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The following title was submitted:

Mineralogical mapping in the Doñana area using datafusion of optical and thermal hyperspectral images.

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Abstract (284 words):

On the 25th of April 1998, a tailings dam failure of the Los Frailes lead-zinc-copper-silver mine at Aznalcóllar (near Seville, Andalusia, Spain) released 4-5 million cubic meters of toxic tailings into the nearby Río Agrio. The slurry wave covered several thousand hectares of farmland and threatened the Doñana National Park, resulting in a large economic damage. Since the mining operations have restarted on the 6th of April 1999, the environmental ministry of Andalusia has knowledge of new high acidity and metal concentrations in the Guadiamar river near the mine.

A study will be carried out to map the contaminants that are present in the Doñana area as a result of the mining activities and the April 1998 accident. Optical and thermal laboratory spectra of field samples will be used to develop a feature level datafusion. The results obtained with the laboratory spectra will be checked with DAIS7915 and HyMap hyperspectral images, which have simultaneously been acquired on the 5th of June 1999. The images cover the abandoned open pits of the mine, the mine-tailings reservoir and the sediments deposited downstream the Rio Agrio.

The Australian HyMap (Hyperspectral Mapping) is a Whiskbroom scanner with one conical scan mirror. It covers the wavelength range between 400 and 2500 nm in 128 spectral bands with a bandwidth of approx. 16 nm. The Digital Airborne Imaging Spectrometer DAIS7915 is a 79-channel Kennedy type spectrometer, which covers a range of 400 – 12300 nm. A quick view shows that the DAIS images have a low quality in the SWIR region (spectrometer 3). A pixel-level datafusion of the last six DAIS thermal bands (8700 – 12300 nm) with the HyMap images will be carried out to correct for this problem.