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Simulation of Termination II

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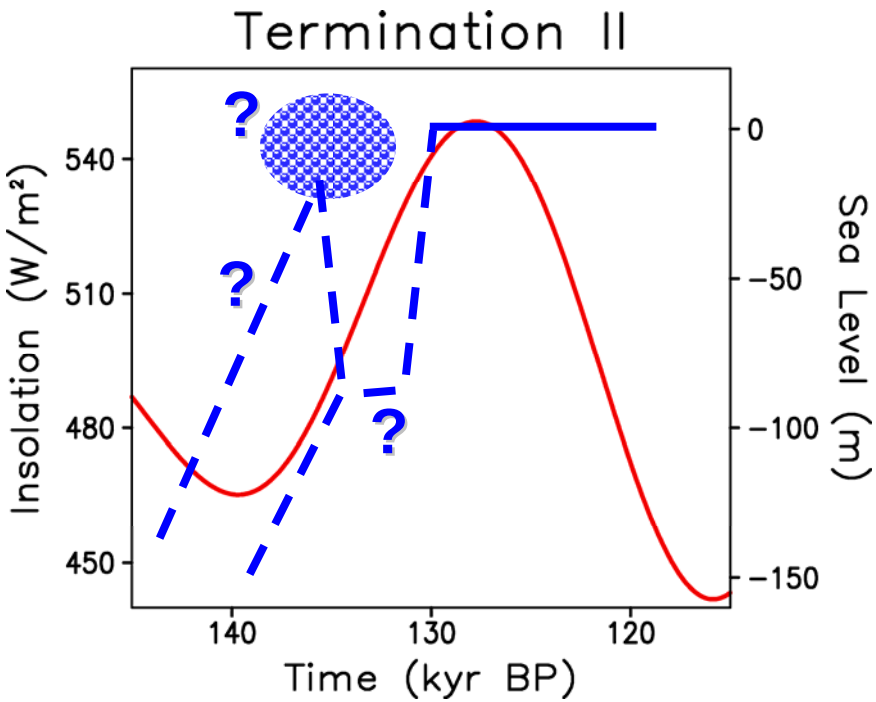
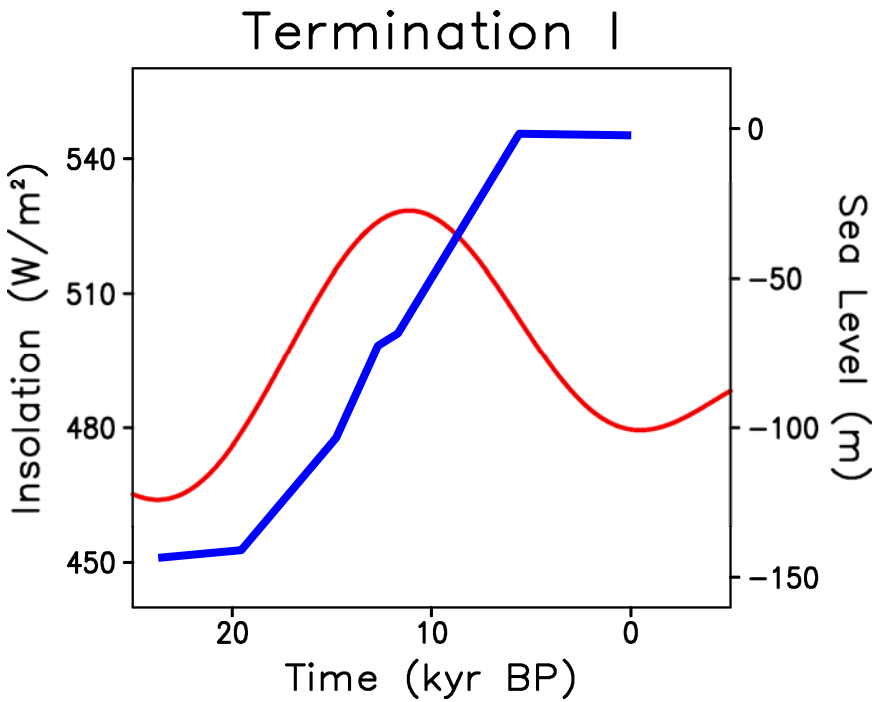
Motivation – the Termination II Problem

