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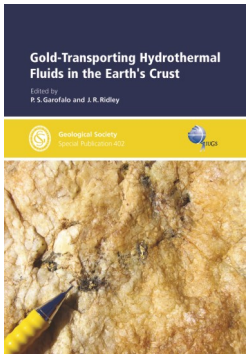
Gold-Transporting Hydrothermal Fluids in the Earth's Crust

Edited by Gleb S. Pokrovski, Nikolay N. Akinfiev, Anastassia Y. Borisova, Alexandre V. Zotov and Kalin Kouzmanov

Hydrothermal ore deposits that are exploited for gold include both gold-only deposits, such as orogenic deposits, and gold-bearing examples of the common hydrothermal deposits types that are formed around upper-crustal magmatic centres, in particular porphyry and epithermal deposits. Fluid-inclusion data have shown that ore fluids of gold-only deposits are compositionally distinct compared to fluids of other deposit types. This Special Publication includes an up-to-date summary of thermodynamic parameters of aqueous Au species at high temperatures and pressures; a dataset of fluid inclusion properties and compositions from orogenic deposits of different parts of the world; several comprehensive case studies of different types of gold deposits and their fluids from USA, Brazil, Egypt, Slovakia and Bulgaria; and numerical modelling aimed to define key parameters that affect fluid flow and gold deposition at a range of scales.



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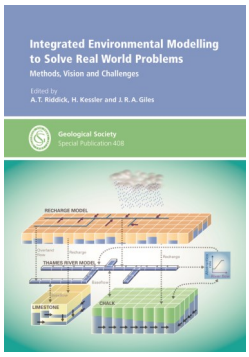
Integrated Environmental Modelling to Solve Real World Problems: Methods, Vision and Challenges

Edited by A.T. Riddick, H. Kessler and J.R.A. Giles

The discipline of Integrated Environmental Modelling (IEM) has developed in order to solve complex environmental problems, for example understanding the impacts of climate change on the physical environment. IEM provides methods to fuse or link models together, this in turn requires facilities to make models discoverable and also to make the outputs of modelling easily visualized. The vision and challenges for IEM going forward are summarized by leading proponents. Several case studies describe the application of model fusion to a range of real-world problems including integrating groundwater and recharge models within the UK Environment Agency, and the development of 'catastrophe' models to predict better the impact of natural hazards. Communicating modelling results to end users who are often not specialist modellers is also an emerging area of research addressed within the volume. Also included are papers that highlight current developments of the technology platforms underpinning model fusion.



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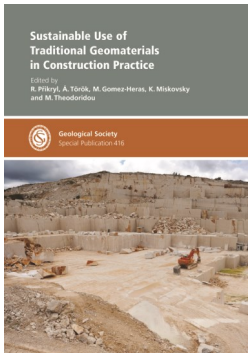
Sustainable Use of Traditional Geomaterials in Construction Practice

Edited by R. Přikryl, Á. Török, M. Gómez-Heras, K. Miskovsky and M. Theodoridou

Geomaterials derived from the Earth's crust and used in construction after appropriate processing are among the earliest raw materials exploited, processed and used by humans. Their numerous functional properties include accessibility, workability and serviceability, and these are explored within this volume. In modern society, sustainable use of raw materials, specifically those exploited in large volumes such as geomaterials for construction, raises questions of reducing extraction of primary resources and thus minimizing impacts on natural systems, and also employment of materials and technologies to lower emissions of deleterious substances into the atmosphere. This will be possible only if we fully understand the properties, processing and mode of use of traditional geomaterials. Although most of the papers within this volume were written by geologists, the contributions will also be of interest to those working in cultural heritage, monument conservation, civil engineering and architecture.



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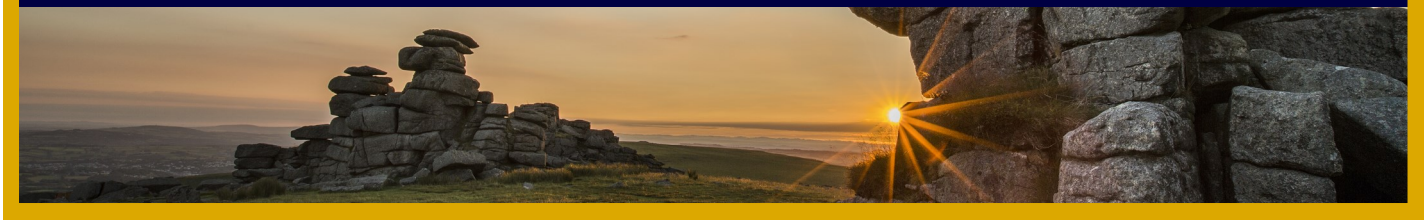

