

GC12A-01 Wildfire Temperature Estimation by Comparing PRISMA and ECOSTRESS data

Stefania Amici, Dario Spiller, Luigi Ansalone

Wildfire temperature retrieval is of great interest as it helps to characterize wildfires effects and their potential impact on natural and built environments. For example, different temperatures of a fire are associated to different types of particles and gas emissions while studies have linked wildfires temperature to the degree of damage that fires cause to the landscape (severity).

This study focuses on the wildfire temperature estimation by using PRecursores IperSpettrale della Missione operativa (PRISMA) data acquired over Log fire, US 2021. PRISMA is the new satellite launched on March 27th, 2019, by ASI (Italian Space Agency) and hosting an imaging spectrometer for acquisition of hyperspectral images. The optical sensor operates in the spectral range spanning between 400-2500nm with a spectral resolution ≤ 12 nm and a spatial resolution of 30m/px.

Temperature is retrieved by using PRISMA radiance and a linear mixing model based on two background components (vegetation and burn scar) and up to two active fire components. The PRISMA retrieved temperatures are compared with the LST (Land Surface Temperature) products delivered by ECOSystem Spaceborne Thermal Radiometer Experiment (ECOSTRESS), a thermal sensor (5 bands at 8-12 μ m) which imaged the Logfire US close to the PRISMA passage.

In line with the literature, effects of saturation on temperature estimation has been investigated. In this way, a critical discussion of the results obtained with PRISMA will be to report advantages and limitation of the proposed approach