SEEBASE layers provided in GSWA Reports 182 and 191, and OZ SEEBASE 2020 grid, 2020

by

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Abstract

The Energy Systems Atlas is a collection of new geological map layers designed to help explorers identify each of the essential elements and processes of a petroleum system: source, reservoir, seal, burial/maturation, structure/trap formation and migration. Basement parameters such as depth and composition are important factors when considering heat flow, and in areas with little to no seismic coverage, depth-to-basement models determined from potential field datasets such as magnetic and gravity serve as good first-pass regional assessments of basin structure. In 2005, Frogtech Geoscience completed the OZ SEEBASE (Structurally Enhanced view of Economic BASEment) project using primarily potential field data with seismic interpretation constraints where possible, resulting in a continental-scale depth-to-basement grid highlighting the structure of Phanerozoic basins across Australia. With the acquisition of new potential field and seismic datasets since then, in 2017–18 the Geological Survey of Western Australia (GSWA) contracted Frogtech Geoscience (now Geognostics Australia) to revise the SEEBASE model of the Carnarvon Basin and the Canning Basin including the extension over the western Amadeus Basin, and to provide interpretations of basement terranes and lithology. The 2017 Canning SEEBASE project (GSWA Report 182) and the 2018 Carnarvon SEEBASE project (GSWA Report 191) have markedly increased the resolution of the Canning and Carnarvon Basin depth-to-basement models compared to the 2005 version, and improved identification of major structures, basement faults and crustal architecture. Geognostics Australia have incorporated the new depth models from these two projects into the latest OZ SEEBASE 2020 grid. The Canning Basin SEEBASE project (2017) also included a heat flow study that will aid geothermal explorers.

How to access

The Energy Systems Atlas is best accessed using the Western Australian Petroleum and Geothermal Information Management System (WAPIMS). This online interactive mapping system allows data to be viewed and searched together with other datasets. The Energy Systems Atlas SEEBASE digital data are also available as a free download from the Data and Software Centre via Datasets — Statewide spatial datasets — Energy Systems Atlas — SEEBASE, as ESRI shapefiles and MapInfo TAB files and as raster grid (.BIL) and image (.JP2) files. The OZ SEEBASE 2020 grid and contours are displayed with permission from Geognostics Australia, and updated products will be added when available.

Recommended reference

Thomas, CM and Zhan, Y 2021, SEEBASE layers provided in GSWA Reports 182 and 191, and OZ SEEBASE 2020 grid, 2020: Geological Survey of Western Australia; digital dataset, <https://wapims.dmp.wa.gov.au/WAPIMS/GISMap/Map>.

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