

# Pacific Northwest and Southeast China Climatology: A Comparative Analysis of CMIP5 Global and Regional Climate Model Time of Emergence

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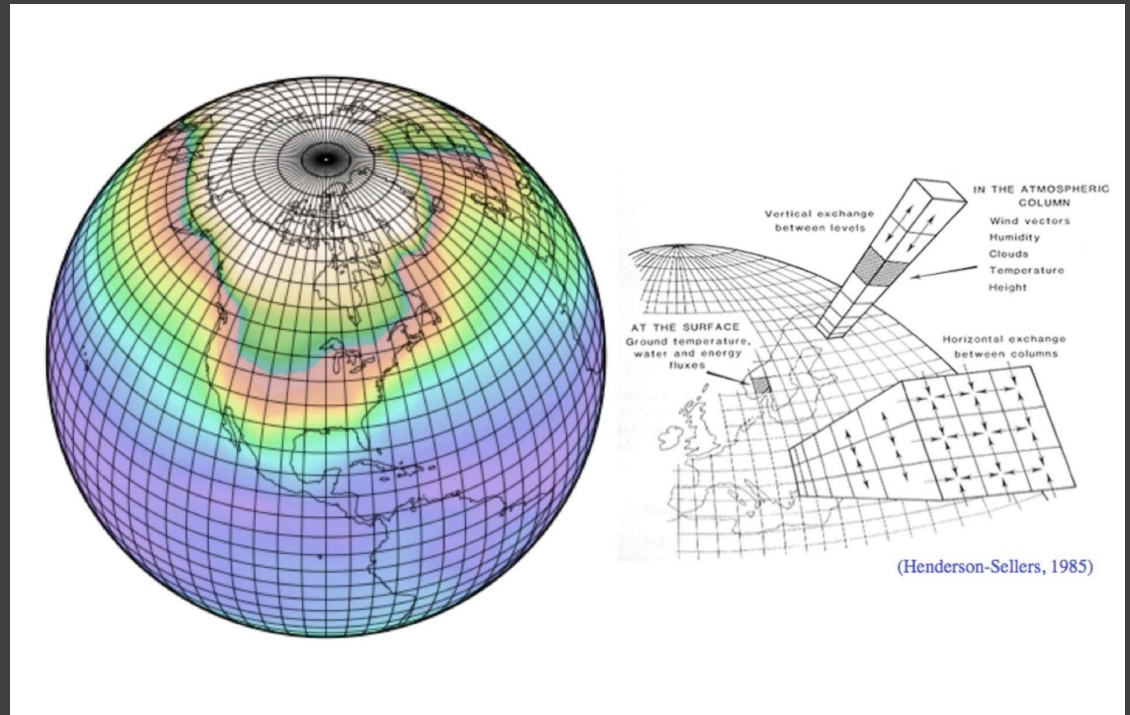
Let's Start  
With a Fable



How Can We  
Anticipate  
and Respond  
to Change?



