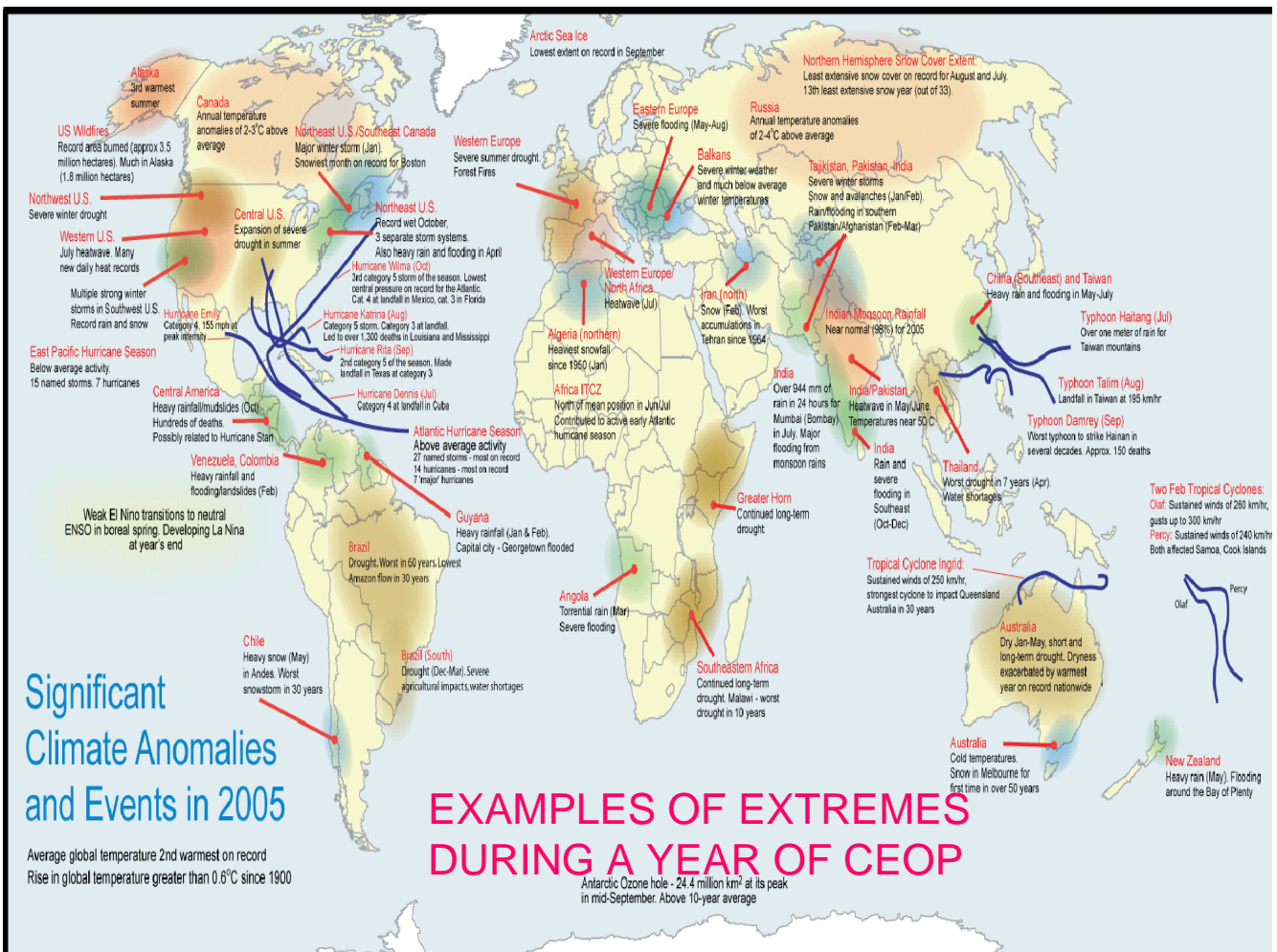




EXTREMES AND CEOP



Extremes and CEOP ...

Overall objective ...

