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Using Haines Index coupled with fire weather model predicted from high resolution LAM forecasts to asses wildfire extreme behaviour in Southern Europe.

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Haines Index (HI) was developed by USDA Forest Service to measure the atmosphere's contribution to the growth potential of a wildfire. The Haines Index combines two atmospheric factors that are known to have an effect on wildfires: Stability and Dryness.

As operational tools, HI proved its ability to predict plume dominated high intensity wildfires. However, since HI does not take into account the fuel continuity, composition and moisture conditions and the effects of wind and topography on fire behaviour, its use as forecasting tool should be carefully considered.

In this work we propose the use of HI, predicted from HR Limited Area Model forecasts, coupled with a Fire Weather model (i.e., RISICO system) fully operational in Italy since 2003. RISICO is based on dynamic models able to represent in space and in time the effects that environment and vegetal physiology have on fuels and, in turn, on the potential behaviour of wildfires.
The system automatically acquires from remote databases a thorough data-set of input information both of in situ and spatial nature. Meteorological observations, radar data, Limited Area Model weather forecasts, EO data, and fuel data are managed by a Unified Interface able to process a wide set of different data.
Specific semi-physical models are used in the system to simulate the dynamics of the fuels (load and moisture contents of dead and live fuel) and the potential fire behaviour (rate of spread and linear intensity).

A preliminary validation of this approach will be provided with reference to Sardinia and Corsica Islands, two major islands of the Mediterranean See frequently affected by extreme plume dominated wildfires.
A time series of about 3000 wildfires burnt in Sardinia and Corsica in 2007 and 2008 will be used to evaluate the capability of HI coupled with the outputs of the Fire Weather model to forecast the actual risk in time and in space.