Contribution ID: **36** Type: **Poster presentation**

Lateral boundary conditions in GungHo

The Met Office is currently developing a next generation dynamical core for weather and climate prediction, known as GungHo. The model uses compatible finite-elements with finite-volume methods for the transport and is designed to be highly scalable and easily adaptable to future supercomputing architectures. A limited-area version of the model is also being developed: a limited-area model runs over a smaller region, rather than the whole globe, and uses lateral boundary conditions (LBCs) prescribed from a driving model. In this poster, we focus on the implementation of LBCs in GungHo.

To apply the LBCs, data derived from the driving model is prescribed in an LBC region around the edge of the limited-area model domain. Dirichlet boundary conditions for the wind increment are also applied to the linear solve, which results from the semi-implicit time discretization and solves for the increments between timesteps.

Results from idealized 'big brother'test cases, which isolate the impact of LBCs, are shown. The experiments run the full GungHo dynamical core using idealized initial conditions such as a baroclinic wave, and then use the LBCs to drive a nested version of the same dynamical model, at the same resolution, and with LBCs applied at every timestep. The results show that the LBCs have been implemented correctly and can therefore provide the foundation of the next-generation regional weather and climate modelling capability at the Met Office.

Primary author: JOHNSON, Christine (Met Office)

Co-author: Dr SHIPWAY, Ben (Met Office)

Presenter: JOHNSON, Christine (Met Office)

Session Classification: Posters

Track Classification: Annual Seminar