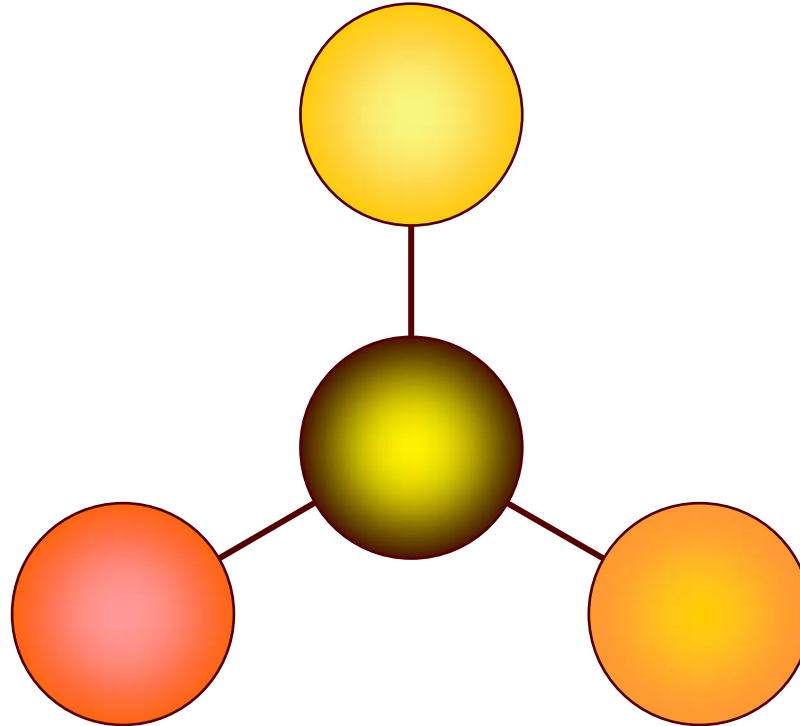




HEPEX .. It is your HEPEX!!

❖ **Let's build it**





What is the goal? Where are we going?

- ❖ **Shall we start from the testbeds?**
- ❖ **If yes .. Is it OK if we define a testbed in terms of:**
 - Geographical location/river
 - Scientific problem(s) it aims to address
 - Resources: manpower, data, infrastructure, money
 - ??
- ❖ **If not, from where shall we start?**



Testbeds

- ❖ T1: Great Lakes (V Fortin)
- ❖ T2: South-East US (E Wood)
- ❖ T3: Western US basins (A Wood, T Pagano & F Weber)
- ❖ T4: Rio Grande basin Brazil (C Tucci)
- ❖ T5: Probabilistic methods for Hydro^{~al} simulations (M Clark)
- ❖ T6: A European basin [maybe Po'] (J Thielen)
- ❖ T7: Ganges and Brahmaputra basins (T Hopson)
- ❖ T8: NAME region (D Gochis & S Mullen)
- ❖ T9: Downscaling (M Clark)
- ❖ Others: Africa (AMMA)? China?



Testbed 1: Great Lakes, US-Canadian basin (V Fortin)

❖ What is available:

- meteo-forcings, data (soil, ..)
- Verification data (gauges) available

❖ Scientific question(s):

- Can we gain by doing dynamical downscaling?
- How do ensemble precip fcs verify over the lakes?

❖ Spatial/time scales:

- Two focuses: weekly fcs & longer terms

❖ Deliverables/milestones:

- Within 1y to have an ensemble hydrological ensemble prediction system

❖ Participants/users:

- Users: hydropower comp, civil prot agencies,



Testbed 2: Selected South-East US basins (E Wood)

❖ What is available:

- meteo-forcings, data (soil, ..)
- Verification data (gauges) available

❖ Scientific question(s):

- Can we make valuable ensemble hydrological predictions?

❖ Spatial/time scales:

- Short and long time ranges, 1-2 basins

❖ Deliverables/milestones:

- Answer to some scientific questions related to HEPEX
- Sensitivity to initial conditions, models, ..

❖ Participants/users:



Testbed 3: Western US basins (A Wood, T Pagano & F Weber)

- ❖ **What is available:**
 - Forcings, verification data, hist data, ...
- ❖ **Scientific question(s):**
 - How can we get hydrological ensemble capture all sources of uncertainties?
- ❖ **Spatial/time scales:**
 - 1-14 days, operationally oriented
- ❖ **Deliverables/milestones:**
 - Operational real-time forecasts in ~1y
- ❖ **Participants/users:**



Testbed 4: Rio Grande basin Brazil (C Tucci)

❖ What is available:

- Hydro data, land use, reservoir data,
- Some data on operation management

❖ Scientific question(s):

- Downscaling: can weather/climate forecasts be improved using ‘better’ downscaling methods?

❖ Spatial/time scales:

- Time: Short- (1-2 weeks) and long-terms (up to 6m)

❖ Deliverables/milestones:

- Improve upon existing stochastic models, in ~1y

❖ Participants/users:

- Main user is Operational National System and hydropower Co



Testbed 5: Probabilistic methods for Hydro^{al} simulations (M Clark)

- ❖ **What is available:**
 - All model input data over US
- ❖ **Scientific question(s):**
 - Input uncertainty into hydrological probabilistic models
- ❖ **Spatial/time scales:**
 - Spatial: small basis (<1000km²)
 - Temporal: few hours
- ❖ **Deliverables/milestones:**
 - Papers, reports, techniques,
- ❖ **Participants/users:**



Testbed 6: A European basin [maybe Po'] (J Thielen)

❖ What is available:

- Meteorological forcing, meteo and discharge obs, catchment data, soil, ..

❖ Scientific question(s):

- How to improve meso-scale medium-range flood forecasting using ensemble methods
- What can be achieved with the current data and state-of-the-art models?

❖ Spatial/time scales:

- Meso-scale, medium-range ($t < 10d$, $X > 1000km^2$)

❖ Deliverables/milestones:

❖ Participants/users:

- Meteo- and flood forecasting centres, hydrological authorities, research institutes



Testbed 7: Ganges and Brahmaputra basins (T Hopson)

❖ What is available:

- Meteo data (if ECMWF approves), sparse rain gauge data, satellite data, discharge data
- 2 hydrological models

❖ Scientific question(s):

- Can forecasts be improved using hydrological data-assimilation

❖ Spatial/time scales:

- Large spatial scale (>500k Km²) - Time scale: 10-20 days

❖ Deliverables/milestones:

- Data assimilation system in ~1y

❖ Participants/users:

- Bangladesh government and international aid organizations



Testbed 8: NAME region (D Gochis & S Mullen)

❖ What is available:

- Typical meteo, and hydrological data
- Some intense obs periods
- Radar and other remote-sensing data

❖ Scientific question(s):

- How should downscaling be done in a semi-tropical, semi-arid region
- Study of warm-season predictability

❖ Spatial/time scales:

- Time: short (<1d) to season (1m) – Spatial: 100 to 10000km²

❖ Deliverables/milestones:

- Data, streamflow, forecast data .. Better water resource management
- Report, paper, ..

❖ Participants/users:



Testbed 9: Downscaling (M Clark)

- ❖ **What is available:**
 - TIGGE data (to be provided)
- ❖ **Scientific question(s):**
 - Which is the best way to extract information from atmospheric model for hydrological applications?
- ❖ **Spatial/time scales:**
 - Spatial: small, local, grid-point scales – Temporal: hourly
- ❖ **Deliverables/milestones:**
 - Methods and synthesis, algorithm
- ❖ **Participants/users:**