

## **Estimating Flow Statistics for Gaged and Ungaged Streams in Alaska**

### **Workshop, AWRA Annual Meeting 2004, Fairbanks, Alaska**

<http://www.awra.org/state/alaska/ameetings/2004am/2004am.html>

This one-day workshop will introduce concepts of streamflow statistics and methods for computing streamflow statistics at gaged streams, then focus on methods for estimating streamflow statistics at ungaged streams in Alaska. Hands-on practice and examples will provide participants familiarity with using procedures in two new USGS streamflow reports (Wiley and Curran, 2003; Curran and others, 2003) to estimate daily mean flow-duration statistics and flow frequency statistics for Alaska streams.

#### **Who should attend, and what to bring**

This workshop is intended to explain and facilitate the use of USGS streamflow reports published for Alaska in 2003 and is taught by the principal author of the reports. Scientists, engineers, consultants, planners, and others with a general understanding of hydrology and a need to apply or understand streamflow statistics will find this course useful. A background in streamflow statistics is not required. Participants are not required to bring any equipment or materials, but will get more from the course by downloading and reviewing the new USGS reports beforehand. A laptop computer or scientific calculator will be useful during the workshop.

#### **Topics covered**

Introductory concepts

- determination of daily mean flows and peak flows
- definitions of daily mean flow-duration statistics and flow frequency statistics

Brief primer on computation of streamflow statistics for gaged sites

- data adjustments: historic peaks, high outliers, and anomalous flows
- how percent exceedance, *n*-day low-flow frequency, and flood frequency are computed

How the regional regression equations for estimating streamflow statistics were developed

- delineation of seven new streamflow analysis regions for Alaska
- determination of basin characteristics

Estimating streamflow statistics at ungaged streams in Alaska: procedures and examples

- how to determine basin characteristics for maximum statistical validity
- streamlining computations: online Excel files, computer program
- examples for ungaged streams, streams with short gaging records
- standard error, confidence limits, equivalent years of record – what they mean, how to use them

#### **Instructor**

Janet Curran is a hydrologist at the USGS-Alaska Science Center in Anchorage, Alaska and was the principal investigator for a recent update of Alaska streamflow statistics.

#### **References available online at <http://water.usgs.gov/pubs>**

Curran, J.H., Meyer, D.F., and Tasker, G.D., 2003, Estimating the magnitude and frequency of peak streamflows for ungaged sites on streams in Alaska and conterminous basins in Canada: <http://water.usgs.gov/pubs/wri/wri034188/>

Wiley, J.B., and Curran, J.H., 2003, Estimating annual high-flow statistics and monthly and seasonal low-flow statistics for ungaged sites on streams in Alaska and conterminous basins in Canada: <http://water.usgs.gov/pubs/wri/wri034114/>