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An intercomparison of burnt area estimates from key operational products: results from the analysis of Greek wildland fires

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Wildland fires have long been recognized as one of the most threatening sources of disturbance for property, infrastructures as well as ecosystems. Particularly in the Mediterranean region, for millennia fire has been a major ecological factor with a long and important presence. Being able to obtain accurate as well as rapid mapping of burnt areas in particular after fire suppression, is of key importance between other in policy decision making, in the modelling the atmospheric and climatic impacts of biomass burning, as well as in the estimation of the total atmospheric emissions from it.

With the support of modern technologies, such as of remote sensing, today's societies are able to map and analyze wildland fires at large observational scales and at otherwise inaccessible locations in a cost-effective, repetitive and systematic way. Nowadays, a wide variety of remote sensing sensors are employed for this purpose, including also a number of relevant operational products. With regards to burnt area mapping in particular, two of the most widely used operational products consist the MODIS burnt area product and the European Forest Fires Information System "EFFIS", operated by NASA and the European Union respectively.

Despite the wide use of those operational products by the users' community, to our knowledge, very few studies have so far been performed evaluating the agreement in the estimates by those datasets, particularly so in a Mediterranean environment.

The objective of the present work has been to undertake a comparative study of the MODIS and EFFIS burnt area operational products in a Mediterranean setting. For this purpose, the burnt area estimates by those two datasets for Greece are compared for a number of consecutive years for which observations from both operational products were available. In the framework of the analysis conducted, it was also performed an investigation of the main findings observed with respect to parameters such as topography and land use/cover.

The results from the above analysis are presented herein, whereas an interpretation of the findings observed is also attempted bearing in mind the relative differences in the techniques employed for the retrieval of burnt area by each operational product.

Keywords: burnt area mapping, remote sensing, MODIS, EFFIS, Mediterranean, Greece