EXPLANATION OF MATERIAL CLASSES

- Materials are listed based on quality of match with reference spectra; class may contain one or more minerals

- Minerals having slightly different compositions but similar spectral features were less easily discriminated; thus, some map classes consist of several minerals having similar spectra, such as "Goethite and jarosite." A designation of "Not classified" was assigned to the pixel when there was no match with reference spectra. Further discrimination of "Not classified" material types with the most likely option listed first. Number in parentheses indicates pixel count. Material classes that have small areal extent may not be visible at the publication scale of this map.

- Materials are color-coded for visualization.
- Materials are listed based on quality of match with reference spectra; class may contain one or more minerals
- Minerals having slightly different compositions but similar spectral features were less easily discriminated; thus, some map classes consist of several minerals having similar spectra, such as "Goethite and jarosite." A designation of "Not classified" was assigned to the pixel when there was no match with reference spectra. Further discrimination of "Not classified" material types with the most likely option listed first. Number in parentheses indicates pixel count. Material classes that have small areal extent may not be visible at the publication scale of this map.

DATA SUMMARY

- The work done by geoscientists at the U.S. Geological Survey began with the hypothesis that images from the HyMap™ imaging spectrometer carry information about the earth's surface that can be used to locate iron-bearing minerals and other materials. The HyMap™ data were intended to fill the need to provide an updated resource for the mining industry.

- HyMap™ data were acquired over the Gawdezereh (615), Galachah (616), Chahar Burjak (609), and Khan Neshin (610) quadrangles, Afghanistan. The HyMap™ data were collected in 2007, and the map was published in 2013.

- The HyMap™ imaging spectrometer measured reflected radiation from the earth's surface at 300 spectral bands between 400 nanometers (nm) and 2400 nm. The HyMap™ data were digitized to a grid with a spatial resolution of 10 meters and a spectral resolution of 1 nm.

- The HyMap™ data were preprocessed to correct for atmospheric effects, sensor calibration, and radiometric calibration. The data were then radiometrically corrected to remove the effects of atmospheric scattering and absorption.

- The HyMap™ data were then processed to generate a hyperspectral surface materials map of the Gawdezereh (615), Galachah (616), Chahar Burjak (609), and Khan Neshin (610) quadrangles, Afghanistan. The map was published in 2013 by the U.S. Geological Survey and the Afghanistan Geological Survey.

- The HyMap™ data were then used to map the spatial distribution of selected iron-bearing minerals and other materials. The map was published in 2013 by the U.S. Geological Survey and the Afghanistan Geological Survey.

REFERENCES

- Flown at an altitude of 50,000 feet (15,240 meters (m)), the HyMap™ imaging spectrometer measured reflected radiation from the earth's surface at 300 spectral bands between 400 nanometers (nm) and 2400 nm. The HyMap™ data were digitized to a grid with a spatial resolution of 10 meters and a spectral resolution of 1 nm.
- The HyMap™ data were preprocessed to correct for atmospheric effects, sensor calibration, and radiometric calibration. The data were then radiometrically corrected to remove the effects of atmospheric scattering and absorption.
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- The HyMap™ data were then used to map the spatial distribution of selected iron-bearing minerals and other materials. The map was published in 2013 by the U.S. Geological Survey and the Afghanistan Geological Survey.

HYERSPECTRAL SURFACE MATERIALS MAP OF QUADRANGLES 2962 AND 3062, GAWDEZEREH (615), GALACHAH (616), CHAHAR BURJAK (609), AND KHAN NESHIN (610) QUADRANGLES, AFGHANISTAN, SHOWING IRON-BEARING MINERALS AND OTHER MATERIALS

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