
Eine kurze Einführung in die Analyse von Klimadaten

Tutorium Studienstiftung

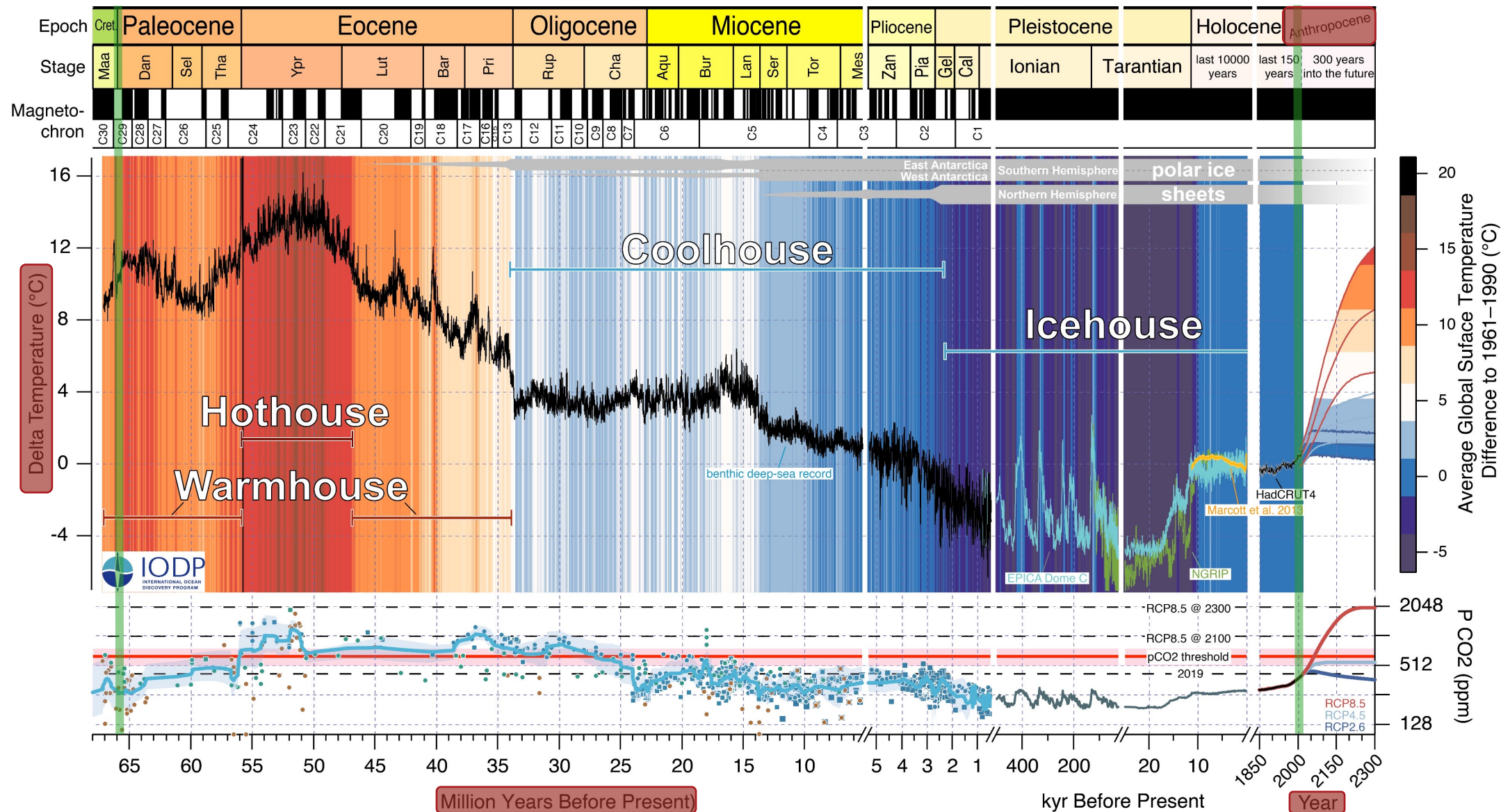
24.05.2022

Christian Stepanek

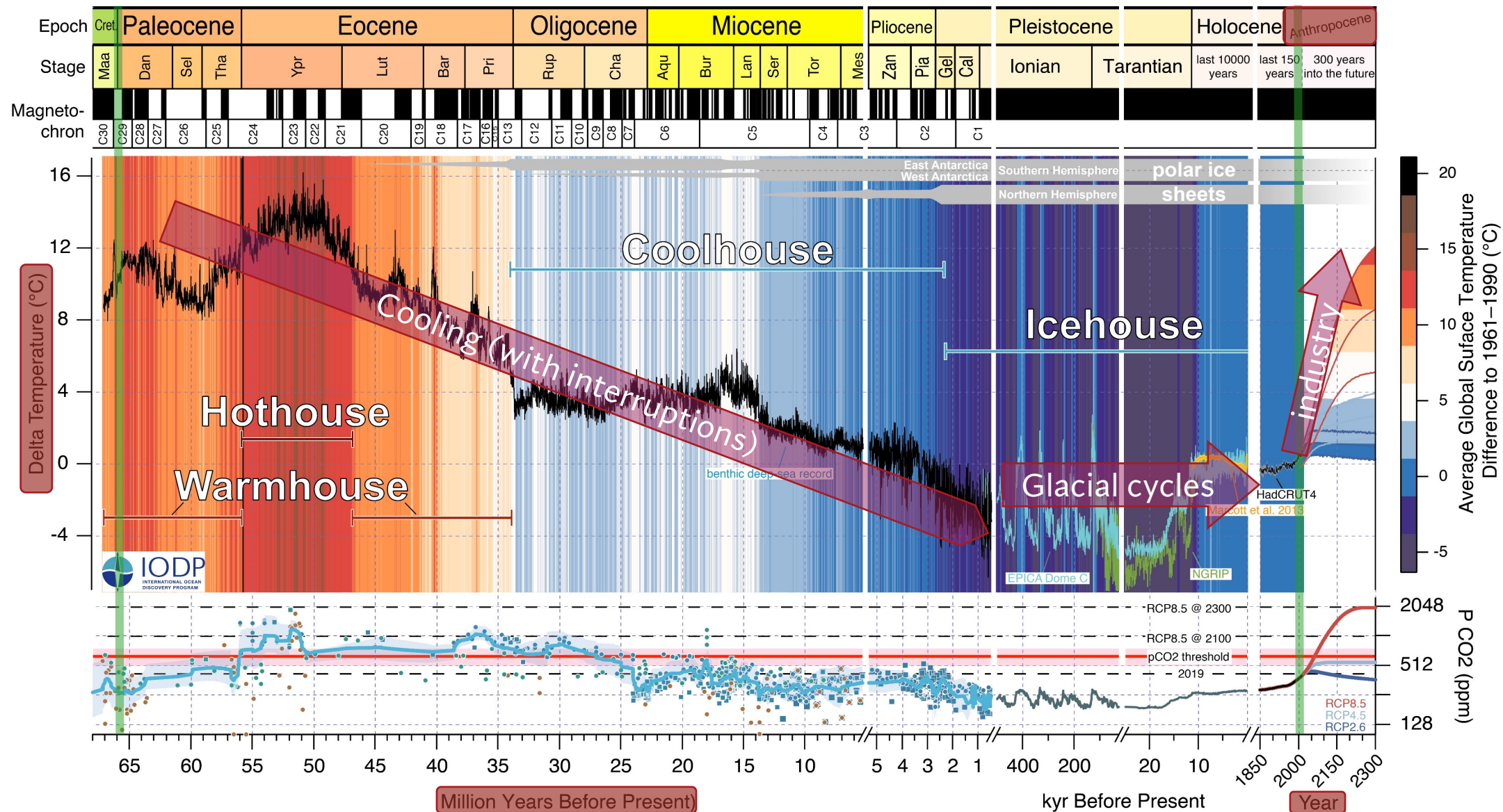
Dynamik des Paläoklimas

Fachbereich Klimawissenschaften

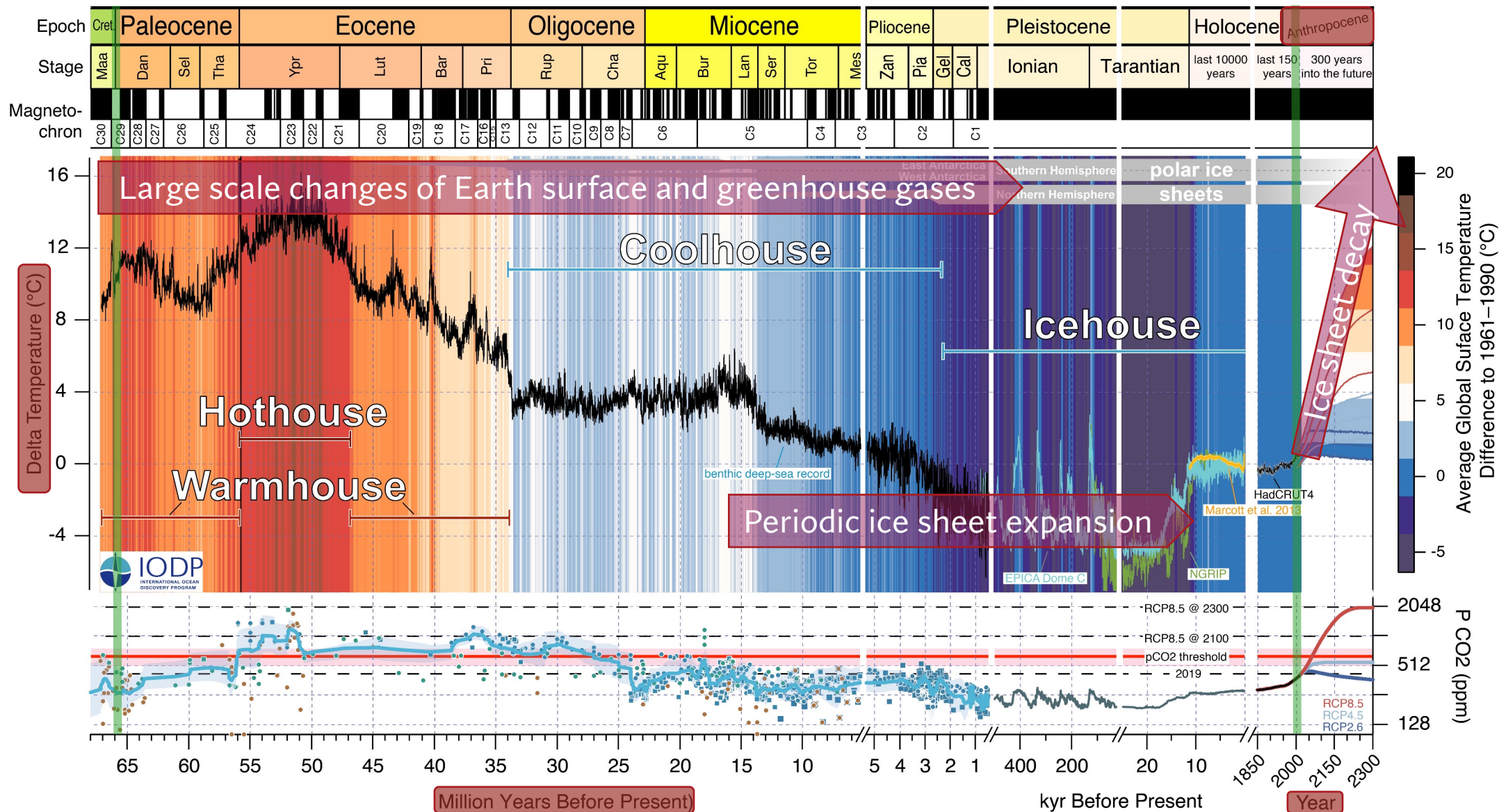
Alfred Wegener Institut – Helmholtz-
Zentrum für Polar und Meeresforschung



