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NATURAL ENVIRONMENT RESEARCH COUNCIL

Experience hosting (Nuffield) Research Placement students

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CMS weekly meeting, 2024-10-04

Context

- "The **Community for Change** is an initiative to create a lively community of colleagues working to make environmental science more accessible for everyone, by taking part in coordinated engagement activities." See https://ncas.ac.uk/for-staff/change/ for more details.
- The **Nuffield Research Placements scheme**: national scheme to host talented/capable Year 12 students from disadvantaged backgrounds for two weeks over the summer", with help to coordinate by CfC scheme and matched to students by Nuffield local rep. See: https://www.nuffieldresearchplacements.org/

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Who, what and when

Two students from local state schools joined us, both studying sciences and maths (you might have seen them around the building!):

- *Student 1: Natalia,* hoping to study computer science at university in the UK, hosted late July to mid August;
- *Student 2: George*, hoping to study maths at university in the UK or US, hosted in two separate weeks (due to both our constraints), first late August and second early/mid September.

There was the **same goal for both students: to create new code recipes for the cf-python documentation 'Recipes' section**. Quite open-ended and flexible depending on their abilities, motivation and how much they could get done in the time.

Many thanks to Ros, Sharar and Kim Nip for various logistical help!

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What both parties (the students & us) got out of this

NCAS/I got:

Reciprocal benefits! ↔

- new recipes for our cf-python documentation
- several bugs noticed in cf-plot! Natalia even wrote up a few bug reports with my guidance
- mentoring experience
- outreach / engaging with the local community
- (me) learning about VS Code and appreciating difficulty of sourcing good datasets!

The students got:

- new skills and experience in (crash course!) Linux, the terminal, Python esp. conda environments, Python, Jupyter Notebooks, netCDF data, CF Conventions metadata, our cf tools for data analysis
- experience in a real-like research environment to aid boost their university applications
- a life-long mistrust of / frustration with conda, etc.(!)

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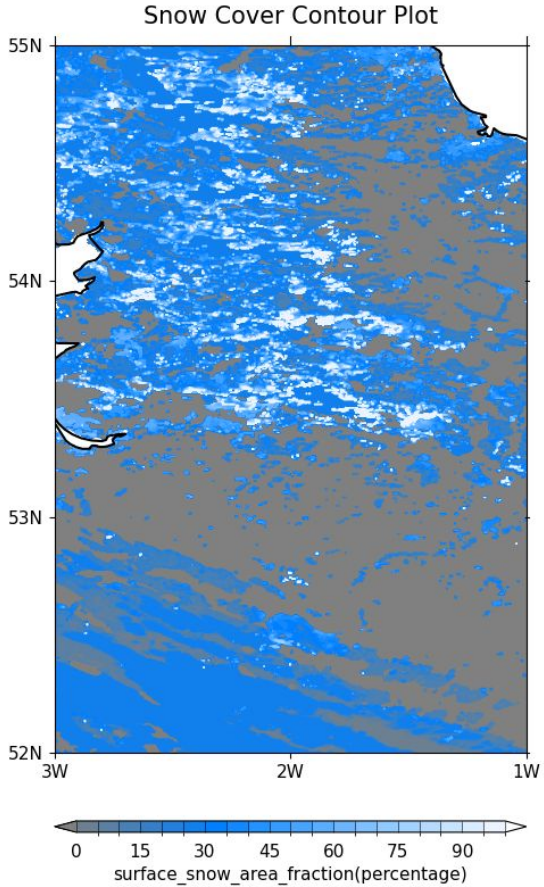
Natalia's Recipes

1. Pure visualisation based: *subplots showcasing data plotted in range of different projections* (PR in review, https://github.com/NCAS-CMS/cf-python/pull/818)
2. Pure visualisation based again: *subplots showcasing data plotted with different colour maps*, explaining important factors to influence a suitable choice e.g. avoiding unintended bias, accessibility (PR in draft form, https://github.com/NCAS-CMS/cf-python/pull/819)
3. Statistics and visualisation based (see right): plotting snow cover then high-res elevation datasets over the UK and *calculating the Pearson correlation coefficient* between these when regridded onto the same grid (PR up soon)

I will share the final poster Natalia submitted via Slack (she agreed I could share it internally), for anyone interested.



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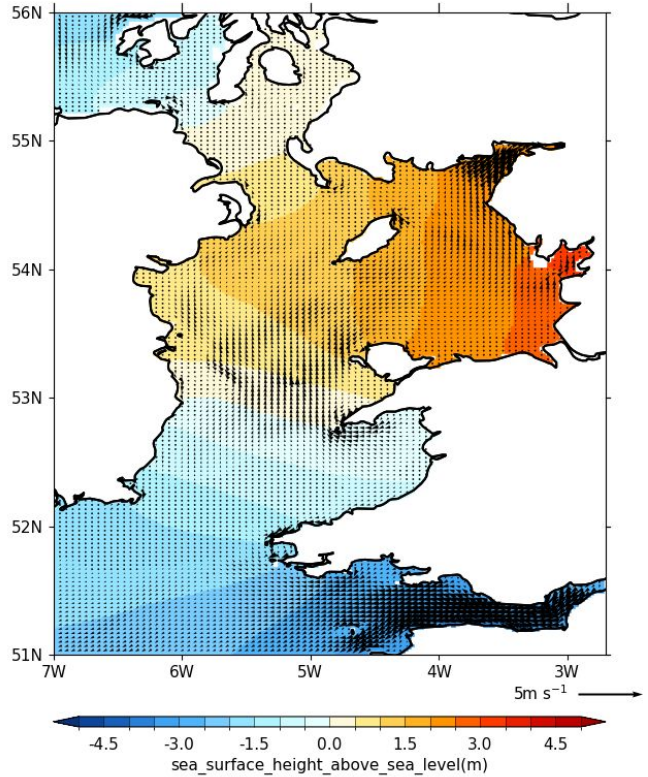
George's Recipes

1. Visualisation and collapse (data reduction) based: making a *line plot of global average sea surface temperature* with lines to pick out trend for *each season* (PR to go up soon)
2. Statistics and visualisation based (see right): plotting ocean currents in the Irish Sea and *calculating the divergence* of these vectors (PR to go up soon)

I have not yet seen George's poster, but will share it on Slack also when I do (assuming/if he gives permission to).



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Consider hosting yourself in future!

Rewarding experience with useful outcomes but *time-consuming* - ensure you can dedicate enough time before signing up.

From my experience with these two students (not a great sample size, of course, but):

- students are very capable, and can produce really impressive work (the kids are alright!) so some really good work can be produced, but they only have two weeks including a big learning curve to start, so ~5-8 days to do the designated work, not much time to do it in
- they have a lot on in the background with university applications approaching, keep this in mind
- it is pretty time consuming to supervise/mentor, with lots of context switching from your day-to-day work, so quite disruptive, needs a lot of attention in the weeks they are here
- a bit of advance planning is very useful: remember to prepare desktop, office, wifi, etc.