

HydroLogic

HydroLog4 Analysis Techniques

Duration: 1 day

Synopsis

This course teaches how to use the advanced data analysis techniques of HydroLog4, it includes derivations of time-series records, long term statistics and the GIS interface. This course is intended for users of HydroLog4 – Advanced and Professional editions

Prerequisites

Delegates wishing to take this course should already have a working knowledge of Hydrolog4. They should normally have taken the HydroLog4 Standard Modules course or have prior experience in the core elements of HydroLog4.

Outcomes

After taking this course, delegates should be proficient at performing derivations and a range of data analyses included in the HydroLog4 Advanced edition.

Content

The course teaches the various ways that Hydrolog4 can be employed in data analysis. This includes making derived time series from one or more existing records. Statistics include duration frequency analyses and the occurrence of rare events, as well as the quality of data. Theoretical stage discharge relationships over flow structures are considered, as is the empirical base flow discharge of catchments after rain. The course content is normally adjusted to focus on the needs of participants and includes some or all of the following:

- The GIS Interface: View site locations and archived data. Set up map layers, parameters, sub groups and symbols. View archived data and data quality, set up graphs and screen capture for reports. Creating and saving map layers such as catchments.
- Telemetry, Polling and Alarms: Poll telemetry outstations from the Imports module of HydroLog4 and from the IDQTel poller. Set up alarms in IDQTel to pass messages to e-mail or mobile phones when specified limits have been exceeded.
- Derivations: Set up a formula that will derive one target data stream from one or more source streams. Use the available mathematical functions and environmental parameters to estimate the target data. Create and use rating tables. Examples include deriving flow on ungauged tributaries and using a reservoir rule table to derive stored volumes from water levels.
- Update Calculated Archive: Having set up active derivations, use Update Calculated Archive to calculate and archive derived values. Single and multi-stream derivations, Rainfall Intensity and Long Term Analysis.
- Long Term Statistics: Calculate minimum, maximum and mean values over different periods and compare stations. Produce a flow duration curve and derive extreme event statistics. Investigate data quality Export statistics to file or Excel.
- Baseflow Recession Analysis: This tool is designed to indicate a worst case scenario during a period of drought. By examining the hydrograph for each stream and picking out regions of falling stage, it is possible to estimate the form of any future hydrograph in the absence of rain.

Tuition uses a hands-on approach, with no more than six participants per tutor. The main features of each topic are explained using a projector, after which participants are given appropriate tasks. Exercises are used for extension and consolidation, so participants can work through a sequence of operations that are typical of the sort of things that may need to be done with live data.