# Coweeta Hydrologic Laboratory Metadata Report
# (CWT)

Otto, North Carolina



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# Research Area Information

**Coweeta Hydrologic Laboratory** .....CWT

# Coweeta Hydrologic Laboratory

## Research Area Information

**Harvest URL - Option 1**

http://kloeppel.myweb.uga.edu/climdb.txt

**Harvest URL -Option 2**

http://kloeppel.myweb.uga.edu/hydrodb.txt

**Site URL**

http://coweeta.ecology.uga.edu/

**Site Climate URL**

http://coweeta.ecology.uga.edu

**Site Watershed URL**

http://coweeta.ecology.uga.edu

**Site Map URL**

http://coweeta.ecology.uga.edu/ecology/cbase.html

**Publications**

Kloeppel, B.D., B.D. Clinton, J.M. Vose, and A.R. Cooper. 2003. Drought impacts on tree growth and mortality of southern Appalachian forests. Chapter 3 in D. Greenland, D. Goodin, and R. Smith, editors. Climate Variability and Ecosystem Response at Long-Term Ecological Research Sites. Pp. 43-55. Oxford University Press, New York. 459 pp. http://cwt33.ecology.uga.edu/publications/2011.pdf Swift, L.W., Jr.; Cunningham, G.B. 1986. Routines for collecting and summarizing hydro-meteorological data at Coweeta Hydrologic Laboratory. In: Michener, William K., ed. Research data management in the ecological sciences; 1984 Nov. 4-6; Hobcaw Barony, Georgetown, SC Univ. of South Carolina Press: 301-320. http://cwt33.ecology.uga.edu/publications/398.pdf Hibbert, Alden R.; Cunningham, B.B. 1966. Streamflow data processing opportunities and applications. In: Jopper, W.B. and Lull, H.W. ed., Forest Hydrology; Proceedings of International Symp. Pp 725-736., Pergamon Press, N.Y. http://cwt33.ecology.uga.edu/publications/841.pdf

**USGS Harvest URL**

http://gce-lter.marsci.uga.edu/harvest/usgs/cwt_lter.txt

# Meteorlogical Stations

# Climate Station 01

## Meteorological Station

**Elevation** (meters; a.m.s.l.) .....685m

**Begin Date**..... 1937

**History**

In May 1963, CS01 was moved NW of the junction of Ball Creek and Shope Fork of Coweeta Creek, in a large grassy opening. Previously, it was located 100 m SW of its current location, also in a large grassy opening.

## Air Temperature

**Begin Date**..... 1937

**Data Logger Sampling Interval**..... Daily

**Summary Interval** .....Daily

**Data Accuracy** (degree celsius) ..... +- 0.56°C

**Instrument Height** (meters) .....1.2m

**Instrumentation Description**

Standard thermometers and min,max thermometers are used at CS01.

**Methods Description**

Temperature readings are taken daily, except for weekends. The hygrothermograph is used to calculate the min and max temperatures for the weekends. Daily, the temperature taken for the standard thermometer is compared to the hygrothermo-graph. The temperatures are recorded on Form 2 report.

**Sensor History**

Observations were made twice a day at 0800 and 1700 through 1957. In 1958, observations were made at 0900 eastern standard time only. Since March 1968 observations are made at 0800 eastern standard time.

## Precipitation

**Begin Date**..... 1937

**Data Logger Sampling Interval**..... Daily

**Summary Interval** ..... Monthly

**Data Accuracy** (millimeters) ..... +-0.25mm

**Instrument Height** (meters) .....0.9144 m

**Instrumentation Description**

National Weather Service standard rain gauge with 8 inch orifice.

**Methods Description**

The standard rain gage is measured using a dipstick on a daily basis, except for weekends. The precipitation from the weekend is broken down daily, using the recording rain gage chart, corrected to the standard rain gage amount. The daily reading is recorded on Form 2 report. Once a week the standard rain gage amount is compared to the recording chart, the amount is transferred to a Form 7 report then totaled monthly. The monthly report is verified by an employee other than the one who created the chart. The standard rain gage is checked weekly for leaks and structural defects.

**Sensor History**

In May 1963, CS01 was moved NW of the junction of Ball Creek and Shope Fork of Coweeta Creek, in a large grassy opening. Previously, it was located 100 m SW of its current location, also in a large grassy opening.

**Calibration History**

Standard rain gauge amounts are compared to a Recording rain gage on a weekly basis.

## Snow Depth

**Begin Date**..... 1937

**Data Logger Sampling Interval**..... Daily

**Summary Interval** ..... Monthly

**Data Accuracy** (millimeters) ..... +- 0.25mm

**Instrumentation Description**

The outer funnel of a standard rain gage is used for snow collection.

**Methods Description**

The snow is melted down and measured as precipitation using the NWS standard rain gage.

# Watershed

# Watershed 18

## Watershed Spatial Characteristics

**Area** (hectares) .....12.48 ha
**Minimum watershed elevation** (meters; a.m.s.l) .....726m
**Maximum watershed elevation** (meters; a.m.s.l) .....993 m

## Watershed Ecological Characteristics

**Mean annual precipitation** (millimeters) .....1939 mm
**Slope** (Percent) .....52.5%
**Channel length** (meters) .....281.6m

## Watershed Descriptions

**Soil description**

Cove Soils: 840 - Trimont series; Family - fine-loamy, mixed, mesic Humic Hapludults; depth 1.52m; permeability - moderate125 - Saunook series; Family - fine-loamy, mixed, mesic Humic Hapludults; depth 1.5m; permeability-moderateSide slope soils: 783 - Cowee-Evard complex; Family - fine-loamy, mixed/oxidic, mesic Typic Hapludults; depth 0.96m; permeability - moderate

**Geology description**

TF - Tallulah Falls formation

**Treatment History**

Control, undisturbed since 1927.

