H.A.T.C.H. Atmospheric Correction Software for Remote Sensing

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Background

Remote sensing allows the measurement of dangerous or hard-to-access places for purposes ranging from environmental protection to weather prediction to national security. However, varying concentrations of atmospheric gases and spectral signatures from the sun can distort the data received in this way, making it challenging to achieve close correlation between remote sensing data and ground verification measurements.

Technology

<u>High Accuracy Atmospheric Correction for Hyperspectral Data</u> is software developed at the University of Colorado to correct remote sensing data for atmospheric and solar effects. Whereas other remote sensing correction software focuses only on correcting for the effects of water vapor or assumes that gas spectrums are linear in certain absorption regions, HATCH does correct for water vapor and other gases (such as CO_2 and methane). HATCH also does not assume linearity across various absorption bands.

HATCH's core technique is a "smoothness test" to determine the amounts of atmospheric gases. Since the quality of retrieved spectral data is often judged visually by its smoothness, HATCH applies this human technique through a mathematical algorithm. Simply, the surface reflectance spectrum is relatively smoother than the atmospheric spectrum. Therefore, when viewing various surface spectrums created using various amounts of gases, the proper amounts of gases correspond to the smoothest spectrum. Using this calibration procedure, HATCH produces much smoother – and therefore more accurate – data.

Licensing

HATCH is a complete software package with some documentation developed by the Center for the Study of Earth from Space at the University of Colorado. Non-exclusive licenses are available; the University of Colorado is also seeking distribution partners for HATCH.

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