Global atmospheric products from polar-orbit satellite instruments

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Information on atmospheric composition has been available since decades from satellite-based instruments. Currently, observations from the Dutch-Finnish OMI (Ozone monitoring Instruments) are used in several applications like ozone and solar UV radiation research, air quality monitoring and emergency alert.

The satellite products include for example atmospheric ozone, nitrogen dioxide, sulphur dioxide, aerosols, clouds and solar UV radiation properties. These data are available with almost daily global coverage. Over specific regions the data are available very soon (about 15 minutes) after the satellite overpass. For example, real time data received in Sodankylä (Finland) cover the region over central and northern Europe and are distributed through SAMPO service (Satellite measurements from Polar orbit, http://sampo.fmi.fi). The service includes for example information on volcanic emissions which have been used for monitoring smoke and gases produced during the recent volcanic eruptions in Iceland. Also, information on solar UV radiation products are available for monitoring the effect of UV radiation on human heath and ecosystems.

The upcoming TROPOMI (TROPOspheric Monitoring Instrument) on Sentinel 5 Precursor will produce observations similar to OMI but with improved spatial resolution (7 × 7 km2 instead of OMI's 16 × 24 km2) and signal-to-noise ratio. This opens more opportunities for using satellite data in different kinds of applications.