



BASIN STRUCTURE GROUP

bsg.leeds.ac.uk

Significant uncertainty exists in defining the controls and boundary conditions of sedimentary basins on continental margins. This uncertainty affects our ability to assess fully exploration risk.

The Basin Structure Group (BSG) undertakes cutting edge research that can reduce this exploration risk by improving our understanding of margin structure and basin evolution and assessing how this impacts key hydrocarbon play elements, including source and reservoir rock character and distribution, and hydrocarbon generation and migration.



RESEARCH VISION

The BSG is an interdisciplinary group encompassing geophysicists, structural geologists, sedimentologists and petroleum systems modellers. It consists of 4 Faculty Staff, 2 PDRAs, ~10 PhD students and a number of visiting research fellows.

The BSG is part of Petroleum Leeds, a collaboration between the School of Earth and Environment and the Faculty of Engineering at the University of Leeds.

Our research vision is to:

- Build a detailed understanding of the regional interplay of tectonics, structure and basin evolution
- Address the impact of this regional context on exploration
- Evolve a contextual framework to capture the variability of continental margin architecture
- Investigate the impact of margin architecture on petroleum system modelling.

PREVIOUS SPONSORS

BG, BP, Ecopetrol, EON, GETECH, Saudi Aramco.

COSTS

Standard membership: £50k for 3 years.

Membership including a company specific Phd project: £150k for 3.5 years.

DELIVERABLES

Company wide access to:

- Research results for detailed, integrated, regional research projects, including; southern South Atlantic, East Africa from Durban to Somalia, Australian margin, North Atlantic, Borneo and Colombia.
- Research outputs delivered through the BSG website
- Searchable literature database tailored to research themes
- Online learning resources
- Company visits of 2 days/year plus annual user group meeting
- Ongoing contact with BSG staff and student.
- Bespoke field and/or classroom training course as an optional extra.

RESEARCH OUTPUTS

Fundamental to our research is an observational approach based on regional 2D and 3D reflection data integrated with potential fields data from which we provide new insights into the process underlying basin evolution.

By coupling these outputs with petroleum system modelling we will derive a series of predictive tools and models that can be applied to global exploration.

- Geotranssects - regional scale sections that capture the structural architecture and petroleum system elements of continental margins across the globe.
- Analogues Database - integration of the Geotranssects with potential fields data will allow us to construct an analogue database that can be used as a predictive tool to predict crustal architecture in data poor regions.
- New structural framework and crustal architecture databases will provide a resource within which our more detailed research and geotranssects will be embedded. This is in collaboration with Dr Paul Markwick.
- Beyond rifting - using regional studies and geotranssects we aim to expand conceptual models of basin fill from rifting through to ocean basin formation.

CONTACT US

Professor Douglas Paton

t +44 (0) 113 343 5238

e d.a.paton@leeds.ac.uk

<https://bsg.leeds.ac.uk/>

Current projects include:

- Volcanics and rift phase - what is the nature of the sag?
- 3D geometry of volcanic margins
- East African rift geometry
- Red Sea rift evolution
- Interaction of hyperextension and transform margins.

Future projects are likely to include:

- Pelotas margin restoration
- Falklands/South Africa – role of transform margins on continental break-up
- Deep Water Fold and Thrust Belts – insights from SW England
- East African margin evolution
- Interplay of volcanics and hyperextension.

KNOWLEDGE TRANSFER

Our bespoke research website will give you access to:

Research Outputs

Research results delivered as pdfs viewable online or downloadable. This includes conference talks, posters, regular research summaries and MSc and PhD thesis. Results can be searched by geography or subject.

Cutting Edge

This provides insights into the latest world leading research that we are undertaking including active research prior to conference presentation of publications.

Literature Database

A bibliographic review database that allows industry professionals to keep abreast of advances in academic literature and incorporate the latest thinking into their work. Additionally, these tools allow users new to basin structure analysis to quickly develop an understanding of these settings.

Training

This online training resource is based upon our world leading MSc Structural Geology with Geophysics, and will be made available and is applicable to both graduate and advanced levels.