# Stress field analysis in an earthquake cluster in Wakayama area

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Recently, earthquake bursts, defined as many earthquakes striking in limited space and time, have been recognized at many places in Japanese islands, through developments of dense seismic telemetry networks. Some bursts are understood as aftershocks initially delineating the rupture planes of large earthquakes, or seismic activities associated with volcanic sources. However, other bursts are categorized as seismic swarms of non-volcanic origin. It has been an open question to explain the reason why such seismic swarms of non-volcanic origin occur in upper crust. In this study, we aim to obtain detailed stress field associated with a seismic swarm, and discuss relations between the swarm activity and heterogeneous stress field.

Seismic swarms of non-volcanic origin have been observed for long years beneath Wakayama in the northwestern part of the Kii Peninsula, southwest Japan. We temporally deployed very dense seismic network above one area of the seismic swarms, and estimated the detailed hypocenter distributions (Kato et al., 2006). Focal mechanisms estimated using the data are composed of both dip-slip and strike-slip fault types, and the dip-slip type is dominant. Stress tensors in the source region were inverted directly from the first-motion data. The azimuth of the maximum principal stress is roughly W10N with a small plunge angle. This is well consistent with the regional stress field with E-W horizontal compressions. In contrast, the minimum principal stress axis is not well constrained, and it ranges from subvertical to nearly horizontal directions. This result indicates that the stress field locally changes in the swarm area.