Multi-Model Climate Emulator

PROJECT UPDATE, 04/23/2020

RECAP

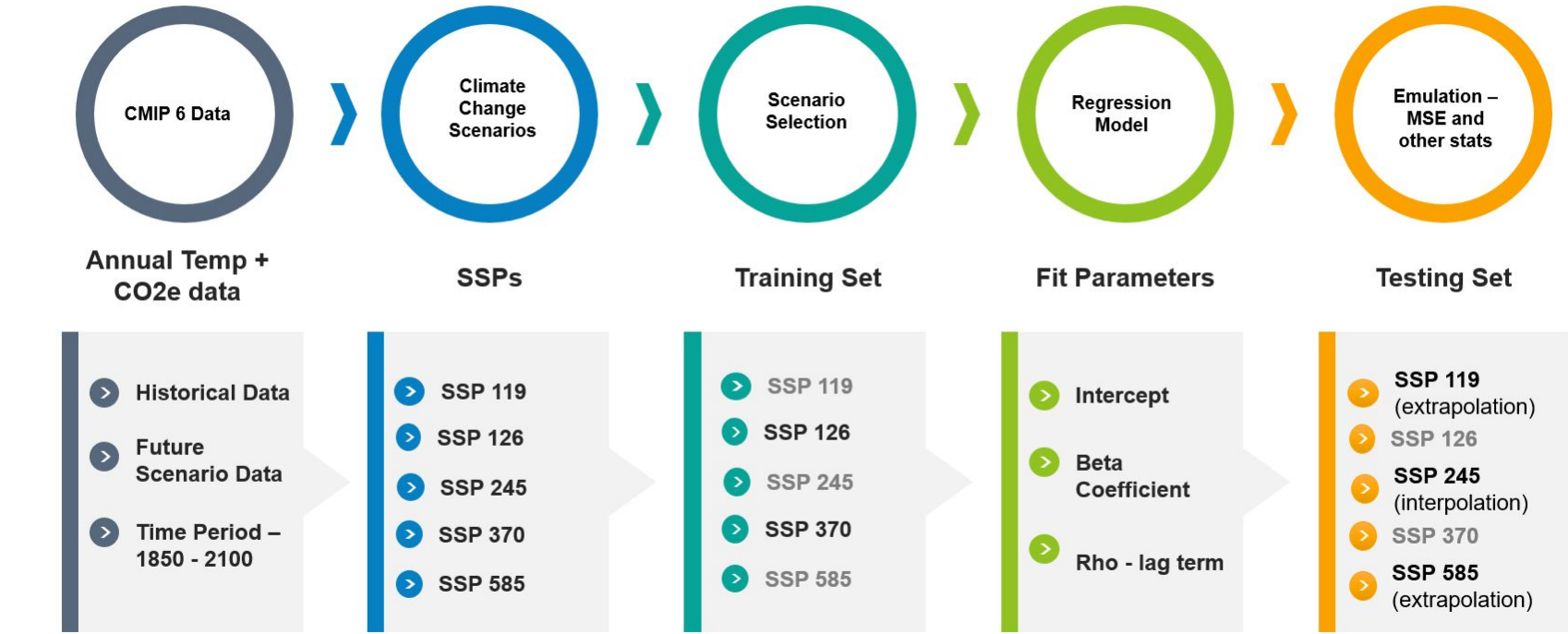
1. Climate emulator with CMIP (Coupled Model Intercomparison Project) 6.0 data - input for IPCC's Assessment Report 6
2. Model forecast
3. SSP paradigms-CO2 data
4. Autoregressive Error Term

$$T(t) = \beta_0 + \beta_1(1-\rho)\sum_{k=0}^{n-1}\rho^k \log\left(\frac{CO_2[t-k]}{CO_{2preindustrial}}\right) + \epsilon(t)$$

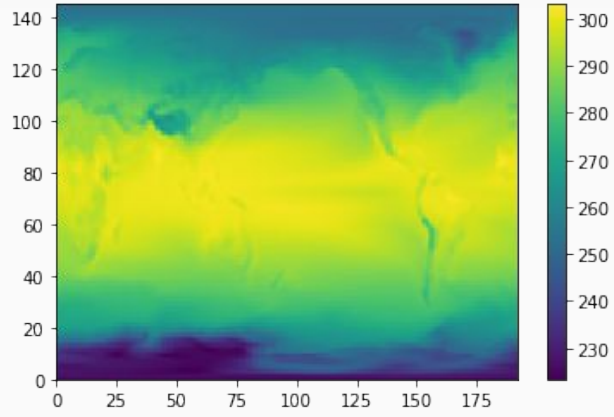
GOALS

- Overall goal: make a simple statistical model that captures the behavior of GCMs
- Model run -> data -> fitting (linear) model of CO2 to temperature
- Global temperature emulation -> regional emulation
- Develop a metric of accuracy of the emulation to a hypothetically perfect emulator

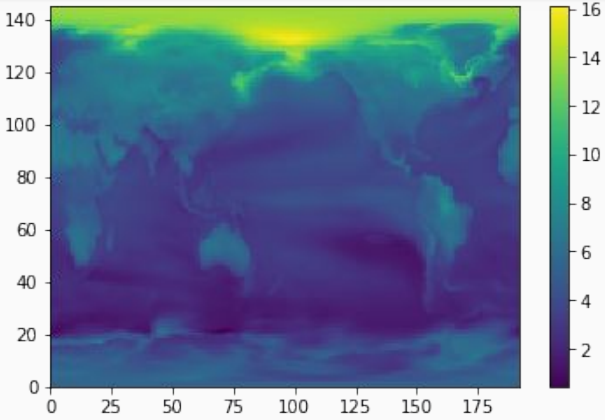
CMIP6 Data to Model Emulation Process



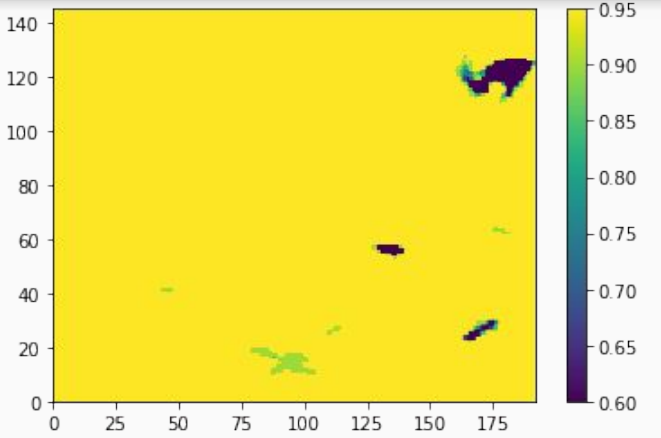
Regional Fit - ACCESS-ESM1-5 Model



Intercept



Beta Coefficient



Rho - lag term