

An evidence of existence of transition region from slow-slip area to general earthquake area

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Yaeyama Region, Western Ryukyu Islands, is one of tectonically unique regions which have slow-slip, tsunami earthquake and general earthquakes within one are associating with Philippine Sea plate subduction. Repeating slow slips are detected beneath west off Ishigaki island (Heki and Kataoka, 2008) and Nishimura(2014) analyzes detail of slip distribution of each slow slip carefully. Arai et. al.(2016) reported low frequency seismic signals in shallower area by ocean bottom seismic network. By considering with broadband seismic data, these are one of shallow very low frequency earthquakes. Yamamoto et.al.(2016) identified inter-plate general earthquakes using by ocean bottom seismic and islands' telemetered data and located their hypocenters. They suggested that each event of source type locate in different area. It implies that mechanical property around interface of two plates varies in space. Nishimura(2014) and Yamomoto et.al.(2016) shows that Ishigaki island locates just above boundary between slow slip and general earthquake occurrence area. We try to monitor and review broadband seismic data recorded STS-1 sensor (station: ISG) in Ishigaki island. We identified one very low frequency event signal. In short period network in Yaeyama region, short-term tremor-like signals also observed. The feature is same with deep very low frequency earthquake.

By location using envelopes of seismograms, epicenter is determined just below Ishigaki island. Assuming plate shape model proposed by Yamamoto et.al.(2016), constraint analysis shows also that this event just boundary region below Ishigaki island. It supports results of Yamamoto et. al.(2016) and implies existence of transition region of two areas.

Keywords: low frequency earthquake, slow slip