CLM4.0 Technical Note planning (internal)

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12.	BIOGENIC VOLATILE ORGANIC COMPOUNDS (BVOCs)	S. Levis	DONE
13.	URBAN MODEL (CLMU)	K. Oleson	DONE
14.	CARBON NITROGEN (CN) and CN-DV MODELS	P. Thornton	DONE
15.	DYNAMIC LANDCOVER CHANGE	P. Lawrence/D. Lawrence/K. Oleson	DONE
16.	OFFLINE CLM - ATMOSPHERIC FORCING	K. Oleson/D. Lawrence	DONE
17.	REFERENCES	K. Oleson	DONE

CLM4.0 Technical Note Tasks

- Incorporate CLM3.5 document into CLM3.0 technical note
  - canopy interception section 7.1 DONE
  - surface and subsurface runoff - but with CLM4 modifications section 7.3 DONE and 7.5 DONE
  - groundwater and water table depth - but with CLM4 modifications section 7.5 DONE
  - supercooled soil water section 6.2 DONE, 7.4 DONE
  - soil moisture stress function - stomatal open/close section 8 DONE
  - nitrogen limitation factors in non-CN mode section 8 DONE
  - Thornton-Zimmermann canopy integration scheme section 4.1 DONE and 8 DONE
- Change to freezing temperature constant section 1.2.4 DONE
- forcing height at atm plus z0+d on each tile section 1.2.1 DONE
- Effective porosity divide by zero fix section 7.3 DONE
- X. Zeng sparse/dense canopy aerodynamic parameters section 5.3.1 DONE
- Stability formulations - never implemented
- ground/snow emissivity section 4.2 DONE
- organic soil section 1.2.3 DONE, 6.3 DONE, 7.4.1 DONE
- init h2osoi=0.3 section 1.2.2 DONE
- snow compaction fix section 7.2.5 DONE
- snow T profile during layer splitting fix section 7.2.6 DONE
- snow burial fraction section 2.3 DONE
- snow cover fraction section 3.2 DONE
- SNICAR (snow aging, black carbon and dust deposition, vertical distribution of solar energy) section 3.2 DONE, 6.1 DONE, 7.2.3 DONE
- remove SNOWAGE, no longer used section 3.2 DONE
- deep soil (15 layers), including changes for bed rock throughout DONE
- Koichi ground evap (beta), stability, and litter resistance section 5.2 DONE, 5.3 DONE
- Swenson organic/mineral soil hydraulic conductivity percolation theory section 7.4.1 DONE
- Zeng/Decker Richards equation modifications section 7.4 DONE
- normalization of frozen fraction of soil formulation section 7.3 DONE, 7.4 DONE
- Swenson one-step solution for soil moisture and qcharge section 7.4 DONE
- changes to rsub_max for drainage and decay factor for surface runoff section 7.3 DONE, 7.4 DONE
- description of new forcing data? fixed diurnal cycle section 16 DONE
- back to old lakes and wetlands datasets, but 1% rather than 5% threshold (same for glacier) section 1.2.3 DONE
- changes to pft physiology file from CN section 8 DONE
- possible changes to surface dataset due to CN? section 1.2.3 DONE
- new grass optical properties section 1.2.3 DONE
- new surface dataset from Peter Lawrence assuming no herbaceous understory section 1.2.3 DONE
- direct versus diffuse radiation offline section 16 DONE
- new VOC model (MEGAN) section 12 DONE
- modification to solar radiation penetration through snow (no solar to soil if snowdp<0.1m) section 6 DONE
- new RTM rdirc file and change to QCHANR definition section 7.6 DONE and 11 DONE
- snow-capped runoff goes to ice stream section 7.2.1 DONE, 7.6 DONE and 11 DONE
- dust model always on, LAI threshold parameter change from 0.1 to 0.3 section 10 DONE
- daylength control on vcmax section 8 DONE
- SAI and get_rad_dtime fix ?
- MAXPATCH_PFT=17 section 1.1.2 DONE, 1.2.3 DONE
- Bug fix in lake model; use beta*sabg rather than sabg in calculation of lake surface T - never implemented DONE
- dynamic land use mode - datasets, energy and water balance section 15 DONE
- RTM sub-cycling section 11 - CLM User's Guide
- soil evaporation calculation based on PFT demand section 5.3 DONE
- finemesh capability? Not documented DONE
- twostream bug fix section 3.1 DONE
- soil colors section 3.2 DONE
- 2m relative humidity section 5.1 DONE
- fix for aquifer leak (SoilHydrologyMod, BalanceCheckMod) section 7.5 DONE
- new nitrogen deposition file (units and sum of NOx, NHy) section 1.2.3 DONE, 14 DONE