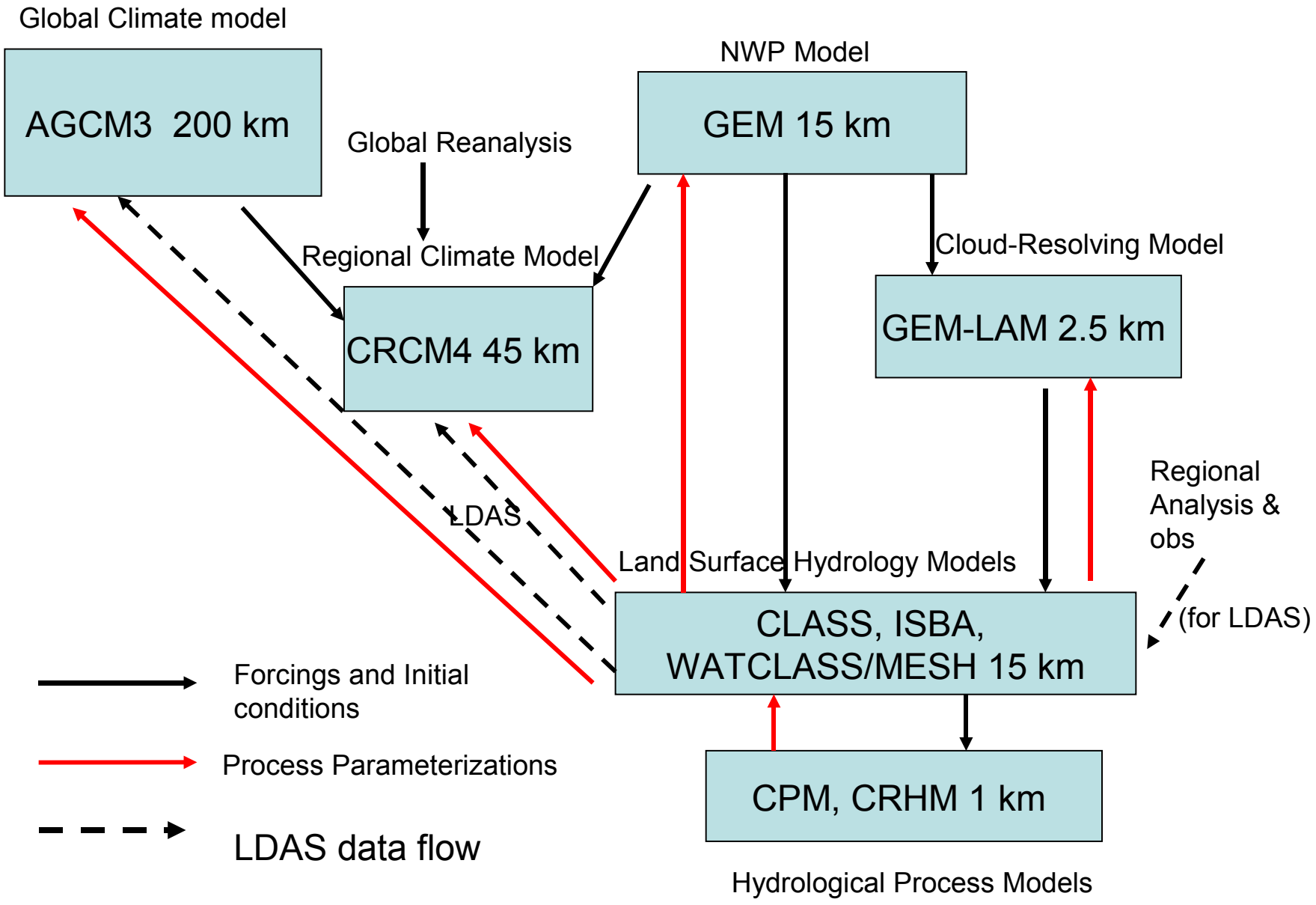
DRI Strategy for Prediction

Working Group 2

27 Jan 2009

3. SIMULATE AND PREDICT THE DROUGHT



Prediction Elements

- Precipitation and Atmospheric Parameters
  - Models: CRCM, GEM, GCM3
  - Driving Data: NCEP, ERA40, NARR
- Soil Moisture and Runoff Generation
  - Models: Watflood, VIC, CRHM, VSMB, CLASS/MESH
  - Driving Data: Station, gridded Obs., NARR, NCEP, GEM/CALDAS/Capa, CRCM
- Groundwater
  - Models: VSMB, gCLASS, ParFlow
  - Driving Data: GEM forecast

Predicting What? (parameter, time, space, accuracy)

- Soil moisture – crops and runoff generation, daily, field scale
- Surface temperature – hourly, field scale
- Precipitation – phase, intensity, volume, hourly, 5 km
- Streamflow (small, rivers) daily to weekly
- Wetland storage
- Groundwater
- Evapotranspiration/NPP

Why Predict

- Users who will use models results
- User requests for model outputs
  - Provincial federal agricultural departments, crop forecaster
  - Insurance companies, CWB
  - Water managers, irrigation districts,
  - Hydroelectric companies

