



Application of the Haines Index in the fire warning system

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Croatia, as all Mediterranean countries, is strongly affected by large wildfires, particularly in the coastal region. In the last two decades the number and intensity of fires has been significantly increased, which is unanimously associated with climate change, e.g. global warming. More extreme fires are observed, and the fire-fighting season has been expanded to June and September. The meteorological support for fire protection and planning is therefore even more important. At the Meteorological and Hydrological Service of Croatia a comprehensive monitoring and warning system has been established. It includes standard components, such as short term forecast of Fire Weather Index (FWI), but long range forecast as well. However, due to more frequent hot and dry seasons, FWI index often does not provide additional information of extremely high fire danger, since it regularly takes the highest values for long periods. Therefore the additional tools have been investigated. One of widely used meteorological products is the Haines index (HI). It provides information of potential fire growth, taking into account only the vertical instability of the atmosphere, and not the state of the fuel. Several analyses and studies carried out at the Service confirmed the correlation of high HI values with large and extreme fires. The Haines index forecast has been used at the Service for several years, employing European Centre for Medium Range Weather Forecast (ECMWF) global prediction model, as well as the limited-area Aladin model. The verification results show that these forecast are reliable, when compared to radiosonde measurements. All these results provided the introduction of the additional fire warnings, that are issued by the Service's Forecast Department.