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Breakup magmatism on the North Atlantic Igneous Province: what could we learn about the extension/breakup processes from the Norwegian Margin?

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The early continental breakup and initial seafloor spreading in the northeast Atlantic area was accompanied by widespread intrusive and extrusive volcanism. New and reprocessed seismic reflection allow for detailed seismic volcanostratigraphy interpretation of the breakup complex and sub-basalt sequences. Several distinct volcanic seismic facies units have been identified: (1) Landward Flows, (2) Lava Delta, (3) Inner Flows, (4) Inner Seaward Dipping Reflectors (Inner SDR), (5) Outer High, (6) Outer SDR. Such facies succession represents a typical volcanic rifted margin and defines the extent of the breakup extrusive complex landward of the first magnetic seafloor spreading anomaly. We present an updated map of the volcanic seismic facies units in the northeast Atlantic area based on high-quality geophysical data combined with the newest published and unpublished data.
The Norwegian margin shows an along-strike segmentation that seems to be in relation with the margin inheritance. We notice that this segmentation affect also melt production in the area and LCB (lower Crustal Bodies) extent. The lateral variation of LCB thickness could be interpreted as a variation of melt supply during the extension/breakup process which is also controlled by the crustal inheritance.
The updated imaging of the sub-basalt facies and the deep crustal mapping provides important constrain on the pre-volcanic basin configuration, margin subsidence history, and the volume of igneous rocks. These constraints lead to a better understanding of the melt supply from the upper mantle and the relationship between tectonic setting and volcanism. The result gives key boundary conditions for understanding the processes forming volcanic margins and constraints on the thermal evolution of associated prospective volcanic basins.