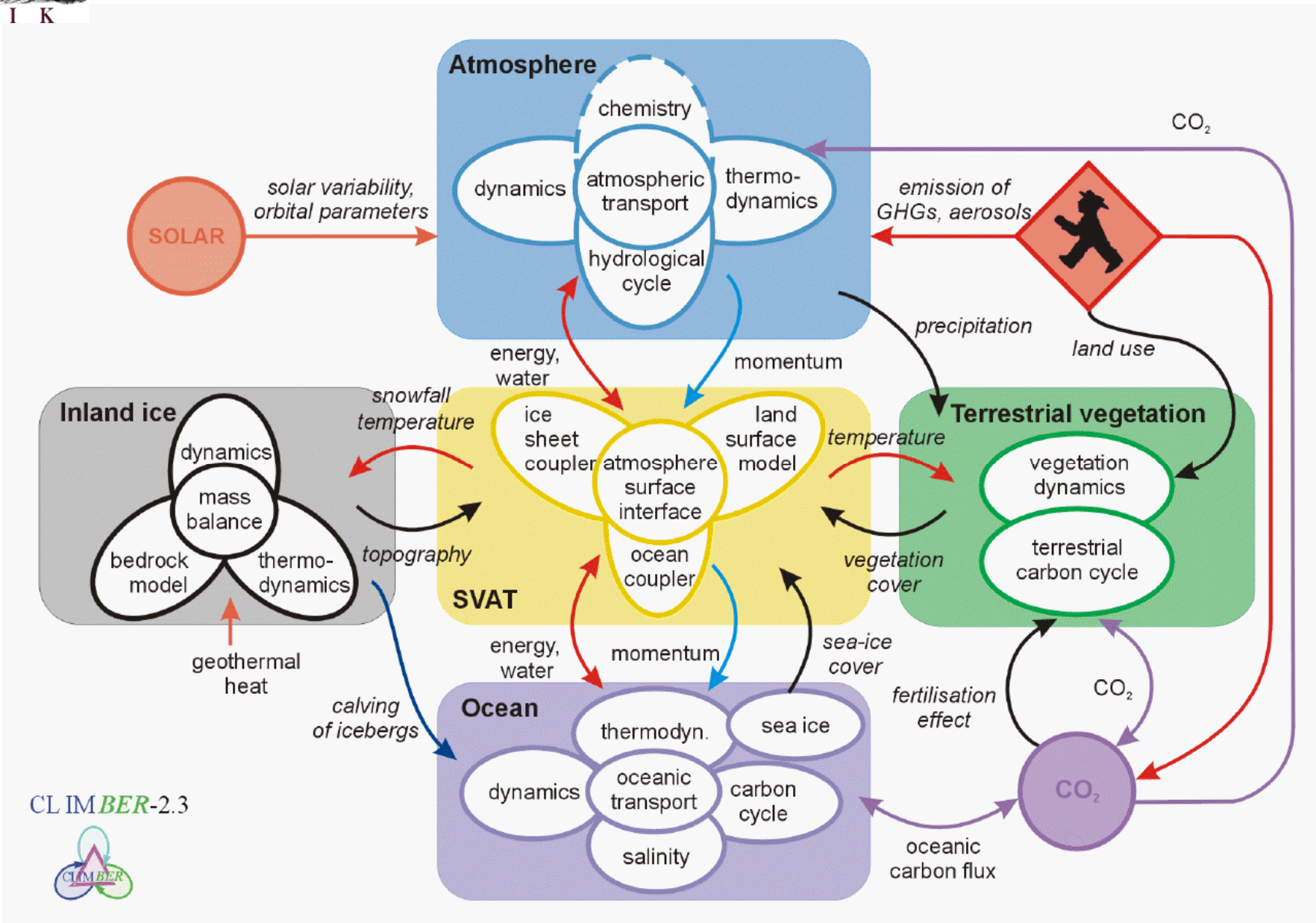




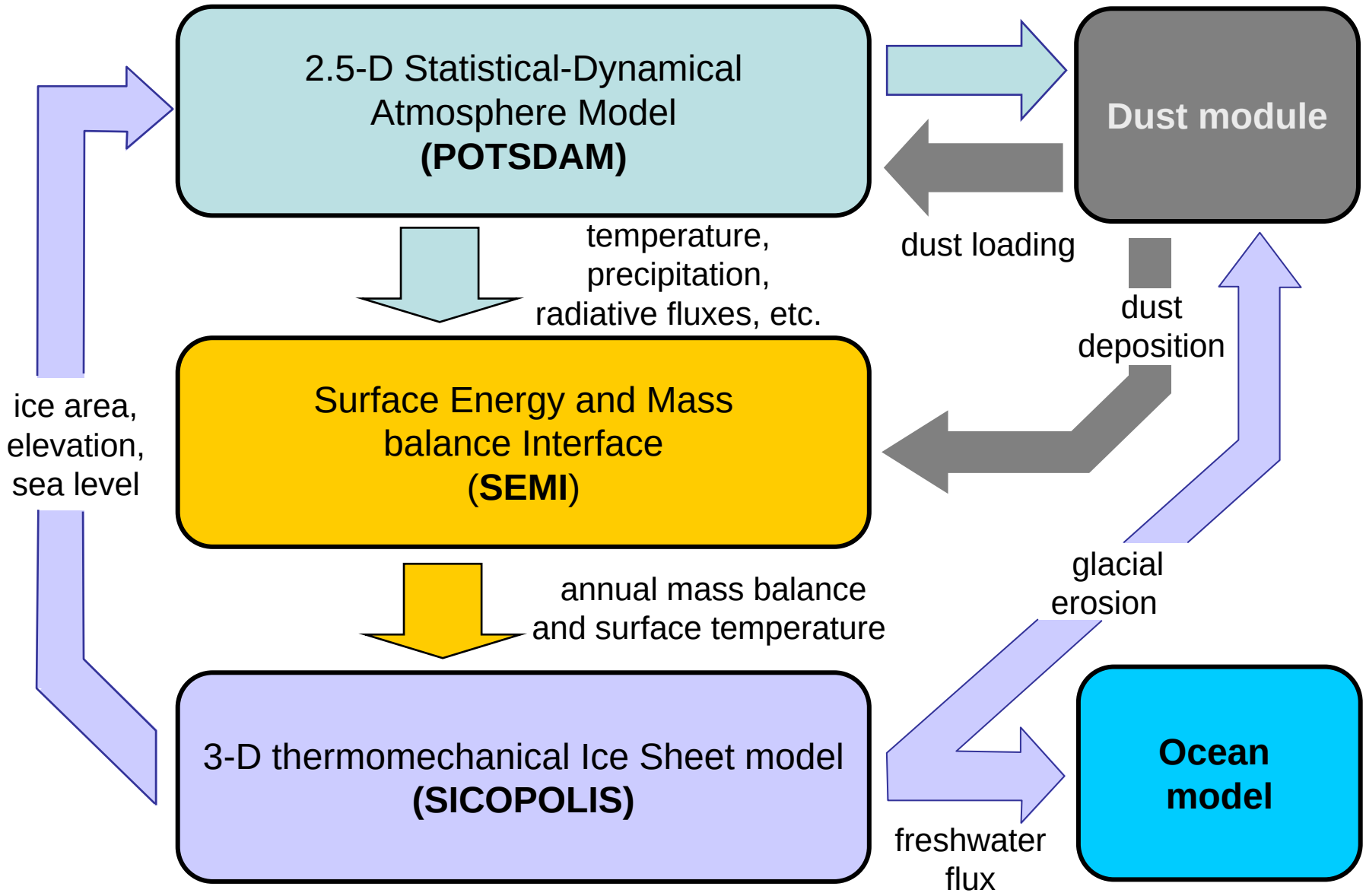
Maximum Summer Insolation at 65° N

Schematic Sea Level Reconstructions

The Model – CLIMBER-2



