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Rapid solar wind streams during solar cycle 23 and their geomagnetic imprint

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The paper sets a catalogue of high speed streams in the solar wind for the last solar cycle, namely during the 1996-2006 interval. We have used the same identification and calculation criteria of the streams as the authors of the similar catalogues for solar cycles 20-22 (Lindblad and Lundstedt: 1981, 1983, 1989; Mavromichalaki et al.: 1988, 1998). The source data consist of OMNI Data - an hourly resolution multi-source data set - and SOHO data. Our catalogue lists the basic parameters of the rapid streams: the time of start (calendar year, month, and day as well as the corresponding day in Bartels Rotation), the initial and maximum velocities (in km/sec), and the duration (in days). The solar source of each stream, such as coronal holes or solar eruptive phenomena, as well as the interplanetary magnetic field dominant polarity are also mentioned. The statistical analysis of the high speed streams (by year, by duration, by velocity and, by intensity) is discussed in comparison with the results for the previous solar cycles (nos. 20-22). An analysis of the high speed stream impact on the variability of the terrestrial magnetic field is also done. The geoeffectiveness of the streams in respect to their solar origin (flares or coronal holes) is discussed.