



Derivation of Burnt Areas from Sentinel-3 and MODIS data for the European Forest Fire Information System using Active Contour Level Sets

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The European Forest Fire Information System (EFFIS) provides timely and reliable information on wildland fires in Europe since 1998. As a Copernicus Emergency Management Service, EFFIS is supporting agencies in charge of the protection of forests within the European Union. The services comprise the daily analysis and publication of weather based fire danger information, as well as the timely delivery of active fire locations and recently occurred burnt areas.

The German Aerospace Center (DLR) / Department of Geo-Risks and Civil Security has been entrusted with the task of the analysis, derivation and delivery of burnt areas from Sentinel-3 and MODIS data. . In this regard, a methodology has been developed, as well as implemented and tested, to efficiently derive reliable and accurate burnt area perimeters for different optical earth observation satellites. The procedure is based on well-known vegetation related differential indices, such as dNDVI, dBAI and dMSAVI , but primarily uses the Active Contour Level Set method for accurate differentiation between burnt and non-burnt areas via an energy function. The fully automated processing chain comprises the pre-processing of satellite data, as well as histogram matching, mosaic generation and functions for the tracking of burnt area growth over time.

Hotspot data from DLR's TET-1 and BIROS satellites are used to verify the validity and accuracy of the derived perimeters.