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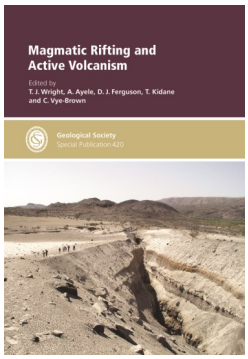
Magmatic Rifting and Active Volcanism

Edited by T.J. Wright, A. Ayele, D.J. Ferguson, T. Kidane and C. Vye-Brown

A major rifting episode began in the Afar region of northern Ethiopia in September 2005. Over a ten-day period, c. 2.5 km3 of magma were intruded along a 60 km-long dyke separating the Arabian and Nubian plates. Over the next five years, a further 13 dyke intrusions caused continued extension, eruptions and seismicity. This activity led to a renewed international focus on the role of magmatism in rifting, with major international collaborative projects working in Afar and Ethiopia to study the ongoing activity and to place it in a broader context. This book brings together articles that explore the role of magmatism in rifting, from the initiation of continental break-up through to full seafloor spreading. We also explore the hazards related to rifting and the associated volcanism. This work has implications for our understanding of how continents break-up and the associated distribution of resources in rift basins and continental margins.



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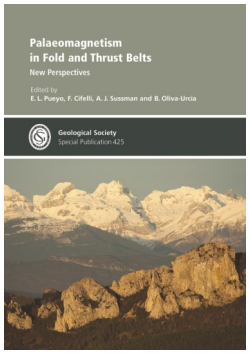
Palaeomagnetism in Fold and Thrust Belts: New Perspectives

Edited by E.L. Pueyo, F. Cifelli, A.J. Sussman and B. Oliva-Urcia

Palaeomagnetism is a technique used to understand complex deformation patterns in fold-and-thrust belts; it can be used to characterize the distribution, magnitude and timing of vertical axis rotations, an elusive variable using other methods. A combination of palaeomagnetic and structural geology analyses has helped to unravel the geometry and kinematics of fold-and-thrust belts around the world and of different geological ages for more than 50 years. This volume comprises three sections: the first shows thorough overviews of western Mediterranean arcs and the western Carpathians; the second depicts several examples from the Andes, the Alps, Anatolia, Pyrenees, Iberian Ranges and the Atlas; and the third shows the latest research on the use of palaeomagnetism to understand fold-and-thrust belts in 3D and 4D in a more quantitative way and it also includes some methodological proposals to avoid common errors. In the papers of the first two sections, the combination of palaeomagnetic analyses with structural data, AMS or magnetostratigraphic analyses demonstrate the usefulness of palaeomagnetism in deciphering complex deformation patterns in fold-and-thrust belts.



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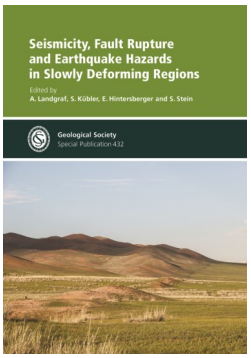
Seismicity, Fault Rupture and Earthquake Hazards in Slowly Deforming Regions

Edited by A. Landgraf, S. Kuebler, E. Hintersberger and S. Stein

Palaeoseismic records and seismological data from continental interiors increasingly show that these areas of slow strain accumulation are more subject to seismic and associated natural hazards than previously thought. Moreover, some of our instincts developed for assessing hazards at plate boundaries might not apply here. Hence assessing hazards and drawing implications for the future is challenging, and how well it can be done heavily depends on the ability to assess the spatiotemporal distribution of past large earthquakes. This book explores some key issues in understanding hazards in slowly deforming areas. Examples include classic intraplate regions, such as Central and Northern Europe, Mongolia, Inner Mongolia, Australia, and North and South America, and regions of widely distributed strain, such as the Tien Shan Mountains in Central Asia. The papers in this volume are grouped into two sections. The first section deals with instrumental and historical earthquake data and associated hazard assessments. The second section covers methods from structural geology, palaeoseismology and tectonic geomorphology, and incorporates field evidence.



