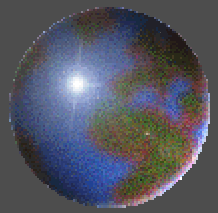


Hydrological Aspects of Ensemble Prediction

HEPEX

Group 2

HEPEX Goals

- Suggested revisions:

  "… to demonstrate how to produce reliable hydrological ensemble forecasts …"

HEPEX Science Questions

- Precipitation ground truth:
  - Issues and guidelines for how to make comparison at specific time and space scales
- Uncertainty
  - Assess uncertainty for all component variables (e.g., for data assimilation)?
  - Study uncertainty after it has propagated through the system?
  - Quantify uncertainty for extreme events (constrast with more common events).

HEPEX Science Questions

- Kryztofowicz approach
  - Roadmap as to how to proceed and investigations needed.
  - Bayesian perspective allows a priori uncertainty to be considered.

HEPEX Science Questions

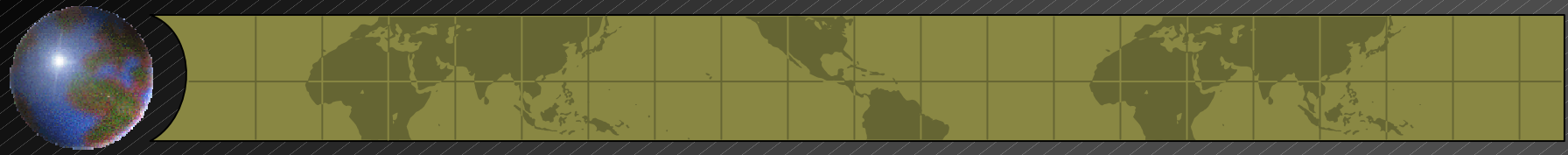
- Linkages from weather or climate ensembles
  - Is downscaling at climate scales appropriate?
  - Alternatives?
    - Significant opportunities to investigate conditioning of hydrology (e.g., wet/dry spells) on climate
    - MOS-like or conditional simulation

HEPEX Science Questions

- Space-time tradeoff in QPF
  - Uncertainty associated with good predictions but poor locations.
- Use of LDAS to provide initial conditions for hydrologic prediction models
  - Consideration of continuous time models
  - Components of ELDAS have demonstrated advantages for weather & hydrologic predictions
  - What is the relative role of local knowledge versus an LDAS approach in initialization?

HEPEX Possible Activities

- Coordinate with the WMO Joint Working Group on Verification (Methodologies).
  - Overlapping interests by hydrologists could be an important contribution to this activity
- Aim at having comparisons over long series of ensemble forecasts (for statistical validity), but there are unresolved issues on approach:
  - Fixed model (even though data sources changes through time)?
  - MOS versus PerfProg

HEPEX Possible Activities

- Comparison of downscaling methods
- Comparison of bias removal