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The Geological evolution of the Farasan Banks Using GIS , Remote sensing and ground trothing data, Southeast the Red Sea, Saudi Arabia

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In the southeastern Red Sea The Farasan Bank lies, 40km off the southwestern coast of Saudi Arabia. It is consists of many features including islands (for example Farasan Al-Kabir Island, and Sajid Island), emergent coral reef and reefs, sand shoals, and sea floor depressions. The Farasan Islands arise from the Farasan Bank and are separated from the coast by the Al-Banat Sea The shape of the Farasan islands is elongated northwest-southeast parallel to the Red Sea axial trough and southwest of the Saudi Arabian coastline, and is shown to be intersected by a number of submerged and emergent salt dome features such as diapirs, circular graben, circular bays and circular sea floor depressions and emergent shoals.
This study processes Landsat TM, Spot, and Ikones in a variety of ways in order to examine the surface geology of the Farasan Islands, and the Geomorphology of the Farasan Bank.
The two largest islands; Farasan Al-Kabir and Sajid, have been studied in detail and their outcropping geology has been ground truthed by a series of transects, stratigraphic logs and sampling material for geological age dating.
This investigation indicates that the Farasan Islands consist of six major sedimentary/environmental units, three of these comprise Recent sediments; wet sabkha and rocks, bioclastic sand, and vegetated areas, and three are units of shallow marine reefal limestone comprising bioclastic grainstone, bioclastic rudstone and bioclastic floatstone. The reefal limestones have been dated using 87/86 strontium isotopes and these indicate a spread of Pleistocene ages with the higher elevations on the islands exposing older rocks.
The Farasan Limestone has been deformed by salt diapirism into a variety of mapped structures including salt domes, anticlinal salt ridges, solution holes and surface breccias. Bathymetric mapping down to 30m identifies seafloor salt domes and solution holes. The Al Banat Sea is considered to be a salt withdrawal basin between Farasan Bank and the Saudi Arabian coast.
The study concludes that the Farasan Bank probably initiated by differential loading of salt triggered by tectonic stretching of the overburden during the regional extension of Red Sea rifting. The extension initiated upeard movement of diapirs and northwest-southeast salt walls, and salt withdrawal from beneath the Al-Banat Sea. The salt has moved upward to form diapirs, walls and canopies that have deformed and interacted in a complex fashion with the sedimentation of the overlying coral reef limestone. The Islands were formed as a result of diapirism of Miocene salt that has controlled the sea floor and island topography from Pliocene to Recent times.