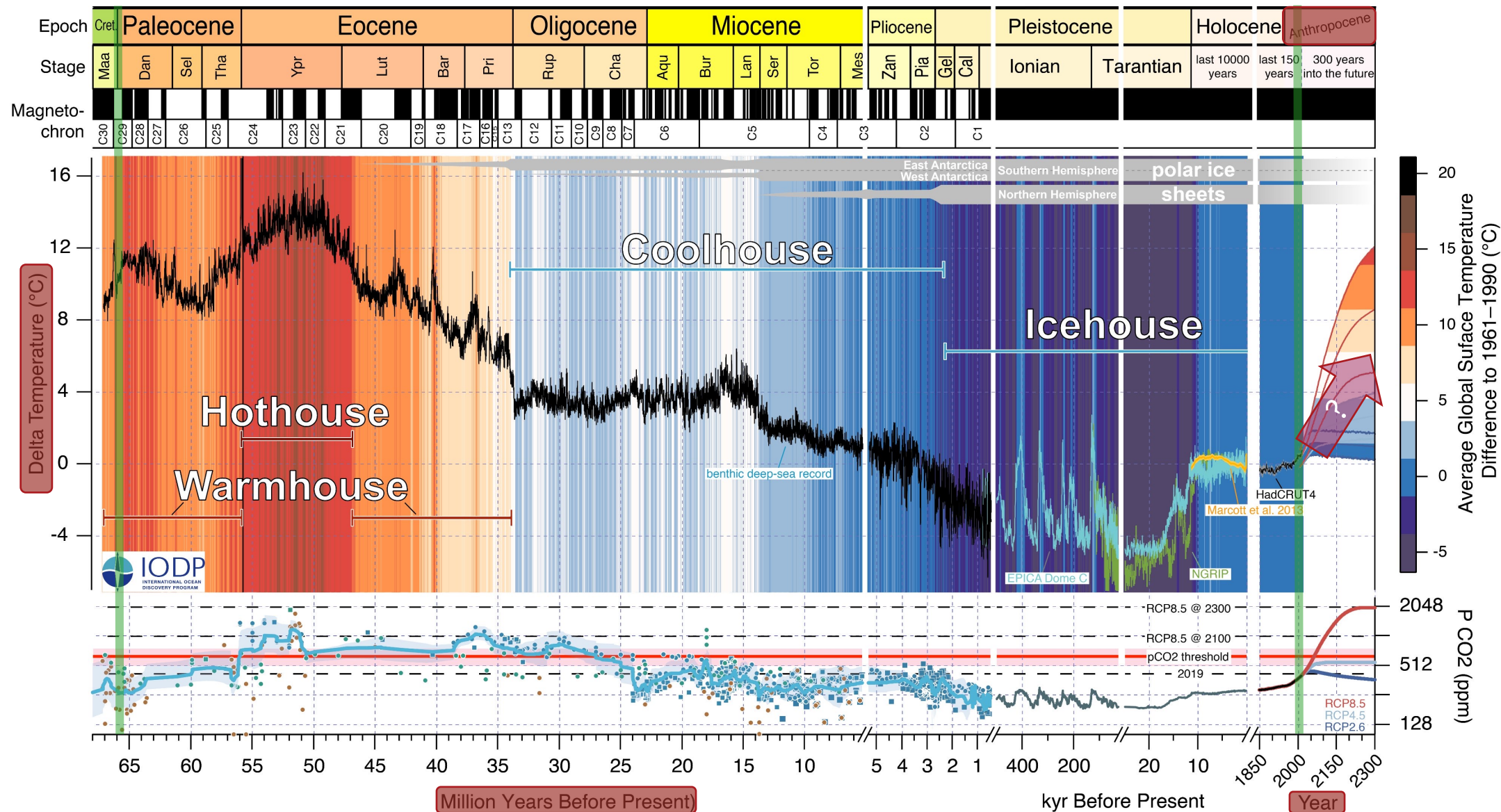
Source: ECORD/IODP (https://twitter.com/ECORD_IODP/status/1407018887523278854/photo/1)



