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The Planet Simulator: An integrated system of development environment and online visualisation for PC, parallel computer, and cluster.

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The need for graphical user interfaces (GUI) and integrated development environments (IDE) for Earth sytem modelling is obvious. There are general approaches like PRISM that make it possible to use the same GUI and couplers for all types of models compatible to the PRISM standard. On the other hand, models of intermediate complexity (MIC), designed for speed and low resource consumption cannot gain the same profit from general approaches as the comprehensive models.

This talk presents an approach of combining model development environment, graphical user interface, online visualisation and interactive user access on model variables. The implementation is optimized for speed and portability by using only the Xlib (X11R6) library and in the case of multiprocessor machines the message passing interface MPI.

The visualisation speed can reach more than 50 frames per second showing nine windows with model variables in several representations, most of them coloured isoline pictures. The user may change model variables online in the running model. The IDE takes care of compiling, building and running the model. The use of the Xlib maintains full network transparency, so that all processes can either run on the same computer or may be spread over the network.