

Notes for JULES snow configurations for ESM-SnowMIP stage 1. June 2017

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Please contact cecile.menard@ed.ac.uk for questions about the configuration or if you find any errors which may affect JULES' performance in the ESM-SnowMIP simulations.

The *.nml files use the JULES-C configuration, the recommended for earth-system studies, and the snow configuration by John Edwards.

They were used for points runs for the ESM-SnowMIP plot scale simulations at individual sites using prescribed (observed) meteorological forcing and, where appropriate, site specific parameters

(http://www.geos.ed.ac.uk/~ressery/ESM-SnowMIP/ESMSnowMIP_Reference_sites.pdf).

The following switches were modified. Most are functionalities that are not needed for ESM-SnowMIP:

- **jules_hydrology.nml** `l_top` TRUE to FALSE (Need parameters for `init_top` which are irrelevant for point run)
- **jules_surface.nml** `l_point_data` FALSE to TRUE except at forest sites. From Richard Essery 22/6/14:

" l_point_data = T in switches.nml (which I would usually recommend) has the unintended consequence of giving snow-covered forest a high albedo. This goes all the way back to the introduction of l_point_data in 2.0. For now I would suggest the (ugly) solution of using l_point_data = T for short vegetation but F for forests.

A preferable solution in the next release would be to replace

```
IF ( l_point_data ) THEN  
in tile_albedo_jls.F90 with  
IF ( l_point_data .and. .not. cansnowtile(n) ) THEN"
```

The proposed solution has not been implemented yet.

- **jules_vegetation.nml**
 1. `can_rad_mod` 5 to 1 as I didn't have diffuse and direct radiation. Note that the website states that "When using `can_rad_mod` = 4, 5 or 6 it is recommended to use driving data that contains direct and diffuse radiation separately rather than a constant diffuse fraction" (http://jules-lsm.github.io/vn4.8/namelist/jules_vegetation.nml.html?highlight=can_rad_mod#JULES_VEGETATION::can_rad_mod). "Recommended" is the wrong word: the model produces NaNs / crashes if `can_rad_mod` = 5 but only one type of solar radiation is provided (i.e. SW)
 2. `l_triffid` TRUE to FALSE. Would need values for `alloc_fas`, `alloc_med`, `alloc_slow`.
 3. `l_phenol` TRUE to FALSE
- **jules_soil_biogeochem.nml** `soil_bgc_model` 2 to 1 (2 requires `l_triffid` = TRUE)