cambridge sustainable computing lab

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Green Algorithms Initiative

The Green Algorithms Dashboard

Bringing Carbon Visibility to Research Computing

You can’t reduce what you don’t measure!

- Information and Communication Technology (ICT) sector accounts for ~2-3% of global greenhouse gas emissions
- Comparable to the carbon footprint of aviation!
- Running jobs on HPC is perceived as unlimited or inconsequential
- No visibility = no incentive to change

The opportunity!

- Every HPC job already leaves a detailed trace (via workload managers like SLURM)
- These logs contain just enough information needed to estimate energy use and emissions
- Missing piece: turning raw system data into meaningful, user-facing insights
- The GA Dashboard :
  - Open source monitoring tool
  - Installated locally on HPC
  - Applies the **Green Algorithms methodology**[1]
  - Generates intuitive visualizations of resource use and carbon emissions

[1] L.Lannelongue, J.Grealey, M.Inouye, Green Algorithms: Quantifying the Carbon Footprint of Computation. Adv. Sci.2021, 8, 2100707. https://doi.org/10.1002/advs.202100707

Find out more

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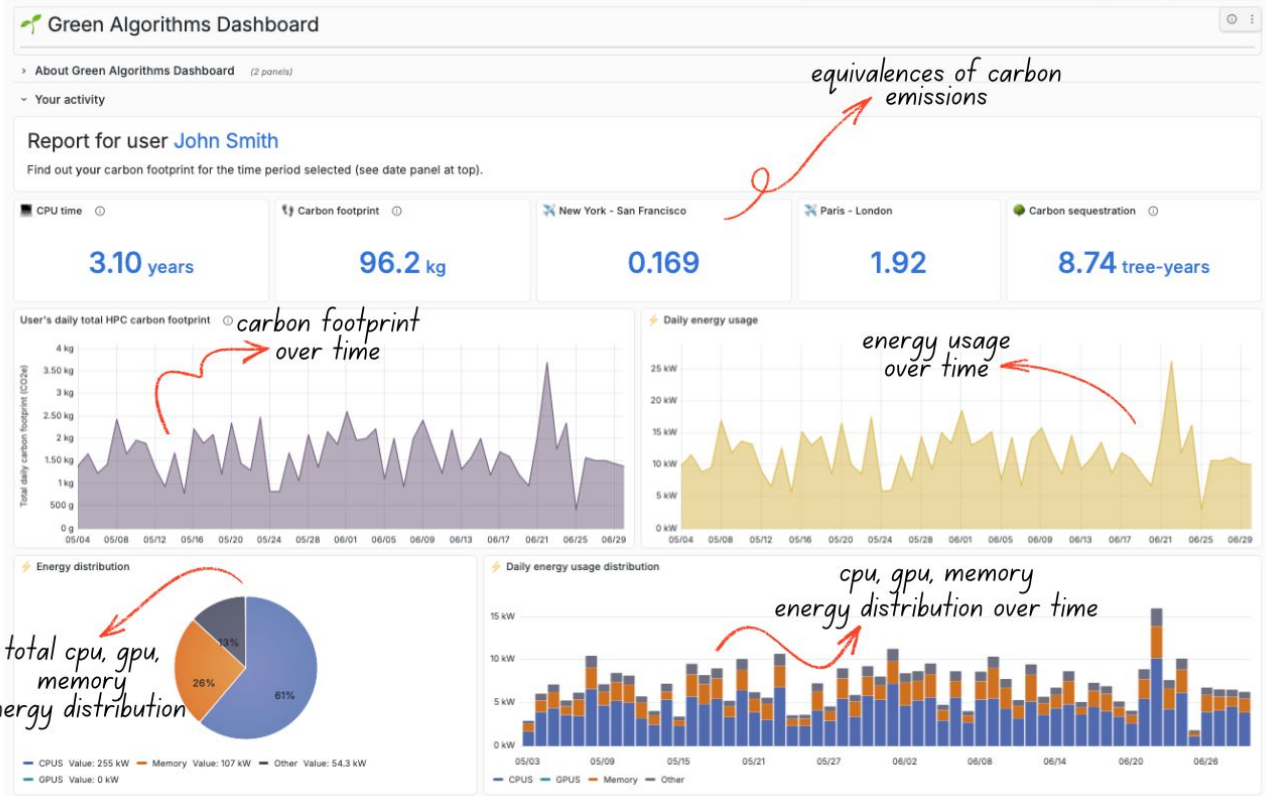
Make your footprint visible

