



Near Real Time website for IASI observations of atmospheric anomalies

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Rapid analysis of satellite observations of the state of the atmosphere and the contaminant levels within it can be used for pollution monitoring, forest fire detection and volcanic activity monitoring. There are numerous operational satellite instruments for which this is possible. The IASI instruments, currently flying on board the MetOp-A and MetOp-B satellite platforms, are used to produce Near Real Time (NRT) data using analysis algorithms developed by Oxford University. The data is then displayed on a website within 3 hours of measurement. This allows for the semi-continuous monitoring of the state of the atmosphere over most of the globe, both in daylight and at night. Global coverage is achieved 4 times per day, which is a significant advantage over most of the alternatives, either geostationary, giving limited spatial coverage, or UV instruments which are only able to observe during the daylight side of the orbit. The website includes flags for atmospheric contaminants detectable by IASI, including dust, biomass burning-derived species and volcanic ash and SO₂. In the near future, the website will be developed to also include a quantitative estimate of the mass loading of SO₂ contained within any volcanic cloud.

Emissions of volcanic products, such as ash and SO₂, are useful indicators of a change in the activity level of a volcano. Since many volcanoes are only monitored by remote sensing methods, such as satellite instruments, this can be the only such indicator available. These emissions are also dangerous to passing aircraft, causing damage to external surfaces of the plane and to the engines, sometimes leading to failure. Evacuation of regions surrounding volcanoes, and cessation or diversion of air traffic around actively erupting volcanoes is costly and highly disruptive but is sometimes required. Up to date information is of critical importance as to when to make these sensitive decisions. An archive of data will be available to allow for easy comparison with previous related events, such as large dust storms, forest fires or volcanic eruptions over the whole of the IASI lifetime.

The website is being developed in conjunction with the Centre for Environmental Data Archival (CEDA).