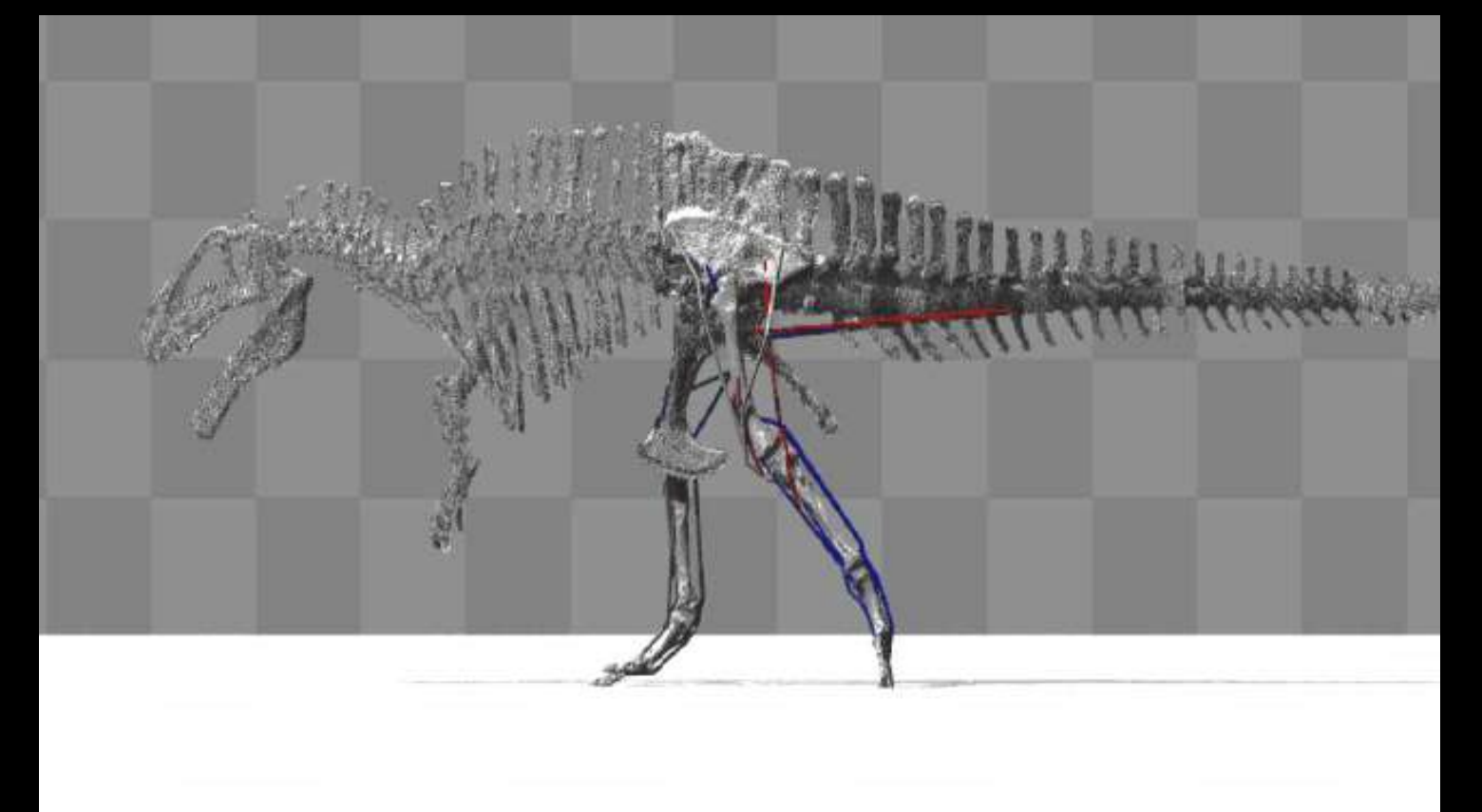
