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## **An academic heritage for geoscientists: Example of Kachchh Rift Basin, Western India**

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Kachchh basin, in western India, exposes distinctive geological features for basic and applied study for geoscientists. The fossil rich stratigraphy of Kachchh represents the past 200 million years of geological history from the Jurassic period to present day through the Tertiary period. Mesozoic and Cenozoic sediments are highly fossiliferous, with varieties of mega and micro-fossils including fossil vertebrates like dinosaurs, some mammals and large marine reptiles.

Kachchh is a Gondwana rift basin – a block of upper crust subsided along fractures when the Indian continent broke up from the African continent 200 million years ago [1]. The basin is bound by major faults, where the uplifted faulted blocks within the basin are seen as hilly regions, whereas the subsided ones formed low lying areas like the Ranns. The basin is situated in a critical area of the global tectonic framework and is tectonically very active even in the present time, as evident from repeated earthquakes [2]. Several episodes of tectonic movements deformed the strata into complicated folds, sheared zones and network of faults and joints. The unique structural style thus formed is exposed as 3D-models for basic geological study.

Thick Deccan Trap lava flows and basic intrusive bodies, help geologists understand the deeper crustal and mantle processes associated with basin evolution. Geoscientists can have a perception of all such geological features, such as primary structures and processes, sedimentary and igneous rocks, minerals, geomorphic features, and secondary structures as described in the text books, and the impressive occurrence of varieties of fossils (vertebrates, invertebrates, plants and traces).

The region is also significant to study the occurrence of residual sedimentary economic minerals like china clay, bauxite, bentonite and some economic rock formations of Eocene age, such as Nummulite limestone and lignite [3]. Many of the famous geological middle Jurassic to late Tertiary sections are found in Kachchh. Unfortunately, many sites of highly significant geological features will soon cease to exist since major parts of Kachchh region have been leased out for mining for economic value. The region is a natural geological museum and a large laboratory. Once destroyed, it cannot be recreated. We need to protect such geoheritage from human activities or any other means. The purpose of presenting this paper is to create awareness to protect the natural geological sites for our future generations to study them in the field by making geological monuments and national parks.

### *References:*

[1] Biswas, S. K. (1987) Tectonophysics, 135, 307-327

[2] Thakkar, M. G. et al (2012) J Geol. Soc. India, 79, 367-375

[3] Swarna, K. et. al (2013) Jour. Env. Protection, 4, 1360-1372

