

MarineE-tech: Exploring Deep Ocean Mineral Deposits

MarineE-tech, a GBP4.2 million research programme that will investigate the origins and formation of these crusts and study the potential impacts of mineral extraction, is funded by NERC (UK) and FAPESP (Brazil). The organisation will assess deep ocean ferromanganese deposits, a major source of the elements that are essential for emerging renewable energy technologies and a low carbon society.

E-tech elements, such as cobalt and tellurium, are vital for emerging E-technologies. These elements are in short supply, yet they are formed through natural Earth processes and occur in high concentrations in the world's ocean basins in metal rich deposits.

The MarineE-tech team are planning a research expedition to the northeast Atlantic next year to discover what controls the richness of the deep-sea deposits which arise on seamounts and assess novel exploration methods and potential effects of disturbance of these sensitive marine environments.

Technical director Dr Jez Spearman is leading HR Wallingford's contribution to MarineE-tech. He thinks this is a unique opportunity to study these crusts in situ, working at thousands of metres water depth. They are also crucially exploring sustainability issues around any extraction of these deposit, especially in the territories of small nation states with developing economies."

HR Wallingford's team will survey and monitor currents, water quality and sediment movement, including sediment plumes. The collected data will be used to further validate the current and sediment plume models. The researchers will also consider what plumes might be generated from commercial extraction activities, and how these plumes might behave. This information will be used to help inform research in to the environmental impact of this type of operation.

The MarineE-tech partnership spans industry, academia and policy makers. The programme is led by the UK National Oceanography Centre and also includes the University of Bath, the British Geological Survey, the University of Sao Paulo (Brazil), the South Pacific Island Communities, the United Nations' International Seabed Authority, Gardline Ltd, and Soil Machine Dynamics Ltd.

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