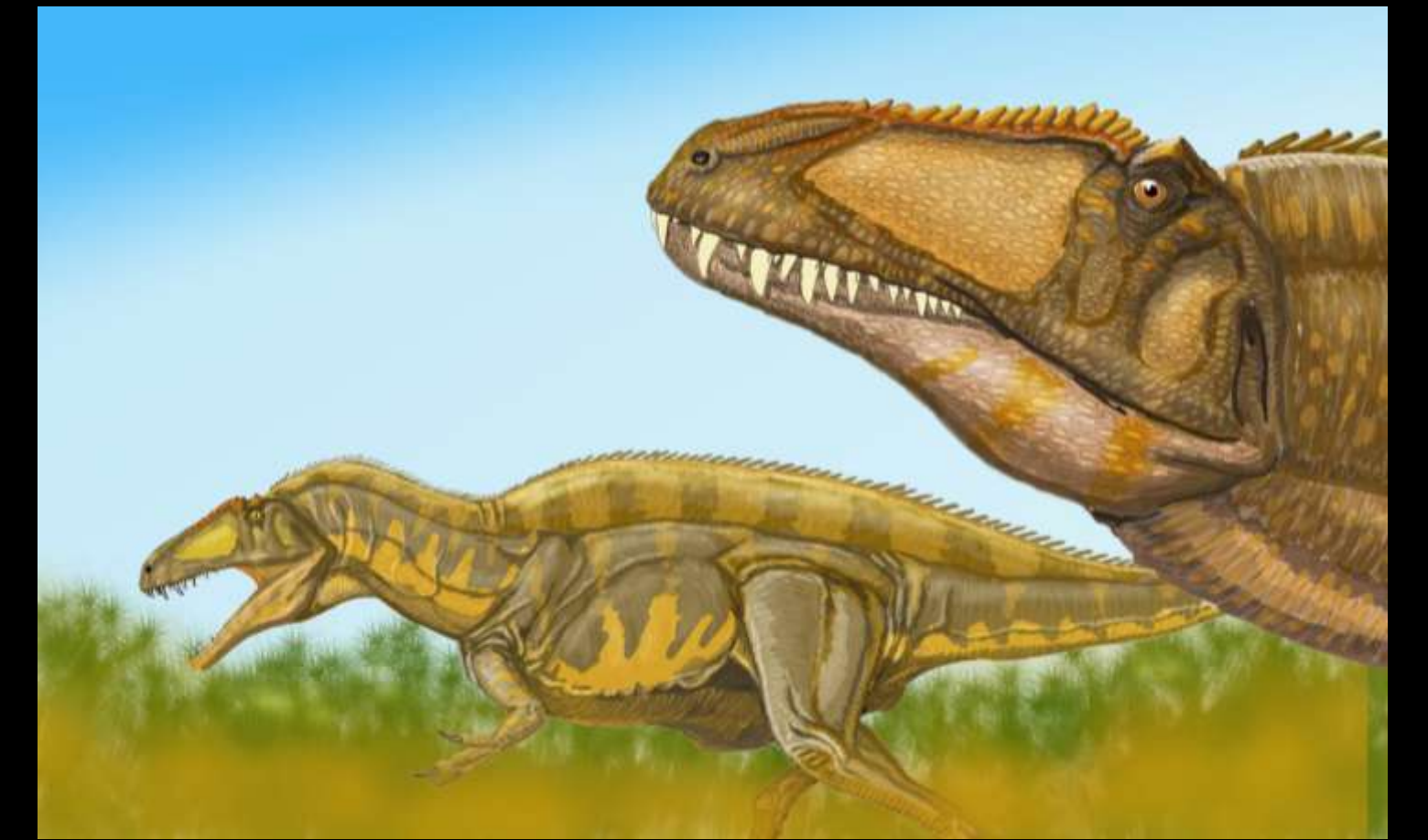


