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Estimating and Validating the Net Primary Production of ADEOS-II/GLI Global Mosaic and 250-m Spatial Resolution

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Abstract

High-accuracy estimation of the net primary production (NPP) of vegetation is important for the study of the carbon cycle and the biotic response to climatic war

estimated the NPP of vegetation using Advanced Earth Observing Satellite Imager (GLI) data with a modified vegetation index based on the郁木 decomposition method.

The NPP was estimated using GLI 250-m data sets and ground observation temperature and solar radiation. The results agreed with the NPP calculation survey data gathered in Nara, Japan, within the limit of estimation error. The annual NPP was estimated using v210 global mosaic data, air temperature from the European Centre for Medium-range Weather Forecasts, and GLI global active radiation (PAR) data. The result was compared to the NPP calculation using the efficiency-based method using the normalized difference vegetation index. The NPP for the latter was less than in our results for areas near the equator. This may be due to the NDVI saturation for dense vegetation.

Using the GLI PAR data, the global annual NPP was estimated at 62.6 PgCyr^{-1} ³¹⁾ and the Moderate-resolution Imaging Spectroradiometer (56.04 PgCyr^{-1})³²⁾.

Keywords: [cedar forest](#), [field validation](#), [global net primary production](#)

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