# With Climate Modeling!

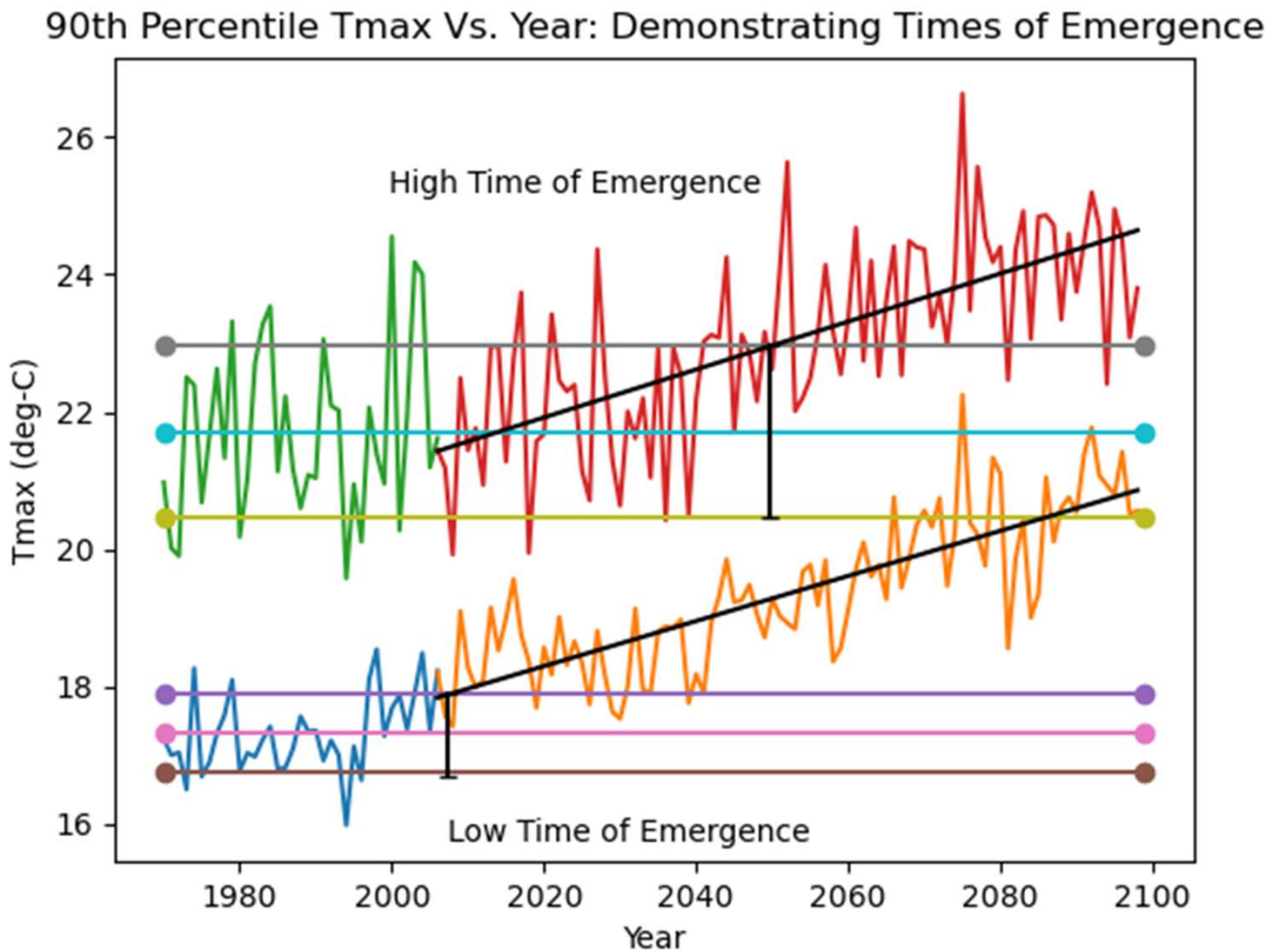


# What Variable are we Tracking?

- Time of Emergence
  - The year in which a particular weather variable overtakes one standard deviation around the mean of that variable.



# Examples of TOE calculations







# Research Question

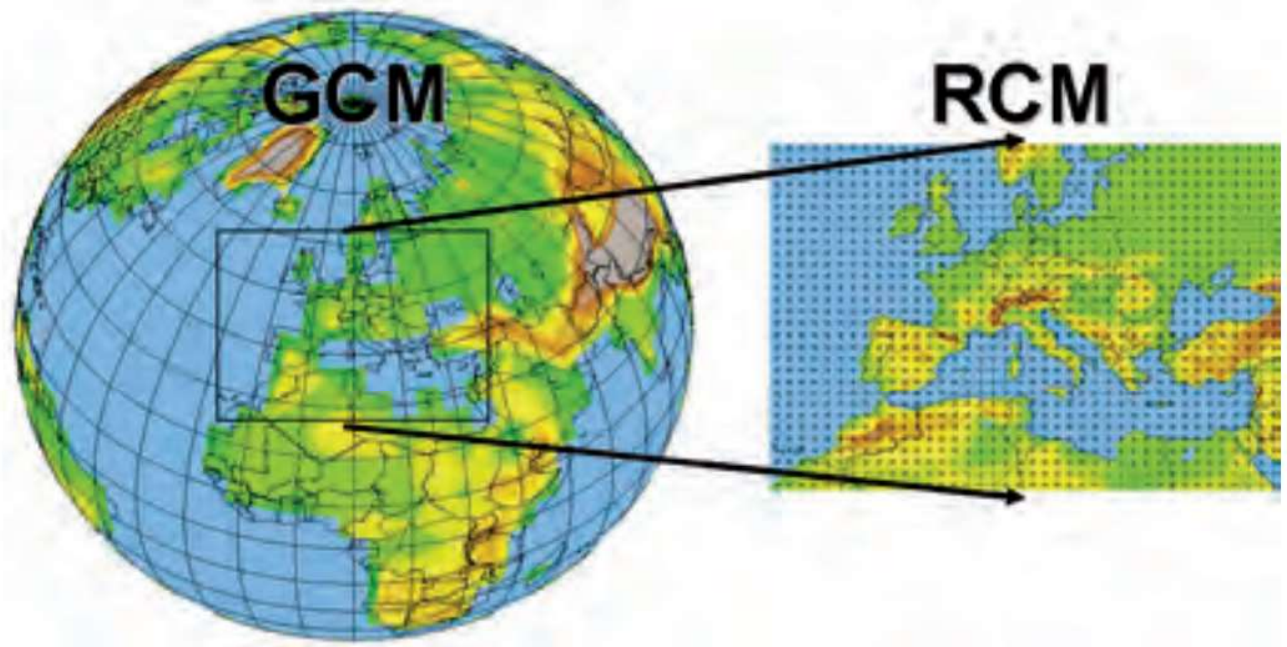
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- What are the mesoscale differences between the GCM and RCM models that can be gleaned from the Time of Emergence and what do those differences tell us about the viability of each in judging our climate future?