Driving Data

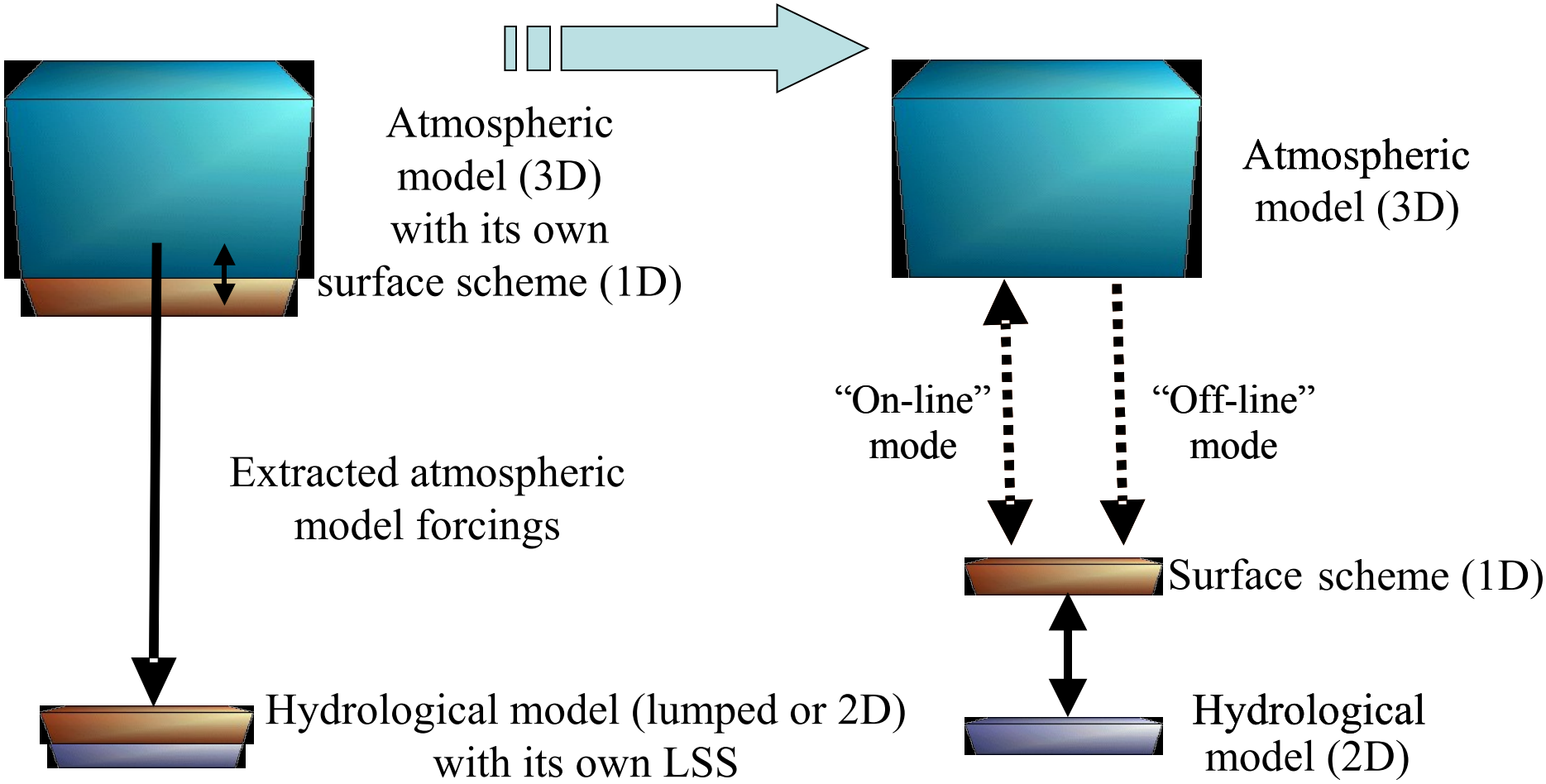
- NARR T, Qsi, 32 km, 3 hourly, bad precip
- ANUSPLIN – daily only, ends 2003
- NCEP – less accurate than NARR but earlier
- GEM forecast – 2001onwards, 15 km SSRB only
- Station – snowfall corrected archive, sparse
- Wood dataset? 7 variables
- **Develop bias corrected fine scale reanalysis dataset K, L, P, q, T, U, p for Prairie for drought and comparative periods 3 hourly**
  - **Bias correction, T, q, etc 51 km grid (Berg)**
  - **Precipitation correction (Berg) cangrid, anusplin reconstr.**
  - **Radiation reconstruction BCW-CRHM (Pomeroy)**
  - **Wind reconstruction, DEM PDF, diurnal reconstruction (Pomeroy)**
- **GEM regional 15 km grid (HAL)**
- **1 June????**

Model Developments

- Precipitation
- Evaporation
- Snowmelt & Hydrology
- Groundwater Linkages

- Will not be linked to atmospheric models during life of DRI

Modélisation Environnementale Communautaire, MEC



Prediction Legacy

- Which models will we focus our developmental efforts onto? **MESH via IP3 Prediction Workshop March 2009**
- Can model development be aided by model runs and comparisons at our common sites?
  - Fluxnet, NAESI, Smith Creek,
- Who will run our legacy models?
  - HAL, EC, broader modelling community
- What about model output datasets, archiving?
  - DRI