

## Integrated offshore investigations in the vicinity of Kikai Caldera, southwestern Japan —towards a comprehensive understanding of destructive caldera eruptions—

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Integrated offshore geophysical and geological investigations have been started to understand the mechanism of catastrophic caldera-forming eruption (CCFE) of the Kikai Caldera, SW Japan, which caused the latest CCFE on the Earth at 7.3ka. This caldera has been focused as it is a submarine caldera allowing to conduct dense seismic structural survey that is required for imaging and monitoring a large magma reservoir beneath this caldera. In the Oct. 2016, Kobe University and JAMSTEC conducted bathymetric survey with multi narrow beam echo sounder (MNB), geomagnetic survey with a proton magnetometer, multi-channel reflective seismic survey (MCS), and deployments of ocean bottom seismometer (OBS) and electro-magnetometer (OBEM) in “the 1st KOBEC exploration cruise” by the training vessel “Fukae-maru” belonging to Kobe University. The MNB survey revealed detailed bathymetry in the vicinity of the caldera. The bathymetric change from data obtained in the past bathymetric survey by Japan Coast Guard (2008) will be discussed in the presentation. In addition, acoustic pressure anomalies within the seawater rooting to the seafloor observed at the several areas in the margin and inside of the caldera. They are interpreted as hydrothermal anomalies relating to volcanic activities. The MCS surveys were conducted beneath 4 survey lines across the caldera. The reflection profiles show dense layered subsurfaces outside of the caldera while reflective planes are hard to be recognized inside of the caldera. Faults and disconformities are recognized in the several locations. Preliminary geological interpretation will be also discussed in the presentation. The OBSs and OBEMs will be retrieved in the 2nd exploration cruise in March 2017 by “Fukae-maru”. In the 2nd cruise, we also plan to conduct direct seafloor observation by a remotely operated vehicle (ROV) named “Shindai-2K”. In addition, we will deploy 4 OBEMs which equip absolute pressure gauge to detect vertical geodetic displacements and to image electrical resistivity structure which may reveal magma reservoir beneath the caldera (e.g. Hill et al., 2009).