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Thematic Focus: Resource Efficiency and Ecosystem Management

Ancient Water is Used to Irrigate a Desert—Murzuq Basin, Libya

Why is this issue important?

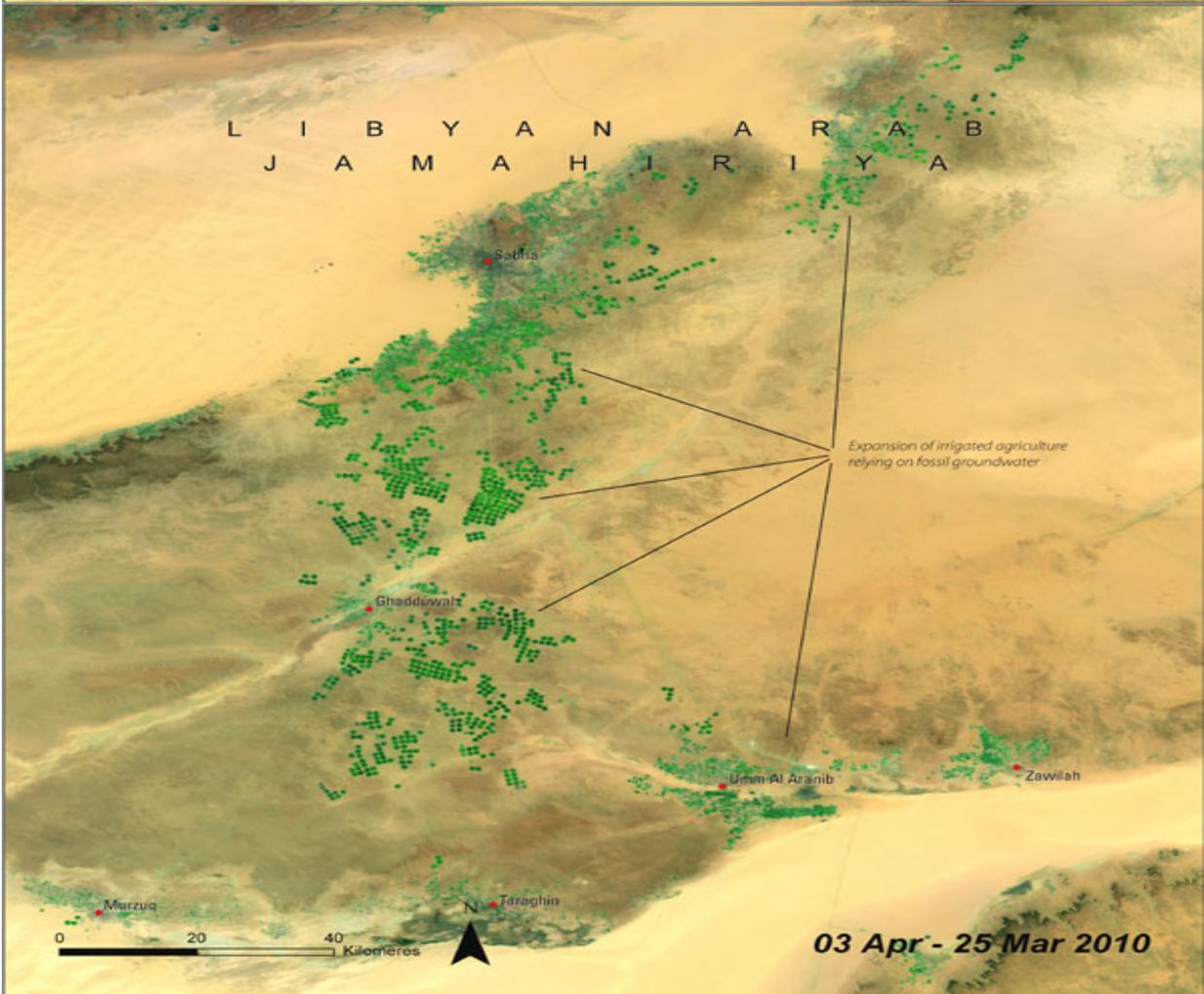
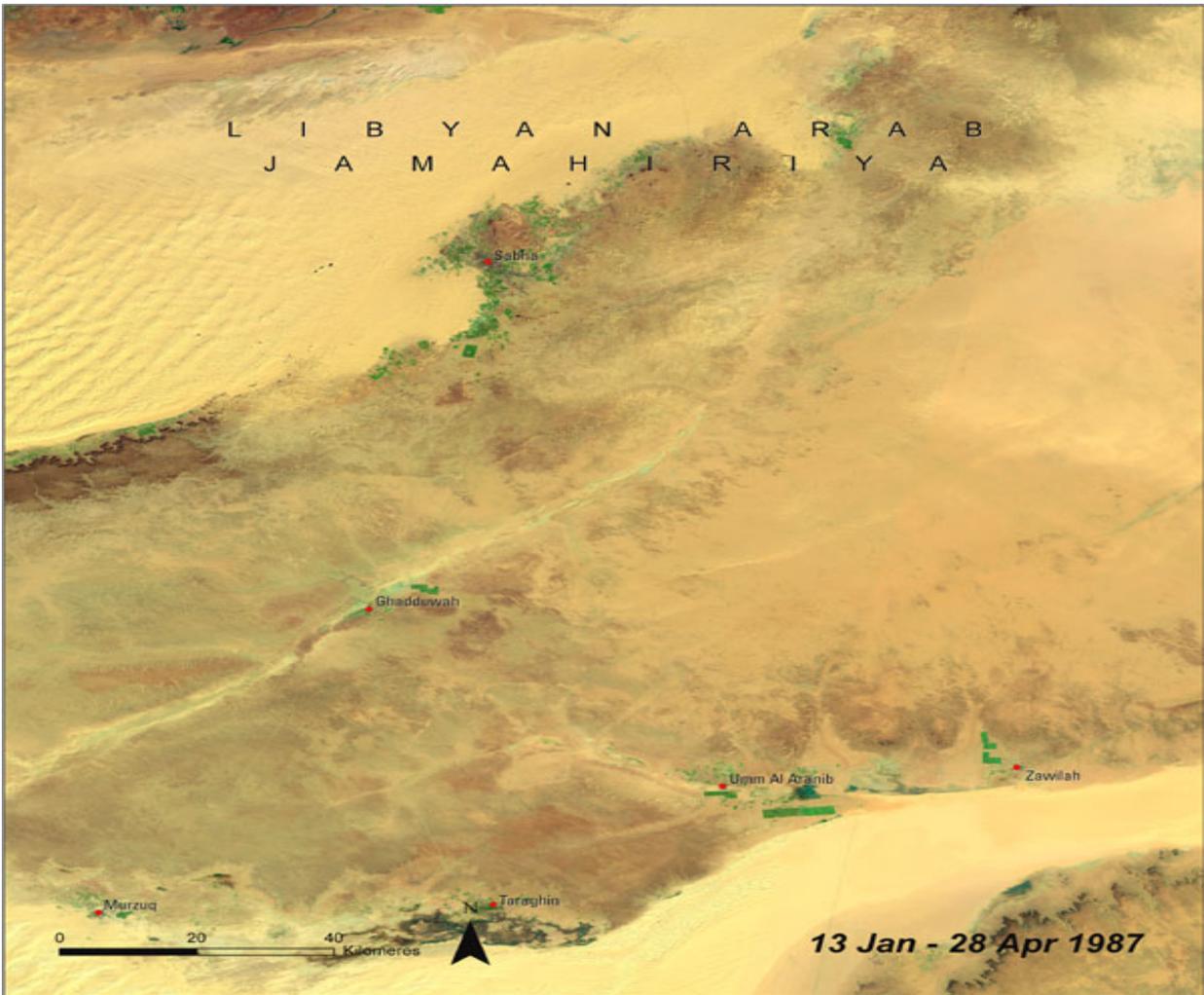
Libya relies on groundwater to meet 95 per cent of its water requirements; it is primarily "fossil water" from non-recharging aquifers such as the Nubian Sandstone Aquifer System, the North-Western Sahara Aquifer System and the Murzuq Basin Aquifer System (Alker 2008). In the 1960s, the discovery of water in deep aquifers located under Libya's southern desert inspired an enormous water transfer scheme—the Great Man-Made River Project. Begun in the 1970s, the project brings water from well fields in the Sahara to Libya's settlements, which are generally concentrated along its northern coast. The system is among the largest civil engineering projects in the world.