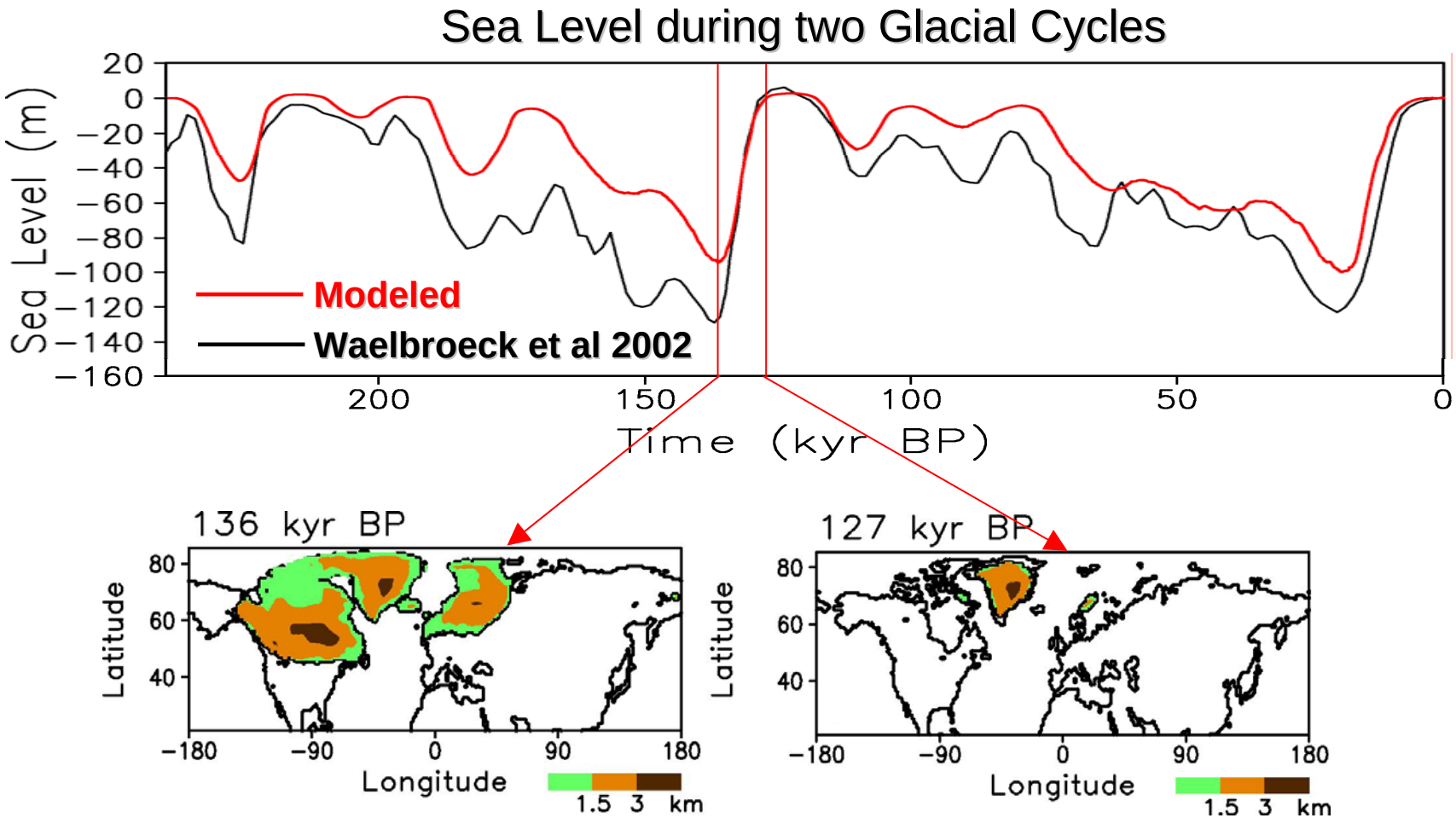
The model – Climate Ice Sheet Coupling



Experimental Setup

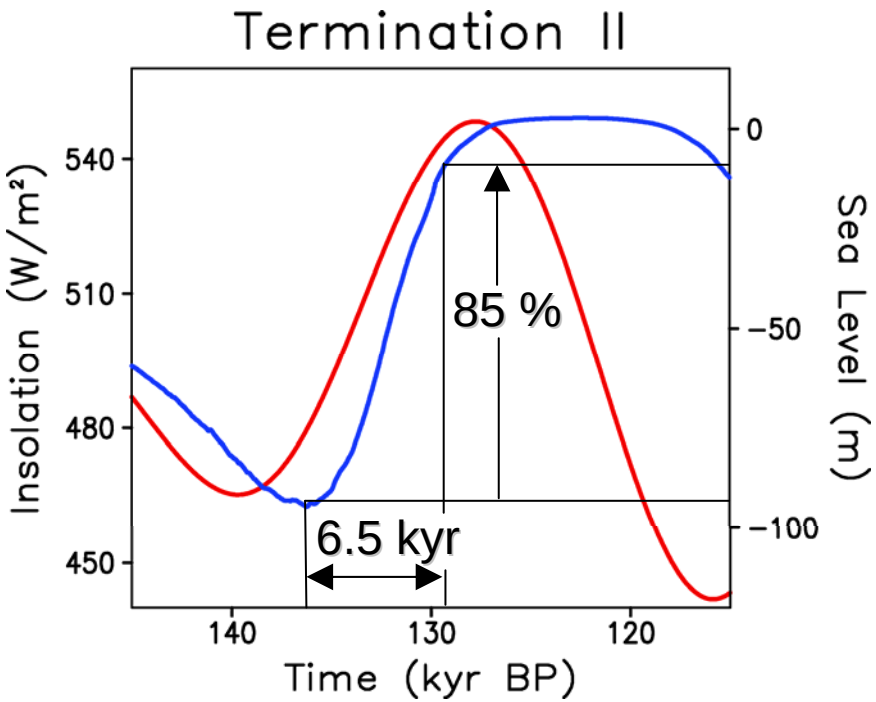
- **Forcings**
