INTRODUCING
INTRODUCING GEOPHYSICS

Geophysics is a term that might discourage any but the most inquisitive Earth Scientist but, simply put, it is the study of the Physics of the Earth. As the Earth is very large and relatively slow-moving it is described by the classical Physics disciplines such as heat, gravity, magnetism, electricity, vibrations and waves. Everything we know about the deep Earth, apart from the superficial pinpricks provided by boreholes, we have learned from geophysics. In this approachable and well-illustrated introduction to the many multi-disciplinary facets of geophysics, Peter Styles has kept mathematics to a bare minimum.

The composition of the Earth, its geothermal heat flow and the forces which drive Plate Tectonics and which make the Earth a dynamic system are discussed, as is the application of seismology which allows us to 'see' the complex structures which are hidden deep below the surface of our planet. The Earth's magnetic field and its variations over time are described and we learn how these changes are recorded in sedimentary rocks and the ocean crust, allowing us to chart tectonic plate motions. Earth's electrical properties and its gravity and the role these play in understanding the deep Earth and its evolution are explained clearly.

A key aspect of the book is a clear detailing of the application of Geophysics to practical matters. While geophysics plays a crucial role in surveying for hydrocarbon and mineral resources; it is also a fundamental environmental tool to look for hidden dangers beneath the surface, such as caves and old mine workings; for managing pollution and environmental hazards; and, most recently, for looking for and monitoring safe and secure places to store our manifold wastes, such as Carbon Dioxide and spent nuclear material. Readers will soon appreciate that the popular perceptions of practical geophysics as used in archaeology or forensics is merely a glimmer of the many crucial applications of this science to all our lives.

Peter Styles, is Professor Emeritus in Applied & Environmental Geophysics, Keele University. During his first post, at University College Swansea he taught and researched the whole of Geophysics, from Plate Tectonics to detecting old coal mines, all of which wonderful apprenticeship is reflected in the breadth of this book. While at Liverpool, he specialised in gravity, magnetism and interpretation of geophysical data. Then at Keele University his interest in Environmental Geophysics developed. Although retired, he does Geophysics most days, mainly in contentious areas such as induced earthquakes and subsidence caused by human activities such as shale gas and other intrusive operations.

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