

most common WISKI hydrologic operations

accessing **innovative calculation + visualization tools** for faster, efficient analysis and collaboration

Constrained by limited time and staff in cases, water data analysts are optimizing their analytical capabilities to identify insights, prepare compliance reports, and make actionable recommendations from the volume and complexity of information.

They can **quickly evaluate both accuracy and consistency of data** collected over long periods of time more conveniently **with data analytics native to the Water Information System by KISTERS (WISKI)**.

Pre-programmed functions calculate an array of trend analyses using a variety of methods like linear, polynomial, exponential, sigmoidal -- allowing mean changes to be determined for any user-defined period of time.

Run any operation for a specific time period on a given time series or set of time series. Any point in time can be selected as a reference point in addition to the start and end of the period of investigation.

“OCWA staff find WISKI extremely easy to use. We are impressed with the outstanding graphing + calculating engines. It has more than satisfied our needs; I look forward to continued collaboration with KISTERS.”

-- **Cindy Spencer**, Special Projects Manager
Ontario Clean Water Agency

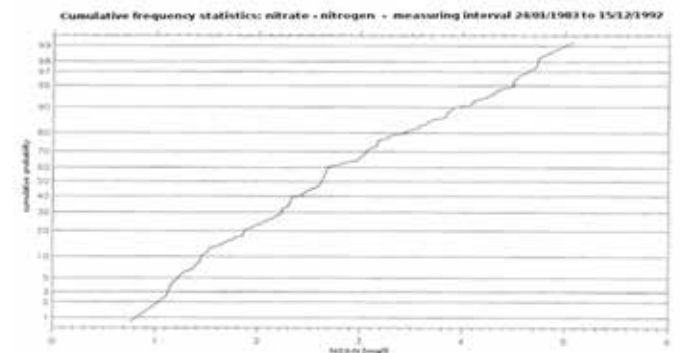


Frequent Operations

- Cumulative Frequency Analysis
- Long-Term Statistics Ranking
- Double Mass Analysis
- Duration Curve Analysis
- Frequency Distribution
- Overlaid Plot

Cumulative Frequency Analysis

Visualize how often a certain phenomenon occurs below or exceeds a certain value. Determine how likely an event might occur in the future based on past frequency.



Graph shows probability of nitrate concentration falling below a certain value.

Long-Term Statistics Ranking

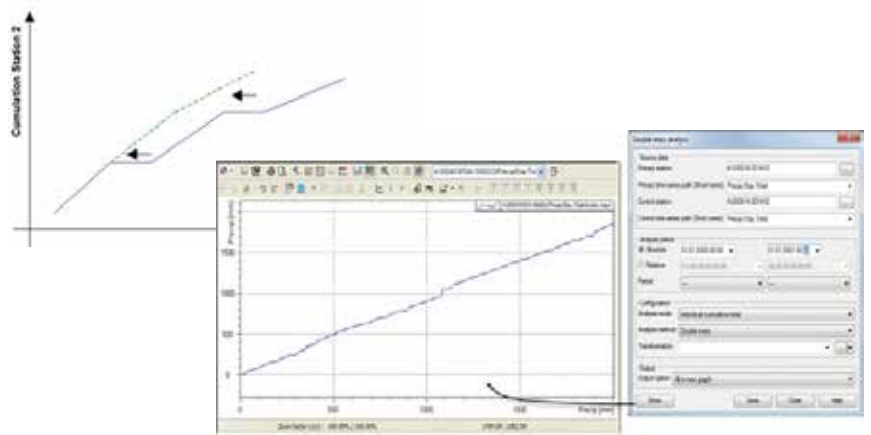
Sort values of any parameter in ascending or descending order. Determine percentage deviations when comparing ranked + long-term values. Commonly reported metrics:

- Highest instantaneous flows over the last 10 yrs
- Highest daily mean flows for the last 5 yrs
- Highest flow peaks above a threshold for the last 30 yrs

data analytics powered by KISTERS

Double Mass Analysis

Check measured values for consistency + homogeneity. Account for changes in data collection protocol by comparing observations from different sensors assigned to the same GIS coordinates or information from neighboring gauges. Double mass plots validate data when monitoring procedures are modified. A straight line indicates that both time series are affected to the same extent by the same trends.



Plateaus in the graph reveal a need for correction to the data.

Duration Curve Analysis

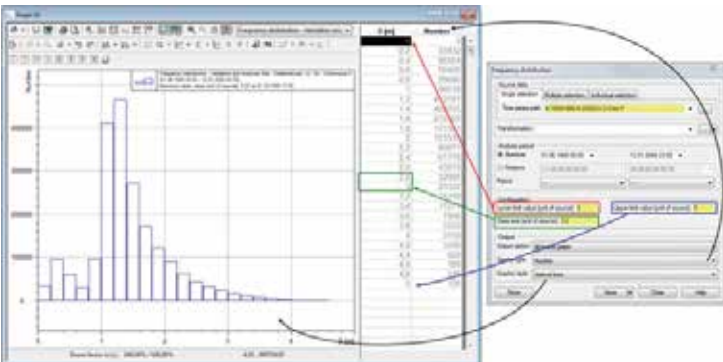
Visualize the distribution of time series values to reveal probabilities for exceedance or non-exceedance of a particular value. Evaluate the return period of extreme events using a variety of methods:

- Annual Duration - calculated for every year
- Long Term - calculated for a full data set
- Mean Annual - average of the annual duration lines is estimated

Probabilities distributed in descending order of magnitude.

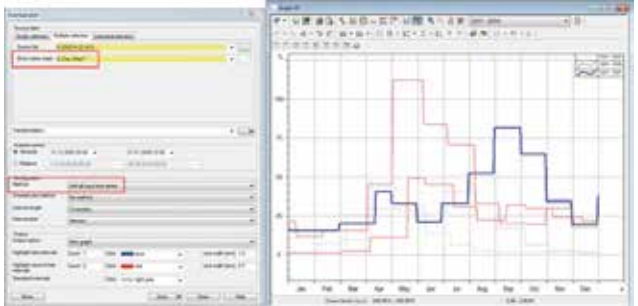
Frequency Distribution

Partition the value range from the source time series into classes, to calculate the number or percentage of values in respective classes. Users can specify upper and lower limits as well as class size.



Overlaid Plot

Visually compare observations such as discharge measurements by overlaying time periods of a time series. For example, analyze rainfall or snowpack from every January within 10 years.



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