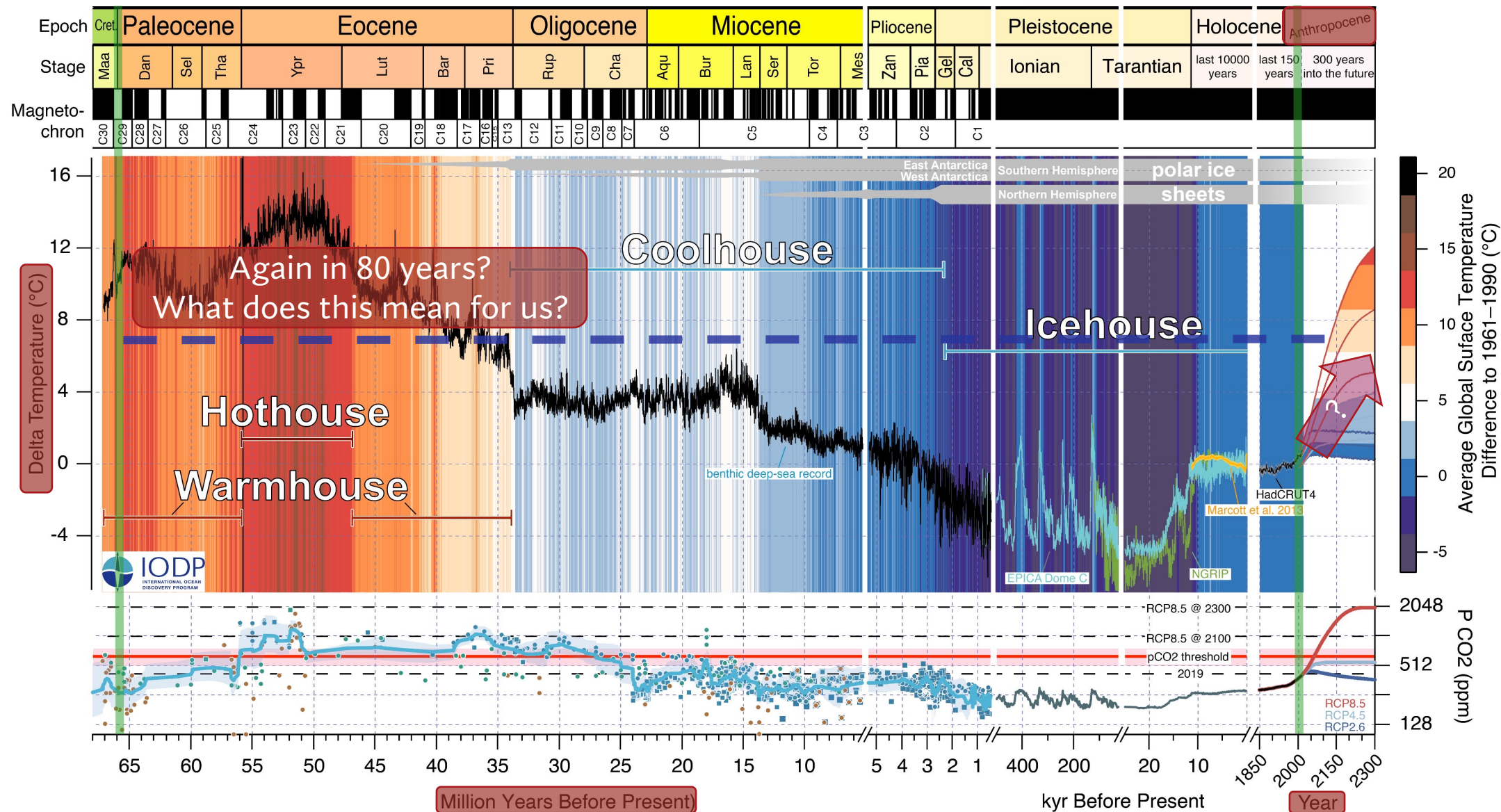
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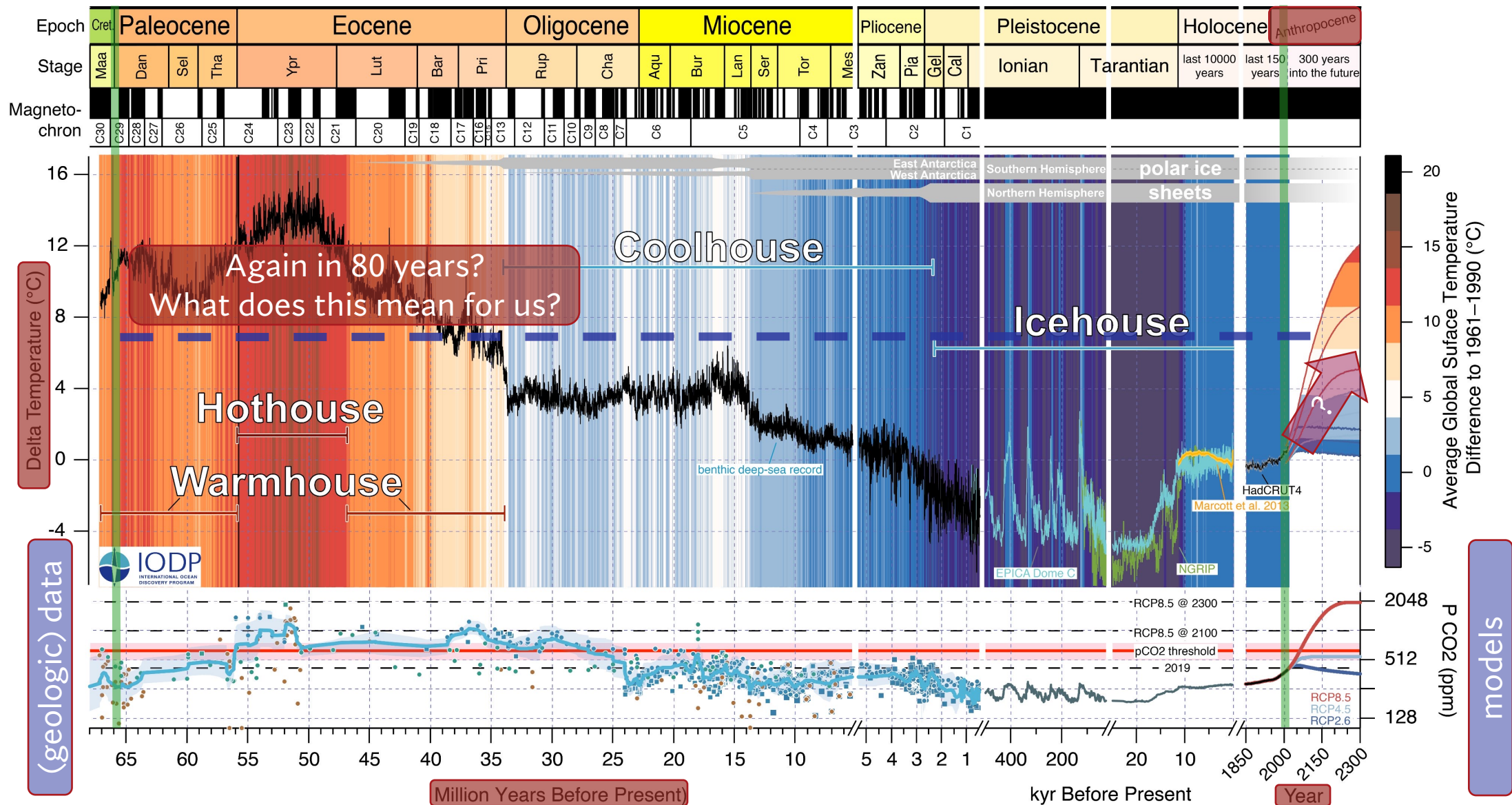
