

Geowissenschaftliches Kolloquium

Hydrothermal convection at fast and slow spreading ridges: insights from joint hydrothermal, mechanical, and petrological modeling

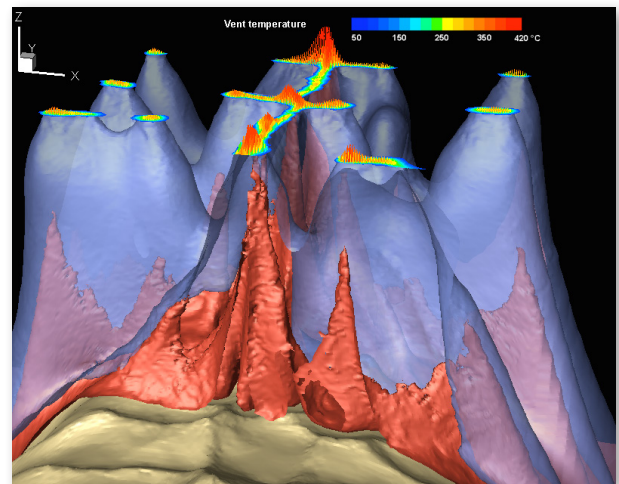
Donnerstag, 19. November 2015 - 16.15 Uhr

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Hydrothermal flow at mid-ocean ridges influences ocean and crustal chemistry, controls the thermal structure of young oceanic plates, and forms metal-rich sulphide ore deposits. Nonetheless, how and under what conditions heat and metals are extracted from the young ocean floor remains unclear. Here we present high-resolution two- and three-dimensional simulations of hydrothermal flow beneath fast-spreading ridges that predict the existence of two interacting flow components that merge to feed ridge-centred hydrothermal vent sites.

Shallow on-axis flow structures develop owing to the thermodynamic properties of water, whereas deeper off-axis flow is strongly influenced by crustal permeability.



Prof. Dr. Lars Rüpke is a professor at the GEOMAR Helmholtz Centre for Ocean Research in Kiel, where he heads the seafloor modelling group. In his work he combines models with data to investigate different geological systems including deep sea hydrothermal system, marine gas hydrate deposits, and passive continental margins. He holds a PhD in geophysics from Kiel University (2004) and a diploma in marine geosciences from Brest University in France (2000).

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