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# Joint Land Modelling Programme (JLMP)

Eleanor Blyth and Andy Wiltshire



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## What is JLMP?

National capability partnership between CEH, NCAS, NCEO, Met Office under the JWCRP (Joint Weather Climate Research Program).

We aim is to support, release and update the **core land** configurations used across the JWCRP partnership and broader community. To enable world-class national capability in physical (weather, climate) and earth system modelling, as well as hydrological applications.

Our scope includes code, platforms, configurations and evaluation tools.



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# Core Land Configurations

- **Global Land** – underpins the weather and climate models, globally applicable, should be the best model for simulating exchange of heat, water and momentum.
- **Earth System** – builds on global land to include interactive carbon, nitrogen and methane cycles, land-use and cover change. The best model for understanding carbon cycle and ecosystem processes
- **UK Hydrology** – currently being defined, intended to be a regional configuration best suited to UK hydrological applications

**The intention is this are versioned and updated with time.**



## What do we do?

- Make available core configurations to the community on the Met Office and JASMIN platforms
- Make available the tools to benchmark and assess
- Maintain a process by which all users can contribute their science to the configurations,
- Liaise with stakeholders – flood, impacts, climate, weather, earth system modellers, J-PEGs, working groups, Hydro-JULES etc.
- Update configurations on a semi-annual basis
- We don't lodge code for you but we do provide the tools and methodology to make this as easy and as robust as possible.



# Who's who?

JLMP is run by a management committee:

	<b>Role</b>	<b>Manager</b>	<b>Scientist</b>
MO	Chair	<b>Andy Wiltshire</b>	
CEH	Community Engagement	<b>Eleanor Blyth</b>	
CEH	Hydrology and Comms	<b>Douglas Clark</b>	<Recruiting>
NCAS	Global Land	<b>Pier Luigi Vidale</b>	Patrick McGuire
NCAS	Systems	<b>David Case</b>	
NCEO	Evaluation and Benchmarking	<b>Tristan Quaife</b>	Javier Amezcua
MO	Global Land	<b>Martin Best</b>	Heather Ashton
MO	Systems	<b>Rich Gilham</b>	
MO	Earth System	<b>Andy Wiltshire</b>	Spencer Liddicoat

With input from Anna Harper and Eleanor Blyth representing the broader community



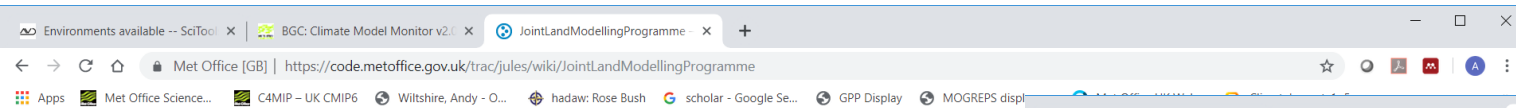

# Overseen by a Governance Committee

MO	Chris Jones
CEH	Simon Dadson
NCAS	Bryan Lawrence
NCEO	Amos Lawless
MO	Keith Williams



# Webpage: <https://code.metoffice.gov.uk/trac/jules/wiki/JointLandModellingProgramme>

## Place to go for info in JLMP, getting and using configurations

wiki: [JointLandModellingProgramme](#)

### Joint Land Modelling Programme (JLMP)

[Click here to skip to JLMP configurations](#)

The Joint Land Modelling Programme (JLMP) is a joint activity to develop and maintain the major configurations of JULES to ensure national capability in earth system and impact modelling. JLMP is a joint NERC-Met Office activity under the Joint Weather and Climate Research Programme (JWCRP).

JLMP consists of a consortium including CEH, NCAS, NCEO and the Met Office with links to the Universities of Exeter and Reading.

JLMP aims to provide and support JULES configurations and suites for physical, earth system and hydrological modelling. Suites will be available via the evaluation and benchmarking suites will also be provided.

See [JLMP\\_Intro.pptx](#) for more info

#### How does JLMP differ from JULES?

JLMP is a programme of work developing and supporting configurations of the JULES model.

JULES is the modelling framework that will underpin the JLMP programme.

JLMP includes the model code, model configurations, platform support and evaluation/benchmarking tools.

The previous JULES JWCRP project only focused on provision of model code.

