# Flood mapping of Danube River at Romania using multi-date ERS2-SAR data

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Abstract

The objective of this study is to explore some flood map classification techniques to identify flooded areas of Romania due to the 2006 Danube River flooding events, to improve the accuracy of flood mapping using multi-date ERS-2 SAR data. Among the 7 SAR images analyzed for the same study site locate around Bistret of Romania, several likely represent "dry" and several "wet" conditions, and the latter were mainly due to the major Danube flooding event of 2006. The images were classified into (1) permanent water (Danube River and lakes), (2) flooded area, and (3) dry land, using single image supervised classification, frequency-based contextual classification, principal component analysis, and an orthogonal, 2-dimensional wavelet transform of Mallat. The flooded areas delineated from the above procedure are visually compared with a Landsat-TM and a MODIS mosaic images of the study site at Bistret. Apparently there is no one technique that is consistently better partly because of data noise even though the images were first subjected to speckle filtering and geometric corrections, and partly because SAR images could appear dark not only because of flooding but also because of smooth surfaces and other factors.