- To advance our understanding of hydro-extremes including their occurrence, characteristics, evolution and inter-connections for prediction and for addressing societal concerns

The Focus of Extremes During CEOP

- Droughts, floods and heavy precipitation
- Heat waves, cold waves
- Possibly timing or phasing of events
- ...

And, in some instances

- Inter-meshing of extremes

Issues for CEOP Extremes include ...

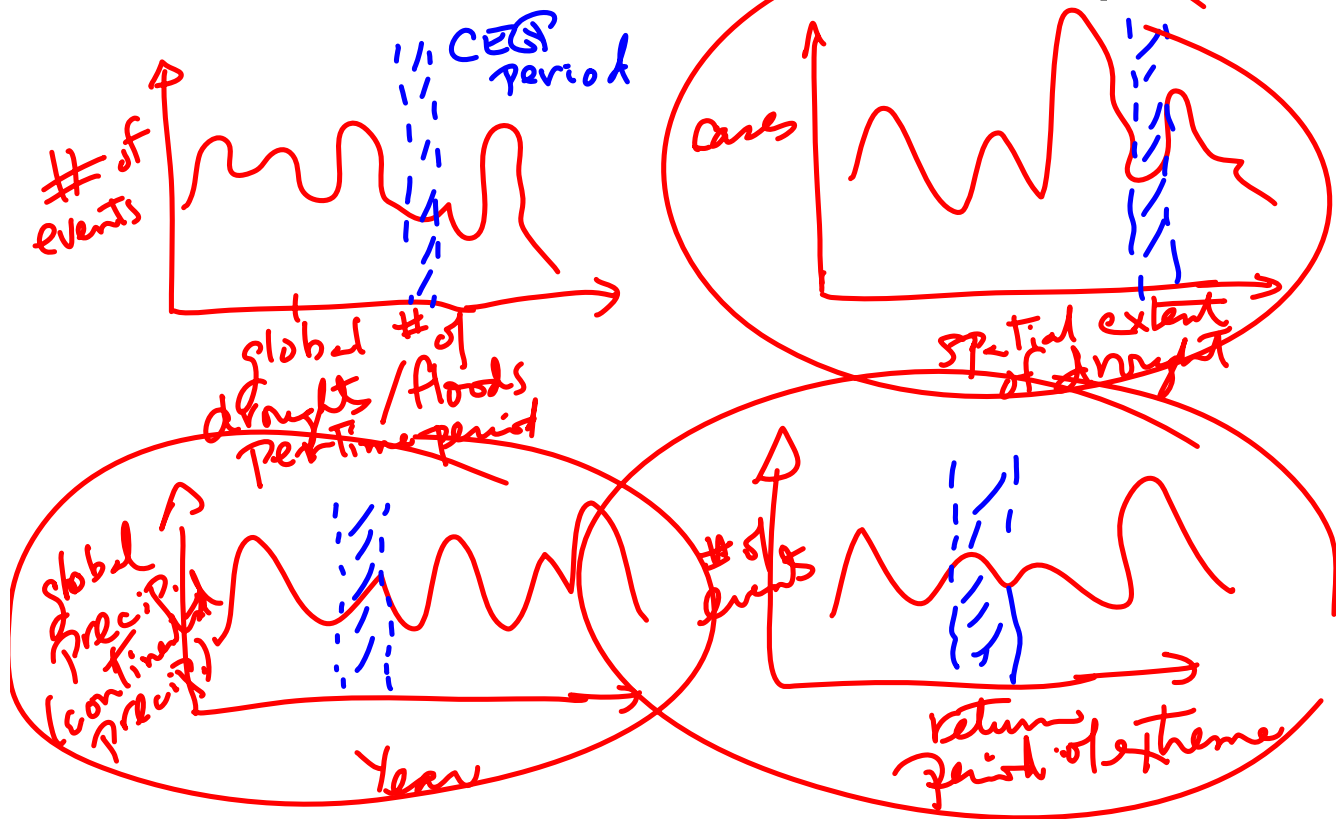
- What extremes occurred?
(CEOP period, longer record ...)
- What features made them 'extreme'?
reference to definitions, return period, etc.
- What are similarities and differences in the processes leading to extremes in different regions?
- Were extremes linked and, if so, how and why?
- What are the implications for simulations and trends (past and future)?
- ...

