

NCAS Computational Modelling Services



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About NCAS-CMS

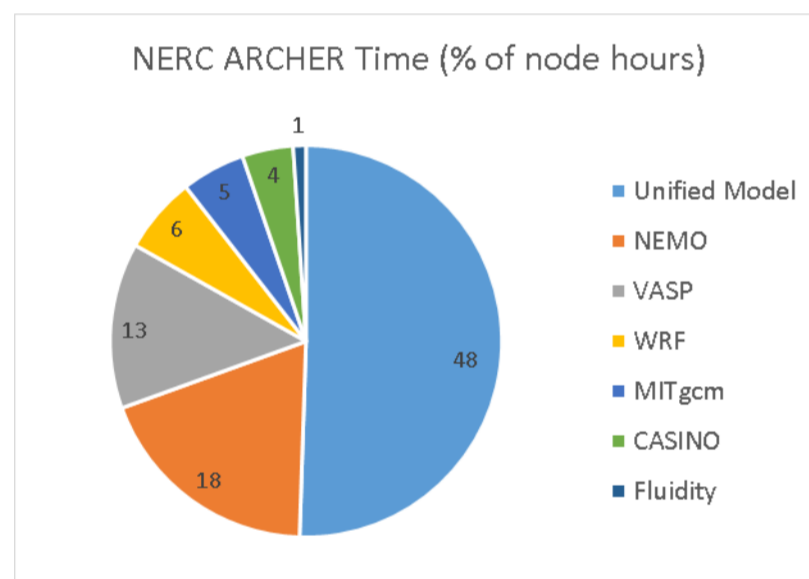
CMS provides **HPC resource management** and **software engineering support** for the UK atmospheric and polar science community, and delivers key underpinning **infrastructure**.

- For more information visit: cms.ncas.ac.uk
- Contact us on: cms-support@ncas.ac.uk

HPC

CMS manage HPC resources on behalf of 462 HPC users in the atmospheric and polar research community on these facilities:

- 250 Million CPU-hrs of **ARCHER compute**
- 534 TB of **ARCHER work disk**
- 3.2 PB of **Research Data Facility Storage**
- 3.1 PB (+ elastic tape) of **JASMIN storage**
- 4.2% of the XCS for NERC users (**NEXCS**)



PUMA

The PUMA service provides access to key services for the research community:

- Met Office Science Repository Service (MOSRS) mirrors
- UMUI job database with submission to ARCHER and Monsoon
- Rose, cylc and FCM application, workflow and code management systems with submission to ARCHER, JASMIN and more

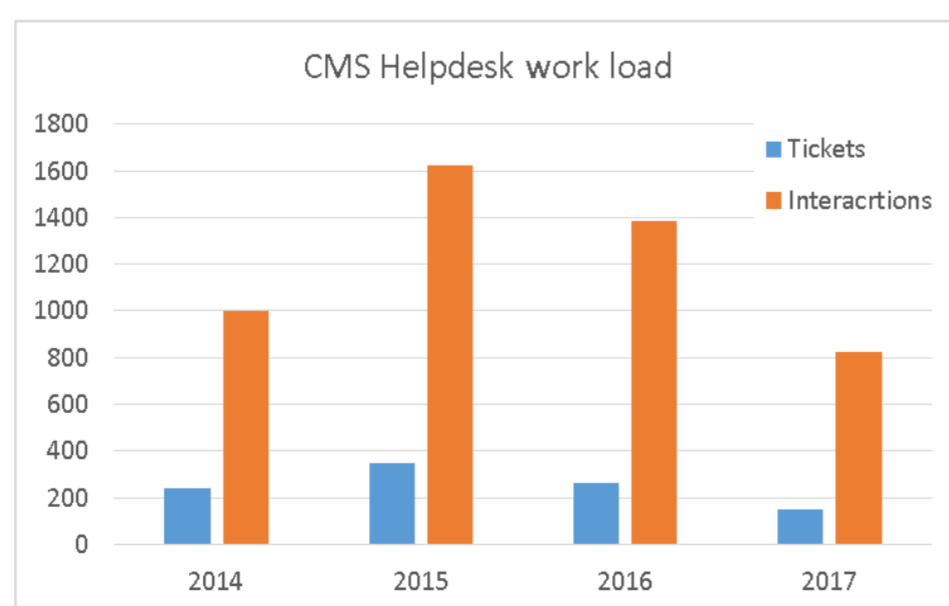
Currently PUMA has around 350 active users (and over 1000 user accounts in total).

CMS are working to move PUMA to the JASMIN unmanaged cloud.

