

# **The March 11, 2002 Masafi, United Arab Emirates earthquake: Insights into the seismotectonics of the northern Oman Mountains**

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## **Abstract**

A moderate ( $M \sim 5$ ) earthquake struck the northeastern United Arab Emirates (UAE) and northern Oman on March 11, 2002. The event was felt over a wide area of the northern Emirates and was accompanied by smaller (felt) events before and after the March 11 main shock. The event was large enough to be detected and located by global networks at teleseismic distances. We estimated focal mechanism and depth from broadband complete regional waveform modeling. We report a normal mechanism with a slight right-lateral strike-slip component consistent with the large-scale tectonics. The normal component suggests relaxation of obducted crust of the Semail ophiolite (specifically, the Khor Fakkan Block) while the right-lateral strike-slip component of the mechanism is consistent with shear across the Oman Line. Felt earthquakes are rare in the region, however no regional seismic network exists in the UAE to determine local seismicity. This event offers a unique opportunity to study the active tectonics of the region as well as inform future studies of seismic hazard in the UAE and northern Oman. © 2005 Elsevier B.V. All rights reserved.

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