Aspects of Extremes Study

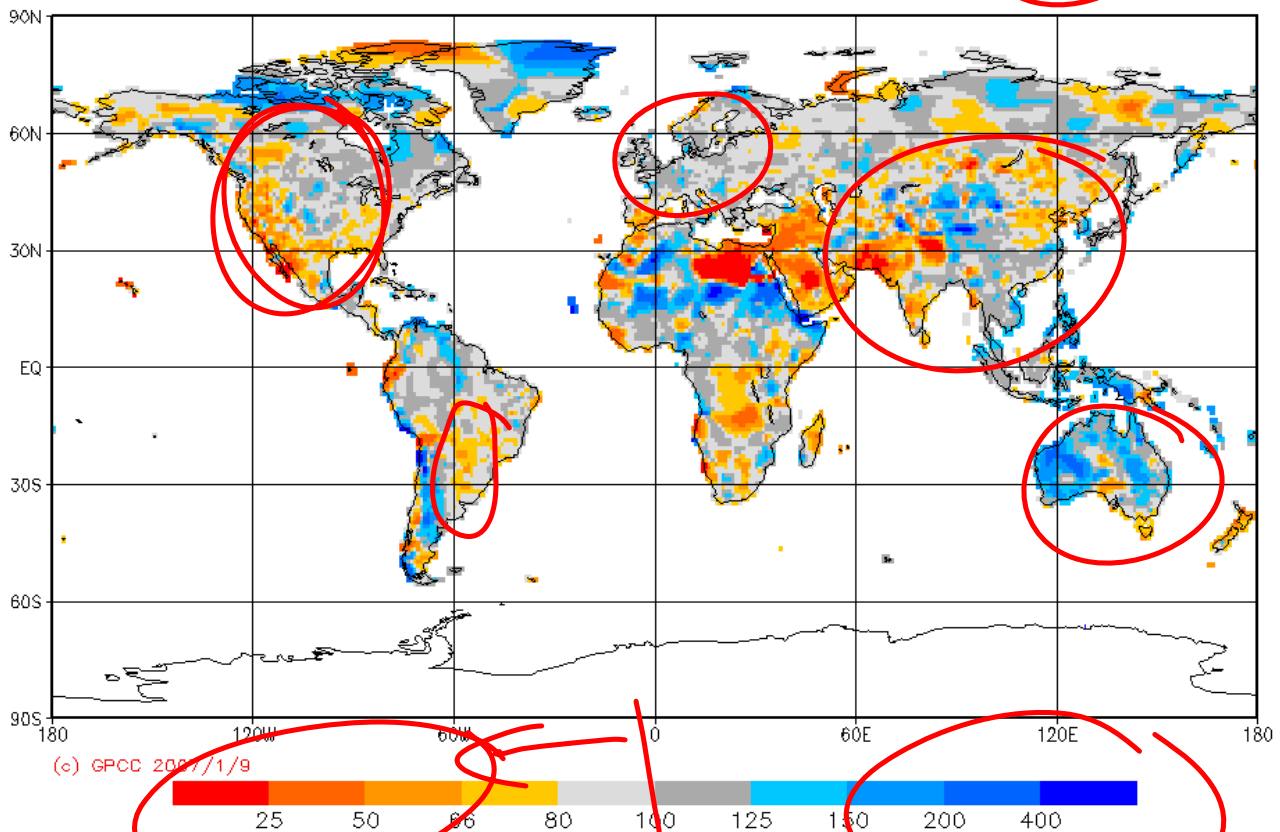
Some key aspects include:

- extremes in long-term perspective (statistics)
with WEBS and others
- global perspective and inter-connections
- detailed "case studies" and inter-comparisons
possibly including 'pilot project(s)'
- contributions to predictions
- ...

