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Groundwater Over-Pumping and Recent Earthquakes in the Northern United Arab Emirates: A Natural Hazard Accentuated by Human Activity

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Author(s)

Asma Al-Farraj

ABSTRACT

At the present day the United Arab Emirates (UAE) is on the flank of the Arabian plate, but some way away from the major modern earthquake epicentres. It normally experiences only minor earthquakes whose epicentres lie along the suture between the Arabian and Asiatic plates in Iran, the Arabian Gulf and the Gulf of Oman. In March 2002 a series of earthquakes occurred in several areas in the northern UAE, with foci along fault lines within the UAE. What made these earthquakes different from earlier earthquakes was their strength and frequency. For the first time in the area, earthquakes of a magnitude 5.5 (on the Richter scale) occurred, and continued over a period of three days. The causes appear to involve more than fault zone and plate tectonics, and may be related to human activity. Tracing the earthquakes during the past three decades indicates that the earthquakes followed major groundwater over-pumping, itself a result of population growth, growth in the number of farms and number of bottled water factories.

KEYWORDS

Groundwater Over-Pumping; Earthquakes; Northern UAE; Human Impact

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