

# SEISMICITY PATTERN : A TOOL FOR UNDERSTANDING THE EVOLUTION OF CONVERGENT PLATE MARGINS

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The detailed study of the geometry of distribution of earthquake foci in convergent plate margins, based on a large body of high quality seismological data published by the International Seismological Centre and relocated by Engdahl et al. [1998], enabled us

[1] to identify the morphology of the Wadati-Benioff zone, its continuity or discontinuity along the trench, the variability of the depth of its penetration into the upper mantle, and basic geometrical parameters (inclination and length),

[2] to classify the individual seismic events according to their appurtenance to individual seismically active fracture zones, to delineate these zones and to make their geometrical documentation,

[3] to interpret the distribution of active calc-alkaline volcanoes along the trench, to correlate them spatially with the position of the aseismic gap in the Wadati-Benioff zone, to elucidate the position of fossil andesitic volcanoes generated by older subduction cycles, and to estimate the role of seismically active fracture zones for the interpretation of their anomalous position in relation to the recently active trench,

[4] to contribute to the knowledge of the deep structure in different peri-Pacific convergent plate margins and to interpret the deep seismicity as a reactivation of fossil lithospheric plates, buried several hundreds of Ma in the upper mantle, by their collision with actually downgoing oceanic plate.