PhD position at IFP Energies nouvelles (IFPEN)
Earth sciences
Thermal and geochemical tracing of syn rift hydrothermal systems: Implications for the preservation of early source rocks

Both syn-rift and post-rift petroleum systems from the most distal part of continental margins constitute new targets for oil and gas exploration. The evolution and the preservation the distal margins are related to the formation of the continent ocean transition (COT) zone and continental break up, as well as the resulting thermal regime. The extreme crustal thinning leads to an increase of the heat flow, balanced by hydrothermal processes carrying an important part of the heat through the system. Relics of the ancient thermal anomalies have disappeared through time, but they are clearly observable in COT and on oceanic domain of young margin (Red sea, Gulf of Aden, Californian gulf, Asal lake). Oceanic flank ridges like Juan de Fuca represents also good analogs of the stretched distal margins regarding thermal transfers related to hydrothermal circulation. The main objectives of the PhD thesis is to understand and quantify the thermal regime perturbations induced by the onset of the hydrothermal system, using coupled heat flow values and geochemistry of interstitial waters, obtained through oceanographic surveys on different systems (oceanic flank ridges, young continental margins) analogous to distal parts of older continental margin. this understanding will allow to design a modelling methodology for thermal regime in the toe of continental slopes.

Keywords: distal continental margin, hydrothermalism, geochemistry, heat flow,

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PhD location IFPEN and IPGP
Duration and start date 3 years, starting preferably on October 1, 2014
Employer IFP Energies nouvelles, Rueil-Malmaison, France
Academic requirements University Master degree in Earth Sciences
Language requirements Fluency in French or English, willingness to learn French
Other requirements geological modelling

For more information or to submit an application, see theses.ifpen.fr or contact the IFPEN supervisor.

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