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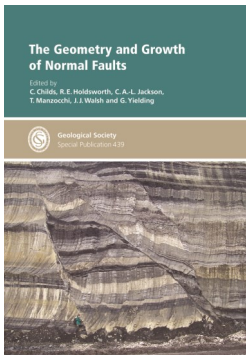
The Geometry and Growth of Normal Faults

Edited by C. Childs, R.E. Holdsworth, C.A.-L. Jackson, T. Manzocchi, J.J. Walsh and G. Yielding

Normal faults are the primary structures that accommodate extension of the brittle crust. This volume provides an up-to-date overview of current research into the geometry and growth of normal faults. The 23 research papers present the findings of outcrop and subsurface studies of the geometrical evolution of faults from a number of basins worldwide, complemented by analogue and numerical modelling studies of fundamental aspects of fault kinematics. The topics addressed include how fault length changes with displacement, how faults interact with one another, the controls of previous structure on fault evolution and the nature and origin of fault-related folding.
This volume will be of interest to those wishing to develop a better understanding of the structural geological aspects of faulting, from postgraduate students to those working in industry.



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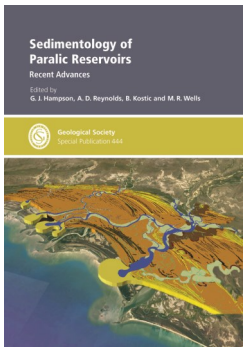
Sedimentology of Paralic Reservoirs: Recent Advances

Edited by G.J. Hampson, A.D. Reynolds, B. Kostic and M.R. Wells

Paralic reservoirs reflect a range of depositional environments including deltas, shoreline–shelf systems and estuaries. They provide the backbone of production in many mature basins, and contribute significantly to global conventional hydrocarbon production. However, the range of environments, together with relative sea-level and sediment supply changes, result in significant variability in their stratigraphic architecture and sedimentological heterogeneity, which translates into complex patterns of reservoir distribution and production that are challenging to predict, optimize and manage.
This volume presents new research and developments in established approaches to the exploration and production of paralic reservoirs. The 13 papers in the volume are grouped into three thematic sections, which address: the sedimentological characterization of paralic reservoirs using subsurface data; lithological heterogeneity in paralic depositional systems arising from the influence of tidal currents; and paralic reservoir analogue studies of modern sediments and ancient outcrops. The volume demonstrates that heterogeneity in paralic reservoirs is increasingly well understood at all scales, but highlights gaps in our knowledge and areas of current research.



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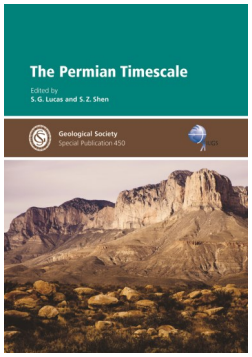
The Permian Timescale

Edited by S.G. Lucas and S.Z. Shen

The Palaeozoic Era ends with the c. 47-million-year-long Permian Period. This was a major juncture in Earth history when the vast Pangean supercontinent continued its assembly and the global biota suffered the most extensive biotic decimation of the Phanerozoic, the end-Permian mass extinction. It was also the time of accumulation of vast mineral and energy deposits, notably of salt and petroleum. The temporal ordering of geological and biotic events during Permian time is, therefore, critical to the interpretation of some unique and pivotal events in Earth history. This temporal ordering is based mostly on the Permian timescale, which has been developed and refined for nearly two centuries. This book reviews the history of the development of the Permian chronostratigraphic scale. It also includes comprehensive analyses of Permian radioisotopic ages, magnetostratigraphy, isotope-based correlations, and timescale-relevant marine and non-marine biostratigraphy and biochronology.



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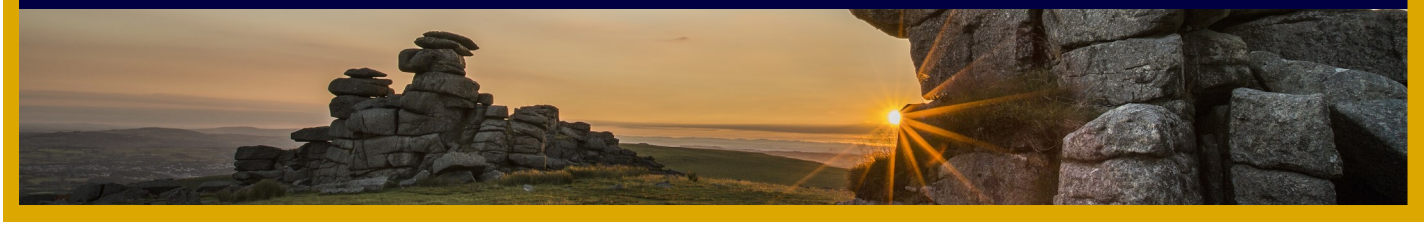

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