100-300 km

10-50 km

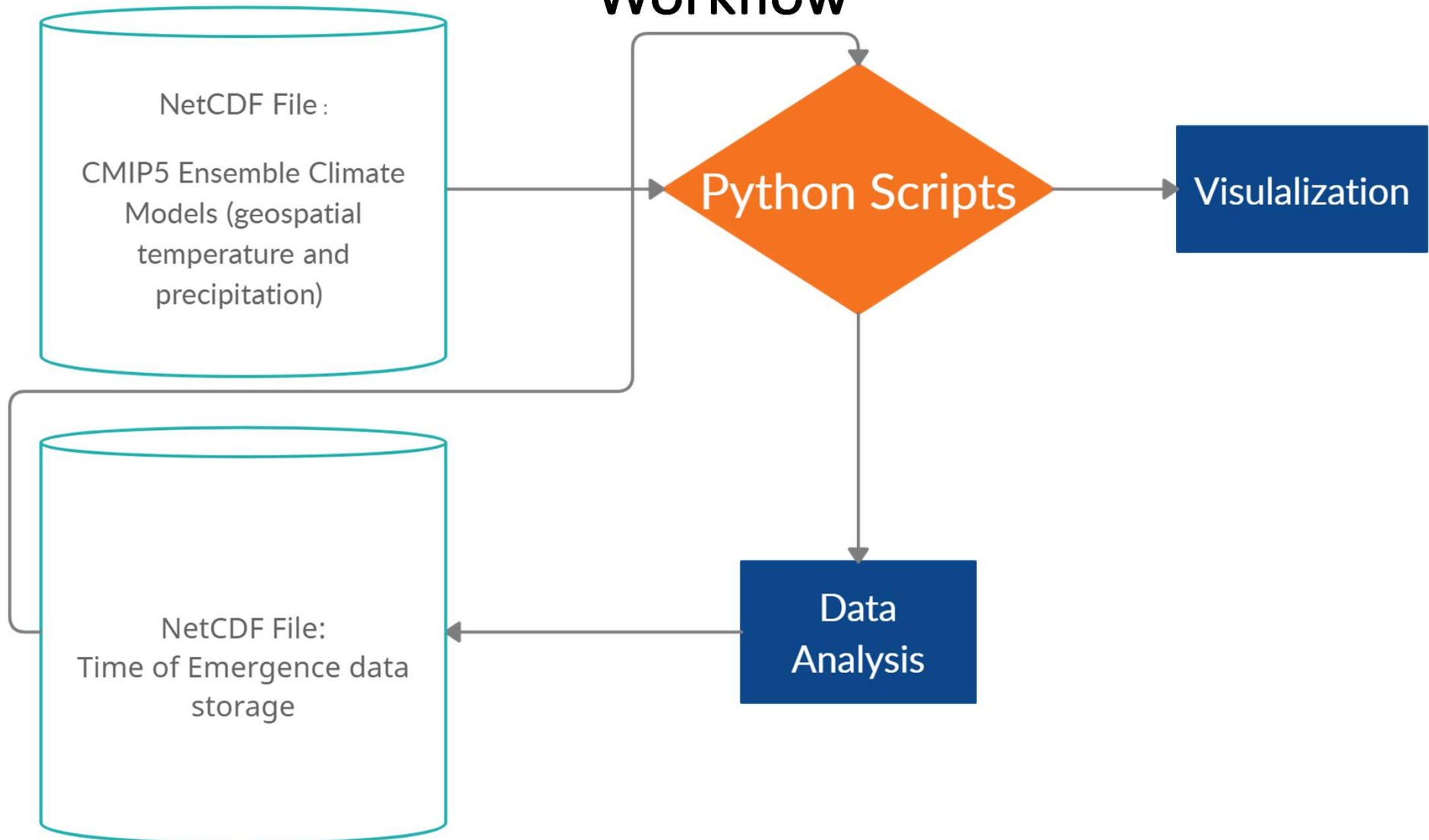


*Figure 1 — Schematic depiction of the Regional Climate Model nesting approach*

Image source: [F. Giorgi, WMO Bulletin 52\(2\), April 2008.](#)

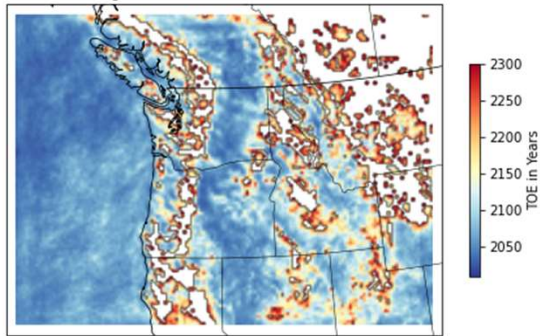


# Workflow

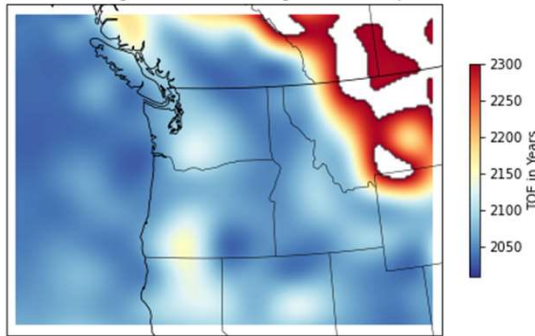