  - **External: orbital**
  - **Internal: CO_2 (equivalent) Petit et al. 1999**
- **Simulations**
  - **Glacial cycles with special attention on Termination II (140 to 120 kyr BP)**

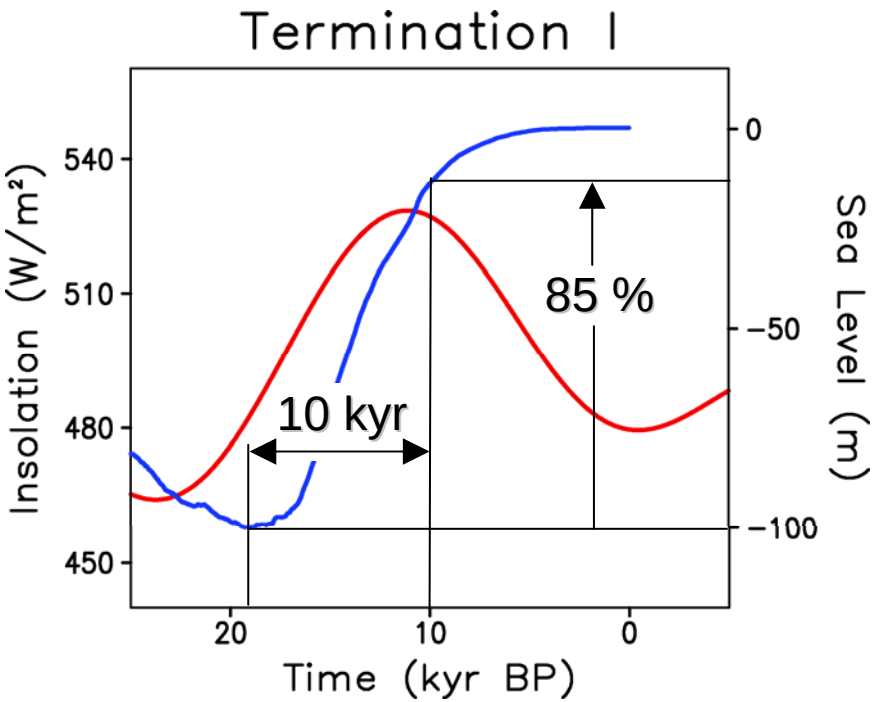
Control Run - Two Glacial Cycles



Modeled Surface Elevation of Ice Sheets at the Beginning and at the End of Termination II

