Continuous Water Temperature

Field Protocol Review

Objective: Review field protocols for continuous water temperature monitoring to determine elements needed in the protocol and the suitability of the adopting Isaak et al. (2013) without modification.

Method: Review of five field protocols and listed elements not included in Isaak et al. protocol. The protocols included:

Isaak, D.J, D. L. Horan, and S. Wollrab. 2013. A simple protocol using underway epoxy to install annual temperature monitoring sties in rivers and streams. Gen. Tech. Rep. RMRS-GTR-314, U.S.D.A.

Issak, D.J., B. Rieman and D. Horan. 2009. A watershed-scale monitoring protocol for bull trout. Gen. Tech. Repo. RMRS-GTR-224. U.S.D.A

Danielson, T. 2004. Protocols for measuring contiuous water temperature using an onset data logger. Maine Department of Environmental Protection (DEPLW0639)

Durnham, J., G. Chanlder, B. Rieman and D. Martin. 2005. Measuring stream temperature with digital data loggers: a user’s guide. Gen. Tech. Rep. RMRS-GTR-150WWW, U.S.D.A.

Wagner, R. J., R. W. Boulger, C. J. Oblinger and B. A. Smith. 2006. Guidelines and standard procedures for continuous water-quality monitors: station operation, record computation and data reporting. Technques and Methods 1-D3, U.S.G.S.

Considerations: The following are methods or issues either that are not included in Isaak et al. or that may need to be considered for our monitoring effort:

1. Sensor accuracy tests are mentioned but not described;
2. Use of NIST certified equipment for accuracy and calibration tests and procedures;
3. Need to identify objectives clearly and then review monitoring approach to make sure that it meets the objectives;
4. Sampling interval selection to meet objectives;
5. Placement and spatial variation of temperature at location – site placement criteria;
6. Data processing:
	1. Station description
	2. Error screening
	3. Data correction
	4. Database selection and format of fields
	5. Archiving and data availability procedures;
7. State and local permitting requirements;
8. Susceptibility to freezing and fouling - protocols to address each; and
9. Maintenance procedures during field checks, including periodic sensor calibration