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INTER-COMPARISON AND EVALUATION OF THE GLOBAL LAI PRODUCT (3G) AND THE REGIONAL LAI PRODUCT (GGRS-LAI) OVER THE AREA OF KAZAKHSTAN

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ABSTRACT:
Long-term global data sets of Leaf Area Index (LAI) are important for monitoring global vegetation dynamics and are an important input for Earth System Models (ESM). The comparison of long-term data sets is based on two recently available data sets both derived from AVHRR time series. The LAI3g data set introduced by [1] is developed from the new improved third generation Global Inventory Modeling and Mapping Studies (GIMMS) Normalized Difference Vegetation Index (NDVI3g) from AVHRR sensors and best-quality MODIS LAI data. The second long-term LAI-data set is based on the 8 km spatial resolution GIMMS-AVHRR data (GGRS-data set by [2]). The GGRS-LAI product uses a satellite-based LAI. This algorithm 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.
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