



## IRIS – Rapid response fire spread forecasting system: Development and application to Greece

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In the frame of DISARM Interreg Balkan-Med project (co-funded by the European Union and national funds of the participating countries) a rapid response fire spread forecasting system was developed. Named IRIS, under a messenger Goddess of Greek mythology, the forecasting system was primarily designed and developed for supporting the operational fire suppression activities of the Greek Fire Service. It employs a coupled atmosphere-fire modelling system for considering the two-way interactions between fire and weather, comprised of the state-of-the-art numerical weather prediction Weather Research and Forecasting (WRF) model and an advanced fire spread model (SFIRE). A prototype fuel models' geospatial dataset was compiled for the implementation of IRIS, exploiting high-resolution, pan-European vegetation and land cover data provided by the Copernicus Land Monitoring Service. Eight (8) wildfires that took place in Greece during the 2016-2017 fire seasons, under different meteorological conditions and in varying landscapes, were first selected and retrospectively forecasted, in order to calibrate the fire spread component of IRIS. The calibrated forecasting system was then applied for forecasting 4 major wildfires that broke out during the 2018 fire season. Our overarching goal was to evaluate the capacity of IRIS with respect to providing accurate wildfire spread predictions. The conducted analysis clearly highlights that calibration of the fire spread component is a prerequisite for obtaining reasonably accurate wildfire spread predictions. IRIS is going to be operationally deployed in Greece during the 2019 fire season, supporting the fire suppression activities of the Greek Fire Service by providing 6 h and 24 h wildfire spread predictions in approximately 15 min and 60 min, respectively, following its activation. To our best knowledge, IRIS is one of the first, if not the first, operational fire spread forecasting system in Europe that is based on coupled atmosphere-fire modelling.