# Mini 3D seismic surveys on the mud volcanoes in the Kumano trough

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We have conducted mini 3D seismic surveys in the Kumano trough to reveal the geological structure beneath and around the mud volcanoes. In 2004, a mini 3D seismic survey was conducted in Daigo and Dairoku Kumano knolls ('twin' mud volcanoes). In 2006, a new mini 3D seismic survey was also conducted in Daisan Kumano knoll (KK3), whose activity would be in different status from Daigo and/or Dairoku Kumano knolls, suggested from piston core sample data.

This new seismic survey was carried out in KT06-19 cruise by R/V Tansei-maru operated by JAMSTEC. Single 48-channel, 1200 m long streamer cable and a GI-gun with 355 $in^3$ chamber were used for this survey as receivers and the sounding source. We used a mini GPS buoy and compass birds to detect the shape of the streamer cable. The length of the seismic survey lines was 6km and each line was separated with 50 m interval. The GI gun was fired every 25 or 30 s, which corresponds the shot interval in ˜50 m. We could complete 82 seismic lines in 10 days cruise, which covers the KK3 with a 3D Box with 4km x 6km dimension. Onboard preliminary processing result shows the pseudo-3D structure beneath and around the KK3. The Kumano Basin sediment has ˜0.7 s thick in two-way travel time (TWT) and its lower part slightly dips to southwest. In the northeast of the KK3, a northeast dipping reflector exists beneath the sediment reflectors. The BSR can be traced at ˜0.5 s beneath the seafloor around the KK3, and is not continuous just beneath the KK3. The 'umbrella-shaped' structure can be recognized in the seismic profiles, which would reflect the past activity of the mud volcano (KK3).

Acknowledgement: We are grateful to JAMSTEC for their rental support on compass birds.