Determining the geoheritage significance of deltas using the Geoheritage Tool-kit

*Brocx Margaret[1], Vic Semeniuk[2]

1.Murdoch University, 2.V & C Semeniuk Research Group

Geoheritage is the heritage value assigned to features of a geological nature, encompassing Globally, Nationally, State-wide to Regionally, and locally significant features of Earth Science. Sites of geoheritage significance are intrinsically important or culturally important, offering information or insights into the evolution of the Earth, or into the history of Earth Science, or that can be used for research, teaching, or reference. Features of geoheritage significance can range from the small scale such as crystals to the large scale such as mountain ranges and drainage basins. While there has been a focus on geological features of geoheritage significance in the record of rocks, palaeontology, minerals, and landscapes, there has been little emphasis placed on the geoheritage significance of deltas.
In terms of geodiversity and geoheritage values, deltas provide a rich assortment of geologic, geomorphic, sedimentologic, mineralogic, and biogenic attributes, not only in regards to the features within the deltas themselves, but also in the geology, geomorphology, and hydrology of the immediately surrounding landscape that borders them or (if in an estuary) that frames them. Deltas provide a wealth of features of geoheritage significance: from the large scale expressed as delta types and stratigraphic sequences to the small scale of sedimentary products and diagenesis. Consequently, they lend themselves to qualifying as sites of geoheritage significance. This is especially the case in that deltas derive from and reside in various types of geologic, geomorphic settings, and oceanographic settings which results in a wide variety of delta types; they occur in a wide range of climates from tropical to temperate, and from humid to arid, which also results in a wide expression of delta types stratigraphically, sedimentologically, and geochemically/mineralogically.
The Geoheritage Tool-kit has been developed to systematically catalogue and evaluate different aspects of geology, assign them as to category of geoheritage site, rank them as to size, and then evaluate individual features or package of features as to their significance. The Geoheritage Tool-kit can be systematically applied to deltas to help identify Internationally and Nationally significant deltas as a basis for management and geoconservation. Applying the Geoheritage Tool-kit to deltas worldwide and to specific case examples in Australia shows a range of environmentally significant deltas.

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