Preface

Modeling and forecasting hydro-meteorological time series are of great interest due to their practical applications and impact on the human life. Many methods have been successfully used for solving different types of problems in this area. Here, we try only to summarize some possible approaches and to present a part of our results concerning modeling particular hydrological time series, from a region less studied in Europe.

The book is divided into seven chapters. In the first one we introduce the data series. The next two chapters are mainly theoretical. They contain some tests used for checking different statistical hypotheses on univariate time series and their implementation in R software, as well as a very short overview on the modeling techniques applied in the next chapters.

The rest of this book contains a part of our results, obtained the last 7 years on modeling the precipitation series or applications of some methods proposed by other scientists for generation precipitation fields.

One chapter summarizes the results of modeling the pollutants' dissipation in the atmosphere, while another one summarizes that of the evolution of water quality of two lakes, which are known to be affected by the atmospheric pollution and human activities.

All models refer to series from Dobrogea, a region situated in the southeastern part of Romania, between the Black Sea and the Danube River, for which no systematic study of climatic evolution has been done till 2007.

Scientific research is usually a team work, so a part of the results presented here has been obtained in cooperation with Dr. Lucica Barbeş, Dr. Elena Băutu, Dr. Judicael Deguenon, Dr. Cristina Gherghina, Dr. Carmen Elena Maftei, Dr. Elena Pelican, Dr. Nicolae Popescu-Bodorin, and Dr. Dana Simian. Thanks for their cooperation.

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Sharjah, UAE   Alina Bărbulescu
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