

Surface Water Information Modeling System

Technical Advisory Group

Meeting #2 – Acknowledging Feedback

Purpose

This document summarizes feedback from members of the SWIMS Technical Advisory Group during meeting #2 on January 6, 2026, and describes how feedback will be considered during development.

Meeting procedure

Overviews of three separate analyses were presented to briefly introduce background information, methods, results, and outcomes that were covered in detailed reports that were shared with TAG members prior to the meeting to prepare for discussion. Presentations were given during the first half of the meeting, then during the discussion portion TAG members provided feedback regarding the approaches taken to analyze and assess information, interpret results, and suggest modifications or further investigation that may improve or bolster results. SWIMS project team members engaged in discussion for clarification, but the focus was on obtaining feedback from TAG members.

Meeting theme

The theme of SWIMS TAG meeting #2 was to discuss the selection of streamflow data that would be appropriate to use in the development of a model to estimate natural streamflow conditions in Oregon watersheds. This is important because water availability is derived from natural streamflow, a reference condition that represents streamflow that would occur in the absence of consumptive use, reservoir storage, and other water management activities.

Feedback Summaries and Acknowledgement

General

There were some suggestions to clarify terminology to be transparent and accurate in communicating about the project. For instance, there was a suggestion to distinguish between observed data and modeled products and be clear about the meaning of exceedance flows. Other feedback was related to the decision to focus on 20%, 50%, and 80% exceedance flows, which was a policy-driven decision based on the types of water availability information that are required to support agency business needs. Another point of feedback related to the types of model approaches that are being considered for estimating natural streamflow, which will be covered at a future meeting.

Hydrologic disturbance index

Topic:

An assessment of gaged watersheds in Oregon to determine the degree of anthropogenic impacts, largely in the form of surface water withdrawal and storage, that are impacting streamflow conditions measured by the gaging stations.

Discussion question:

- What should be considered when determining disturbance thresholds for identifying gaging stations that monitor natural flow conditions?

Feedback summary:

Discussion related to the development of a hydrologic disturbance index that describes the type and degree of modifications that impact watershed hydrology was focused on two general ideas:

1. Efforts to distinguish gages monitoring least disturbed watersheds should also include focus on data that may represent seasonally natural conditions, such as during winter when withdrawal for consumptive use is minimal, or when regulatory changes result in less management activity.
2. Consider whether groundwater use may impact flow conditions observed by gaging stations.

Acknowledgement:

The project team is working to incorporate some metric(s) to describe groundwater use in gaged watersheds. There is also an effort to engage with field staff to better understand how on-the-ground water resource management and regulatory actions affect streamflow data.

Gap tolerance analysis

Topic:

An analysis (i.e., gap tolerance analysis) that aimed to determine thresholds for minimum data requirements in the form of how many years of data are required to reliably calculate statistics that represent streamflow conditions over a certain period of time (i.e., 1991-2020).

Discussion question:

- What other items should be addressed when establishing minimum data requirements?

Feedback summary:

Given the somewhat novel application of information theory, there was much interest and discussion of the gap tolerance analysis to determine minimum data requirements for gaging stations to accurately characterize the flow regime for a particular period of

time. Panelists were interested in the assumptions and statistical approaches and whether they had meaningful impacts on the results. Panelists provided three items for consideration:

1. Evaluate the impacts of missing data among the full spectrum of exceedance flow values.
2. Whether the assumption that data are randomly distributed or are more related to hydrologic or climatic conditions.
3. Modify the approach to identify shorter periods of record that represent climate normal conditions and potentially increase the number of gaging stations available for modeling.

Acknowledgement:

The project team is scoping additional analysis pertaining to assumptions regarding missing data that could improve the reliability of the results. There is also value in designing an analysis to identify shorter periods of record that represent climate normal conditions that could help identify additional gages meeting data requirements.

Stationarity analysis

Topic:

An analysis of whether streamflow data collected by a representative set of gaging stations are displaying significant trends over time.

Discussion questions:

- Does the analysis support use of a 1991-2020 base period?
- How should we utilize data from streamgages that exhibits evidence of non-stationarity?

Feedback summary:

Panelists generally agreed that the more recent base period was reasonable, although it may be unusually dry. Panelists also generally agreed that stations with significant results should be retained in model development, as trends represent potential real changes to water availability. Panelists noted, however, that stationarity results are sensitive to climate oscillations (particularly Pacific Decadal Oscillation or PDO), record timing (e.g., starting year), and record length, and that significance testing can produce biased results, emphasizing the need to consider statistical power. Specific methods, such as Akaike Information Criteria (AIC), were recommended to address limitations.

Acknowledgement:

The project team is currently completing a follow-up analysis using the AIC approach and controlling for climate oscillations and period of record and record length.