Technologies for analysis of geophysical time series. Part 1. Requirements for software

A.V. Desherevskii¹, V.I. Zhuravlev¹, A.N. Nikolsky², A.Ya. Sidorin¹

¹ Schmidt Institute of Physics of the Earth, Russian Academy of Sciences, Moscow, Russia ² OOO "CMC Consulting", Moscow, Russia

Abstract. Time series of geophysical monitoring data are very specific. They can contain complicated irregular variations and nonstationary effects of various kinds. Time-varying noise, numerous gaps in the data, trends, technical drawbacks, and other hardly predictable features are often present in these time series. These peculiarities demand of special methods and procedures for acquisition and analysis of the data. In the first part of the paper, the peculiarities of the software for such the time series are discussed, and a brief review of the methods for solving the task is given. In the second part of the paper, the universal software package WinABD developed by the authors for multivariable analysis of geophysical time series will be described. The technologies realized in the software package and intended for the analysis of similar signals will be considered.

Keywords: monitoring, режимные наблюдения, seismicity, geophysical field variations, time series database, time series analysis, algorithms and software for time series analysis.