Abstract: The determination and monitoring of vertical land motion is of crucial importance in the observation of long-term sea level change and its reconstruction, but is among the most challenging tasks for space geodesy. We compare the vertical velocity estimates of the five longest-running New Zealand tide gauges and the Tahiti Island obtained from independent geophysical measurements, namely a decade of GPS and DORIS, data 17 years of sea level time series differencing (altimeter minus tide gauge (ALT-TG)). All the techniques are in a good agreement and reveal a very slow subsidence of the Tahiti Island that averages -0.5 mm/yr, which is barely significant, but very consistent with coral reef stratigraphy measurements. In contrast, vertical land motion, at New Zealand tide gauges, from GPS and ALT-TG show discrepancies that might call for further explanations of the New Zealand sea level rise.

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References