

Decadal Prediction: Information and Applications

- Potential applications
- Types of information that are relevant
- How to verify / What is verification?

Conceptual Framework a la IRI

- Climate Change
 - Implied by projections
- Decadal variability
 - Internal variability/dynamics
- Seasonal/Interannual
 - “freebie” as a result of initialization

How/What to Verify (1)

- Climate Change/Projection level based on hindcasts
 - RMSE on hindcasts
 - Reduced spread on ensemble
 - Reduced spread across models
 - Reliability e.g., observed frequency vs. forecasts (5yr or 10yr averages??)

How/What to Verify (2)

- Decadal variability
 - Deviation about the trend
 - How well do models represent various indices (e.g., ENSO, NAO) and their structure
 - Quality of the dynamics: circulation features/time scales/amplitudes
 - Regional climate/teleconnections

How/What to Verify (3)

- Perfect model approach? Zero order approach
- Then improved projections, perhaps measured by time series where pdfs vary in phase and are better than runs w/out initialization.
- Tighter pdfs
- Predictability of modes?
- Extend metrics to something(s) of user interest: extremes/tails of distributions?

Types of Information (1)

- Define diagnostics that can be realistically offered, e.g. trends on regional scales?
- What spatial scales can be realistically offered?
- What modes of variability can be realistically modeled?

Types of Information (2)

- Lots of start dates for hindcasts, but does it make sense to have regular intervals?
 - Do some start dates have better forecasts than others? E.g., perfect times within climate mode that have better predictability

Types of Information (3)

- Save out fields for later analysis
- Have followup meeting to define what might be feasible/desirable.

Potential Applications?

- Water resources
- Infrastructure
- Insurers have rolling 5-year window