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GeoMAP Base a Generic Expert System Mapper for Imaging Spectroscopy

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Imaging spectroscopy is a geophysical remote sensing technique that is more and more used on an operational basis in the geoscientific community today. Its primary use has been the study of large remote areas for mineral exploration using airborne sensors. EO-1 Hyperion offered the first hyperspectral spaceborne data to the geoscientific community, covering the full solar reflective range from 400 – 2500 nm, as a technology demonstrator. The next generation of hyperspectral spaceborne instruments will be the Japanese Hyperspectral Imager Suite (HISUI) and the German Environmental Mapping and Analysis Program (EnMAP), which will deliver hyperspectral spaceborne data at an operational level.

Recent advances in sensor development have now offered new imaging spectroscopy applications in the near field to the geoscientific community such as outcrop scanning or hyperspectral drill core scanning. Here we present application examples of the Geological MAPPER (GeoMAP) from nearfield applications (outcrop scanning), over airborne data takes from the Hyperspectral Mapper (HyMAP) to the spaceborne scale with simulated EnMAP data and Hyperion data. These will demonstrate that imaging spectroscopy and automated Expert Systems for material mapping have become mature tools for earth- and environmental scientists working in mineral exploration and exploitation to maximize resource efficiency.

