



Scaling up CATS, The *Climate-Aware Task Scheduler*, for cluster computing and international reach

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CATS is a Python library and command-line **tool that calculates the optimal time to run a compute job to minimise its carbon intensity**. Version 1 targets local jobs while the upcoming Version 2 will support use on clusters through integration with batch scheduling systems (Slurm at first). It is not the only carbon-aware scheduling tool, but offers a lightweight general solution designed to be user friendly that could e.g. serve educational purpose:

expected job runtime *job location as a UK* postcode* *optional plot of intensity series*

```
$ cats --duration 3600 --location "SW1A" --plot
```

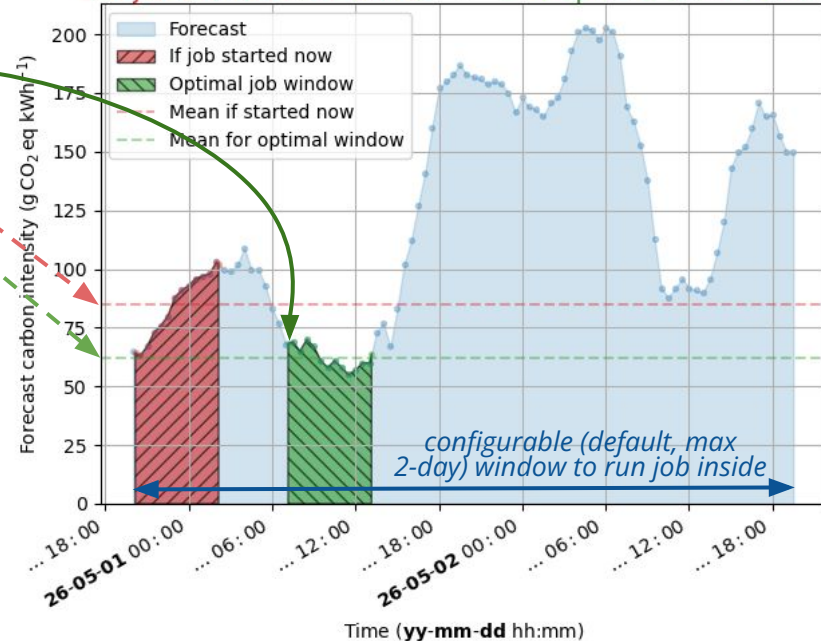
Best job start time = 2026-05-01 08:09:11
Carbon intensity if job started now = 84.80 gCO₂eq/kWh
Carbon intensity at optimal time = 61.93 gCO₂eq/kWh

CATS can optionally schedule the job to run at the optimal time via extra arguments `--scheduler` and `--command`, with 'at' and 'sbatch' supported in v1, e.g:

```
<command above> --scheduler at --command 'python work.py'
```

With Slurm support for cluster use in v2, we aim to develop a 'green' queue incorporating CATS into volunteer HPC systems.

Projected carbon intensity (g CO₂ eq kWh⁻¹) mean...
...if job started now: 84.80 → ...at optimal time: 61.93



Help us find APIs!

*CATS is constrained by availability of APIs for electricity grid forecasts so at present only works in the UK.

Please let us know using the QR code if you know of any suitable APIs for other countries or areas!



Install: `pip install climate-aware-task-scheduler`

Paper (to cite): see QR code, Bartholomew et al. (2025), *Journal of Open Source Software*

Codebase: github.com/GreenScheduler/cats

Docs: cats.readthedocs.io

