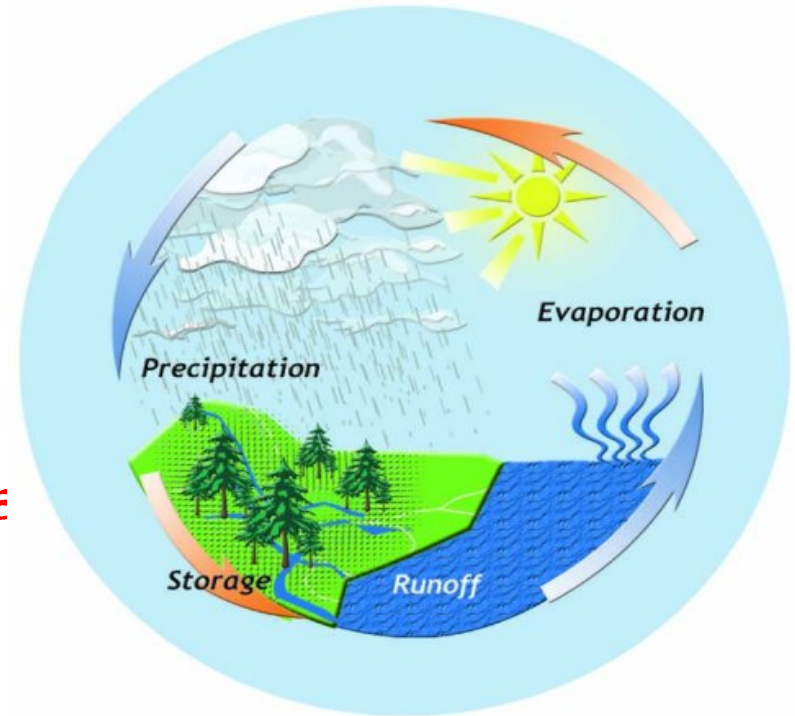


EXTREMES WITHIN GEWEX/CEOP

Objectives ...

- To better document, understand and simulate the occurrence, evolution, structure and role of hydrometeorological extremes within the climate system
- To contribute to their better prediction at various time scales and to addressing societal concerns



**Global Energy and Water cycle
Experiment**

FOCUS

- Extremes of Interest

Drought

Heavy precipitation

Floods

Low Flows

...

- And, in some instances

Inter-meshing of these extremes

BREAK OUT

- Are our goals OK?
- What is our status?
- What are our plans?
- What model and data products are needed?
- How can we best coordinate the RHPs?
- Plans for: 1-3 y, 2013, beyond
- How/when will be proceed?
 - Web and email
 - GEWEX Conf 2009
 - CEOP meeting 2009
 - Other opportunities

STATUS

- General objectives
- Lots of ideas and interest
- Need to firm up our plan with specifics
- Need a few specific items to get going

IDEAS FOR ACTION

- Develop an inventory of extreme events and extreme event studies.
- Organize a review of what is currently available, including their formats and consistencies ??
- Include an updated review of web material consisting of extreme event occurrences such as damages and photographs (more qualitative), and quantitative information.
- Encourage RHPs to be opportunistic in identifying and studying droughts in their areas.
- Encourage twinning studies in which RHP extremes are examined in conjunction with similar events in other parts of the world.
- Develop a review article on Extremes for use by stakeholders.

Continued ...

- Document one good case study on a continental basis (e.g., the recent North American drought)? Too ambitious for now?
- Choose a particular time period—for example 2002—as a global case study for Extremes
- Incorporate the “Hugh van den Dool” extreme event catalogue (heat waves, floods, droughts) on a global basis from 1948 to present into the Extremes information base.
- Develop land data assimilation products for areas where extremes case studies are being carried out.
- Assess to what extent the same mechanisms are responsible for ‘ordinary’ precipitation as opposed to ‘extreme’ precipitation.
- Inform the impacts/forecast community (e.g., BC Hydro) of what data are required for an accurate case study (so they can archive)

IDEAS FOR ACTION

- Establish national offices for coordinating data and information related to extremes (beyond GEWEX).
- **Develop a small set of definitions of drought which could be supported by WCRP and the World Meteorological Organization (WMO). This could work with the *Expert Team on Climate Change Detection and Indices (ETCCDI)* as appropriate. ??? Assess all definitions??**
- Develop a task to create a data base for extreme events from data sets contributed by GEO countries. The datasets could include station data as well as satellite, model, and other products. The task should include the all nations in GEO.
- **Agree on the complete data needed to characterize extremes. SWAT TEAM?**
- Develop procedures and agreements whereby researchers could work with GPCC so as to obtain access to the full GPCC data archives.
- Assess Global Precipitation Climatology Project (GPCP) satellite-based products within Extreme events such as light and heavy precipitation.
- Develop an inventory of data sources, data types, and metadata.
- Launch a study using standard definitions and techniques in different regions of the world.
- Develop a listing of 'chains-of-events' associated with Extremes events.
- Undertake studies of the frequency distributions of extremes using satellite data and radar products.
- Include data set developers (for GPCC and GPCP, for example) in trend and related studies since they are familiar with the data issues such as inhomogeneities.
- Assess the need for data rescue efforts for vulnerable data records in many countries.
- Develop stronger links with the ensemble forecasting community to investigate the 'tails' of distributions.

- *Ideas for actions:*
- Assess weaknesses in predictive models for extremes
For drought, drought-end is a common issue? SWAT?
- Undertake comparative analyses of extremes in reanalysis data and long-term forecasts and actual extremes inferred from data. It is key to find areas where large differences exist. SWAT?
- Assess the feasibility of using high-resolution models for downscaling during extremes.
- Give forecasters incentives to provide documentation on the areas where they would like to see models improved.

DO-ABLE ACTIONS AND METRICS

- $5 + / - 2 = 3 - 7$

NEEDED PRODUCTS

- Model
- Observations

RHP Interactions

TIMELINE

- 2008-11

specific outcomes of selected actions: data, model, ...
use Google?

- 2013

data, definition, model, scales, hydrology, ...

regional .. Structures of extremes ...

unimodel?

also beyond hydromet ... heat, cold season ...

- Beyond 2013

scales/quality/local/ urban/vulnerable/minimize ...

EVENTS - ACTIONS

- Emails ...conf calls ...
- GEWEX Conference 2009
side meeting?
- CEOP meeting 2009
a few sessions (aspects of extremes)
breakouts
- ??Special Extremes workshop in 2009??