Automated Quality Control of Geophysical Time Series

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The algorithmic systems developed in the Laboratory of Mathematical Analysis of Geomagnetic Data at the Geophysical Center of Russian Academy of Sciences are intended for recognition of disturbances with defined morphology on time series. These algorithms were applied to 1-minute and 1-second INTERMAGNET data for recognition of artificial disturbances on the magnetograms. INTERMAGNET network is the basis for geomagnetic field monitoring so requirements for reliability of collected data are very high. Therefore, an important task is an objective and formalized recognition and further elimination of possible anthropogenic anomalies in data records. Algorithms SP and SPs for spike detection and JM algorithm for recognition of baseline jumps are designed for processing data recorded with 1 minute, 1 second and less sampling rate. The results of training and testing show that SP, SPs and JM algorithms are efficient enough to recognize almost all artificial spikes and jumps detected by data experts manually. This also provides the possibility to carry out retrospective analysis and quality control of the magnetograms available at ICSU World Data Centers.