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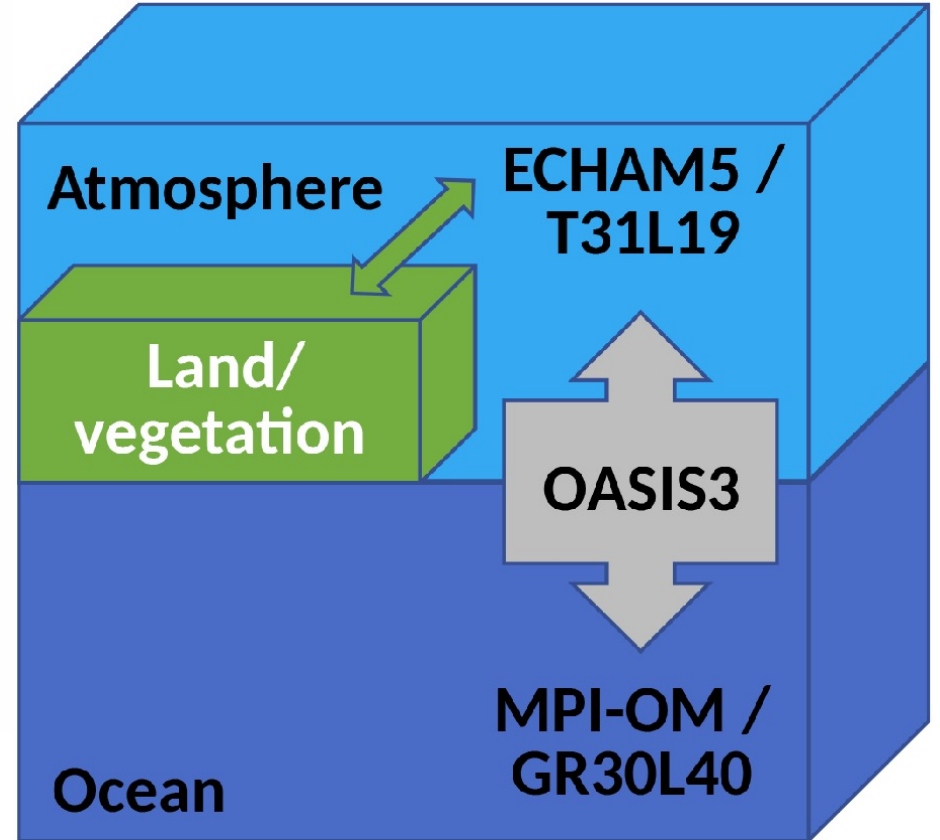
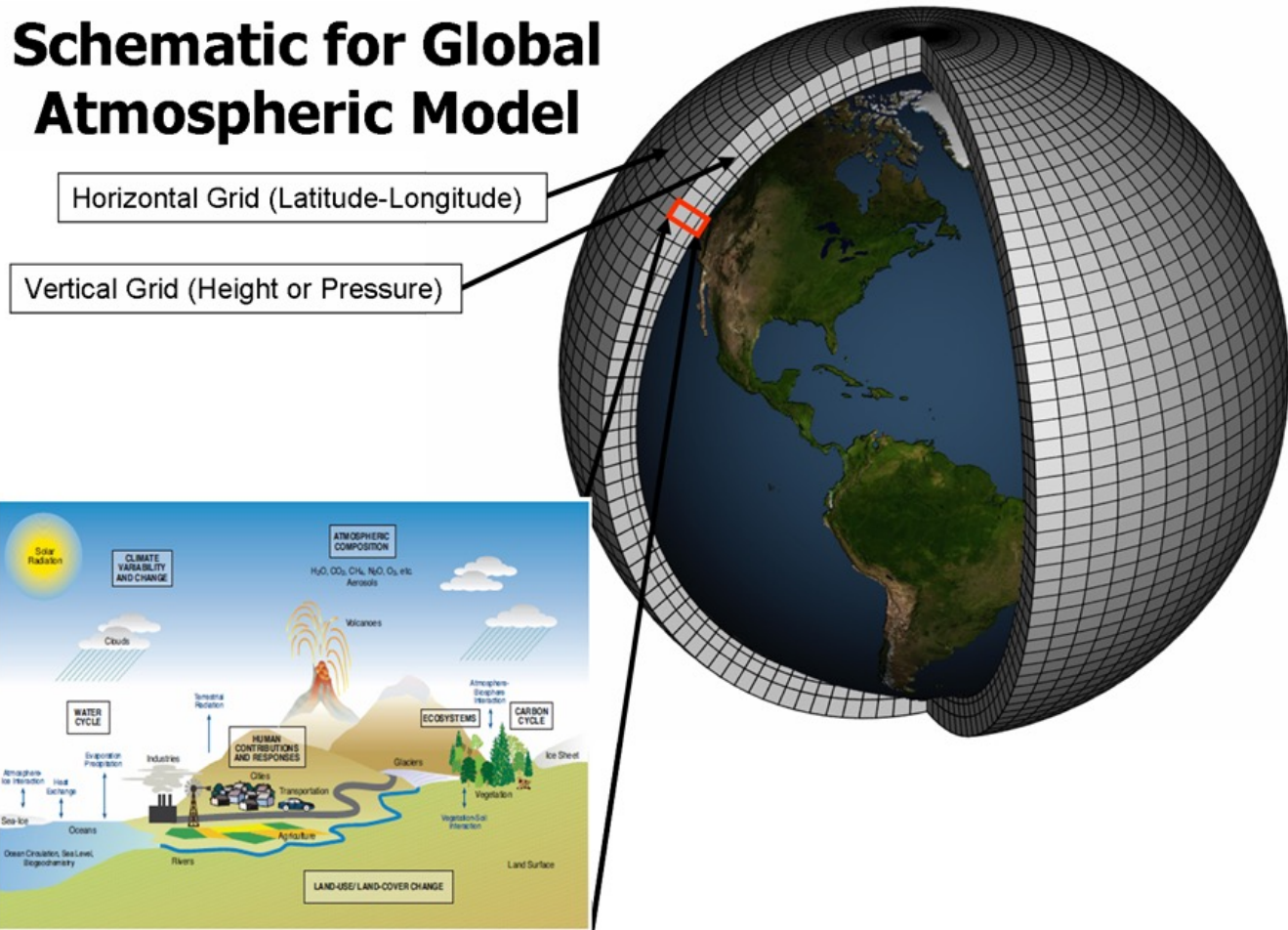


