



## **Prototype global burnt area algorithm using the AVHRR-LTDR time series**

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One of the main limitations of products derived from remotely-sensed data is the length of the data records available for climate studies. The Advanced Very High Resolution Radiometer (AVHRR) long-term data record (LTDR) comprises a daily global atmospherically-corrected surface reflectance dataset at 0.05° spatial resolution and is available for the 1981-1999 time period. Fire is strong cause of land surface change and emissions of greenhouse gases around the globe. A global long-term identification of areas affected by fire is needed to analyze trends and fire-clime relationships.

A burnt area algorithm can be seen as a change point detection problem where there is an abrupt change in the surface reflectance due to the biomass burning. Using the AVHRR-LTDR dataset, a time series of bidirectional reflectance distribution function (BRDF) corrected surface reflectance was generated using the daily observations and constraining the BRDF model inversion using a climatology of BRDF parameters derived from 12 years of MODIS data. The identification of the burnt area was performed using a t-test in the pre- and post-fire reflectance values and a change point detection algorithm, then spectral constraints were applied to flag changes caused by natural land processes like vegetation seasonality or flooding. Additional temporal constraints are applied focusing in the persistence of the affected areas. Initial results for year 1998, which was selected because of a positive fire anomaly, show spatio-temporal coherence but further analysis is required and a formal rigorous validation will be applied using burn scars identified from high-resolution datasets.