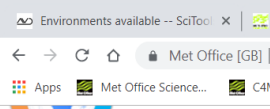
#### JLMP Structure

JLMP is managed by governance and management groups.

The governance group:

- are responsible for the strategy through engagement with stakeholders
- have the ability to provide directable resources (i.e. provide staff for core JLMP activities)
- oversee the management group
- report to JWCRP Science Programme Board.

The management group:



wiki: [JulesConfigurations](#)

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### Configurations

A JULES configuration is a set of model switches and parameter values. The large number of options available in JULES means that there are very many potential configurations, but the scientific performance of most of these has not been evaluated. Users are **strongly advised** to use one of the standard configurations listed below. The performance of each standard configuration is known to be "acceptable" and is documented - so by using a standard configuration a user can have confidence in the model set up. Furthermore runs that are based on a standard configuration are traceable in that the user can refer to a body of previous work that has documented the performance of the configuration.

The standard configurations are made available below as Rose suites. This collection will be expanded in future as resources allow.

A JULES configuration has been defined as a set of model switches and parameter values, but it does not specify every aspect of the model set up. In particular a configuration does **not** specify the model grid (and resolution), nor does it specify the input data that are used (including meteorological driving data and ancillary files). Thus a single configuration can be implemented differently in different suites - the values that define the configuration will be identical across the suites, but details such as the model grid and input files can differ.

The suites are configured to be easy to run either on JASMIN or the MetOffice? Cray. Instructions on accessing JASMIN can be found [here](#) and running suites on JASMIN [here](#).

#### Standard configurations

The table below lists the standard, supported configurations. Click on a name for further information, including instructions on how to access and run the Rose suite.

Name	Ticket	Description	CRU-NCEP N96	WFDEI
GL7.0	#837	Global land (physical)	<a href="#">u-bb316</a>	not yet
GL7.2	#837	Global land (physical)	<a href="#">u-bb543</a>	not yet

**Who to contact for further information? Process for development and release of a config?** Each new release of JULES will be accompanied by suites for the standard configurations.

#### Other information

Other sources of information about configurations, generally older information that is retained for legacy purposes only, are listed below. Note that any configurations, model set ups or suites described in these other pages are not supported by JLMP.

- [Older wiki page about configurations](#)
- [JULES website page](#)

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## Recent Successes

- JULES-GL7 – the setup currently in use in CMIP6 now available on JASMIN and MetOffice Cray.
- JULES-ES – the earth system setup for CMIP6 will be available shortly
- Central install of JULES on JASMIN
- Evaluation tools now running on JASMIN – still need some work to turn these into benchmarks.





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## Upcoming Issues

- Current numerical modelling approaches are no longer suitable for the next generation of computing.
- LFRIC is the joint UK project to address these challenges which inevitably means some changes to the JULES code base and coding style.
- JLMP will not be leading these changes but aims to support and guide use and maintenance of configurations during this period
- Please be aware if you are planning big developments. We hope more guidance will come shortly.



# Expected typical user role

Download and Setup Standard Configuration



Liaise with the relevant manager/scientist



Develop your science, test and lodge code



Benchmark



Pass to manager/scientist for consideration to be merged into next configuration release



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# Summary

- JLMP aims to jointly develop the important 'national capability' land configurations
- Joint activity bringing together expertise for UK land modelling and observations communities
- We hope that through clearer and easier pathways we can get new science into well evaluated configurations and ensure the UK has a world-leading land modelling capability.
- Through the next series of presentations we hope to give you a flavour of the available tools and configurations we are working on and the process by which you can contribute.



# Questions and Answers

We're still in the early stages so there's lots still to be done and put in place

**JLMP**

**Science Community**

Annual Meeting  
Review Developments

Package Testing

Configuration Update  
e.g. ES1.0 -> ES 2.0

Standard Tests Run and  
Evaluation performed  
Diurnal cycle -> Centennial  
Point -> Global

Supported Release across JWCRP  
Platforms  
Inc. gridded and point fluxnet setups  
Evaluation tools covering diurnal to  
centennial timescales

Testing,  
Development,  
Evaluation

Ticket Submission

Coupled  
Configuration Update  
e.g. ES2.0 -> ES 2.1

Takes into account  
necessary tuning for  
climate biases and  
other UM limitations

Core Activity

Larger Development Activity  
- JWCRP partners very active  
on this side as well