# Watershed 27

## Watershed Spatial Characteristics

**Area** (hectares) .....39 ha
**Minimum watershed elevation** (meters; a.m.s.l) .....1061m
**Maximum watershed elevation** (meters; a.m.s.l) .....1454m

## Watershed Ecological Characteristics

**Mean annual precipitation** (millimeters) .....2450.8 mm
**Slope** (Percent) .....54.7%
**Channel length** (meters) .....1187m

## Watershed Descriptions

### Soil description

Cove soils: 181 - Cullasaja - Tuckasegee complex; Family - loamy skeletal/ fine-lomy, mixed mesic Typic Haplumbrepts; depth 1.65m, permeability - moder-ateSide slope soils (lower elevation); 721 - Chandler series; coarse-loamy, micaceous, mesic Typic Dystrochrepts; depth 1.65m; permeability-moderately rapid803 - Edneyville - Chestnut complex; coarse-loamy, mixed, mesic Typic Dys-trochrepts; depth 0.91m; permeability - moderately rapidUpper elevation: 841 - Plott series: Family - coarse-loamy, mixed, mesic Typic Haplumbrepts; depth 1.57m; per-meability-moderately rapid

### Geology description

CCR - Coleman River formation CPC - Persimmon Creek Gneiss

### Treatment History

Control, partially defoliated by fall cankerworm infestation 1972 - 1979.

# Gauging Stations

# Tuckasegee River at Bryson City, NC (USGS 03513000)

## Stream Discharge

**Maximum QC Threshold** (liters per second) .....792872

# Cataloochee Creek near Cataloochee, NC (USGS 03460000)

## Stream Discharge

**Maximum QC Threshold** (liters per second) .....76172

# Second Broad River Near Logan, NC (USGS 02150495)

## Stream Discharge

**Maximum QC Threshold** (liters per second) .....94012

# Little Tennessee River at Needmore, NC (USGS 03503000)

## Stream Discharge

**Maximum QC Threshold** (liters per second) .....487050

# Little Tennessee River near Prentiss, NC

# (USGS 03500000)

## Stream Discharge

**Maximum QC Threshold** (liters per second) .....221721

# Flume at Watershed 18

## Hydrologic Gauging Station

**Elevation** (meters; a.m.s.l.) .....726m

**Begin Date**..... 7-03-1936

**Watershed Area** (hectares) .....12.48 ha

**Associated meteorological station**

CS01

**History**

A/F Logger cards are collected monthly from the field then downloaded. These data are checked for missing values, or false storms. The edited data is processed by a flow computation, integration, and frequency program. Every year each weir is inspected and surveyed. A level is used to verify that the relative elevations of both ends of the weir blade and hook-gage bracket have not changed.The head or water depth is verified each week by a hook-gage reading. This reading is then corrected, based on the correction factor derived from the yearly survey, and compared to A/F Logger reading. If needed, the A/F logger reading is changed to reflect hook-gage reading.

**Weir Description**

Discharge for WS18 is measured with a 120 degree sharp crested weir. The weir blade is installed in a concrete wall that serves as a broad-crested weir for flows over 3 feet. A Stevens L-Type chart recorder was first used to record flow in 1936. The recorder was changed to an FW-1 on January 6, 1955, upgraded to Fisher-Porter analog to Digital punched tape recorder on September 3, 1964, and to the current Stevens Type A/F Logger, Model 8901 on November 9, 1994.

**Weir Calibration and Modification History**

07/03/1936-01/06/1955 Stevens L-Type chart recorder 01/06/1955-09/03/1964 FW-1 chart recorder 09/03/1964-09/09/1994 Fisher-Porter analog to digital punched tape recorder 09/09/1994-present Stevens Type A/F Logger,

## Stream Discharge

**Data Logger Sampling Interval**..... 5 minute
**Summary Interval** ..... daily
**Data Accuracy** (liters per second) ..... +- 0.003 feet

# Flume at Watershed 27

## Hydrologic Gauging Station

**Elevation** (meters; a.m.s.l.) .....1061m
**Begin Date**..... 11-02-1946
**Watershed Area** (hectares) .....39 ha

**History**

A/F Logger cards are collected monthly from the field then downloaded. These data are checked for missing values, or false storms. The edited data is processed by a flow computation, integration, and frequency program. Every year each weir is inspected and surveyed. A level is used to verify that the relative elevations of both ends of the weir blade and hook-gage bracket have not changed.The head or water depth is verified each week by a hook-gage reading. This reading is then corrected, based on the correction factor derived from the yearly survey, and compared to A/F Logger reading. If needed, the A/F logger reading is changed to reflect hook-gage reading.

**Weir Description**

Discharge for WS27 is measured with a 120 degree v-notch sharp crested weir. The weir blade is installed in a concrete wall that serves as a broad-crested weir for flows over 3-feet. The first record was collected on November 2, 1946 using an FW-1 chart recorder. The recorder was changed to a Fisher-Porter punch tape analog to digital recorder on September 9, 1964, then upgraded to the current Stevens type A/F Logger, Model 8901 on May 10, 1994.

**Weir Calibration and Modification History**

11/2/1946 -09/09/1964 FW-1 chart recorder 09/09/1964 - 05/10/1994 Fisher-Porter punch tape analog to digital recorder 05/10/1994-present Stevens type A/F Logger, Model 8901

## Stream Discharge

**Data Logger Sampling Interval**..... 5 minute
**Summary Interval** ..... daily
**Data Accuracy** (liters per second) ..... +- 0.003 feet