Availability of spatially refined satellite active fire detection data is gradually increasing. For example, the new 375 m Visible Infrared Imaging Radiometer Suite (VIIRS) data show significantly improved active fire detection performance for both small and large size fires compared to current MODIS 1 KM fire product. The VIIRS data are complemented by other satellite active fire data sets of similar or finer spatial resolution, including the new 30 m Landsat-8 sensor data. Additional assets include the upcoming 20 m Sentinel-2 Landsat-class instrument by the European Space Agency, to be launched in 2014-15. Together, Landsat-8 and Sentinel-2 data will provide greater spatial and temporal coverage compared to currently available data. These new sensor data and their improved active fire data sets have fostered new applications that rely on moderate spatial resolution input fire data. In this study, we demonstrate one such new application of satellite active fire data in support of routine fire mapping and behavior modeling for wildfires events spanning several days to weeks of either continued or intermittent activity.

We present results for a wildfire observed in June 2012 in New Mexico/USA using an innovative approach to improving the simulation of large, long-duration wildfires, either for retrospective studies or forecasting in a number of geophysical applications. The approach uses (1) the Coupled Atmosphere-Wildland Fire Environment (CAWFE) Model, a numerical weather prediction model coupled with a module representing the rate of spread of a wildfire’s flaming front, its rate of consumption of different wildland fuels, and the feedback of the heat released upon the atmosphere - i.e. 'how a fire creates its own weather', combined with (2) spatially refined 375 m VIIRS active fire data, which is used for initialization of a wildfire already in progress in the model and evaluation of its simulated progression at the time of the next pass. Results show that initializing a fire that is 'in progress' with VIIRS data and a weather simulation based on more recent atmospheric analyses can overcome several issues and improve the simulation of late-developing fires and of later periods (particularly those with growth periods separated by lulls) in a long-lived fire.