JULES releases

Overview of JULES developments since the last meeting
JULES Version 4.1
Release Notes

See https://jules.jchmr.org/software-and-documentation/jules-v4.1

• Irrigation demand
  • Adds soil moisture up to the critical point (currently unlimited)
  • Two methods for determining when to irrigate (climate and dvi)
• Carbon cycle developments
  • Height-based competition
  • Trait-based plant physiology
  • Land use change
• Output types for maximum and minimum over a period
• Changes to coupling routines
  • Simplify coupling to facilitate future developments
• Other small changes + bug fixes
JULES Version 4.2
Release Notes

See https://jules.jchmr.org/software-and-documentation/jules-v4.2

• TRIP and RFM river routing
• Fire risk indices
• New soil thermal conductivity model
  • More appropriate for organic soils
• Addition of “bedrock” column beneath the soil column
  • Represents thermal processes only
• New canopy radiation scheme
  • Like 5, but nitrogen follows exponential decay through the canopy
• Crop model made carbon conserving
• Additional changes to coupling code
• Other small changes + bug fixes
JULES Version 4.3
Release Notes

See https://jules.jchmr.org/software-and-documentation/jules-v4.3

- Enhancements to the snow scheme
- Update to wetland scheme
- Crop scheme generalised to work with trait-based physiology
- New JULES-C configuration (prototype configuration for UKESM1)
- Restructured compilation procedure
  - Primarily to facilitate porting to the new Met Office Cray supercomputer
- Ancillary data is now saved to, and can be read from the dump
  - With the exception of river routing, a dump file can now be used to initialise all the spatially varying data for a run
- Large increase in testing
  - JULES now routinely tested on 3 platforms – Intel and gfortran compilers on Linux and CCE on the Cray
- Other small changes + bug fixes
JULES development is now hosted on the Met Office Shared Repository Service

- https://code.metoffice.gov.uk/trac/jules/wiki

- Shared SVN repository, accessed using FCM

- Shared Trac system for tickets
  - Every change to JULES is documented via a ticket

- Development wiki
  - Release schedule
  - Release milestones for tracking progress

- Working practices
  - Documented branching and testing procedure
  - Two stage review process, with scientific reviews coordinated by module leaders
  - Progress documented on ticket at all times

- How-Tos for developers
  - Testing changes
  - Building and editing the JULES User Guide
  - Guidance on adding new science routines
JULES Support

• New location for web documentation
• After (nearly) 7 years, I am leaving the Met Office
• Met Office UM systems team will be the new “guardians” of the official JULES trunk
  • Responsible for JULES code reviews
• New email address for JULES support
  • [jules-support@metoffice.gov.uk](mailto:jules-support@metoffice.gov.uk)
  • Read documentation first!!
• For developer access to JULES on the Met Office SRS, contact Martin Best
  • Must have an institution email address (i.e. no gmail, etc.)
Questions and answers