GC31B-0469   Comparison of the New LEAF Area INDEX (LAI 3G) with the Kazahstan-Wide LEAF Area INDEX DATA SET (GGRS-LAI) over Central ASIA

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Wednesday, December 17, 2014   08:00 AM - 12:20 PM
Moscone West
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Long-term global data sets of Leaf Area Index (LAI) are important for monitoring global vegetation dynamics. LAI indicating phenological development of vegetation is an important state variable for modeling land surface processes. The comparison of long-term data sets is based on two recently available data sets both derived from AVHRR time series. The LAI 3g data set introduced by Zaichun Zhu et al. (2013) is developed from the new improved third generation Global Inventory Modeling and Mapping Studies (GIMMS) Normalized Difference Vegetation Index (NDVI3g) and best-quality MODIS LAI data. The second long-term data set is based on the 8 km spatial resolution GIMMS-AVHRR data (GGRS-data set by Propastin et al. 2012). The GGRS-LAI product uses a three-dimensional physical radiative transfer model which establishes relationship between LAI, vegetation fractional cover and given patterns of surface reflectance, view-illumination conditions and optical properties of vegetation. The model incorporates a number of site/region specific parameters, including the vegetation architecture variables such as leaf angle distribution, clumping index, and light extinction coefficient. For the application of the model to Kazakhstan, the vegetation architecture variables were computed at the local (pixel) level based on extensive field surveys of the biophysical properties of vegetation in representative grassland areas of Kazakhstan. The comparison of both long-term data sets will be used to interpret their quality for scientific research in other disciplines.

References:
Propastin, P., Kappas, M. (2012). Retrieval of coarse-resolution leaf area index over the Republic of Kazakhstan using NOAA AVHRR satellite data and ground measurements," *Remote Sensing*, vol. 4, no. 1, pp. 220–246.

Zaichun Zhu, Jian Bi, Yaozhong Pan, Sangram Ganguly, Alessandro Anav, Liang Xu, Arindam Samanta, Shilong Piao, Ramakrishna R. Nemani and Ranga B. Myneni (2013). Global Data Sets of Vegetation Leaf Area Index (LAI)3g and Fraction of photosynthetically Active Radiation (FPAR)3g Derived from Global Inventory Modeling and Mapping Studies (GIMMS) Normalized Difference Vegetation Index (NDVI3g) for the Period 1981 to 2011. Remote Sens. 2013, 5, 927-948; doi:10.3390/rs5020927

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