

ARC PARTITIONING DUE TO RIDGE COLLISION WITH AN OCEANIC SUBDUCTION TRENCH: EXAMPLE OF VANUATU (SOUTH-WESTERN PACIFIC)

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Subduction process is often controlled by heterogeneities on the subducting plate (such as aseismic ridge). These structures may be responsible of the locking of subduction process and control the arc deformation. Characterize intra-arc strain accumulation is thus essential to understand the seismic cycle, that can yield strong earthquake in such context.

The New Hebrides subduction zone presents one of the most important variations in horizontal convergence motion along a trench: 17-12cm/year relative to the Australian plate to 1.5cm/year in front of the d'Entrecasteaux ridge. The collision of the d'Entrecasteaux ridge yields arc island vertical movements estimated at several mm/year as well as strong recurring earthquakes (e.g. Ambrym, 1999, Mw = 7.5; Santo, 2000, Mw = 6.9).

We processed 13 years of GPS data in a global net of IGS sites to improve precision on the vertical component. This allow us to identify a partitioning in several blocks through the arc during interseismic stage of the seismic cycle, an intra-arc shortening of 2cm/year and an interseismic vertical motion of about 1cm/year.