



Sill induced hydrothermal vent structures: what do they look like in the field?

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Hydrothermal vent structures are formed when sills intrude into sedimentary basins and cause gas generation and escape. Such structures are important as they represent the mechanism of venting of the gases to the surface and as such their contribution to the gas budgets of large igneous provinces. The metamorphic reactions and gases formed are highly dependent on the host rocks that are intruded, and the development of the vents required certain conditions to be met for their formation. Many of the vent structures have been identified in offshore seismic data, yet few examples are recorded or identified in the field. The exceptions include the Siberia and Karoo examples, where different types of onshore vents have been realised. New inspection of sites within the North Atlantic Igneous Province, provide addition examples of venting structures, and ones which relate to the degassing associated with PETM event. In the past many of these structures have been misinterpreted or described as 'vent agglomerates', which means that their occurrence in onshore data sets is significantly underestimated. Additionally, close inspection of outcropping lava sequences can reveal vent structures which cut the early volcanic sequences allowing a relative age relationship to be established, which help to provide additional constraints on sill emplacement.