS images acquired over the site. However, phase coherence maps of the area derived from tandem ERS-1 and ERS-2 complex data provide extremely clear discrimination of open water bodies, due to the fact that water surfaces exhibit zero phase correlation with later ERS acquisitions. This resulting contrast with the surrounding land surface (where a greater level of phase coherence is found) permits highly effective mapping of open water, regardless of wind conditions, clouds, or darkness. Our findings also suggest that wetlands that typically display high backscatter from emergent aquatic vegetation are also effectively detected using this method.

Tandem ERS pairs acquired over the Ob River on Jul