TSTool – Streamflow Data – Quick Start Guide

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This document will help you access and process streamflow data. This guide assumes that the user has at least basic TSTool experience (refer to the general TSTool Quick Start Guide or TSTool documentation for more information). After reading the guide and running the examples, you will have a basic understanding of how to process streamflow data in TSTool, and can explore additional software features and analysis techniques.

# Sources of Streamflow Data

Streamflow data are available in a variety of forms from various sources. General categories of streamflow data include:

* Stage (water depth), which is the direct measurement and must be converted to flow using a rating curve. Data collection organizations typically maintain rating curves and convert stage to discharge.
* Real-time flow (discharge), typically for 15-minute interval or possibly irregular interval if alert (event-based)
* Historical flow, typically for hourly, daily, monthly, and annual interval, with larger intervals often having units of volume

Real-time streamflow data typically are published as “provisional”, meaning that the values could be adjusted later. Historical data typically are published after some delay to allow for data quality control.

TSTool supports reading general formats including comma-separated-value (CSV) and also directly supports several databases, web services, and file formats for streamflow data. Additional formats will be added in the future. The following table lists common public data sources for streamflow time series.

| Data Source | Datastore | TSID Supported in TSTool Browser? | TSTool Read Command |
| --- | --- | --- | --- |
| State of Colorado HydroBase Database | HydroBase | Yes | ReadHydroBase() |
| State of Colorado HydroBase web services | ColoradoWaterHBGuest | Yes |  |
| State of Colorado Satellite Monitoring web services | ColoradoWaterSMS | Yes |  |
| United States Geological Survey National Water Information System (USGS NWIS) web services | UsgsNwisInstantaneous,  UsgsNwisDaily | Not currently | ReadUsgsNwisInstantaneous()  ReadUsgsNwisDaily() |
| Natural Resources Conservation Service Air and Water Database (NRCS AWDB) web services | NrcsAwdb | Not currently | ReadNrcsAwdb() |
| Others |  | Not currently | WebGet()  ReadDelimitedFile() |

# Useful TSTool Commands for Streamflow Data

The following command are useful to analyze and process streamflow data (in addition to all the other TSTool commands)…

# Useful TSTool Visualization for Streamflow Data

Include information about visualizing streamflow data here…

# Example 1 – State of Colorado Realtime Streamflow Data

xx.

# Example 2 – State of Colorado Historical Streamflow Data

xxx.

# Example 3 – USGS NWIS Realtime Streamflow Data

xxx

# Example 4 –USGS NWIS Historical Streamflow Data

xxx.

# Example 5 – Urban Drainage and Flood Control District Real-time Streamflow Data

Use WebGet() to download delimited file..

# Resources

* After installing TSTool, use the Help… View Documentation menu to view documentation as PDF files.
  + The User Manual provides information about using the software interface.
  + The Command Reference provides documentation for each command, in alphabetical order.
  + The Datastore Reference provides documentation for each datastore and input type, including limitations.
* Use the Help… View Training Materials to view self-paced training slideshows, with examples that can be run.
* New documentation is being prepared to help software users apply TSTool to different types of problems. See the OWF for Users… TSTool page at http://www.openwaterfoundation.org.

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