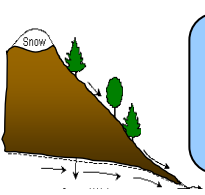


CCSM4 Timeline

- **First deadline for working groups to provide component models**
 - **March, 2008** **CLM Ski day!!**
- **Second deadline**
 - **October 1, 2008**
- **CCSM4 release**
 - **June, 2009**



LMWG progress towards CLM4

– Soil hydrology

- **Status:** critical need to resolve upper-soil moisture variability problem

– Snow model: snow cover fraction, snow burial fraction, snow age, vertically resolved heating, aerosol deposition

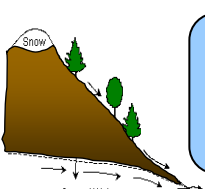
- **Status:** needs to be merged onto trunk, aerosol deposition dataset

– Urban model

- **Status:** implemented onto CLM trunk, derivation of global datasets and testing still required

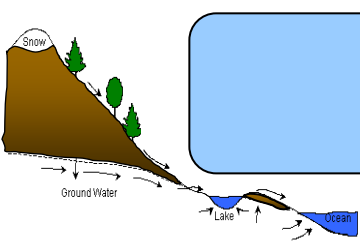
– Integration of CLM-CN with CLM-DGVM

- **Status:** Mostly complete, work needed to make DGVM work with prescribed land-use change



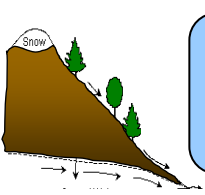
LMWG progress towards CLM4

- Organic soil / deeper soil column
 - **Status:** needs to be implemented onto trunk, integration with CLM-CN soil carbon not complete
- Fine mesh – high resolution land and downscaling
 - **Status:** in CLM3.5, revision and extension of downscaling algorithms
- Minor changes:
 - roughness length sparse/dense canopy
 - CCSM stability function
 - reference height – 40m to accommodate 20m lowest atmos level
 - energy imbalance where snow capping is active – introduce ice stream



LMWG progress towards CLM4

- **Shrub vegetation type in DGVM**
 - **Status:** code received from University partner, being integrated with CLM-CNDV
- **Prognostic canopy airspace** – improves computational efficiency, storage of heat, moisture, carbon in plant canopy
 - **Status:** prototype code being developed for testing
- **Ice sheet model**
 - **Status:** CLM physics changes mostly complete, coupling between CLM and GLIMMER ongoing, software engineering work on elevation classes on land columns, testing in offline and then coupled simulations, tuning



LMWG progress towards CLM4

Possible to likely

– Irrigation

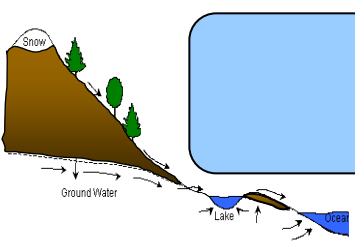
- **Status:** preliminary algorithm tested, a number of practical and scientific issues need to be resolved

– Integrated global crop model

- **Status:** Development

– Dynamic wetlands

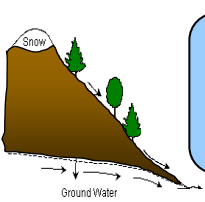
- **Status:** Conceptual development



LMWG progress towards CLM4

by CCSM
meeting
June 17-19

- Soil hydrology
- Snow model changes
- Organic soil / deeper soil column
- Roughness length sparse/dense canopy; CCSM stability function; reference height; energy imbalance
- Urban model
- Fine mesh – high resolution land and downscaling
- Integration of CLM-CN with CLM-DGVM
- Shrub vegetation type in DGVM
- Ice sheet model
- Prognostic canopy airspace
- Irrigation
- Integrated global crop model
- Dynamic wetlands



LMWG progress towards CLM4

- **Managed rivers and lakes, update of River Transport Model**
- **Soil degradation**
- **Variable soil depth**