Title: An automatic wave detection algorithm applied to Pc1 pulsations in California, and results of a 6-year statistical survey

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A new technique designed to automatically identify and characterize waves in three-axis data is presented. This technique is demonstrated on a single Pc1 event recorded on a triaxial search-coil magnetometer, and then applied to a 6-year period between February 1999 and May 2006. The technique begins with the creation of a standard dynamic spectrogram, and consists of three steps: (i) for every column of the spectrogram (which represents the spectral content of a short period in the time-series), spectral peaks are identified whose power content significantly exceeds the ambient noise; (ii) the series of spectral peaks from step (i) are grouped into continuous blocks representing discrete wave events using a `spectral-overlap' criterion; and (iii) for each identified event, wave parameters (e.g., wave normal angles, polarization ratio) are calculated which can be used to check the continuity of individual identified wave events, or to further filter wave events (e.g., by polarization ratio). The results of our 6- year survey show that Pc1 pulsations at low latitudes peak in the night sector in agreement with previous work, and that when viewed as a function of frequency and local time, a number of wave polarization parameters exhibit well-defined and repeatable characteristics.