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Monitoring volcanoes in Iceland; an update

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The Icelandic Meteorological Office is responsible for monitoring pre- and syn-eruptive volcanic activity, monitoring volcanic emissions in the atmosphere, and disseminating information. There are ~32 active volcanic systems in Iceland. Pre-eruptive monitoring has emphasized seismic-, GPS-, strain-, tilt- and hydrological measurements. The network is being expanded and gas and infrasound measurements are now included. Air-borne eruption product monitoring is also being improved. The atmospheric monitoring system includes ~210 weather stations, a mobile sounding station, and lightning detectors to provide meteorological properties inside and outside of an eruption cloud. Two fixed C-band weather radars and two mobile dual-polarization X-band radars are operated. Radars provide information on the maximum height and location of the eruption cloud, indicate emission rate, and may provide experimental products such as columnar ash concentration. Two scanning Lidars will arrive in November 2013. One will be fixed at Keflavík airport and one mobile. These may provide information on the location of air-borne ash, sphericity of particles, and cloud thickness. Seven ceilometers will retrieve cloud base height. Two particle counters will measure the concentration and ash size distribution at the ground. Fixed and mobile DOAS and MultiGas instruments may provide information on the emission rate of SO_2 and the ratios of other species. UV, visible and IR cameras will provide information on maximum cloud height and particle velocities within a cloud. Satellite products based on SEVIRI, AVHRR, MODIS and GOME-2 instruments will be used for determining the location of an eruption cloud and deposited products and to provide information about the ash and SO_2 mass loading, cloud height, and ash effective radius. The EU FP7 project "Futurevolc- European volcanological supersite in Iceland: a monitoring system and network for the future" will lead to further improvements in IMO's monitoring systems and will help IMO integrate the many streams of information.