Human impacts on Biomass burning persistence

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Several studies have shown the impact of human activities on fire occurrence, as well as recent trends associated to agricultural expansion and forest loss, particularly in Tropical regions. However, much less effort has been dedicated to understand the human role on fire persistency, that is the recurrence of fire activity in a series of years, and whether that recurrence is more linked to human or climate factors.

We use a burned area time series generated within the ESA Fire_cci project covering the period from 2001 to 2017. The product (named FireCCI51) was derived from MODIS 250 m near infrared reflectance and thermal anomalies. Average and standard deviation values were computed for the yearly burned area of the time series for each 0.25 degree cell. The persistency of fire activity was defined by the coefficient of variation (CV) of yearly burned area. The hypothesis was that regions with higher CV would be more controlled by climatic variations, while lower values would imply higher human influence. Input variables include land cover, climatic data and fire models. The analysis is based on machine learning and spatial statistics to analyse the regional variations of relations between human activity and fire persistence.