Traditional and new ways to investigate geology in coal-seam-gas and geo-sequestration research

Seminario
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Abstract:

Joining the research in coal exploration at the University of Queensland, it has become increasingly important to integrate traditional and innovative methods for investigating hydrocarbon-bearing formations that are poorly exposed and mostly buried deep in the Australian craton.

Surat Basin (Eastern Australia) is a large Jurassic-early Cretaceous clastic basin, which hosts several coal measures interbedded with sand-dominated formations. Although the exploration of this basin is now at its acme (with more than 8000 wells), the central areas have not been explored yet and syn-depositional tectonics started to be taken into account. The School of Earth Sciences at University of Queensland is engaged with basin exploration, supporting government and coal companies with high-level research.

A basin-scale analysis, incorporating outcrop sedimentology (facies analysis, photogrammetry, hyperspectral imaging), well bore analysis (wireline and image logs, hyperspectral scanners) and prediction modelling (stochastic modelling, multi-point statistics, forward modelling), is presented. This is necessary to understand the facies and lithology distribution and connectivity between formations.

The deep investigation of these precious basins is important mainly for the sustainability of our communities, environment and industry economic standing. With strategic investigation we can avoid pollution between gas and aquifers. Furthermore, exploiting the basin configuration, we can detect the ideal formation for green house gas injection in geo-sequestration purposes.

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