AOB Seminar

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講演題目&要旨①： Seismic studies in onshore and offshore of Sri Lanka

Although Sri Lanka is considered to be in an aseismic zone away from major plate boundaries or any active faults, during the last century there have been several hundreds of earthquakes reported in and around Sri Lanka. We therefore made an attempt to investigate earthquake activity of onshore and offshore Sri Lanka to investigate seismic tectonic in the region.
Seismic activity of the shallow part of Sumatra subduction zone near the trench and outer-rise region was analyzed by using earthquake locations and their focal mechanism solutions. The study region was divided into five sub-regions and in each sub region, the focal mechanism solutions were analyzed according to the depth variation of bathymetry. Present study results shows that normal faulting events are recorded than the reverse faulting events in the outer-rise region. In the near trench of the region, reverse faulting events were observed more than the normal faulting events and more reverse faulting events were observed in the shallow part of the trench. Although only the focal mechanism solutions of large events were used for the analysis which may have location errors, the present study results reasonably agree with the results obtained by the other subduction zones.

There had been five major earthquakes of magnitude greater than 8.0 in the Sumatra subduction zone. Three of them are dip-slip and rest of the two is strike-slip type events. Regional earthquake activity after the occurrence of those five events was analyzed. A statistical analysis was carried out to know whether regional earthquake activity has increased after the major five events and the analysis was carried out both qualitatively and quantitatively. The results of the analysis show that the number of earthquakes in the region has increased considerably after the occurrence of April, 2012 magnitude 8.6 and 8.2 strike-slip events. Present study results reasonably agree with the results obtained by the other studies carried out in the same region with different methods. In the context of Sri Lanka, Strike-slip type focal mechanism of the 2012 two major events may be the reason for increasing of activity in the region, especially in Eastern part of Sri Lanka near Maduruoya,

Highland-Wijayan boundry and Wdinagala area of Ampara District.

講演題目&要旨②： スロー地震による排水の可能性

ゆっくり地震の発生に伴うプレート境界近傍での水の挙動を明らかにするために，茨城県南西部で発生しているペアの地震（フィリピン海プレートの上部境界の地震とその直上の上盤内地震）に注目し，相関解析および構造解析を行った．その結果， 2004–2010 年では上盤内の地震活動はプレート境界地震に比べ 0.2–0.4 年遅れて発生していたこと，一方で 2013 年以降はそれらの時間差が 0.1 年になったことが明らかになった．次に，地震活動の直上に展開されている MeSO-net 観測点 8 点の波形データを用いて，上盤地震とプレート境界地震の P 波初動スペクトル比を計算し，その傾きの平均から地震間の減衰パラメータ（Δt*）を推定した結果，Q–1 に明瞭な時間変化が見られ，小繰り返し地震の発生と同期して上盤側の地震波減衰が大きくなっていることが明らかになった．本研究で得られた，プレート境界すべり，地震波減衰の変化，上盤地震の活動変化における時間的な相関は，プレート境界でのゆっくりすべりによる水の排水で説明できると考えられる．