



Sill induced hydrothermal venting: A summary of our current understanding

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Hydrothermal vent structures which are predominantly related with the emplacement of large (>1000 km³) intrusions into the sub-volcanic basins represent a specific style of piercement structure, where climate-forcing gases can be transferred into the atmosphere and hydrosphere. In this case, the types and volumes of gas produced by intrusions is heavily dependent on the host-rock sediment properties that they intrude through. The distribution of vent structures can be shown to be widespread in Large Igneous Provinces for example on both the Norwegian and the Greenland margins of the North Atlantic Igneous Province (NAIP). In this overview we assess the distribution, types and occurrence of hydrothermal vent structures associated with LIPs. There is particular focus on those within the NAIP using mapped examples from offshore seismic data as well as outcrop analogues, highlighting the variability of these structures and their deposits. As the availability of 3D data from offshore and onshore increases, the full nature of the volcanic stratigraphy from the subvolcanic intrusive complexes, through the main eruption cycles into the piercing vent structures, can be realised along the entirety of volcanic rifted margins and LIPs. This will help greatly in our understanding of the evolving palaeo-environments, and climate contributions during the evolution of these short lived massive volcanic events.