
Recognition of another persistent swarm of small earthquakes for monitoring shear-wave splitting

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Abstract

Although seismic shear-wave splitting has been observed many times, in many different circumstances in situ rock, much of the current understanding of shear-wave splitting in the Earth's crust has come from observations above persistent swarms of small earthquakes, associated with transform zones of the Mid-Atlantic Ridge where they run onshore in SW and north Iceland. Monitoring shear-wave splitting allowed a M=5 earthquake in SW Iceland to be stress-forecast three days before it occurred. Common in transform zones offshore, previously the persistent swarms onshore in Iceland were thought to be unique. Here we report another persistent swarm onshore at Simav in the Anatolian Plate associated with a geothermal hot-spot ~250 km south of Istanbul. Since Western Turkey is more seismically active than Iceland, with over five times more $M \geq 5$ earthquakes in the past ten years, the Simav swarm is expected to respond to stress-accumulation before more large earthquakes than Iceland, enabling more large earthquakes to be stress-forecast.

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