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Schematic for Global Atmospheric Model

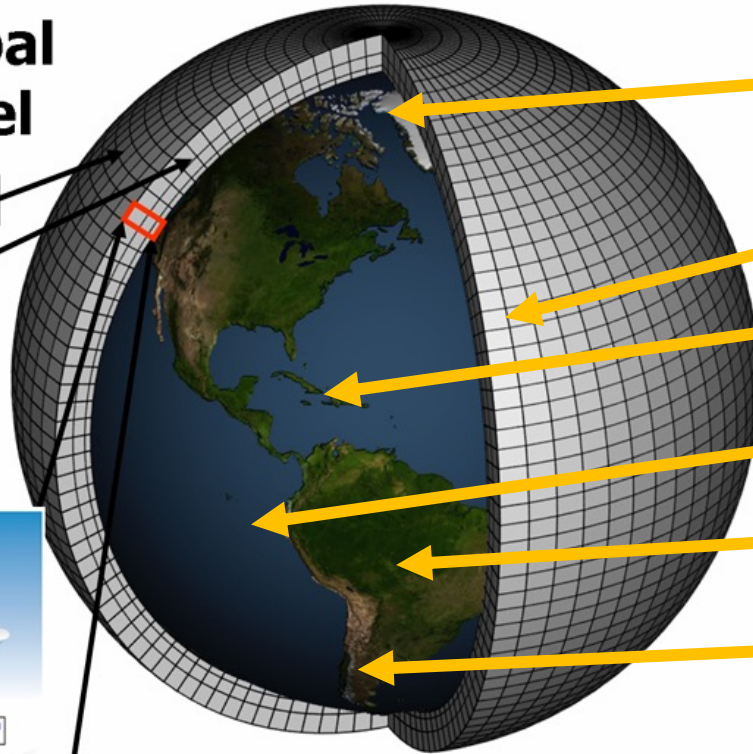


http://celebrating200years.noaa.gov/breakthroughs/climate_model/welcome.html http://www.gfdl.noaa.gov/pix/model_development/climate_modeling/climatemodel.png

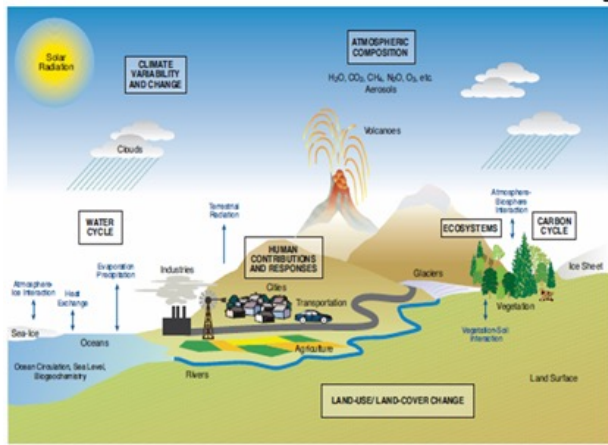
Schematic for Global Atmospheric Model

Horizontal Grid (Latitude-Longitude)

Vertical Grid (Height or Pressure)



- Ice sheets
- Greenhouse gases
- Land/Ocean distribution
- Gateways
- Vegetation
- Mountain chains
- ...

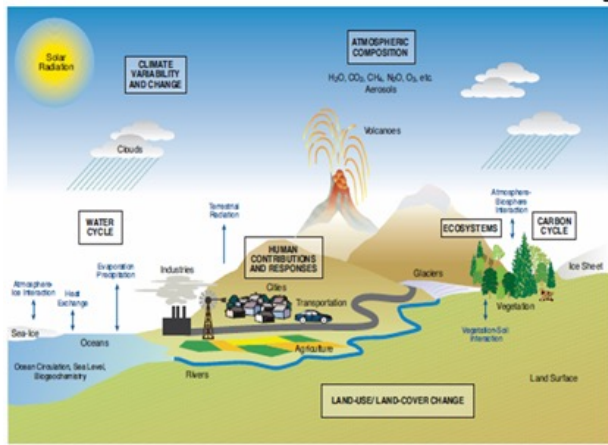
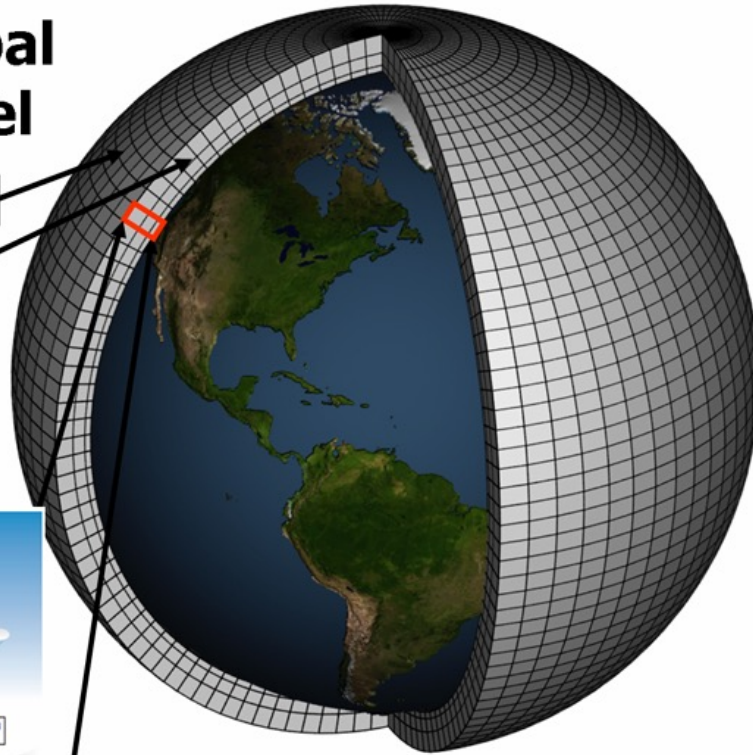


