

hydroscooper: R interface to the Greek National Data Bank for Hydrological and Meteorological Information

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Software

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Summary

The Greek National Data bank for Hydrological and Meteorological Information, Hydroscope (Hydroscope 2018), is the result of long-standing efforts by numerous Greek scientists in collaboration with various companies and associations. Its main purpose is the formation of the basic infrastructure for the implementation of the European Community Directives 2000/60/EC (i.e. establishment of a framework for Community action in the field of water policy) and 2007/60/EC, (i.e. assessment and management of flood risks).

Hydroscope offers several national data sources in HTML and plain text files via a web interface, using the Enhydris database system (Christofides et al. 2011). These data are well structured but are in Greek, thus limiting their usefulness. Furthermore, fully reproducible research (Peng 2011) can be tedious and error-prone using Hydroscope’s web interface. On the contrary, using the Enhydris API for reproducibility requires external programs and scripting to import the data.

`hydroscooper` (Vantas 2018) provides functionality for automatic retrieval and translation of Hydroscope’s data to English for use in R (R Core Team 2018). The main functions that can be utilized is the family of functions, `get_stations`, `get_timeseries`, `get_data`, etc., to easily download JSON and TXT files as tidy data frames (Wickham 2014). The internal databases of the package can be used to run queries on the available stations and time series, reducing the time needed for downloading and data wrangling (Kandel et al. 2011), as these data are rarely modified.

The data have many applications. In general, availability of meteorological and hydrological information is essential for water resources management, water quality assessment and global change studies (Vafiadis, Tolikas, and Koutsoyiannis 1994). Also, these data can be used by researchers to forward their studies when specific requirements of time series are required, such as the estimation of rainfall erosivity (Vantas and Sidiropoulos 2017). Finally, the data are crucial to Greek organizations for the implementation of the Water Framework Directive 2000-2027 (European Commission 2018).

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