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A near real time MSG-SEVIRI based algorithm for gas flaring monitoring

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In the last decades oil and gas industry has become responsible for important environmental issues.
The gas flaring, one of the processes used to dispose of the natural gas associated with extracted crude oil, has been recognized as being potentially harmful to human health and the atmosphere. Efforts to empirically assess the environmental impacts of such phenomenon are frequently hampered by limited access to official information on flare locations and volumes, the heterogeneity in spatial and temporal sampling strategies and methods used to collect data. Consequently, there is a need to develop new methods of acquiring such information and remote sensing techniques seem the most viable option.
In this paper, with reference to this problem, the potential of a satellite based technique for a near real time detection and characterization of hot spot sources was assessed. In detail, Medium Infrared (MIR) radiances acquired by the Spinning Enhanced Visible and Infrared Imager (SEVIRI) scanner carried aboard the Meteosat Second Generation (MSG) satellite were processed following the Robust Satellite Techniques (RST) prescriptions. Such an algorithm, based on the processing of multi-year satellite images, co-located in the space-time domain, allows to timely identify statistically significant variations of the MIR signal, related to changes and/or malfunctions in the industrial process and responsible for the gas flaring blazes.
Results achieved, referring to the flaring activity of the Centro Olio Val d'Agri (COVA), an oil/gas plant located in the South of Italy, will be described in detail and discussed in this paper.