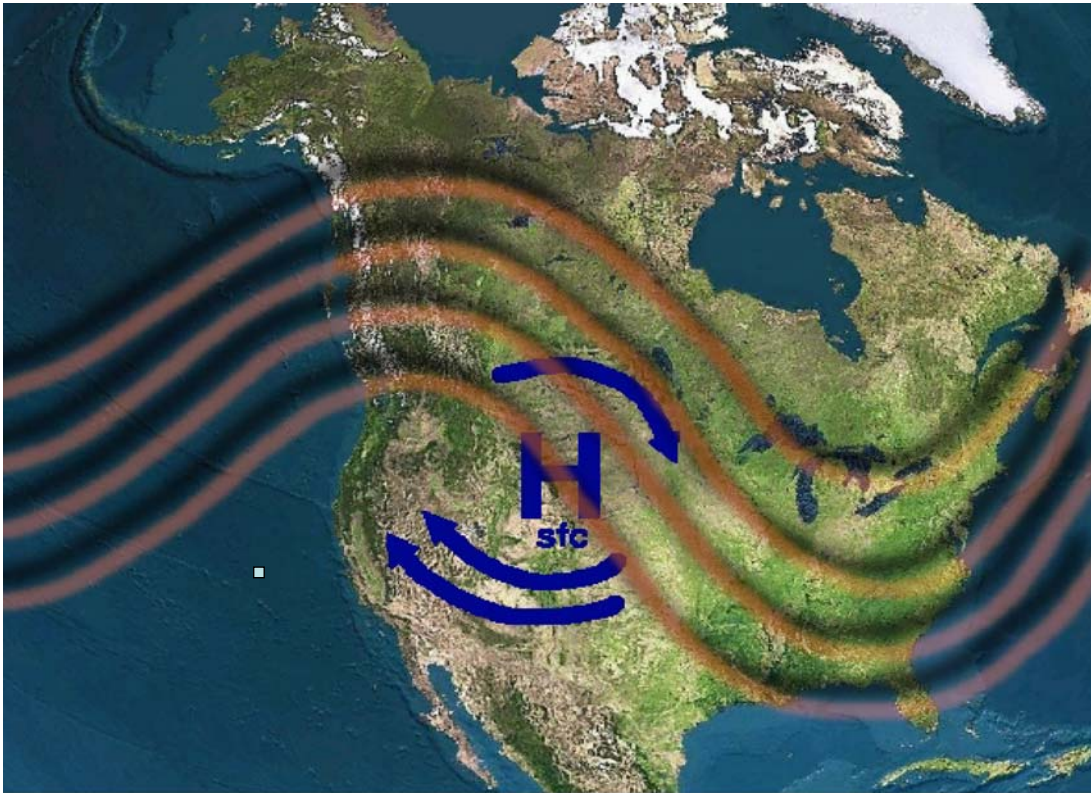
CEOP Extremes: Some Examples



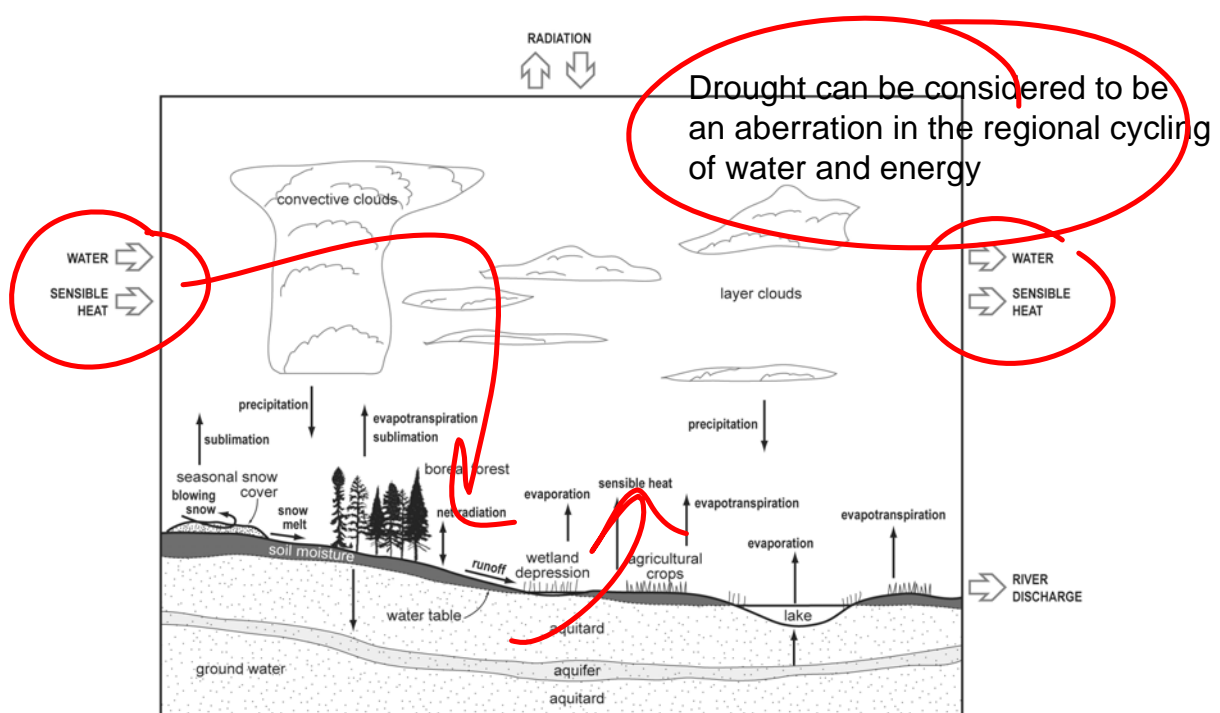
GPCC Monitoring Product Gauge-Based Analysis 1.0 degree precipitation percentage of normals 61/90 for year (Jan - Dec) 1999 (grid based)



