



Qena Valley Evolution, Eastern Desert, Egypt

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Remotely sensed topographic and optical data were used to identify tectonic phenomena in Qena Valley. Using digital elevation model, morphotectonic features were identified. Processing and analysis were carried out by the combined use of: (1) digital elevation model, (2) digital drainage network analysis, (3) optical data analysis, and (4) lineament extraction and analysis. Structural information from other sources, such as geological maps, remotely sensed images and field observations were analyzed with geographic information system techniques. The analysis results reveal that the linear features of Qena Valley controlled by several structural elements have different trends NW-SE, NE-SW and N-S trends. Basement rocks at Qena valley has a major NE-SW trending and the sedimentary rocks are dominated by a NW-SE, NE-SW and N-S trends while, E-W are less abundant. The NE-SW trends at north Eastern Desert Egypt attain to normal faults that reflect extension in NW-SE direction, which is related to strike slip faulting along NW-SE directed Najd fault system. Further, the NE-SW is abundant as joints and fractures seem to have controlled the path of the Nile in Qift - Qena area. The NW-SE direction are abundant in the rock fracture trends (Gulf of Suez or Red Sea) and reflects Neoproterozoic faults have been reactivated in Neogene during rifting events of the Red Sea opening and marked the sedimentary rocks at Qena valley. The results of the lineament density map reveals that Qena valley was originated along one fault that trend like the Gulf of Suez and the range of the Red Sea Hills. This major fault was dissected by several lateral faults are seen well exposed at numerous places within the valley, especially on its eastern side. Both sides of Qena valley have a similar density matching may attain to that this lineaments affected Qena valley during rifting. This rifts it probably happened in Early Miocene associated with Red Sea tectonics. The general southward slope of Qena valley refer to North Qena valley uplifting. This uplift attributes to the continental margins uplift during Red Sea rifting, as a result, a sedimentary cover was removed, and the basement rocks were exposed. Although, the uplift located at the basement (east) but most of north Qena valley subjected to this uplift. The accelerated uplift and volcanism in Neogene time that is occurred all along the Red Sea area, with more uplift at northern margin of the Red Sea rift than farther to the south It's probably this uplift gave Qena valley southward direction and the evidence about the uplift the older rocks are exposed to northward