

CLM UML Diagrams

CLM Over All Design

This is a design we want to work towards from where it is now.

CLM consists of six levels:

1. CESM interface level
2. CLM global superstructure level
3. CLM main parametrization level
4. CLM sub parametrization level
5. CLM infrastructure level
6. CESM infrastructure level

CESM Interface Level

This is the level that interacts with the CESM driver and coupler. This consists of "Ind_comp_mct.F90" or "Ind_comp_esmf.F90" in the "models/Ind/clm/src/cpl_**" directories. There are three public interfaces that interact with the driver ONLY through the argument list.

1. Ind_init
2. Ind_run
3. Ind_final

The convention is that the CESM driver is NOT allowed to send information to CLM EXCEPT through the argument list.

CLM Global Superstructure Level

The top level calling structure.

- clm_initializeMod.F90
- clm_driver.F90
- histFldsMod.F90 --> call Main parametrization level history registration subroutines
- clmtype.F90
- clmtypeInit.F90
- controlMod.F90 --> Call Main parametrization level namelist read subroutines
- clm_varpar
- clm_varcon
- clm_varorb
- clm_varctl
- clm_ursur
- clm_varorb
- iniTimeConst
- restFileMod.F90 --> Call Main parametrization level restart subroutines

CLM Main Parametrization Level

CLM Sub-Parametrization Level

CLM Infrastructure Level

These are things that can be used and called freely from anywhere in CLM code.

- clm_timemgr.F90
- spmdMod.F90
- decompMod.F90
- histFileMod.F90
- filterMod.F90
- ncd_pio.F90
- getdatetime.F90
- fileutils.F90

CESM Infrastructure Level

Things that can be used and called freely from anywhere in CLM code.

- shr_file_mod.F90

CLM Type UML Diagram

climtype -- pit_type
pcbal --> energy_balance_type
pcbal --> water_balance_type
pcbal --> carbon_balance_type
pcbal --> nitrogen_balance_type
pdgvs --> pit_dgvsstate_type
pgpr --> pit_gpr_type
pps --> pit_pstate_type
pps --> pit_wstate_type
pca --> pit_cstate_type
prs --> pit_rstate_type
prv --> pit_vstate_type
pef --> pit_efflux_type
prwf --> pit_wfflux_type
pcf --> pit_cfflux_type
prf --> pit_rfflux_type
prf --> pit_vfflux_type
prf --> pit_efflux_type
pcd --> pit_dcpd_type
pc13s --> pit_cstate_type
pc13f --> pit_cfflux_type

climtype -- column_type

climtype - balance types
energy_balance_type
water_balance_type
carbon_balance_type
nitrogen_balance_type

climtype -- pit types
pit_pstate_type
pit_gpc_type
pit_dgvs_type
pit_gpr_type
pit_wstate_type
pit_cstate_type
pit_rstate_type
pit_vstate_type
pit_dgvsstate_type
pit_efflux_type
pit_wfflux_type
pit_cfflux_type
pit_rfflux_type
megan_out_type
pit_vfflux_type->megan_out_type
pit_dcpd_type
pit_cfflux_type

climtype -- column types
column_pstate_type
pps_a --> pit_pstate_type
column_estate_type
pes_a --> pit_estate_type
column_wstate_type
pes_a --> pit_wstate_type
column_rstate_type
pca_a --> pit_cstate_type
column_rstate_type
prs_a --> pit_rstate_type
column_vstate_type
prv_a --> pit_vstate_type
column_dgvsstate_type
pdgvs_a --> pit_dgvsstate_type
column_estate_type
column_efflux_type
pef_a --> pit_efflux_type
column_rfflux_type
prwf_a --> pit_wfflux_type
column_cfflux_type
pcf_a --> pit_cfflux_type
column_rfflux_type
prf_a --> pit_rfflux_type
pcf_a --> pit_cfflux_type

climtype -- landunit types
landunit_pstate_type
cps_a --> column_pstate_type
landunit_efflux_type
cef_a --> column_efflux_type

climtype -- grid types
gridcell_pstate_type
cps_a --> column_pstate_type
gridcell_estate_type
ces_a --> column_estate_type
gridcell_wstate_type
cws_a --> column_wstate_type
gridcell_rstate_type
crs_a --> column_rstate_type
gridcell_vstate_type
cvs_a --> column_vstate_type
gridcell_dgvsstate_type
gridcell_estate_type
cds_a --> column_dstate_type
gridcell_dgvsstate_type
gridcell_efflux_type
cef_a --> column_efflux_type
gridcell_rfflux_type
prwf_a --> pit_wfflux_type
gridcell_wfflux_type
cwf_a --> column_wfflux_type
gridcell_cfflux_type
ccf_a --> column_cfflux_type
gridcell_rfflux_type
ccf_a --> column_rfflux_type
gridcell_cfflux_type
ccf_a --> pit_cfflux_type