

The thesis deal with long-memory processes which are defined by several ways. The main concern is dedicated to ARFIMA model, to its basic properties and its application. Next, graphical, semiparametric and parametric estimation methods of ARFIMA parameters are described in detail. Five selected R packages are introduced that are suitable for modeling long-memory processes. We discuss their basic functions with description of input arguments and output. Finally, the application of the packages on real data is discussed according to results of each function. Data sample comes from the Nile River and represents its yearly minimal water levels.