COMMON VIEW ...

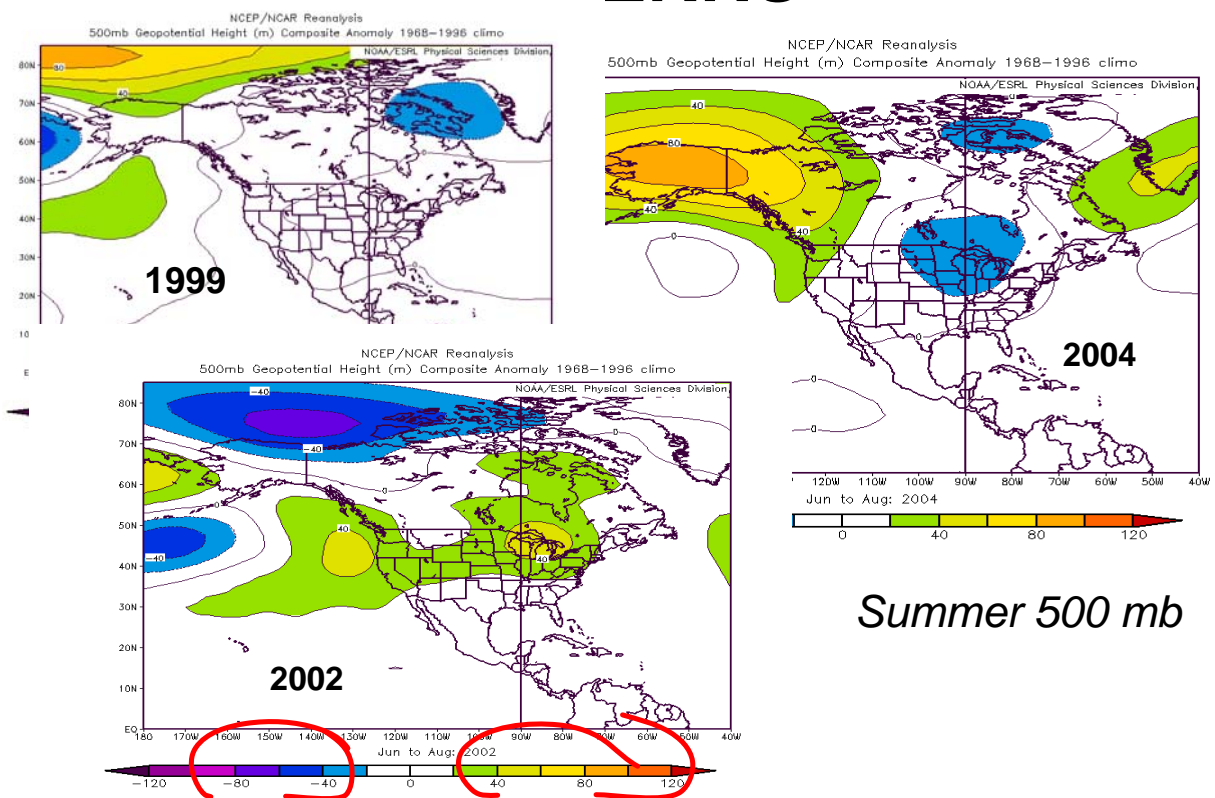


WATER AND ENERGY CYCLING DURING EXTREMES: AN EXAMPLE FOR DROUGHT





LARGE SCALE ACTUAL PATTERNS



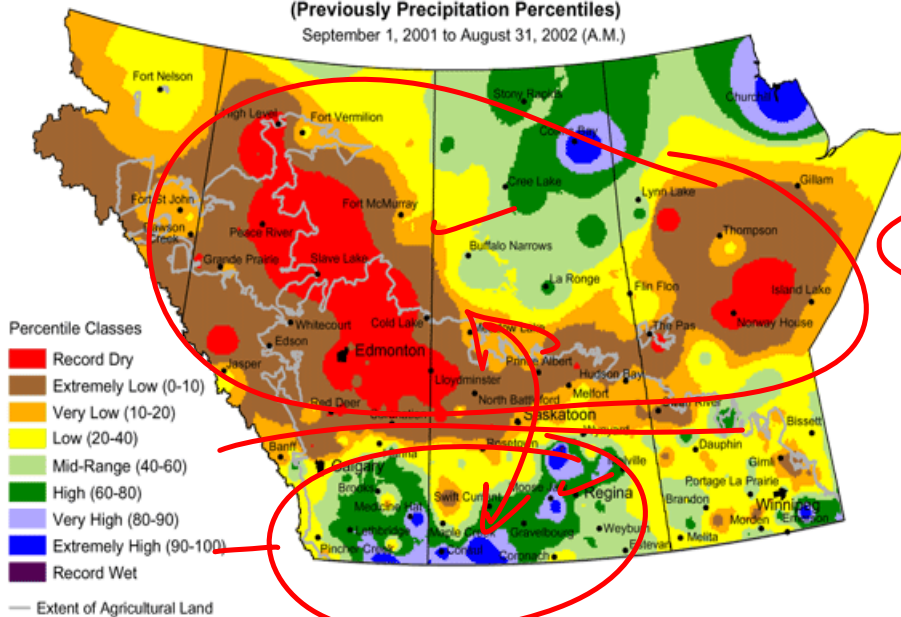
Almost Made it ...



