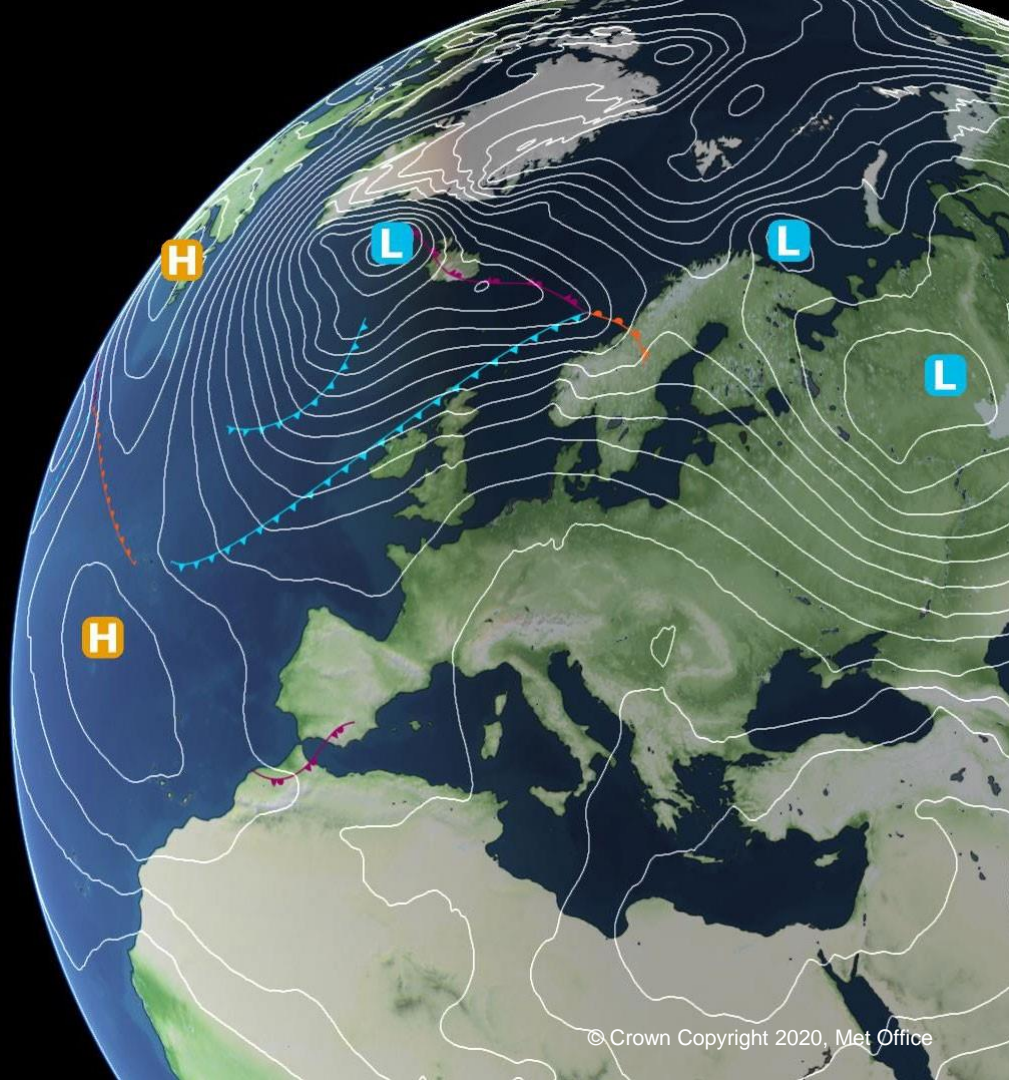


OpenMP in grid_stat

M. Glover

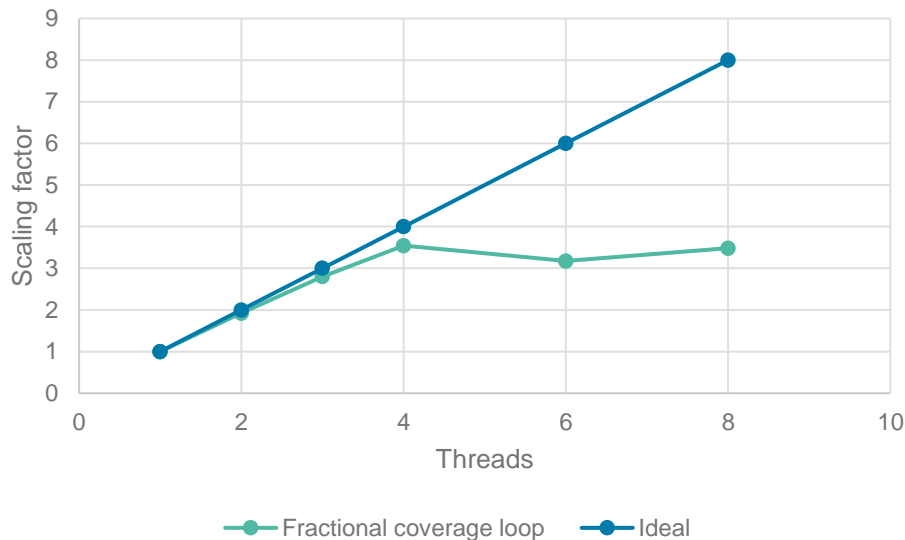


Document control

Date	Description
September 2021	Initial version.
November 19, 2021	Add data from v10.1.0-beta4 branch, including Cray XC40 data.

