
B23J-2666: Mapping degraded pasturelands in the Brazilian savanna through based on remote sensing and ecosystem modelling

Tuesday, 11 December 2018

13:40 - 18:00

📍 *Walter E Washington Convention Center - Hall A-C (Poster Hall)*

The process of degradation in pastures constitutes one of the most significant problems faced by the Brazilian agricultural system. It is estimated that ~ 11% of the national territory is occupied by pasture areas with some level of degradation, corresponding to ~ 50% of the total pasture area in Brazil. The recovery of these areas represents a great opportunity to increase the production efficiency of the sector and to promote environmental and economic gains. However, the great challenge remains on how to map the areas of degraded pastures, which is of fundamental importance for improving the management and territorial intelligence in the agricultural system. Our hypothesis is that an integrated analysis of satellite data and data simulated by the Century - Soil Organic Matter Model Environment ecosystem - ecosystem model makes it possible to determine a degradation index for the mapping of degraded pasture areas. The creation of this index had two stages: 1) adjustment of the Century model to respond to the environmental characteristics of the pastures in the Brazilian savannah (i.e. soil physico-chemical properties, climatic conditions and average pasture management) in order to predict the soil carbon and aerial biomass productivity, with reference to the forage *Urochloa brizantha*, which corresponds to ~ 80% of the pasture areas in the country; 2) the determination of pasture quality using time series of GPP (MODIS MOD17A2), with the data simulated by Century for each pixel as an ideal pasture situation reference under its environmental and management conditions. This allowed us to generate a series of annual pasture quality maps for the period from 2000 to 2017. All analyzes were performed in the R environment and made available as an R package in GitHub. It is expected that this series of maps will contribute to public, private and civil society initiatives aimed at better management and destination of degraded pasturelands in Brazil.

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