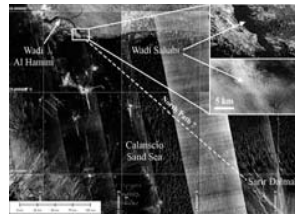


K&C Desert & Water Theme

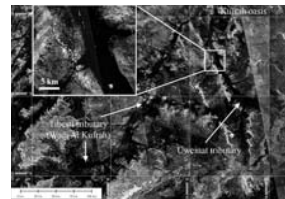
Mapping of a Major Paleodrainage System in Eastern Libya using ALOS/PALSAR: The Kufrah River

Using PALSAR L-band radar onboard the ALOS platform, we mapped a major paleodrainage system in eastern Libya, that could have linked the Kufrah Basin to the Mediterranean coast through the Sirt Basin, possibly as far back as the middle Miocene.

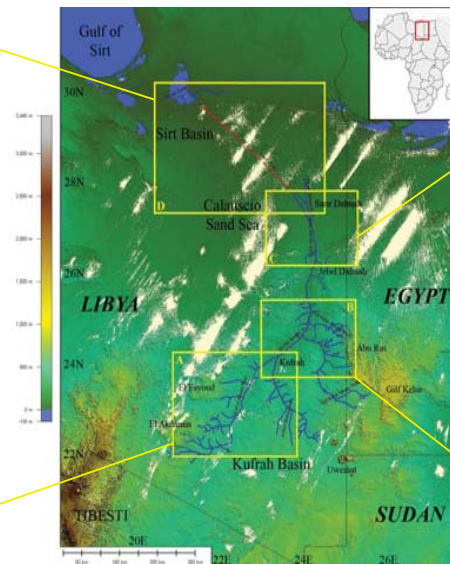
The PALSAR sensor clearly reveals a 900 km-long river system, which starts with three main tributaries (north-eastern Tibesti, northern Uweinat and western Gilf Kebir / Abu Ras) that connect in the Kufrah oasis region. The river system then flows north through the Jebel Dalmah, and forms a large alluvial fan in the Sarir Dalmah. The large sand dunes of the Calanscio Sand Sea prevent radar penetration and preclude detailed reconstruction of any possible connection to the Mediterranean Sea, but a 300 km-long link to the Gulf of Sirt through the Wadi Sahabi paleochannel is likely.



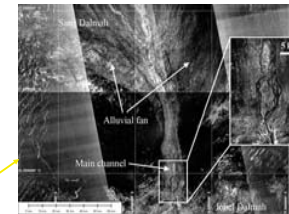
PALSAR image of the Calanscio Sand Sea. The white dotted line indicates a possible path between the alluvial fan in the Sarir Dalmah and the Wadi Sahabi paleochannel. Zoom shows the Wadi Sahabi paleochannel as seen by the radar of PALSAR (top) and by the optical sensor of LANDSAT-TM (bottom).



PALSAR image of the southern part of the Kufrah River, showing the two main tributaries (dark valleys) from the Tibesti and Uweinat regions, which join at the Kufrah oasis. Zoom (inset) shows a secondary braided river pattern.



The Kufrah River (in blue) mapped onto SRTM topography. The red dotted line shows a possible path to the Mediterranean paleo-coast.



PALSAR image of the northern part of the Kufrah River. North of the Jebel Dalmah, it forms a large alluvial fan in the Sarir Dalmah. Zoom (inset) shows the main channel south of the alluvial fan.



PALSAR image of the central part of the Kufrah River. Tributaries from Gilf Kebir and Abu Ras plateaux join the main river channel about 80 km northeast of the Kufrah oasis. Zoom (inset) shows the narrow incised river bed, less than 1 km in width.

If the connection between southeastern Libya and the Mediterranean Sea through the Kufrah and Sirt basins is confirmed, the whole Kufrah River system that we have mapped using PALSAR would be more than 1200 km-long, comparable in size to the Egyptian Nile.

If the Miocene antiquity of this paleodrainage system can be confirmed, it will have important implications for the understanding of the past environments and climates of northern Africa from the middle Miocene to the Holocene, with consequences for faunal, floral, hominid and human dispersal.