Comparison of simulated Termination II and Termination I



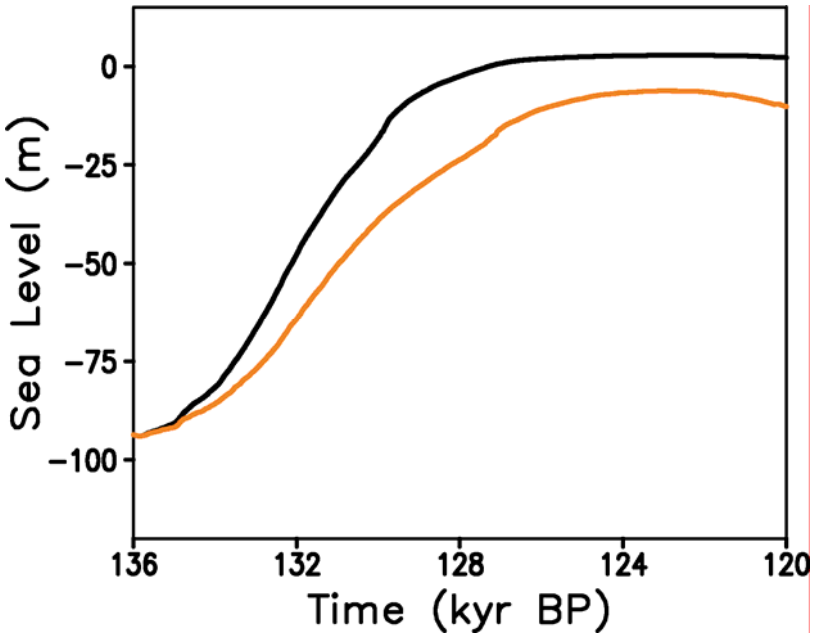


Maximum Summer Insolation at 65° N

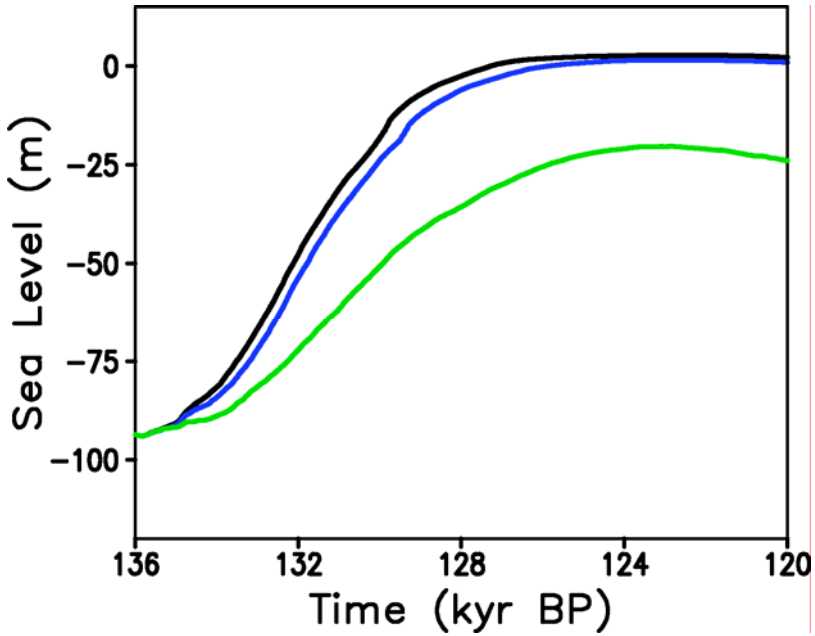
Modeled Sea Level

Role of CO_2, terrestrial Vegetation and SSTs

Role of CO_2



Role of Vegetation and SSTs



— { Control Run: interactive ice sheets, vegetation and ocean; CO_2 raise prescribed