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Schematic for Global Atmospheric Model

Horizontal Grid (Latitude-Longitude)

Vertical Grid (Height or Pressure)

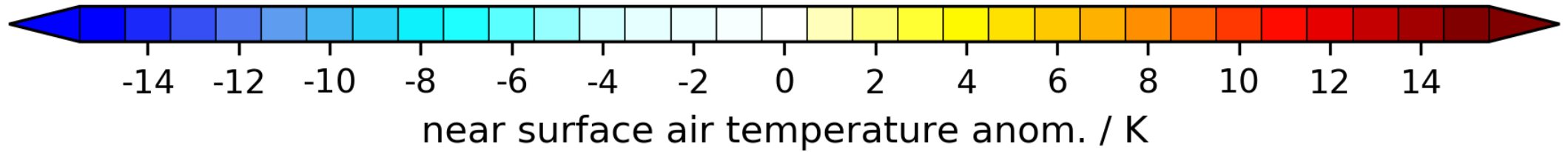
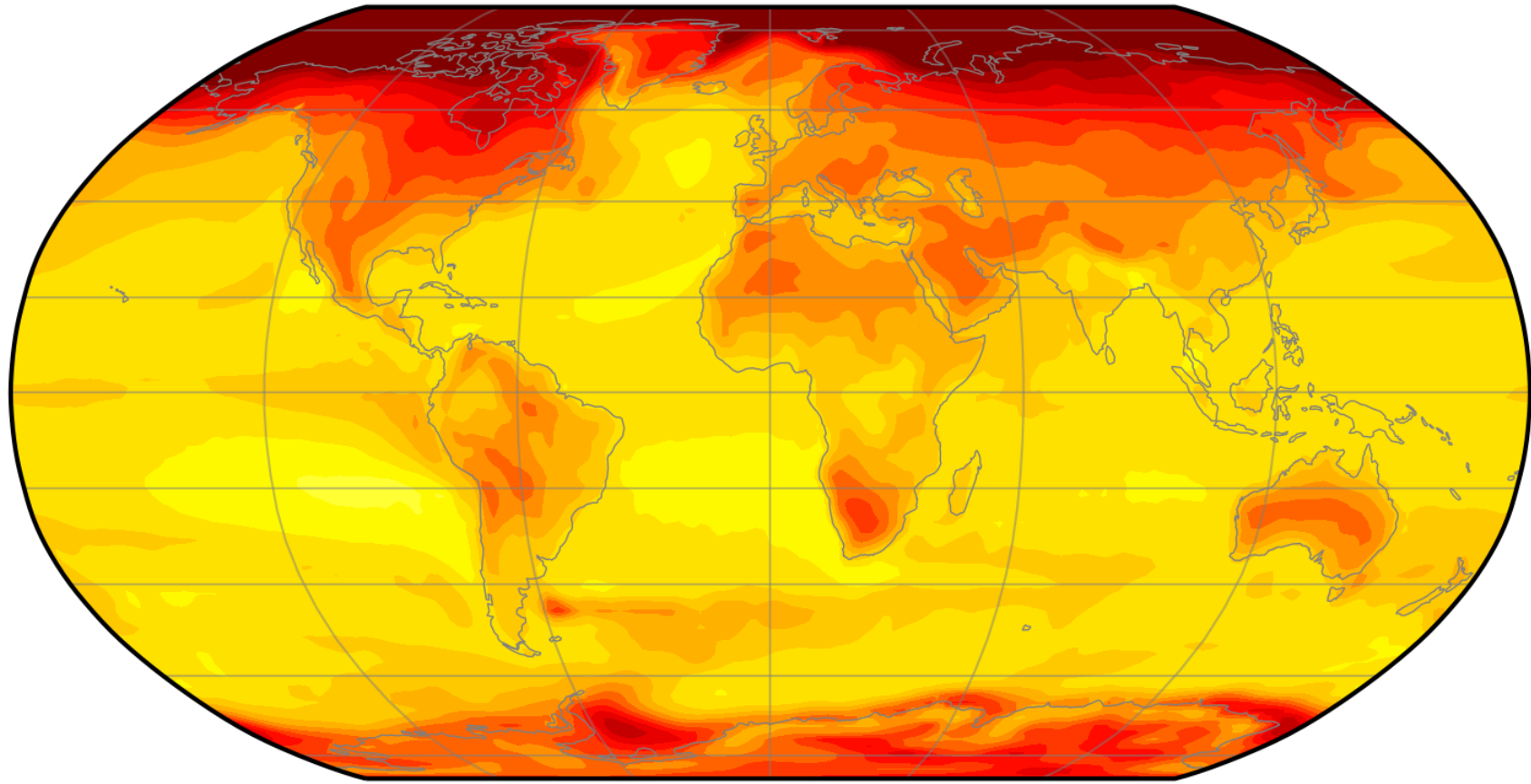


