Land suitability evaluation for agricultural cropland in the Dornod province, Mongolia using Remote Sensing and GIS tools

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The purpose of this study is to create an estimation of cropland suitability map in the study area Dornod province, which belong to the Gobi and steppe region of Mongolia. The soil of the study area is suitable for agriculture, which is one of the main sectors of our economy. However, the pasturing livestock and the crop production are very vulnerable to climate change in the study area. Dry land expansion and pasture land degradation cause to agriculture land vulnerability. It is important to evaluate the impacts of climate change affecting to effectiveness of agriculture and implement the adaptation methods.

We used MODIS data over 2003-2018 to study how the soil moisture content and long term data have changed in the past and what trend is in the future. Multivariable regression analysis using satellite images for Normalized Vegetation Index (NDVI) and Land surface Temperature (LST) from MODIS and DEM Elevation soil and climate data were applied for the potential for crop production in the study area. Multivariable regression analysis provides an opportunity for understanding and analyzing the nature of other factors affecting the factors. In particular, we would propose some models for cropland suitability, which depends on many factors such as surface temperature, elevation, slope, orientation and other soil parameters in the Gobi and steppe regions of Mongolia. The result shows that output map created accurate result and reasonable for cropland suitability. The approach can be an advantageous indicator for carrying out agricultural management decisions and advise for decision-makers in the Gobi and steppe regions of Mongolia.

Keywords: Cropland suitability, soil properties, GIS, Mongolia