Fossil locomotion: Karl Bates

Animal Simulation Lab, University of Manchester

Karl's PhD involves the use of genetic algorithms to search for appropriate muscle activation patterns for locomotion in bipeds such as hominids, dinosaurs and birds.

Applications of the group's work include estimating running speeds and costs of dinosaurs, model sensitivity analysis and determining the walking stance of early hominids such as "Lucy" *Australopithecus afarensis*.



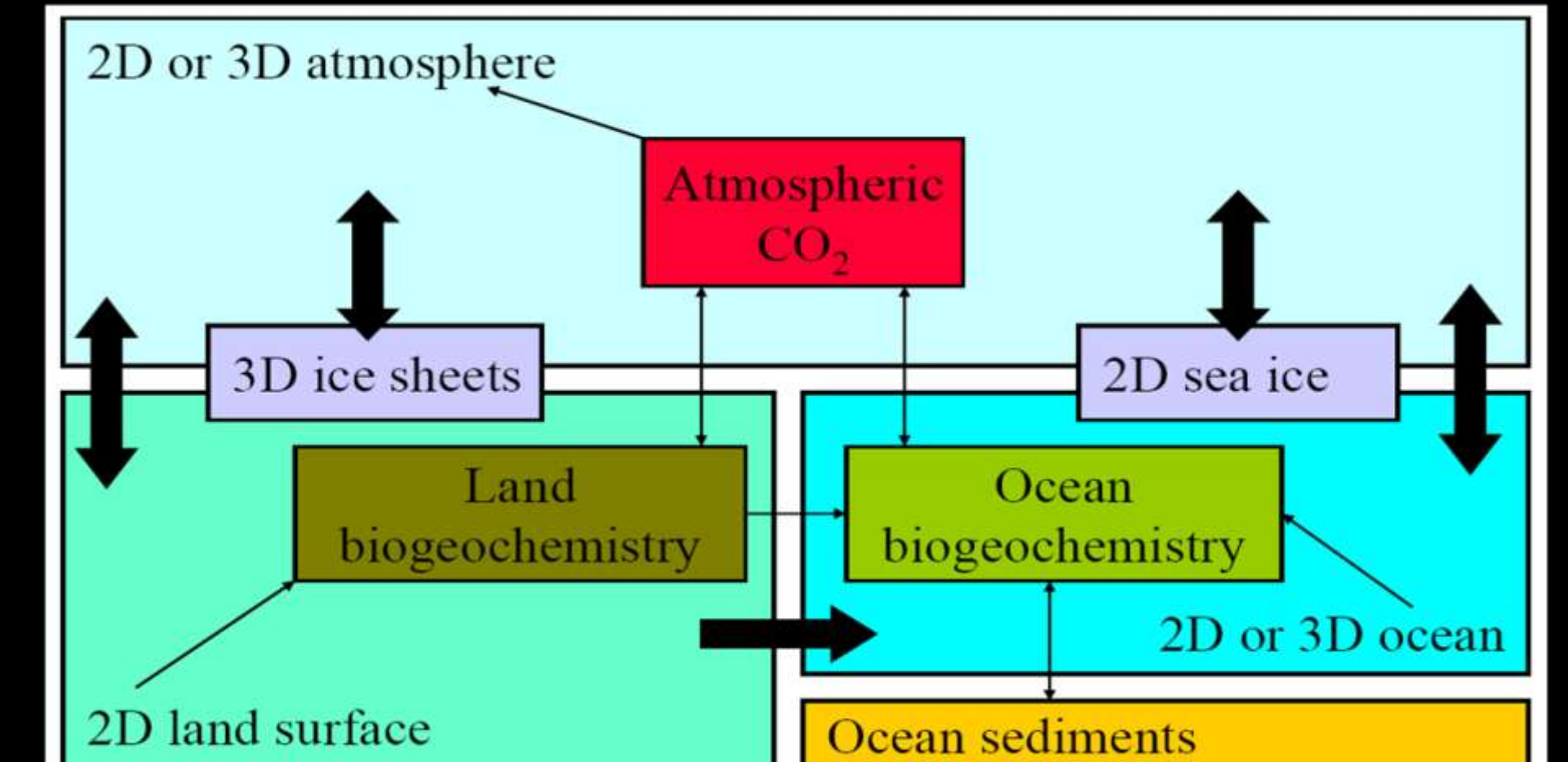
Karl's simulations are computationally expensive. An average 'job' of his on the NGS, using 128 processors, typically consumes around 400 cpu hours. So far Karl has used more than 200,000 cpu hours.

Using NGS resources has allowed Karl to build more sophisticated models than he could using local resources. He's recently published his first results in *J. Vert. Paleontol.*

Studying the stability of our seas

Andrew Price, GENIE project, Southampton

Ever wondered what causes the earth's climate to vary so much? GENIE is a UK-based international collaboration that is attempting to answer this question by studying the factors driving glacial-interglacial cycles during the last million years. The more that is understood about historical processes, the more confident we can be about the predictions climate models make for the future.



GENIE integrates component earth models of varying resolution, dimensionality and complexity for use on the grid



The global conveyor belt of ocean currents

One GENIE study consisted of 12 ensemble studies, 362 simulations covering 428,000 model years. By using the Grid more than five years of computations were completed in just three months.

GENIE users can exploit the NGS from their desktops deploying a variety of computational resources. Additionally the NGS hosts their Oracle database, enabling users to manage and share simulation outputs and metadata.

