Seabeam bathymetric survey off Tokachi -Challenging toward the evidence of the pre/post seismic deformation-

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The 2003 Tokachii-oki earthquake with Mw 8.0, thought to be a megathrust earthquake, occurred off Tokachi on 26 Sep. in 2003. The R/V KAIREI KR03-14 (JAMSTEC) surveyed off Tokachi in Dec. of 2003, focusing on the multi-channel seismic (MCS) survey and seabeam bathymetry features to find any traces after the shock. We have already operated geophysical line/box surveys including bathymetry, gravity, and total and three-component geomagnetics, MCS survey and submersible investigations during Legs KR99-02 in July of 1999, KR00-04 in June of 2000 and YK02-02 in May of 2002.

The research track lines by KR03-14 covered over the northern Japan Trench and its juncture of the Kuril Trench, and the northern edge of the Pacific plate, which is subducting to the northwest direction with a speed of a 10 cm/yr. They are also overwritten on the same track lines of KR00-04 and KR99-02 with the same speed and keeping the same direction.

Two boxed seabeam bathymetric surveys were also covering over the KR00-04, KR99-02, YK02-02 and the pre/post-seismic regions. At a shallower hypocenter region, a full coverage of the seabeam data, toing and froing to obtain a double dataset in different time. We also obtained a 200 km-long MCS data as the same of HK103 by KR00-04. The post processing profile of the multi-channel seismic data (time migrated sections) showed clear shape of both Erimo and landward subducting SMTs in the record of 2000. The MCS line was designed on the peak-to-peak transferred on two seamounts and trench axis, where the topography changes drastically. Comparing with the pre/post earthquake records, several dipolar anomalies observed along the MCS line. They seem to coincide with positions of a large topographic height. A huge deformation derived from the 2003 earthquake might affect to seamounts of the juncture area.

We found geomagnetic features obtained so far that geomagnetic lineation pattern observed in oceanward to landward slope of the Pacific plate of the strike of WSW-ENE (N70E), and maximum/smallest amplitude (P-P) showed the magnetic anomaly which reached to 1000nT on the Erimo SMT and its vicinity area. The positive and negative polarity profile indicated M8-M10 (129-126Ma) in the Cretaceous period observing in the seaward of the trench axis. These lineated anomalies were gradually decreased according to the oceanic plate subducted. We found that there were slightly swollen like positive anomaly region underneath the hypocenter.