

## GC31B-0474 Differentiating between Land Use and Climate-driven Change using Long-term Vegetation Index Trends adjusted for Precipitation on the Mongolian Plateau

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Moscone West

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The Mongolian plateau is undergoing consistent warming in addition to an increase in extreme climatic events. Land cover/land use change has accelerated over the past three decades, owing to post liberalization socio-economic changes in Inner Mongolia, China (IM) Mongolia (MG) which have different political systems. Extensive anthropomorphic modifications of ecosystems have the ability to alter the structure and function of ecosystems and ecological processes such as the carbon and water cycle and it is therefore important to differentiate between such changes from climate-driven changes. This study identified climate-driven and human-induced changes in vegetation cover on the Mongolian plateau across desert, grassland and forest biomes as well as administrative divisions. We applied non-parametric trend tests on time series of vegetation index datasets that include MODIS EVI, Vegetation Index and Phenology (VIP) EVI2, and GIMMS 3g as well as precipitation and temperature obtained from TRMM and MERRA reanalysis datasets. We then correlated the VI trends with the climate drivers to determine and isolate primary climate drivers. VI residuals obtained from the regression of composites of peak season maximum VI and JJA monthly accumulated rainfall were analyzed for detection of trends in vegetation greenness not explained by rainfall dynamics over different time periods (2000-2012, and 1981 to 2010). In addition, we obtained trends in socioeconomic variables like total livestock and population density which were closely correlated with VI residual trends adjusted for rainfall. Some administrative subdivisions in IM and MG showed a decreasing trend in residuals that could be attributed to anthropogenic activity such as grazing, or urbanization, while other subdivisions showed an increasing trend in residuals increasing trend in residuals suggest that vegetation cover has improved and perhaps be attributed to restoration and conservation efforts.

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