

## **Integrated Earth Data Interpretation Workflow - A Recipe for Success in Onshore Frontier Hydrocarbon Exploration**

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The interior of Australia plays host to a series of vast sedimentary basins spanning c. 2.5 billion years of the island continents geological history. Many of these basins contain significant reserves of both conventional and unconventional hydrocarbons. In addition to being active offshore, Santos Ltd has a long history of hydrocarbon exploration (generally as Operator) in several of the onshore basins, which notably include the Bowen, Gunnedah, Cooper, Amadeus and McArthur Basins. Frontier exploration involves various regional geological studies, these being geared towards deriving an early assessment of hydrocarbon potential and directing the geographical focus of future exploration work. Due to the general lack of data in the early exploration phase, much effort is expended in maximising the interrogation and understanding of all available open source and proprietary datasets. These typically include surface geology, surface elevation, surface vegetation, Landsat, gravity, magnetics, radiometry, existing seismic and existing boreholes (including water bores). The key to extracting every ounce of useful geological information from these data is through data integration and co-visualisation. To this end, Santos has developed a tried-and-tested regional exploration workflow, which often involves some novel visualisation techniques (e.g. use of 3D anaglyphs). This presentation will include discussion of basic workflows, the various data types and principles of data integration and interpretation, illustrated with numerous real-world examples from Santos' extensive exploration experience in several of the aforementioned basins.