Geophysical Research Abstracts
Vol. 21, EGU2019-17190, 2019
EGU General Assembly 2019

Assessment of vegetation conditions and cumulated biomass before fire season

Célia Gouveia (1) and Catarina Alonso (2)

(1) Instituto Português do Mar e Atmosfera (IPMA), Instituto Dom Luiz (IDL) LISBOA, Portugal (cmgouveia@fc.ul.pt), (2) FCiências.ID – Associação para a Investigação e Desenvolvimento de Ciências, Instituto Dom Luiz, IDL, LISBOA, Portugal

Better understand the combined effects of drought and heat extremes in the onset of the following fire season becomes relevant, in particular in ecosystems where vegetation activity is limited by water availability. High temperatures are not the driven factor of fire activity in low productive ecosystems, whereas in high productivity ecosystems (where available biomass for fire is high) fire is more sensitive to warm conditions. These results stress the role of fuel availability in fire occurrence and severity on the Iberian Peninsula.
The aim of this work is to assess the relation with dry matter productivity and vegetation status with fire occurrences, fire severity and fire danger in Portugal. In this context, Dry Matter Productivity (DMP), disseminated by Copernicus Global Land Service (CGLS) at 1km spatial resolution since 1999 is used. DMP represents the overall growth rate or dry biomass increase of the vegetation and is directly related to ecosystem Net Primary Productivity (NPP). Additionally, annual NPP fields from MOD17A3 C5 dataset and Net Photosynthesis (PsN) monthly fields from MOD17A2 dataset, both at 1km resolution from 2000-2018 are used. Monthly Psd and decadal DMP anomaly fields, as the departure from the corresponding long-term median in the study period were computed, as well as the cumulated biomass as obtained using PsN and DMP (monthly and decadal anomalies of cumulated biomass: PsN and DMP). The relationship between vegetation dynamics (as obtained by monthly and decadal NDVI, EVI and GEMI anomaly fields) and biomass accumulation (PsN and DMP) with fire occurrence and fire severity is obtained, taking in account the soil water availability during pre-fire season. Obtained results highlighted the high amount of cumulated biomass observed before the Megafire events of June and October of 2017 and August of 2018 in Portugal. The proposed methodology allows to provide estimates of fuel state in order to mitigate the impacts of high biomass availability on fire severity and danger.

Acknowledgements: This study was performed within the framework of the LSA-SAF, co-funded by EUMETSAT. This work was partially supported by national funds through FCT (Fundação para a Ciência e a Tecnologia, Portugal) under project MDROFLOOD (WaterJPI/0004/2014).