— Constant Glacial CO_2 equivalent

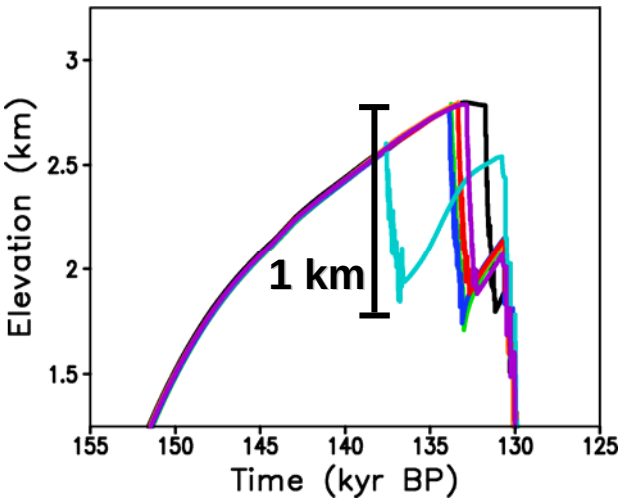
— Vegetation fixed on glacial one

— SSTs fixed on glacial ones

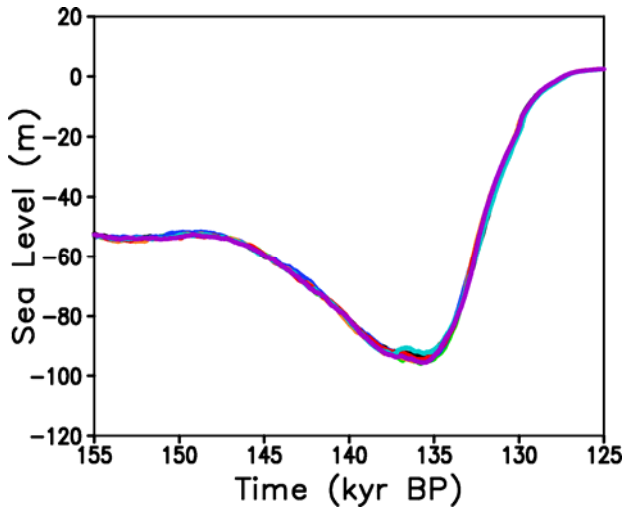
Role of multimillenial Oscillations during Terminations II

Mis 6 in seven different realisa-tions generated by runs through four glacial cycles with varying initial conditions

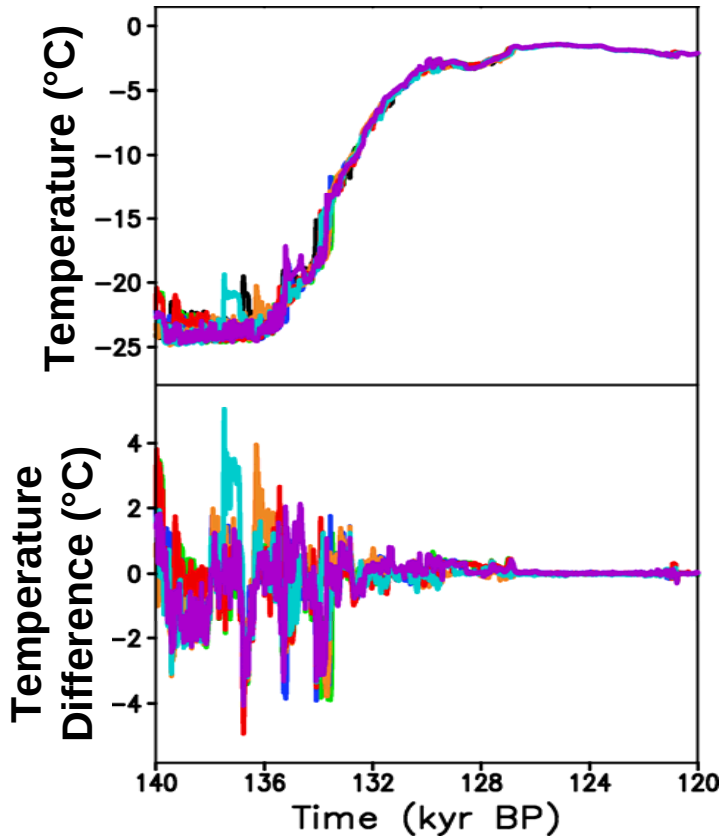
Elevation over Hudson Bay



Sea Level



Greenland Temperature



Conclusions

- The CLIMBER-2-SICOPOLIS model is capable to simulate glacial terminations. In particular, simulated end of Termination II at 130 kyr BP is consistent with the data.

- The interglacial-to-glacial raise in greenhouse gases contributes only little to deglaciation during Termination II.

- Compared to the fully interactive model, constant glacial SSTs results in a moderate reduction of ice retreat during Termination II while constant glacial terrestrial vegetation leads only to a tiny change in deglaciation.

- Multimillenial Oscillations have nearly no impact on Termination II.

Control Run – Termination II

Surface Elevation of the ice sheets