# Results

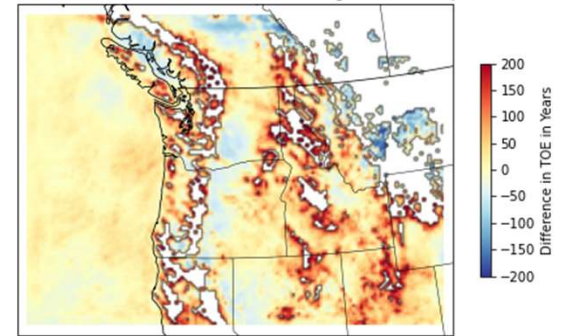
Time of Emergence for access1.3-wrf based on PREC95



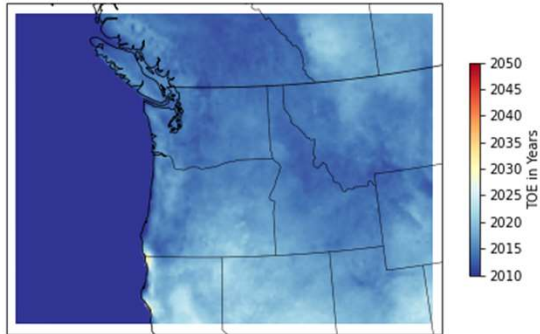
Time of Emergence for access1.3-gcm based on pr95



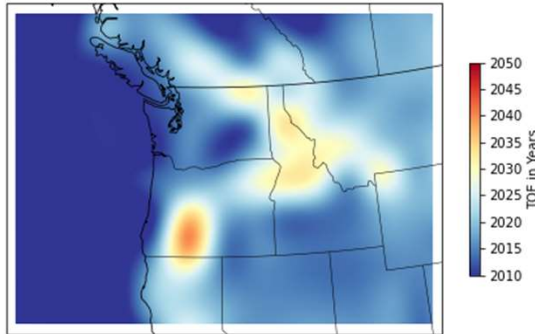
Delta between access1.3-wrf and access1.3-gcm based on pr95



