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RECENT TECTONICS IN CENTRAL NEW HEBRIDES ASSOCIATED WITH THE SUBDUCTION-COLLISION PROCESS OF THE D'ENTRECASTEAUX ZONE.

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Recent data, collected on the New-Hebrides subduction zone (VANUATU) allows a morphological description and a tectonic interpretation of the plate contact zone and its releated areas, where the d'Entrecasteaux Ridges and the West Torres Massif abut the ancient and prominant Santo-Malekula block. The outer limit of the plate contact zone, non defined by a trench between latitudes 14°30 and 17°, is shifted to the west and appears to be very tortuous. This suggest, that the subducting d'Entrecasteaux ridge and chain, limiting two small basins, locally collide and indente the west flank of Santo. The collision appears to be compensated by lateral plastic flow of the innerwall downwards the small basins. This may be explained in the plastic plane strain theory. Moreover, pieces of the North d'Entrecasteaux Ridge could have been cutt off and then incorporated to the frontal arc, thus accounting for the westward jump of the plate contact zone. In a second part, a review of the structural evidences, and the shallow seismicity, show that radiant additional horizontal stresses generate a specific compressive stress regime in the Central New Hebrides. Produced deformations show a great ressemblance with the theoritical strain field resulting from the indentation of a long narrow rigid plastic body i.e. the arc, by a flat rigid die, i.e. the d'Entrecasteaux zone. Thus, the central New Hebrides block, which is elastically bent under vertical stresses appears to be, further, plastically deformed and pushed eastward under horizontal stresses. Recent uplift of the eastern chain can be explained in this model. The strong plate interaction due to the subduction of the d'Entrecasteaux zone is supposed to be responsible for the changing from a compressive stress regime across the central part of the arc, to a tensional stress regime across its northern and southern adjacent parts which is emphasized by the tectonically active back-arc troughs.