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# Large Variations of the coefficient $J_2$ of geopotential, and the dynamical Love number $k_2^d$ from the analysis of laser ranging to LAGEOS-1 and LAGEOS-2

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Secular and seasonal variations of the coefficient  $J_2$  of the geopotential are studied from the analysis of laser measurements of distances to the geodetic satellites LAGEOS-1 (1988--2003) and LAGEOS-2 (1992--2003). It is confirmed that beside the well-known annual variations with the amplitude  $\approx 2.5 \times 10^{-10}$  there also exist very significant semi-annual variations of a comparable amplitude. Phases of these two modes are such that the total effect may be described as a sharp positive splash of  $J_2$  in August and considerably smaller variations in the rest part of year.

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