

# hyfo Easy Start

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## Introduction

Official Website is <https://yuanchao-xu.github.io/hyfo>, where manuals and more details can be found.

hyfo is an R package, initially designed for the European Project EUPORIAS, and cooperated with DHI Denmark, which was then extended to other uses in hydrology, hydraulics and climate.

This package mainly focuses on data process and visulization in hydrology and climate forecasting. Main function includes NetCDF file processing, data extraction, data downscaling, data resampling, gap filler of precipitation, bias correction of forecasting data, flexible time series plot, and spatial map generation. It is a good pre-processing and post-processing tool for hydrological and hydraulic modellers.

**If you feel hyfo is of a little help, please cite it as following:**

Xu, Yuanchao(2015). hyfo: Hydrology and Climate Forecasting R Package for Data Analysis and Visualization. Retrieved from <https://yuanchao-xu.github.io/hyfo/>

## TIPS

- For the hydrology tools part, the minimum time unit is a day, i.e., it mainly focuses on water resource and some long term analysis. For flood analysis part, it will be added in future.
- One important characteristic by which hyfo can be distinguished from others is its convenience in multiple plots and series plots. Most data visualization tool in hyfo provides the output that can be directly re-plot by `ggplot2`, if `output = 'ggplot'` is assigned in the argument of the function, which will be easier for the users to generated series/multiple plots afterwards. When `output = 'ggplot'` is selected, you also have to assigne a `name = 'yourname'` in the argument, for the convenience of generating multiplots in future. All the functions ending with `_comb` can generated series/multiple plots, details can be found in the user mannual.
- For the forecasting tools part, **hyfo** mainly focuses on the post processing of the `gridData` derived from forecasts or other sources. The input is a list file, usually an NetCDF file. There are `getNcdfVar()`, `loadNcdf()` and `writeNcdf()` prepared in hyfo, for you to deal with NetCDF file.
- If you don't like the tile, x axis, y axis of the plot, just set them as '', e.g. `title = ''`
- For R beginners, R provides different functions to write to file. `write.table` is a popular choice, and after write the results to a file, you can directly copy paste to your model or to other uses.

- The functions end with `_anarbe` are the functions designed specially for some case in Spain, those functions mostly are about data collection of the anarbe catchment, which will be introduced in the end of this manual.