Gravity and magnetic anomalies and the deep structure of the Parnaiba cratonic basin, Brazil

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Cratonic basins comprise large thicknesses of sediments that have formed over long periods of geological time, yet their origin is poorly known. During October/December of this year BP will acquire a 1400 km long seismic reflection profile across the Parnaiba cratonic basin in NorthEast Brazil. The purpose of this project is to acquire new gravity and magnetic anomaly data along the seismic profile and to interpret these data in terms of the structure, origin and evolution of the basin. The new data will be combined with all the other publically available data into a new high-resolution grids of the free-air, Bouguer and magnetic anomalies over the basin and its margin. The grids will then be interpreted using both forward and inverse potential field modeling techniques. Plate tectonic reconstructions will be used to continue structural features identified in the basin, across the Equatorial Atlantic margin and into West Africa. The successful student will have the opportunity to carry out geological and geophysical field work across the basin in collaboration with staff and students at the Observatório Nacional in Rio de Janeiro. The project is a unique opportunity to carry out field work in a challenging environment with a team of UK and Brazilian academic and industry scientists interested in working at the boundaries of geology and geophysics on a topic of much current interest in the Earth Sciences.

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