

The opinions expressed during this presentation are those of the presenter and are not necessarily those of Environment Canada or the Government of Canada.

Summary

- **PUB is meant to**
 - 1) improve prediction where there are no gauges, few gauges or changing conditions**
 - 2) demonstrate the value of gauging**
 - 3) reduce the reliance on calibration and enhance prediction based on understanding.**

- **By the end of the meeting there should be ideas on how to address prediction in areas where it is hard to do so, in changing conditions, and to predict something besides streamflow (i.e. other end points).** I might argue more than one endpoint. I tend to think, but cannot substantiate it, that if we can predict contributing area and storage state, we should be able to predict discharge, but no one seems interested in predicting the former. Except for Jeff, who agrees that adequate modelling requires modelling of **sources, flowpaths** and **residence times**. And maybe Danny and Jim, who encourage the prediction of **hydrologic state** and **storage**.

Summary

- Capture end-members and gradients with key focused measurements (ie research catchments) to develop key transferable parameters (Danny). I'm not sure we know what all key transferable parameters. Jim suggested that some necessary ones should include those that encompass physiographic and storage mechanisms, connectivity, and threshold properties. That said, some of us have made good progress, but I'm not sure that as a movement we have really made such methods more widely available than before PUB began? The PUB initiative has dealt with more theoretical study, but few practical solutions to problems. I think that the discussion groups have identified a few paths forward.
- Focus efforts to create catchment function diagnostics in data rich zones for transfer to data sparse and poor zones.
- Perhaps coordinated efforts to build datasets of catchment function diagnostics in ungauged areas (e.g., mapping) would be useful over the last few years of PUB.

Summary

- David Post implied in his presentation that non-stationarity could result in a change in predominant hydrological processes in a given region. This would imply that a more adaptive (i.e., less calibration) model structure is required. Even these physically lumped catchment processes that are identified, and the empirical relationships that come from them are vulnerable to non-stationarity. We need to be aware of this if we develop such tools.
- Put a decision tree for each hydroclimatic zone in the proposed monograph.
- Perhaps we need research into the network design of “data rich sites”.
- Problems with predictability occur when we come off the expected range of Jeff’s Q-S curves. The range of hydrological possibilities (and frequency) are crucial to know for water (i.e. risk) management.