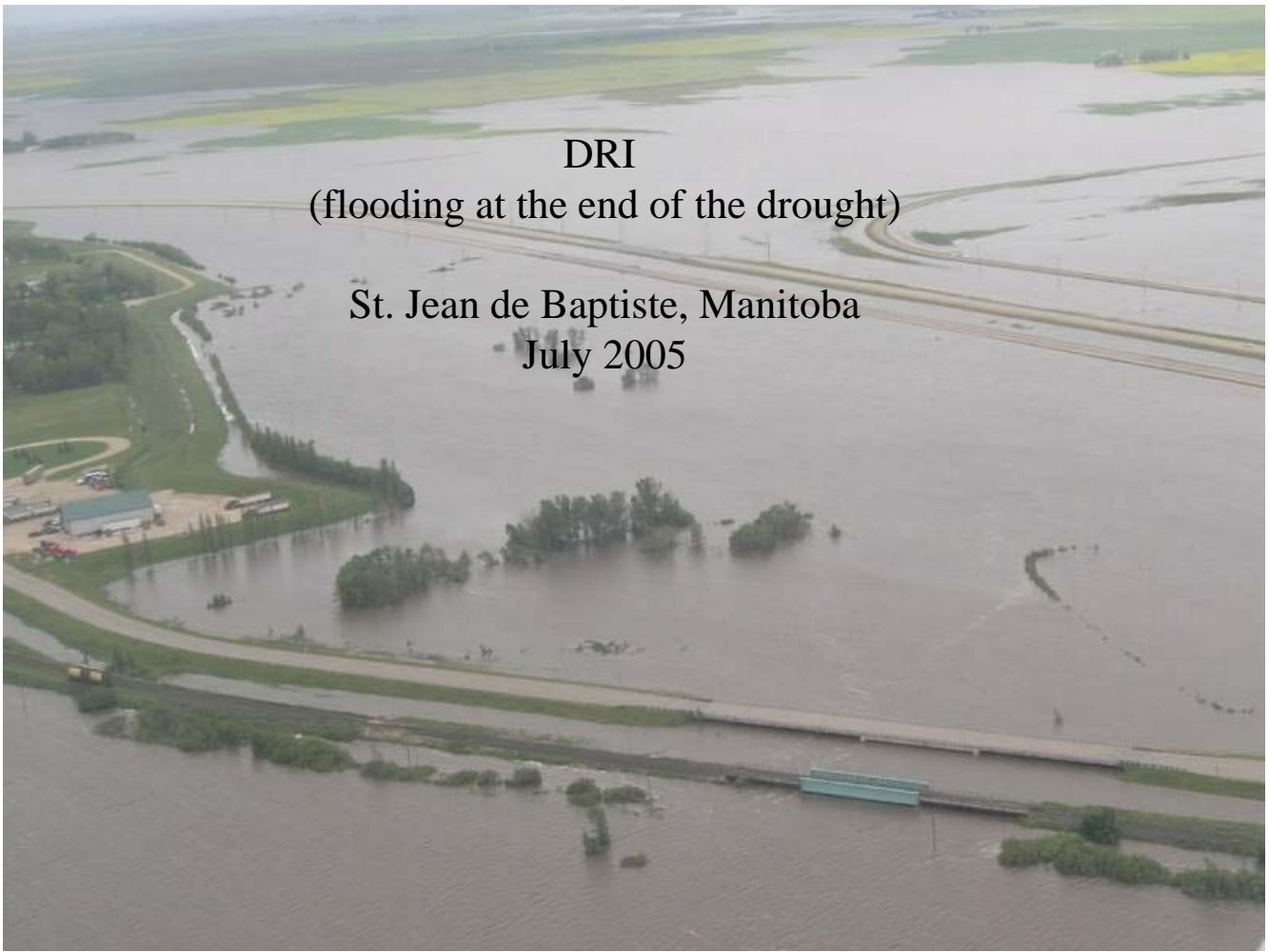
Courtesy PFRA

DRI (Canadian Prairie drought)

Current Precipitation Compared to Historical Distribution
(Previously Precipitation Percentiles)
September 1, 2001 to August 31, 2002 (A.M.)



2001/02

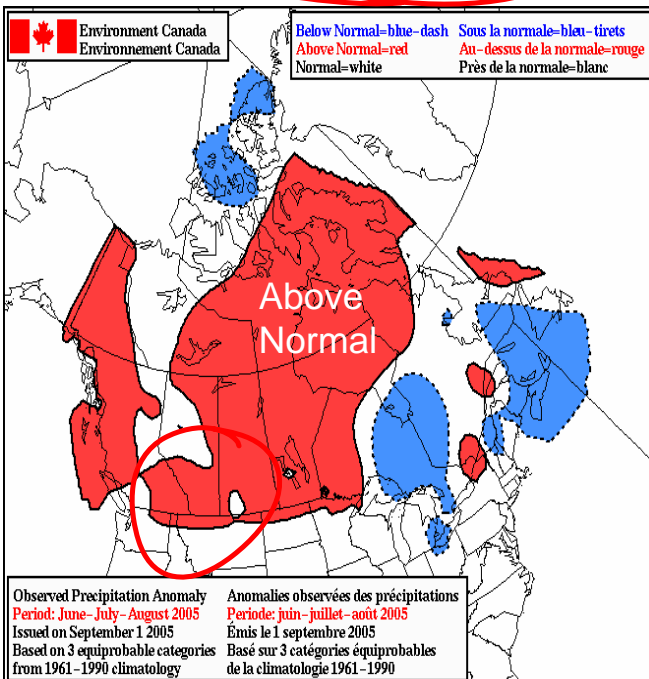


DRI
(flooding at the end of the drought)

