Reducing the observation error

Strategies for reducing observation error

- Quality control on measurements
- Correction of systematic errors (e.g., gauge under-catch)
- Averaging / analysis to larger space and time scales

Should MET include tools for reducing observation error?

Other sources of observation "error"

- Scale mismatch (representativeness)
- Timing differences between forecast and observation times

What can/should MET do about these?

Verification when there is observation error

What are the effects of ignoring the observation error?

- Forecasts may actually be better than they seem
- Should users of verification results be advised?

What are the effects of including the observation error?

- Forecasts verify worse than when error is ignored, except for some terms in Brier decomposition

Some approaches estimate the "true" verification scores, i.e., what would be computed if there were no observation error

- Observation error distribution must be very well known **and** spatially uncorrelated
- How to measure observed error distribution? Can we do it well enough?

Living with observation errors

"Tolerant" verification approaches

- Fuzzy verification methods
- Distributions-based diagnostics including binning, quantiles, error bars
- Probabilistic observations → probabilistic scores
- Object-based methods

What role should these methods play in verification for monitoring purposes? Model intercomparison? Impact assessment?

What methods / results can be taken from data assimilation?