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High resolution fire danger modeling : integration of quantitative precipitation amount estimates derived from weather radars as an input of FWI

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Fire meteo indices provide efficient guidance tools for the prevention, early warning and surveillance of forest fires. The indices are based on meteorological input data. The underlying approach is to exploit meteorological information as fully as possible to model the soil water content, biomass condition and fire danger.

Fire meteorological danger is estimated by Météo-France at national level through the use of Fire Weather Index. The fire index services developed within the PREVIEW project (2005-2008) offer for the first time very high resolution mapping of forest fire risk. The high resolution FWI has been implemented in France complementary to the existing EFFIS operated by the Joint Research Center. A new method (ANTILOPE method) of combining precipitation data originating from different sources like rain gauges and weather radar measurements has been applied in the new service. Some of the advantages of this new service are:

· Improved detection of local features of fire risk
· More accurate analysis of meteorological input data used in forest fire index models providing added value for forest fire risk forecasts
· Use of radar precipitation data “as is” utilizing the higher resolution, i.e. avoiding averaging operations

The improved accuracy and spatial resolution of the indices provide a powerful early warning tool for national and regional civil protection and fire fighting authorities to alert and initiate forest fire fighting actions and measures.