Fractional coverage loop scaling

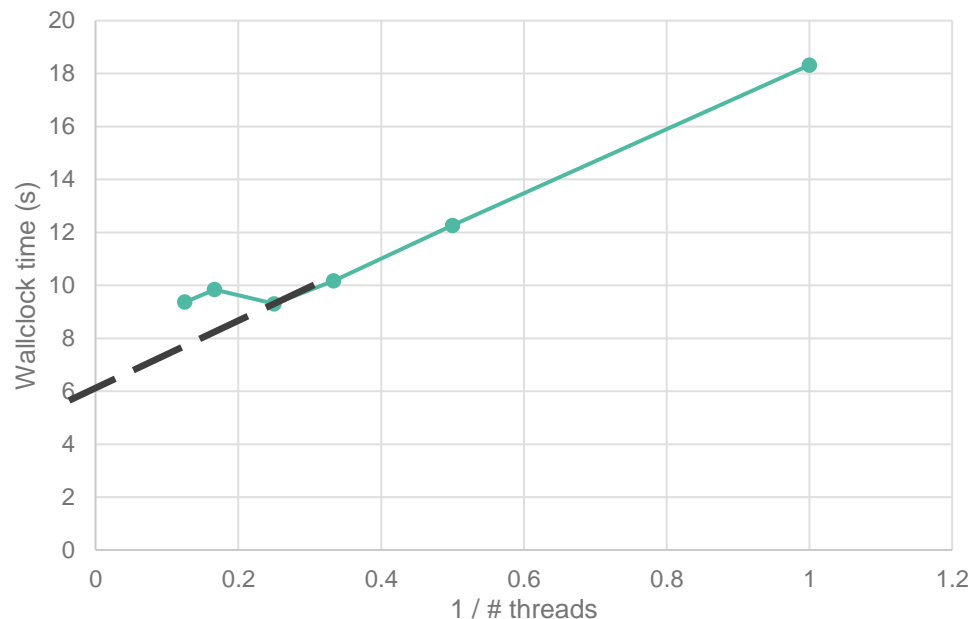
- Version: 10.0.0 + OpenMP changes
- Machine: 4 physical cores
- Flat scaling: includes virtual cores (hyperthreading).
 - *Flatness not surprising!*
- Output stat files match.
(“Diff’d” them.)



Total grid_stat run

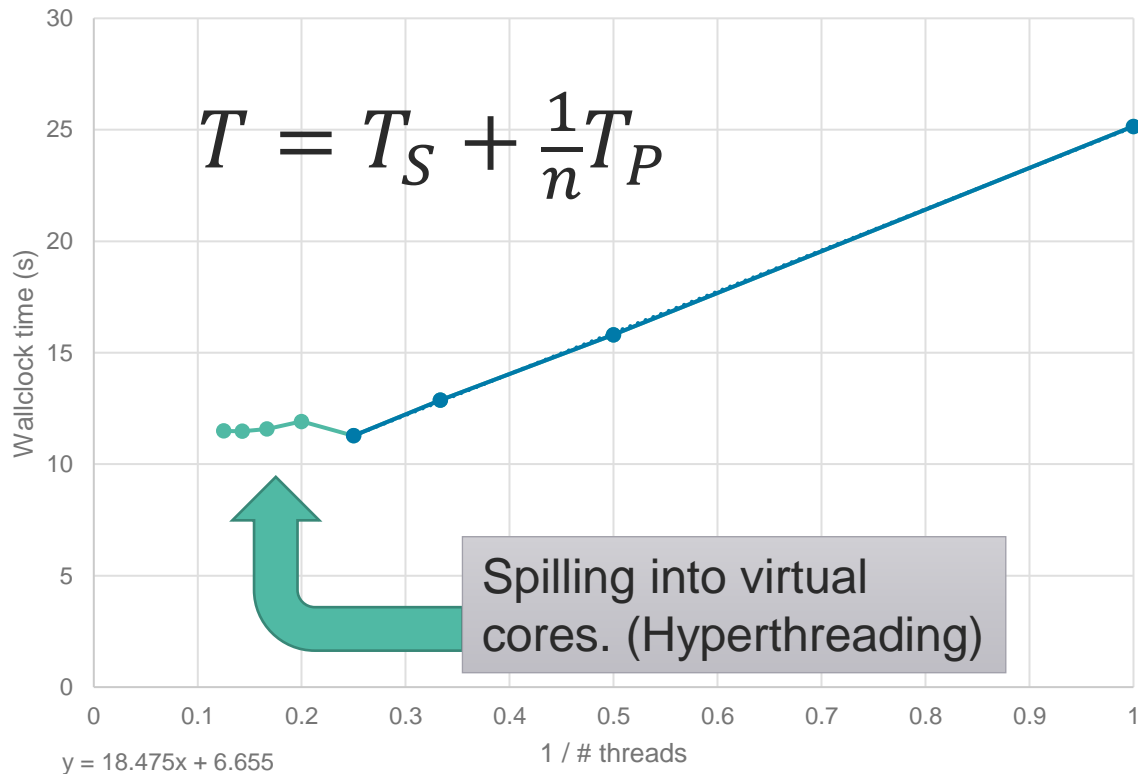
$$T = T_S + \frac{1}{n}T_P$$

- Amdahl's law
- Serial time (unparallelised) approx. 6 seconds (*intercept*).
- Two thirds of the total runtime is parallelised (*gradient*).
- Spilling into virtual cores at > 4 threads. (Leftmost on plot)



Desktop

- 73% parallel time
- 27% serial time



Cray XC40

- 65% parallel time
- 35% serial time

Notes:

- Timings noisy, despite correct affinity.
- Effect of different XC40 nodes each time?