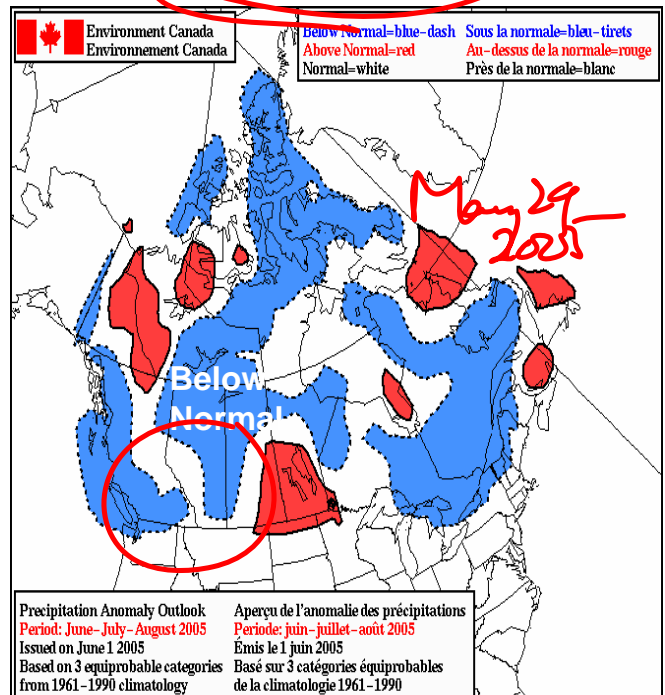
St. Jean de Baptiste, Manitoba
July 2005

SEASONAL PREDICTIONS Summer of 2005

OBSERVATION



PREDICTION



SPECIFIC ACTIONS

- Update List of/contacts for detailed studies of extremes
- “List” of extremes being studied within CEOP
- Acquire datasets for extremes
- Place CEOP extremes in perspective with respect to past climate
- ...

EXTREMES STUDIES

- Several studies of extremes within CEOP are already underway ...

Contact

- AMMA
- BALTEX
- CPPA
- DRI Kit Szeto - Ron Stewart
- LBA
- LPB Hugo Berbery ...
- MAHASRI
- MDB
- NEESPI
- ...
- Modelling
- Data
- Other Cross-Cuts

LINKAGES

- Within CEOP
many events are within RHPs ✓
- Within GEWEX
collaboration on inventory of extremes
datasets including aerosols
- Within WCRP
a key issue
- Beyond ...

DATASETS

Observational datasets include:

- Floods: Dartmouth, GPCC, ...
- Droughts: Drought/Aridity indices, ...
- Heat waves: Temperature (e.g., NCDC?)
- More datasets are listed on the web site:
www.meteo.mcgill.ca/wise
- Numerous model datasets ...

PILOT STUDY

It is not obvious that this is needed but ideas include ...



or ... 'compare' the detailed observed and modelled features of droughts and/or other extremes being studied

GEWEX Roadmap

Theme 2

2008: Develop an inventory of floods and droughts and the role of land-atmosphere feedbacks in causing those events. (CEOP, GRP)

2010: Provide an assessment of the role of land-atmosphere interactions during extremely wet and extremely dry (drought) periods. (CEOP)

Theme 3

2012(b): Demonstrate the contribution of improved prediction systems for forecasting the onset and intensity of droughts and the recovery from drought. (CEOP)

Theme 4

2008(d): Assess the ability of models to simulate the impacts of heavy rain events and droughts on water resources. (CEOP)

2012: Prepare a review article on the hydrological response of basins of different sizes to drought and extreme rainfall events. (CEOP)

LIMITATIONS

Extremes is a huge issue ...

- CEOP can address some of the key issues
- CEOP can contribute to and benefit from other efforts

VERY SHORT-TERM

- Who is carrying out some type of extremes research?
- What aspect of extremes?
- What do you think needs to be done?
- How we move forward?
- ...

CEOP

- COORDINATED EXTREMES
OBSERVATION and modelling PROJECT