User support

CMS provides a **helpdesk**, fielding user queries on a variety of topics including:

- models, infrastructure, HPC issues, resources



In the 2016-2017 academic year, CMS delivered the following **courses**:

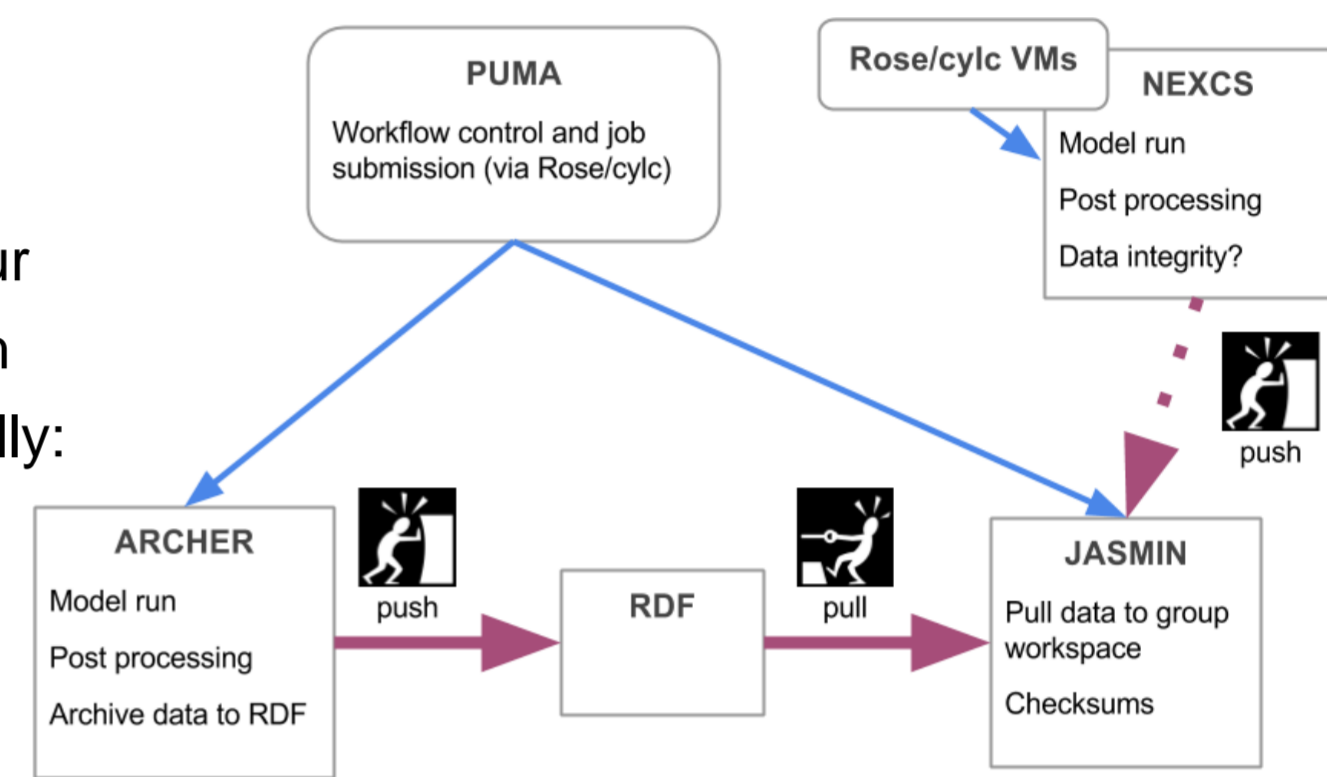
- 2 x 1 day Rose Conversion Course for UMUI users (34 in total)
- 2 x 3 day Introduction to the UM course for new users (46 in total)
- 5 day UKCA Theory and Practice Workshop (~20 attendees)

CMIP6 data workflow

The use of a scheduler (cylc) to manage experimental workflows means that data can be moved and processed as the simulation is running, greatly improving overall efficiency.

