[EE] Evening Poster | M (Multidisciplinary and Interdisciplinary) | M-IS Intersection

[M-IS05]Satellite Land Physical Processes Monitoring at Medium and High Resolution

convener:Jean-Claude Roger(University of Maryland College Park), Shinichi Sobue(Japan Aerospace Exploration Agency), Eric Vermote

Wed. May 23, 2018 5:15 PM - 6:30 PM Poster Hall (International Exhibition Hall7, Makuhari Messe)

We solicit papers on the land physical processes monitoring. In particular, it will include the inversion and use of reflectance products from Landsat(s) and Sentinel 2 sensors with other sensors. For the last years, medium and high resolutions became a useful and a powerful toll for Earth studies. Agriculture applications will be analyzed. An attention to the errors and uncertainties of the described products is suggested.

Topics of interest mainly include (not limited to):

- Use of products in agricultural monitoring applications (such as crop area, crop type, crop growing, yield estimation and prediction, damage assessment);
- Atmospheric corrections (including Cloud screening, Aerosol inversion, Radiative transfer...);
- Agriculture monitoring algorithm description;
- Data integration / Harmonized products from different sensors;
- Theoretical studies for sensors capabilities enhancements (e.g. addition of spectral bands) to future sensors for agriculture application;
- Development and use of new vegetation indices (i.e. red edge) and other products for agriculture applications;
- Evaluation or validation of potential products with ground measurements, official statistics;
- International initiative to enhance Earth-Observing-based agricultural information...

Depending on outcome, we think about a special issue.

[MIS05-P03]Improving the cross-calibration of Landsat8OLI, Sentinel 2 and MODIS sensors through spectral adjustment methods

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Keywords:Cross-calibration, Spectral Adjustment, RSR, Landsat8 OLI, Sentinel 2, MODIS

Cross-calibration between sensors is necessary to bring measurements to a common radiometric scale; it allows a more complete monitoring of land surface processes and enhances data continuity and harmonization. However, differences in the Relative Spectral Response (RSR) of sensors generate uncertainties in the process. For this reason, compensating for these differences is of great importance and can be achieved by using statistical regression methods between analogous bands. In this paper, we analyze the difference between different statistical regression functions obtained with the use of a combination of ground, airborne and satellite measurements, on the accuracy of the spectral adjustment for Landsat8, Sentinel 2 and MODIS sensors. In particular, we compare the linear regression intercalibration methods with multilinear regression, a quadratic and a proposed exponential SBAF (spectral band adjustment factor) dependence with the NDVI for the green, red and NIR bands, and the NDVI. We then propose a correction combining the different methods for specific bands. Results on simulated data show that the best performance is obtained from an empirically corrected exponential

model, which can improve the uncertainties due to the spectral differences by up to 50% in the green band, 22% in the red band and 32% in the NIR band when the sensors considered have spectrally dissimilar analogous bands.