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Observation infrastructure for airborne hazards in the framework of the EUNADICS-AV project

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During the 2010 and 2011 Icelandic volcanic eruptions, the availability of integrated, validated data sets was identified as a major challenge in the effort to gain a rapid situation assessment. These environmental crisis situations may happen again, also from other types ofairborne hazards, like big fires. Currently, the issue is not so much that data and observations do not exist, it is rather the rapid accessibility, the cross-calibration of different sensors, the integration of new platforms and the harmonization of standards and protocols that needs further work and attention. A specific activity is planned within the H-2020 project EUNADICS –AV (“European Natural Disaster Coordination and Information System for Aviation”) for addressing this critical issue. In order to achieve the rapid data accessibility, work will be carried out with full consideration of the main European Research Infrastructures, projects and national/international monitoring networks that are able to provide crucial information related to the dispersion of airborne hazards. The integrated data sets are based on satellite and ground-based remote sensing as well as in situ ground-based and aircraft observations. Networks of ground based remote sensing of atmospheric profiles are particularly important, since these will provide the needed height information that cannot be obtained unambiguously from the vast majority of space borne sensors. A new aspect not treated in any project and initiative so far is the integration of special crisis measurements, for example by aircraft or UAV systems. Particularly suited for the purposes of the project are satellite data from operational sensors aboard EUMETSAT and ESA satellites. Improved retrievals are investigated, and the new generation of Sentinel satellites currently being launched under the Copernicus umbrella and their added value are considered. Especially when the ground based and space borne observations are combined, the much needed spatial-temporal developments of the dispersion of atmospheric plumes can be followed. This capability will further be augmented by data assimilation, such that better homogeneity and reliability of data is assured where data is available and gaps can be identified. This integration initiative not only assures that such data can be used in the models during a crisis, but helps towards deploying such systems in a way that the added value can be maximised.

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