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Deposits & experiments understanding eruption dynamics

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Experimental and field investigations on 10 volcanoes indicate that parameters such as the melt vesicularity almost solely control the fragmentation dynamics of magma. The correlation of experimental results and field observations bear information on the different processes acting in the ascending magma prior and following the fragmentation. Density distributions as measured in the field provide a basis for the comparative investigation of experimental results and eruption dynamics. A closer look into textural variations of pyroclasts gives an insight into the dynamics shortly prior to the arrival of the fragmentation wave. Keeping in mind that textures and particle size might change by more than one mechanism we need to filter the "original" record, again experiments can help to distinguish primary textures from secondary features. A tight discussion on experiments and experimental design is needed to show possible limits of experimental approaches.

This comprehensive work is part of the BMBF project SUNDAARC, which aims to quantify the potential risk of highly-explosive volcanoes combining field and laboratory investigations.