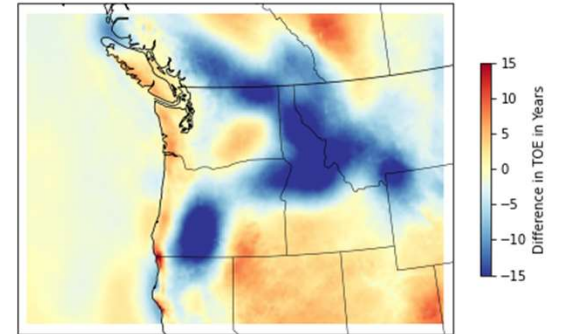
Time of Emergence for access1.3-wrf based on T2MAX90



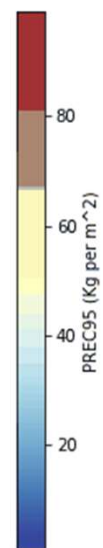
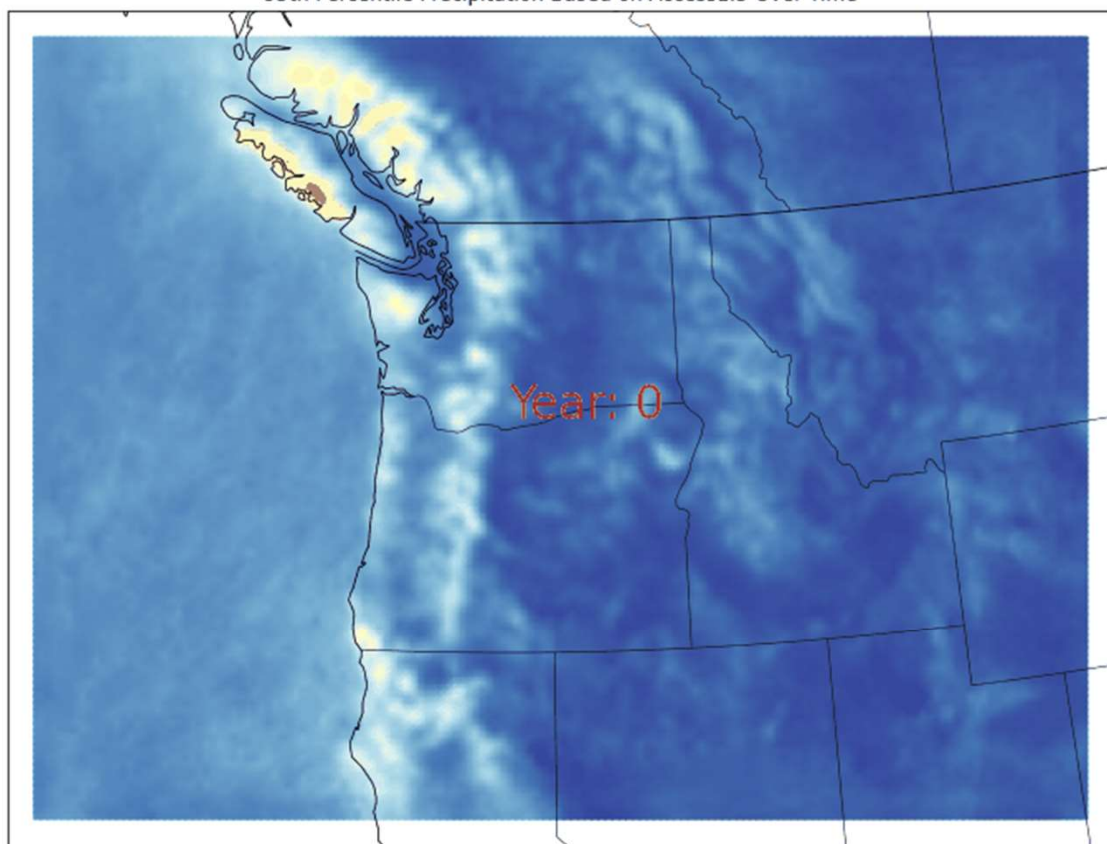
Time of Emergence for access1.3-gcm based on tasmax90



Delta between access1.3-wrf and access1.3-gcm based on tasmax90



95th Percentile Precipitation Based on Access1.3 Over Time





Can the Time of  
Emergence Help  
Governments Anticipate  
and Respond to Change?