



## **Analysis of the crustal structure on the flanks of the Reykjanes Ridge from high-density bathymetry and magnetic data**

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We analyze the crustal structure on the flanks of the Reykjanes Ridge from high-density bathymetry and magnetic profiles. The objective of the study is to constrain the respective roles of the Iceland hotspot and the kinematic parameters in the morphology and segmentation of the Reykjanes ridge. Detailed bathymetry and magnetic data were collected in the Irminger Basin during the Russian surveys VK75, IK80, and LD85. The surveys covered large boxes on the Reykjanes Ridge and its flanks, and collected magnetic data on all profiles and single beam bathymetry data on two out of these three cruises. The data were recorded on analogical format, and have been digitized recently. Ship tracks are 5 to 10 km apart. From the magnetic analysis, the evolution of the Reykjanes Ridge can be divided into three main phases. An initial rapid opening occurred during the Eocene (54-40 Ma). A second phase is marked by ultra-slow spreading during Late Eocene - Oligocene (40-24 Ma). The third phase is characterized by oblique, slow spreading during the Neogene (24-0 Ma). We use the bathymetry and magnetic data from the cruises, along with satellite-derived gravity data to investigate the crustal structure of the flanks of the Reykjanes ridge. The large changes in kinematic parameters appear to affect the geometry of the spreading axis. The decrease in spreading rate at anomaly 19 (40 Ma) coincides with the segmentation of the axis into 30-80 km-long axial segments similar to those observed at slow-spreading mid-ocean ridges. This change is observed synchronously along the whole ridge. The second change in the morphology is characterized by the disappearing of the well-defined second-order segmentation, diachronously from north to south. We investigate the role of the kinematic parameters (spreading rate and direction) in the changes of geometric and magmatic segmentation.