

Generation of the global cloud free data set of MODIS

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To extract temporal change of the land cover from remotely sensed data from space, the generation of the reliable cloud free data set is the first priority item. With the objectives of generating accurate global basic data and to find the effects of spectral and spatial resolution differences and observation time, an attempt is made to generate reliable global cloud free data set of Terra and Aqua MODIS utilizing personal computers. Out of 36 bands seven bands with similar spectral features to those of Landsat TM, i. e. Band 1 through 7 are selected. These bands cover the most important spectra to derive landcover features. The procedure of the data set generation is as follows. (1) Download the global Terra and Aqua MODIS day time data (MOD02: Level-1B Calibrated Geolocation Data Set) of 250 meter (Band 1 and 2) and 500 meter (Band 3 through 7) resolution from NASA web site. (2) Separate the data into several BSQ (Band SeQuential) image and several text (geolocation information of pixels) files. (3) The geolocation information is given to the pixels of several kms interval. Based on the information, resampling of the data are made at 1/2 and 1/4 degrees intervals of latitude and longitude, thus the resampled pixels are distributed in the latitude and longitudinal axis plane at 1/4 degrees (high resolution) and 1/2 degrees (low resolution) intervals. (4) A global data for one day is composed. (5) Compute NDVI for each pixel. (6) Compare the value of NDVI of successive days and keep the larger NDVI. At the same time keep the values of each band of the day of the larger NDVI. Repeating this process for a few or several weeks then the global cloud free data set of the respective season (or month) is completed. It is interesting to notice that the digital values of Nov. 2005 indicates that the value of Aqua MODIS is a little larger than those of Terra MODIS for the desert area of Sahara while the value of the difference is negligible in case of NDVI.