Ask scientific questions to the model

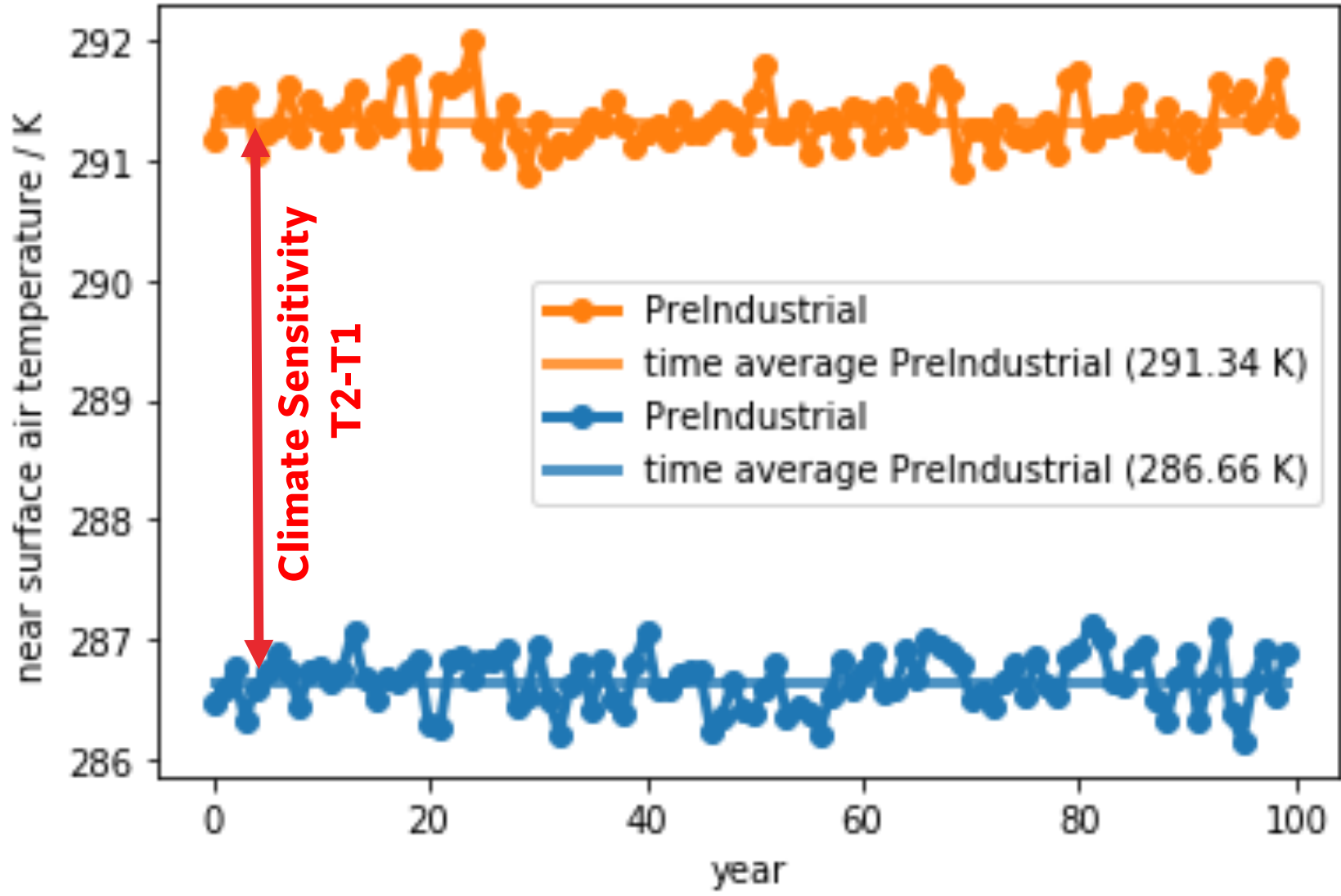
Simulation 1
Setup A
CO2 concentration A

