



JULES versions

Overview of JULES versions since the last meeting



JULES Version 3.4

Release Notes

See <https://jules.jchmr.org/software-and-documentation/jules-v3.4>

- Changes to semantics of output
 - Changed from capture points to all variables captured at end of timestep
 - Timestamps in files are consistent with this approach
- Improved I/O of variables with multiple 'levels' dimensions
 - Previously, variables were restricted to one 'levels' dimension - it is now possible to input and output variables with multiple 'levels' dimensions
- Streamlined process for adding new variables for I/O
- Other small changes + bug fixes



JULES Version 4.0

Release Notes

See <https://jules.jchmr.org/software-and-documentation/jules-v4.0>

- JULES-Crop crop model
 - JULES-Crop crop model from University of Reading now in JULES
- Daily disaggregator for forcing data
 - Drive JULES with daily forcing data
 - Disaggregator will disaggregate the daily forcing down onto the model timestep
- Major namelist changes
 - No more monolithic JULES_SWITCHES namelist – replaced with science section namelists
 - Enables GUI for editing the JULES namelists using Rose
 - Namelists consistent between UM and JULES runs
- Other small changes + bug fixes



About Rose

- Developed by the Met Office to replace the UMUI
 - Open source - <https://github.com/metomi/rose/>
- GUI for configuration of JULES (rose edit)
 - Doesn't try to obscure namelist structure (hence the need for a namelist revamp), but eliminates some common mistakes
- Optional runtime engine
 - Uses an engine called Cylc to execute a dependency graph of jobs
 - Using this allows you to configure everything from building to running through a GUI
 - However, it is not 100% trivial to set up
 - Possible to generate namelists from GUI and run as normal
- Automated regression testing suite (rose stem)
 - Makes the running of a suite of test jobs with bit-comparison tests incredibly easy
 - Such a suite is now distributed with JULES, and should be fairly easy to configure for sites other than the Met Office once Rose is up and running (online tutorials to follow)



Rose Stem example screenshot

r2426_rose_suite - exvcylc03 - gcylc (on els040)

File View Control Suite Help

View 1: running failed... filter View 2: None

task	state	message	Tsubmit	Tstart	mean dT	ETC
1	running					*
LINUX	running					*
install_loobos_data	succeeded	install_loobos_data.1 succeeded at 2014-06-30T13:54:50	13:54:37	13:54:42	0:00:09	*
install_gswp2_data	succeeded	install_gswp2_data.1 succeeded at 2014-06-30T13:54:56	13:54:55	13:54:55	0:00:01	*
BUILD	succeeded					*
JULES_RUN	running					*
LOOBOS_RUN	running					*
point_loobos_gl4	succeeded	point_loobos_gl4.1 succeeded at 2014-06-30T13:57:27	13:55:37	13:56:03	0:01:36	*
point_loobos_daily_disagg	queued		*	*	*	*
point_loobos_euro4	queued		*	*	*	*
point_loobos_forecast	succeeded	point_loobos_forecast.1 succeeded at 2014-06-30T13:57:27	13:55:36	13:56:03	0:01:36	*
point_loobos_ukv	running	point_loobos_ukv.1 started at 2014-06-30T13:57:54	13:57:46	13:57:55	*	*
point_loobos_esm_spinup	running	point_loobos_esm_spinup.1 started at 2014-06-30T13:58:04	13:57:58	13:58:05	*	*
point_loobos_esm	waiting		*	*	*	*
GSWP2_RUN	queued					*
LOOBOS_COMPARISON	waiting					*
rose_ana_point_loobos_gl4	succeeded	rose_ana_point_loobos_gl4.1 succeeded at 2014-06-30T13:57:44	13:57:43	13:57:43	0:00:02	*
rose_ana_point_loobos_daily_disagg	waiting		*	*	*	*
rose_ana_point_loobos_euro4	waiting		*	*	*	*
rose_ana_point_loobos_forecast	succeeded	rose_ana_point_loobos_forecast.1 succeeded at 2014-06-30T13:57:51	13:57:49	13:57:49	0:00:03	*
rose_ana_point_loobos_ukv	waiting		*	*	*	*
rose_ana_point_loobos_esm	waiting		*	*	*	*
GSWP2_COMPARISON	waiting					*

waiting
 rynahead
 held
 queued
 ready
 submitted
 submit-failed
 submit-retrying
 running
 succeeded
 failed
 retrying

running live 2014/06/30 13:59:17



Rose Config Edit example

Science configuration

The screenshot shows the Rose Config Edit application window titled "mi-ab863 - rose config-edit". The interface includes a menu bar (File, Edit, View, Metadata, Tools, Page, Help) and a toolbar with various icons. On the left, an "Index" pane lists configuration categories: suite info, suite conf, Hosts, fcm_make, jules, Execution environment, file, Namelist configuration, Logging, Surface types, Science settings (expanded), Surface options, Radiation options, Hydrology options, Soil options, Vegetation options (selected), Snow options, PFT parameters, Non-vegetated surface, TRIFFID PFT parameters, Timestepping information, Spinup configuration, Grid configuration, Ancillary data, Driving data, Prescribed data, Initial conditions, and Output.

The main area displays the "Vegetation options" configuration panel with the following settings:

- l_q10**: Choose soil decomposition dependence on temperature. Q10 temperature function (.true.) (selected) | RothC temperature function (.false.)
- l_phenol**: Include leaf phenology. false
- l_triffid**: Use the TRIFFID dynamic vegetation model, except for competition. false
- l_bvoc_emis**: Calculate BVOC emissions. false
- l_o3_damage**: Use ozone damage for vegetation. false
- can_model**: Choice of canopy model for vegetation. Radiative canopy with heat capacity (3)
- can_rad_mod**: Choice of treatment of canopy radiation. As 2 with varying leaf N (4)
- ilayers**: Number of layers for canopy radiation model. 10



Rose Config Edit example

Variable tables

The screenshot shows the 'mi-ab863 - rose config-edit' window. The left sidebar contains a tree view with 'Soil properties' selected under 'Ancillary data'. The main window displays the 'Soil properties' configuration page, which includes a table of variables and their values.

Configuration of spatially varying soil properties

const_z Use constant-profile soil properties (false)

file File (or file name template) to read soil properties from

var	use_file	var_name	const_val
b	<input checked="" type="checkbox"/>		6.630000
sathh	<input checked="" type="checkbox"/>		0.049460
satcon	<input checked="" type="checkbox"/>		0.004715
sm_sat	<input checked="" type="checkbox"/>		0.458150
sm_crit	<input type="checkbox"/>		0.242433
sm_wilt	<input type="checkbox"/>		0.136328
hcap	<input type="checkbox"/>		1185676.000000
hcon	<input type="checkbox"/>		0.226873
albsoil	<input type="checkbox"/>		0.110000



On the horizon

- Integration of JULES and CABLE (Australian LSM) into a combined framework
 - Both offline and online
 - Includes some effort towards modularising both code
- JULES to get its own dump file when running online
 - Combined with the work done on the namelists, this should make replicating online runs offline much easier
- River routing (officially...!)
 - As part of the Hydrological Framework, JULES will support RFM and TRIP officially in the near future
- More community science developments!



Questions and answers