



Link between deglaciation and melt production in Iceland

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Magma generation underneath a mid ocean ridge is known to be due to decompression melting caused by passive upwelling of the mantle. Deglaciation in Iceland causes post-glacial rebound, which increases the mantle upwelling rate and hence the decompression melting rate. We adopt a simple viscous half space mantle model with an axisymmetric ice load to study the effect of deglaciation on the melt production rate during the last deglaciation in Iceland. Our simplified model shows that the last deglaciation could cause 30-50 folds increase in the melt production rate and the trace elements concentrations in the melt could be depleted by up to 30%. Further investigations of the time lag between the melt productions underneath Iceland and the magma eruptions on the surface will also help us better understand the mechanism of melt transport from mantle to the surface.