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MONITORING TILT IN THE NEW HEBRIDES ISLAND ARC

- M. Bevis
- B.L. Isacks
- G. Hade (all at: Dept. Geol. Sciences, Cornell University, Ithaca, N.Y. 14853)
- R. Campillo (Office de la Recherche Scientifique et Technique Outre-Mer, Port Vila, New Hebrides)
- J. Recy (Office de la Recherche Scientifique et Technique Outre-Mer, Noumea, New Caledonia)

Measurements of tilt carried out above the seismically active zone of plate convergence in the central New Hebrides include bi-annual re-leveling of 2 one Km arrays of benchmarks (since mid-1975), operation of a network of bubble level tiltmeters (since mid-1976) and current development of a long baseline (100m) half-filled water tube tiltmeter. From mid-1976 through 1978 the largest earthquakes caught within the network include 8 events with magnitudes ( $m_b$ ) between 5.0 and 5.5 recorded at distances of from 35 to 60 Km. Although co-seismic, site-related transients and offsets are recorded for these and smaller events, no clear pre- or post-seismic signals have been detected. Larger events occurred outside the network but the ratios of distances to source dimensions are probably 10 or more. The largest,  $M_s = 7$ , occurred 350 Km from the network. A magnitude 6.5 event occurred 155 Km from one tiltmeter and 215 Km from a second tiltmeter, and a leveling array. Releveling of the array indicate a possible precursor of marginal significance, an excursion of 5 microradians and recovery which takes place sometime during the year preceding the event. The tilt excursion may also be associated with a possible precursory migration of seismicity along the arc towards the epicenter. On Jan. 27, 1979 a magnitude ( $M_s$ ) 6.0 shock occurred 100 Km from 3 tiltmeters, a leveling array and a new seismograph network which had commenced operation 5 months before. Initial reports indicate no obvious precursory tilt signals but do suggest foreshock activity.

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Abstracts accepted for presentation at the National Meeting of the American Geophysical Union in Washington, May, 1979:

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EOS, Transm. Am. Geophys. Union, Washington, 1979

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