${}_oS_o$: gravity and strain and Earth's radius

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The N-Sumatra - Andaman Islands earthquake on December 26, 2004 with a moment magnitude between 9.0 and 9.3 excited the free oscillations of the earth to amplitudes such that due to the improvements of instrumentation during the last 40 years measurements with unprecedented quality could be obtained. Specifically the "breathing mode" ${}_oS_o$ could be observed on vertical accelerometer records in the time domain for several months. On March 28 the second Sumatra event (8.7) reexcited this mode. We determine the frequency and Q of the mode with higher precision than before from a single data set from the STS-1/Z broadband seismometer at BFO. The initial radial amplitude was about 1/20 mm. This mode was also clearly observed on the 10-m Invar wire-strainmeters at BFO with an amplitude of about $8 \cdot 10^{-12}$. The radial and strain amplitudes are geometrically related involving the radius of the Earth. We carry out a consistency check between the amplitudes and Earth's radius. The quality of this check is limited by the small amplitude in strain and the resulting low signal-to-noise ratio.