- Pulls straight from SLURM logs
- Track **energy usage, resource consumption (like CPU, GPU, memory) over time**
- Adding perspective through **equivalences of carbon emissions**



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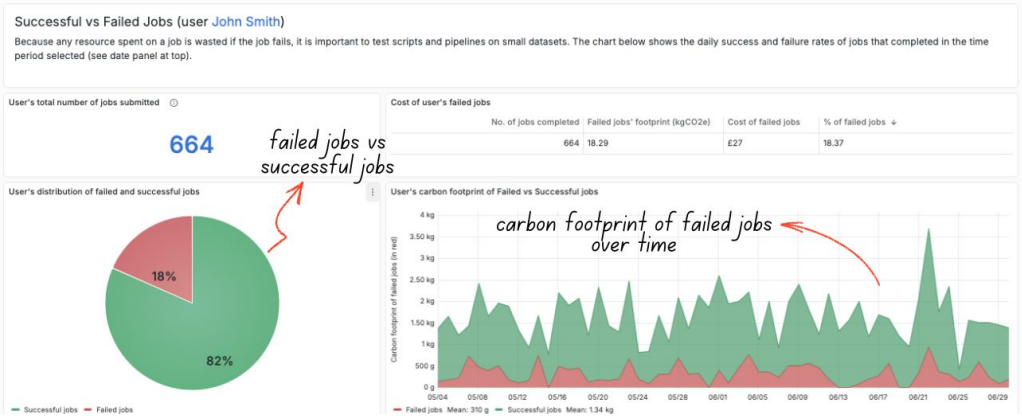
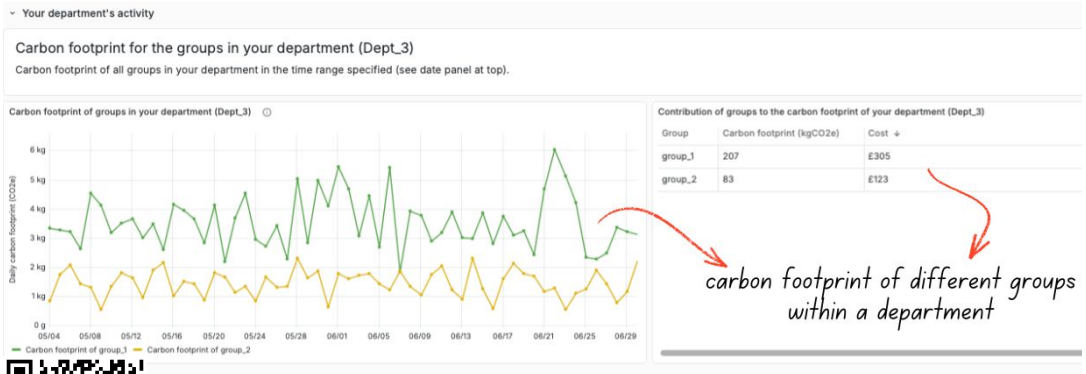
- Track emissions from **failed jobs** - compare with successful ones
- Bigger picture through **group, department, institution** sections





- **All data stays local**, nothing leaves your HPC system
- Real-time carbon intensity for UK clusters

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Github repo:
https://github.com/Cambridge-Sustainable-Computing-Lab/Green-Algorithms-HPCdashboard

Website:
https://www.green-algorithms.org/dashboard

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