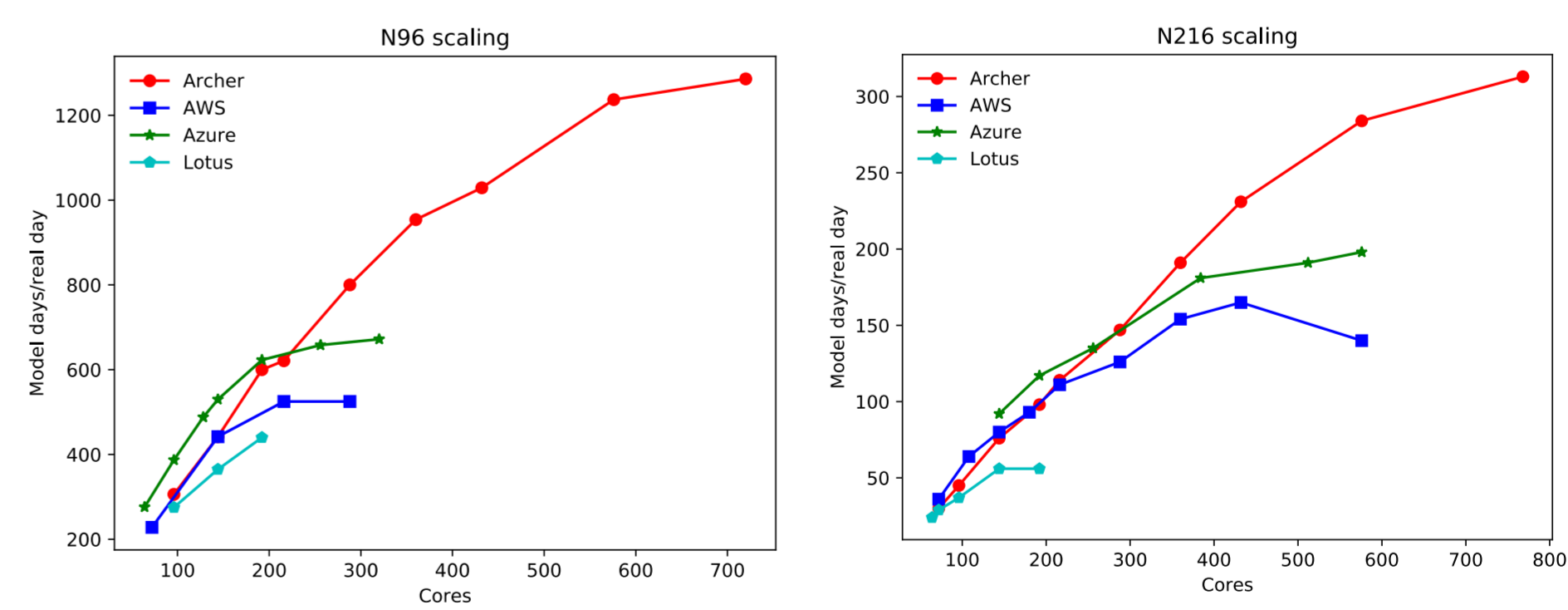
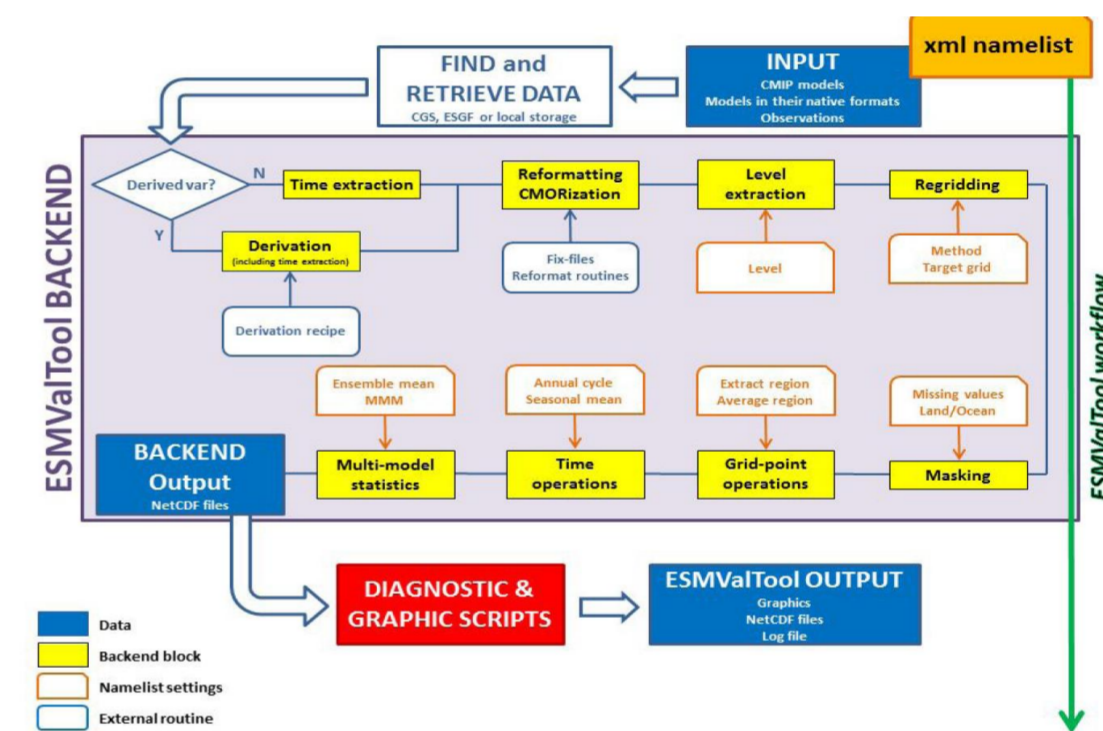
The Met Office system has been adapted by Rosalyn Hatcher for our multi-platform research environment, specifically:

- RDF archiving
- data transfer to JASMIN



Strategic projects

- ESMValTool model diagnostics suite. Work is ongoing to develop an improved version that makes use of a modularized backend, faster analysis and an improved user interface (Valeriu Predoi)
- ES-DOC (Earth System Documentation) software infrastructure encompassing web-services, web-sites, utility libraries, url rewriters, IPython notebooks, & usage metrics utilities (David Hassell)
- Direct writing of netCDF diagnostic files from the UM (Jeff Cole).
- Implementing XIOS in the UM, and adapting it to handle model ensembles (eCSE project with Rupert Nash at EPCC).
- UM performance on commercial cloud systems (Simon Wilson).



Project support

CMS also provides dedicated computational science effort for various modelling-intensive projects, including: PRIMAVERA, UKESM, VERA, SWAMMA, ParaCon, IMPALA etc. This involves managing experiments and data, software development and code optimisation.

