SADIE L. BARTHOLOMEW

Computational scientist | Open-source contributor

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<redacted for public CV>

Reading, Berkshire, UK



PROFESSIONAL EXPERIENCE IN COMPUTING

Computational Scientist

[Jan. 2020 - present]

National Centre for Atmospheric Science, Computational Modelling Services group, based at University of Reading Dept. of Meteorology

Core work, towards two strands of Horizon 2020 project IS-ENES3:

- Work relating to the CF Conventions standard: developing, optimising
 and providing user services for cf-python, an earth science data
 analysis library, and supporting packages, plus general support, e.g. as
 a member of the 'Information Management and Support' team.
- Engineering infrastructure and supporting workflows for ES-DOC (the Earth System Documentation project), e.g. with responsibility for the CMIP6 simulation machine and performance end-to-end workflow.

Other and wider work undertaken as part of, and/or aligned with, role:

- Community-building as Knowledge Exchange Coordinator for the ExCALIBUR research programme project ExCALIData.
- Received a Fellowship from Software Sustainability Institute (2022 cohort), providing funding towards role-aligned training events.
- Educating (qualified as a Certified Instructor for The Carpentries), e.g.
 - Planned and delivered sessions for the ESiWACE Summer School on Effective HPC for Climate and Weather, held August 2020 and 2021.
 - Co-delivery and resource development for CF Conventions Training (Sept. 2022) and the NCAS *Data Analysis Tools* day-long course.
- Independent analysis of CF Standard Names to further others' efforts.
- Recruitment activities: shortlisting, interviewing and candidate assessment, as part of a panel, for four separate NCAS-CMS vacancies.
- Ad-hoc work to optimise an epidemiology model in Aug. Oct. 2020:
 - With a small team from NCAS, optimised the performance of a new epidemiology simulation, JUNE, as part of research into COVID-19.
 - Collectively produced an $\mathcal{O}(100)$ latency speedup to the pre-alpha stage, receiving formal acknowledgement in the release paper.
- Active Research Software Engineering community member.

Scientific Software Engineer

[Oct. 2017 - Nov. 2019]

Met Office, Modelling Infrastructure Support Systems team

Developing, maintaining and supporting users of the infrastructure systems cylc, rose and fcm used to configure and run scientific software for both operational forecasting and research. For example:

- implemented suite host selection and asymmetric cryptography in, and wrote a syntax lexer and software-checking utility for, cylc;
- converted the entire cylc documentation from raw LATEX to Sphinx;
- overhauled web applications, including porting a Python 2 rose utility utilising the cherrypy web framework to Python 3 and tornado;
- registered numerous bug reports, bug fixes, user requests, and ideas;
- co-delivered internal training courses and an internal update seminar.

FURTHER OPEN-SOURCE CONTRIBUTIONS...

...to those made as part of core work for employed roles. Only notable items are listed; for a full record see the GitHub user *sadielbartholomew*.

TECHNICAL SKILLS

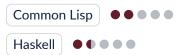
Key: **●** ability self-assessment | ★ preferred

PROGRAMMING LANGUAGES:

• Professional and/or academic use of:



• Recreational use of, as well as the above:



\rightarrow notable Python ecosystem competence:

NumPy	SciPy	Dask	ma	atplotlib
Jupyter	Sphinx	mpi4p	ру	Numba
Airflow	Tornado	netcdf4-python		

MARKUP LANGUAGES:

• Intermediate to advanced ability with:

Markdown reStructuredText

HTML YAML LATEX INI

• Basic proficiency with:

	XML	TOML	Emacs Org-mode
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INFRASTRUCTURE AND SYSTEMS:

• OS: Linux ★ Windows

• Version control: git ★ SVN

Development environment: emacs ★

• Scheduling: slurm PBS cron at

• Host: GitHub ★ GitLab Bitbucket

Web technologies: CSS | Vue.js

• Other notable: conda MPI SQL

Reviewer for Journal of Open Source Software

[June 2020+]

• Selected as reviewer for a number of submissions to the journal JOSS, providing feedback to see these through to publication.

Annual completion of *Hacktoberfest* challenge

[Oct. 2018+]

• Winner of prizes for three consecutive years for completing the DigitalOcean open-source initiative *Hacktoberfest* each October.

Open personal project: creativity with matplotlib [2016+]

• Evolving an independent project, creative-matplotlib, showcasing expressive application of the Python visualisation library matplotlib.

PUBLICATIONS IN REFEREED JOURNALS

All published, representing contributions to three different journals:

- V. Sochat et al., 2022, 'The Research Software Encyclopedia: A
 Community Framework to Define Research Software', Journal of Open
 Research Software [10(1), p.2]
 (DOI: 10.5334/jors.359)
- Hassell, D. and Bartholomew, S. L., 2020, 'cfdm: A Python reference implementation of the CF data model', Journal of Open Source Software [5(54), p.2717]
 (DOI: 10.21105/joss.02717)
- H. Oliver et al., 2019, 'Workflow Automation for Cycling Systems', published in Computing in Science & Engineering [21(4), pp.7-21] (DOI: 10.1109/MCSE.2019.2906593)

OTHER NOTABLE WORK EXPERIENCE

Student Research Assistant Coltraco Ultrasonics Ltd

[Dec. 2015 - March 2017]

• Conducting scientific and technical research relating to ultrasonic measurement on a remote, part-time basis, assimilating into reports.

Science and Technology Editor
Palatinate Newspaper; The Bubble Magazine

[2014 - 2015; 2013 - 2014]

• Sourcing and writing articles to deadlines for two separate student publications, receiving the *Hunter Davies Prize for Journalism* in 2014.

EDUCATION

MPhys (Hons) Integrated Masters in Physics [Oct. 2012 - June 2017] **Durham University**

- Final-year computational project entitled 'Searches for boosted top quarks', evaluating and refining top-tagging algorithms implemented in C++, as applied to simulated LHC proton-proton scattering events.
- Undergraduate physics syllabus plus elective masters-level modules on Advanced Quantum Theory, Particle Theory and Cosmology.

Secondary Education

[2007 - 2012]

Ponteland Community High School

- A levels: Physics (A*), Chemistry (A*), Mathematics (A*), Further Mathematics (A), Critical Thinking (A)
- Other: Extended Project Qualification (A*), CREST Gold Award
- GCSE: 11 A* qualifications including French and self-taught History

SOFT SKILLS

Five soft skills to highlight:

International collaboration Curiosity

Continuous learning | Creativity

Presenting in-person & virtually (see below)

SELECTED PRESENTATIONS

(All delivered talks listed on this webpage.)

- 'Status of ES-DOC', presented (individually) virtually at the IS-ENES3 Second General Assembly in October 2021.
- 'Pursuing and supporting reproducible workflows for all with Cylc', co-presented in-person at the Fourth Conference of Research Software Engineering ("RSEConUK 2019") in September 2019.

ENGINEERING EXPERIENCE

Practiced in software engineering processes:

Software development life cycle stages

Use of Tier-1, -2 and -3 HPC facilities

Design patterns | User support

Peer review of code and written proposals

Documentation writing and infrastructure

Continuous integration | DevOps

PROFESSIONAL INTERESTS

Infrastructure relating to (earth) simulation

Metadata | Workflows | Open source

High-performance computing Big data

UX

Data models Performant Python

OTHER INTERESTS

Art Guitar Rock music Chess

Nature Walking Reading Cookery

REFERENCES

Available on request.

RÉSUMÉ METADATA

Last update: October 7, 2022