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Geomagnetic jerks at the top of the core

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At the surface of the Earth, geomagnetic jerks may be characterized in first approximation by a sharp change in the trend of the secular variation of the magnetic field. These events, visible mostly in the eastern component of the secular variation, are thought to be of internal origin. However, the phenomena giving rise to these rapid events are still a matter of debate. We present here core surface flows for the period 1960-2002, computed from the comprehensive magnetic field model CM4 [Sabaka et al., GJI, 2004]. During this time period, four jerks have been identified: in 1969, 1978, 1991 and 1999. We show that all this dates correspond to maxima of the dynamical pressure associated to the flow at the top of the core. Moreover, observing an additional pressure maximum in 1985 leads us to identify a jerk impulse at this time in magnetic data, mainly in the Pacific area. We thus propose that the observed pressure maxima correspond to the signature of jerks at the top of core.