Simulation 2
Setup A
CO2 concentration B

Sensitivity of
climate to
perturbations
in carbon
dioxide

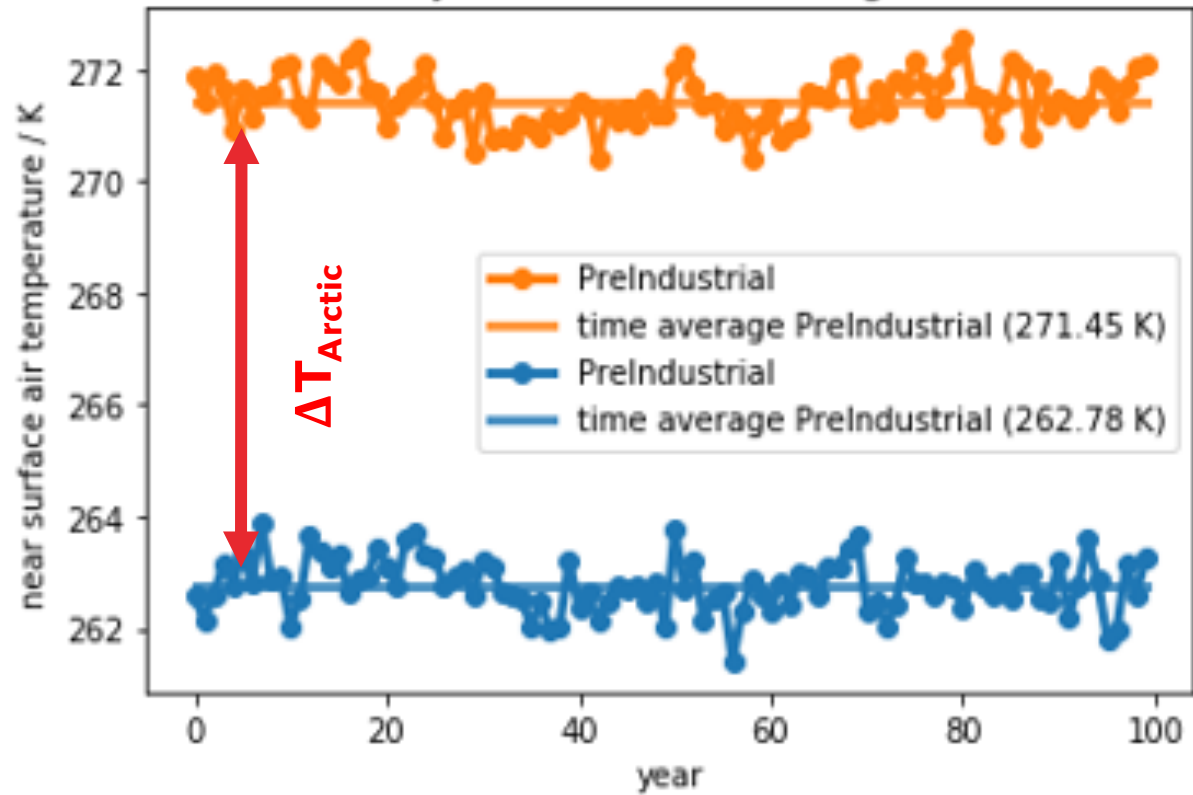


yearmean global average

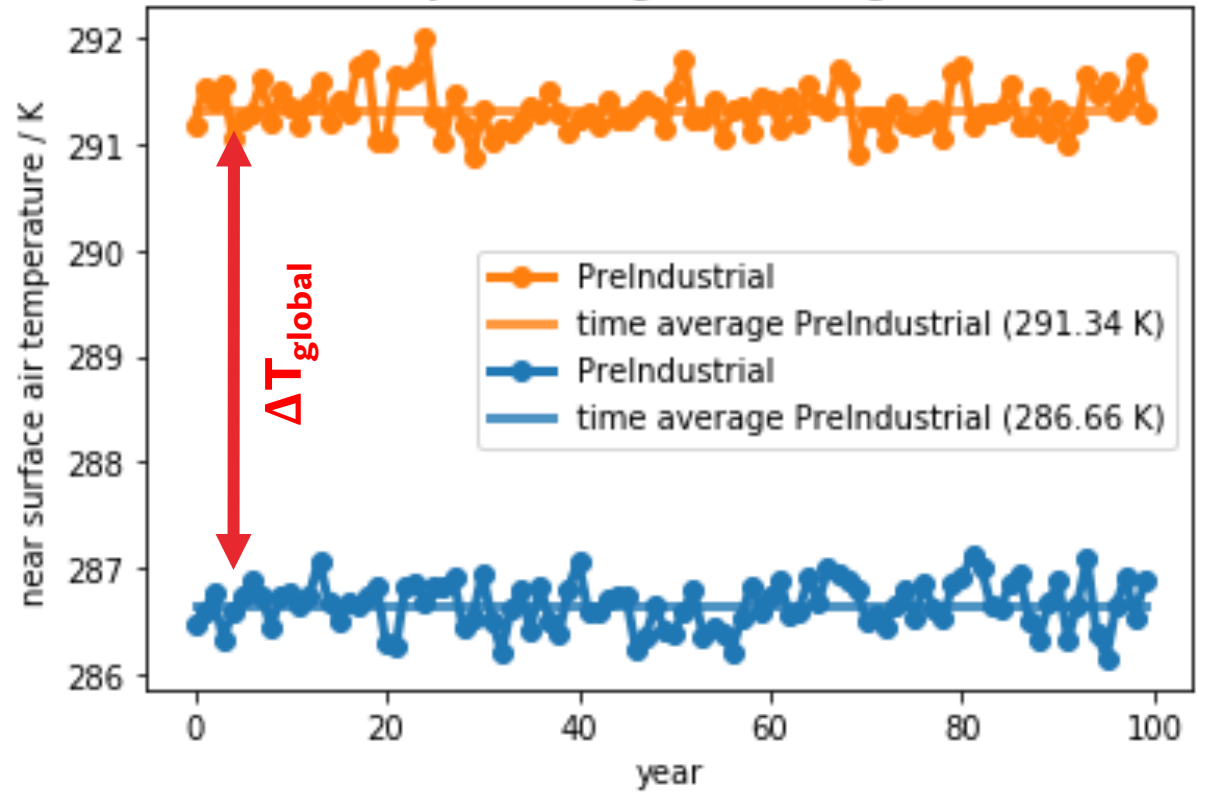


Arctic Amplification: $\Delta T_{\text{Arctic}}/\Delta T_{\text{global}}$

yearmean Arctic average



yearmean global average

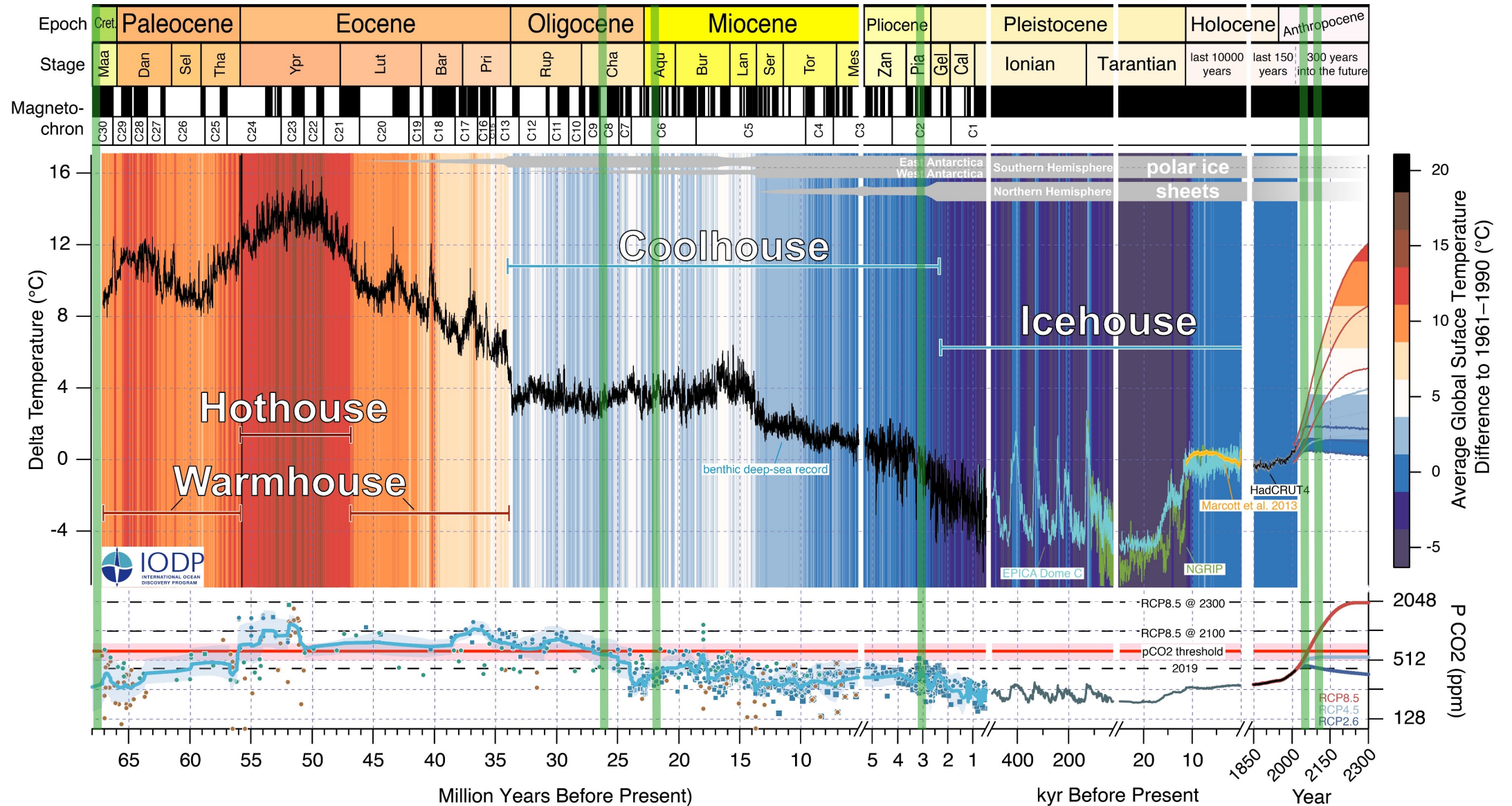


Maastrichtian

Oligocene Miocene

Pliocene

Future (560 ppmv, 1120 ppmv)



Questions?

A 3D rendering of a field of dark grey question marks, with one prominent yellow question mark in the center. The scene is lit from the top, creating highlights and shadows on the raised surfaces of the question marks. The background is a dense field of these dark grey question marks, receding into the distance. The yellow question mark is the focal point, standing out due to its color and central position.
