

Long-distance effect of geochemical precursors at Nagashima spa for a M=5.5 event in central Mie and 2001 Tokai slow slip

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Groundwater gas anomalies were observed at the 1500 m deep Nagashima well near Nagoya for the M=5.5 earthquake (Oct. 31, 2000) in central Mie Prefecture, Japan. In spite of the focal distance of 98 km, H₂/Ar, He/Ar, N₂/Ar and CH₄/Ar ratios of groundwater gas bubbles significantly changed not only at the time of the shock but also 2 days before it. Water temperature indicated a sharp coseismic increase. The earthquake is a dip-slip reverse event occurred approximately beneath the plate boundary in the eastern part of Kii Peninsula at a 44 km depth. The gas anomalies are strikingly different from the previous ones at the same well, which were restricted to those in H₂/Ar ratio for nearby events with M=1.5~5.4 within 25 km. The apparently

