

COMPUTING TIME-SERIES SUSPENDED-SEDIMENT CONCENTRATIONS AND LOADS FROM IN-STREAM TURBIDITY-SENSOR AND STREAMFLOW DATA

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Over the last decade, use of a method for computing suspended-sediment concentration and loads using turbidity sensors—primarily nephelometry, but also optical backscatter—has become more prevalent. Because the in-situ turbidity sensor is capable of measuring turbidity instantaneously, a turbidity time series can be recorded and related directly to time-varying suspended-sediment concentrations. Depending on the suspended-sediment characteristics of the measurement site, this method can be more reliable and, in many cases, a more accurate means for computing suspended-sediment concentrations and loads than traditional computation methods using streamflow.

Guidelines and procedures for estimating time series of suspended-sediment concentration and loading as a function of turbidity and streamflow data will be discussed. The concepts, statistical procedures, and techniques used to maintain a multiyear turbidity time series and to prepare sediment data for public dissemination will also be described. Procedures for comparing computed suspended-sediment concentrations to water-quality criteria and assessing the frequency of exceeding criteria will be included. Specific examples of the method from California, Florida, Kansas, and Oregon will be provided.

KEYWORDS: turbidity, suspended-sediment concentration, sediment load