Hotspot Image Viewer: 1987 and 2010

BEFORE IMAGE

AFTER IMAGE



Instructions

Compare different satellite images for this Hotspot by selecting different "Left" and "Right" images.

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The majority of the system's water comes from Libya's two largest groundwater resources—the Murzuq and Kufra groundwater basins. Located in Libya's southern desert they hold over two-thirds of Libya's groundwater reserves (Alghariani 2007). While the total volume of water in the two aquifers is enormous, neither receives significant recharge. Heavy usage could draw the water down to levels that would eventually make its extraction prohibitively expensive (Shaki and Adeloje 2006, Alghariani 2003).





What are the findings and implications?

The satellite image pair (28 April, 1987 and 25 March, 2010) shows the large increase in centre-pivot irrigation on the Murzuq Basin in southeastern Libya between 1987 and 2010. The water is drawn from the East and North East Jabal Hasaouna well fields, which abstract around 2 million m³ of water daily from the Murzuq Basin Aquifer (Abdelrhem and others 2008).

As much as 80 per cent of Libya's water is used for agriculture, including wheat, alfalfa, vegetables and fruits (Alghariani 2007). Water and agricultural demands are driven by Libya's population growth, which was increasing at just over two per cent a year in 2008, down from five per cent a year in the early eighties (World Bank 2010). Since the initiation of the project in 1983, the cost of alternative sources of water, particularly desalinization, has become competitive with water delivered by the Great Man-Made River transfer scheme (Alghariani 2003) and will likely become less expensive in the foreseeable future.

Download Images

- [28 April 1987](#)

● [25 March 2010](#)

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