



How conduit models can be used to interpret volcano monitoring data

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During the last decade there have been major advances in the field of volcano monitoring, but to be able to take full advantage of these advances it is vital to link the monitoring data with the physical processes that give rise to the recorded signals. To obtain a better understanding of these physical processes it is necessary to understand the conditions of the system at depth. This can be achieved through numerical modelling.

We present the results of conduit models representative of a silicic volcanic system and demonstrate how processes identified and interpreted from these models may manifest in the recorded monitoring data. Links are drawn to seismicity, deformation, and gas emissions. A key point is how these data compliment each other, and through utilising conduit models we are able to interpret how these different data may be recorded in response to a particular process. This is an invaluable tool as it is far easier to draw firm conclusions on what is happening at a volcano if there are several different data sets that suggest the same processes are occurring. Some of these interpretations appear useful in forecasting potentially catastrophic changes in eruptive behaviour, such as a dome collapse leading to violent explosive behaviour, and the role of monitoring data in this capacity will also be addressed.