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Supersite synergies improve volcanic SO_2 flux monitoring

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Both the Etna, Italy, volcano and Piton de la Fournaise (PdF), France, volcano Supersites are monitored with networks of scanning UV spectrometers. An ongoing collaboration between INGV and IPGP researchers has led to a dynamic technology transfer of novel new data analysis procedures to both networks. This new approach has been custom built to account for the particularities of both Supersites. For the Etna Supersite, the large, continuous gas emission, wide plumes and high plume height produce significant challenges for automatic networks of scanning UV spectrometers, due to the lack of a clear sky spectrum and light dilution effects. The novel approach presented here addresses both these issues.

In the case of the PdF Supersite, negligible SO_2 efflux is observed apart from immediately before, during and after volcanic eruptions. This necessitates a very sensitive and precise automatic analysis in order to detect the first whiffs of SO_2 which act as a precursor to eruptive activity. Exactly such a solution has been developed and is demonstrated here.

The technology transfer between these two Supersites promotes synergistic advantages, improving the monitoring capacity at both sites. However, until now such synergies have come about exclusively through local support from each site and the initiative of individual researchers. The full potential of such synergies can be greatly enhanced in the future if they are fully recognised and supported within the context of the Supersite initiative.