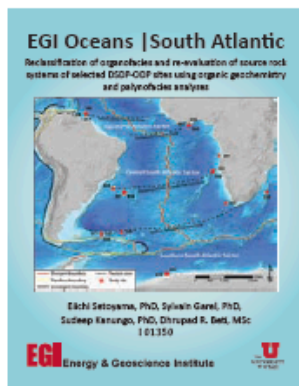# 2 EGI Oceans – South Atlantic Source Rock Reclassification

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EGI Oceans |South Atlantic

Reclassification of organofacies and re-evaluation of source rock systems of selected DSDP-ODP sites using organic geochemistry and palynofacies analyses

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Full Title: **EGI Oceans | South Atlantic** – Reclassification of organofacies and re-evaluation of source rock systems of selected DSDP-ODP sites and industry wells from offshore Brazil and Gabon using organic geochemistry and palynofacies analyses

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Project Rationale & Significance:

A focused and tested workflow from EGI's Central & North Atlantic research program supported by 10 major international oil companies, combining bulk geochemical data, new palynofacies observations, and bulk kinetic analyses, will be employed for a quantitative appraisal of the potential and quality of Mesozoic source rock systems delineated by the EGI Oceans South Atlantic Project (2017). Palynofacies observation enables unambiguous visual identification of organic matter (OM) type and composition, and the correction for the mineral matrix effect. Synthesizing the interpreted organic geochemistry and bio-chronostratigraphic data from the above mentioned Oceans project with new palynofacies, biomarker, and isotope data will provide improved, higher-resolution constraining of the spatial and temporal evolution of potential source rocks along the South Atlantic conjugate margin than understood before. The OM-endmember-specific kinetics will provide reliable kinetic parameters, critical for quantitative modeling of hydrocarbon generation, for each potential source rock system, and thus refine the assessment of YTF resources in the South Atlantic.

Palynofacies observations allow us to visually identify the main organofacies of the potential source rocks, and resolve whether Type II/Type III samples determined by pyrolysis are actually characterized by a mixture of marine and terrestrial OM (mediocre quality, oil and gas prone) or by degraded marine OM (good quality, mostly oil prone). This detailed classification and quantification of OM end-members and the correction for the mineral matrix effect will significantly improve the source rock quality evaluation. Palynofacies observations will also help reconstruct paleoenvironment including redox conditions and detrital inputs. An effort to combine the new results using paleogeographical maps to depict the distribution of potential source rocks will facilitate understanding of its evolution through time.

Deliverables

➢ Source rock characterization for richness, maturity, organofacies type and kinetics

➢ Multi-disciplinary paleoenvironmental interpretation (foraminifera, nannofossils, organic-walled microfossils and siliceous microfossils)

➢ Integrated paleoenvironmental and organofacies maps for identified source rock intervals

➢ Gas Risk Index (GRI) and Source Potential Index (SPI) ranking maps