



Topics for the **WG Connection H/M fcs**

1. Measures of forecast skill in hydrological applications

- which measures should be used?
- how to define skill?

2. Meaning of bias

- Definitions of bias in respect to user objectives?

Skill scores are not user defined but are generic. But, the problem of defining the 'event' (to which skill is applied needs to be defined.)

Proposed that HEPEX develop a document defining 'skill and bias measures' and their computations, and (perhaps) some standard computer code/s to compute these. (V. Fortin distribute information on his verification/skill procedures??; obtain ECMWF on verification; document from the EU project PREVIEW, evaluate standard packages like R, and ???)

V. Fortin volunteered to take the lead in this area, and will develop a team.



Topics for the **WG Connection H/M fcs**

- **Downscaling of meteorological forecasts**
 - What are the hydro issues for downscaling?
- 1. **Combination of fcs from different sources/over different t-scales**
 - What are the problems? What are solutions?

Carry out a HEPEX inter comparison study for precipitation downscaling. Potential techniques include dynamical downscaling, analogs, neural networks, statistical approaches. Goal is to evaluate and understand how the various approaches work.

Tasks: (Leader??)

- Have a HEPEX Downscaling Workshop to evaluate previous studies (especially EU supported programs), propose potential areas - perhaps locations where downscaling has already been done,
- Collect the required data sets,
- Carry out some experimental evaluations prior to any formal study,
- Extend this to include a hydrologic modeling component.



Topics for the **WG Connection H/M fcs**

1. **Appropriate scales of phenomena as a function of catchment characteristics and phenomena to be fcs (floods v drought)**
 - Maximum resolution (EPS input & hydro & interaction) for adequate process representation in relation to catchment size and climatology
 2. **Relative sensitivity of sources of uncertainties as a function of catchment/..**
 - When is which sensitivity important (time scales) for which process?
 - Optimal distribution of research 'energy' in respect to user objectives?
- (Appropriate scales for hydrologic forecasting is related to the time of concentration for the catchment.)**
- **Follow on activities and analysis from the downscaling activity.**
 - **Need to evaluate multi-model hydrological ensemble systems.**



Topics for the **WG Connection H/M fcs**

1. Access to past weather fcs/obs

- How many would we want?
- How should they be designed from a hydro view point (Nr of ensembles, length, resolution)

Statement of fact: long term reforecasts (hindcasts) is a fundamental data set needed to evaluate skill, downscaling, bias removal, etc. (see Tom Hamil's 'White Paper' on this issue.)

Reforecast activities need to consider the hydrologic needs of such data. Need to specify the scientific reasons for reforecast data sets for hydrologic forecasting and development of decision support systems.

HEPEX community needs to develop a position paper on the scientific needs of reforecasts for hydrologic and related decision support systems. – **Lead???**