

# Plant Physiology, Vegetation Dynamics and Crop modelling

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First JULES Science Meeting, 28 June 2007

#### Where are we in JULES?



```
jules --
                      -- init --|
                              |-- allocate_arrays
                              |-- init_output
                              |-- init_vars_tmp
                              |-- init_parms --|
                                             -- tilepts
                                            -- sparm--|
                                                     |-- pft sparm
                                             -- freeze_soil
                                            |-- calc_baseflow
                                                                     PHYSIOL: Calculates surface
                                            |-- calc_fsat
               (top of timestep loop)
                                                                     conductances and carbon fluxes
                      -- control --|
                                |-- zenith
                                I-- ftsa
                                |-- tile_albedo --|
                                               |-- albpft_fapar
                                               |-- albsno
                                                                            SF_STOM: Calculate Stomatal
                                 -- sf_expl --
                                             - tilepts
                                              physiol --
                                                                            Resistance, Photosynthesis and
                                                        |-- albpft_fapar
                                                       |-- root_frac
                                                                            Transpiration
PLANT
                                                       |-- smc_ext
                                                        -- raero
                                                        -- sf_stom --|
PHYSIOLOGY
                                                                    -- gsat
                                                                   |-- leaf limits
                                                                   |-- leaf
(sub-daily timestep)
                                                       |-- soil_evap
                                                       |-- leaf_lit
                                                        -- cancap
                                                        |-- microbe
                                            |-- sf_exch --|
                                                        |-- gsat
                                                       |-- sf_orog
                                                       |-- sf_resist
                                                       |-- sf_rib_sea
                                                       |-- sf_rib_land
                                                       |-- sf_orog
                                                        |-- fcdch_sea --|
                                                                    |-- phi_m_h_sea
                                                        -- fcdch_land --|
                                                                                           Boundary Layer Scheme:
                                                                     |-- phi_m_h_land
                                                       |-- sf resist
                                                       |-- dustresb --|
                                                                                           Soil Thermal Conductivity,
                                                                   |-- vgrav
                                                       |-- sf_flux_sea
                                                                                           Surface turbulent exchange
                                                       |-- sf flux land
                                                       |-- stdevl_sea
                                                       |-- stdevl_land
                                                       |-- sf_orog_gb
                                                       |-- sfl_int_sea --|
```

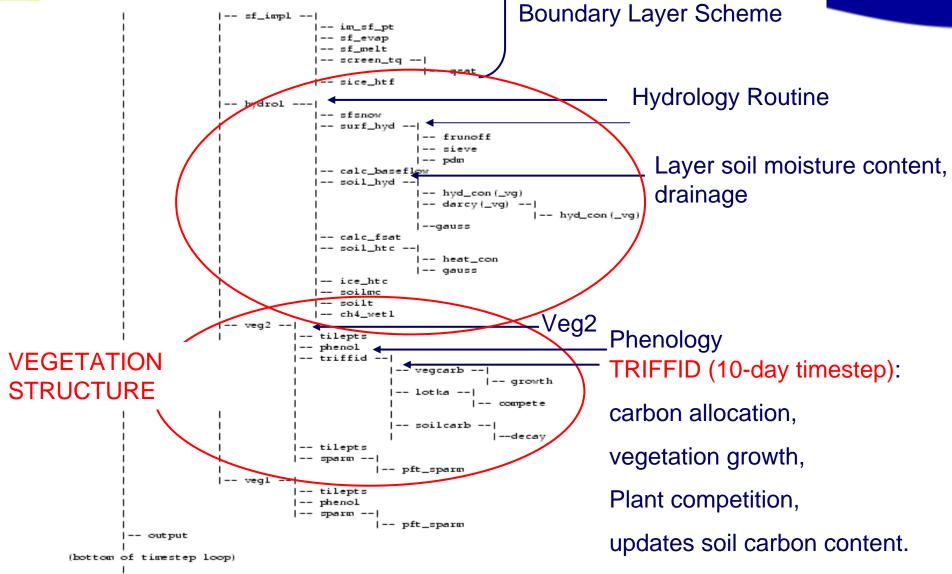
|-- phi\_m\_h\_sea

|-- phi\_m\_h\_land

|-- sfl\_int\_land --|

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-- deallocate\_arrays

### Presentations



## **➤**CROP Modelling

- ➤ Roots, shoots and leaves: The origin of GLAM-JULES, Andrew Challinor (Univ Leeds)
- ➤ Incorporating crop growth modelling into JULES, Tom Osbourne (Univ Reading)
- Vegetation Dynamics
  - ➤ ED vegetation dynamics, implications for physiology, Rosie Fisher (Univ Sheffield)
- ➤ Plant Physiology
  - Vegetation response to drought, David Galbraith (CEH Edinburgh)
  - ➤ Determining biome level phenology module using NDVI, Joerg Kaduk (Univ Leicester)
  - Modelling Plant Nitrogen: Uptake, Fixation & Allocation, Josh Fisher (Univ Oxford)

#### **OUTCOME**



- Raise awareness of current activities
- With the help of an active discussion, to promote collaboration and avoid duplication in the future
- •In general, stimulating discussion act as a catalyst towards advancing our representation of plant structure and function in JULES.

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