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# Zonal winds within the Earth's core

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We investigate rapidly varying zonal winds within the core and their possible relationships with sudden variations of the Earth's magnetic field. First, we show that the external magnetic field modulated on the period of the solar cycle penetrates the fluid outer core and excites Alfven waves carried by geostrophic motions. We evaluate the likely amplitude of this effect. Second, we discuss whether the intensification of the amplitude of the waves upon their arrival at the cylindrical surface tangent to the solid inner core and/or near the equator may explain very rapid features of the magnetic secular variation, such as geomagnetic jerks.