

Machine Learning Approaches to Climate Data Bias Correction and Downscaling

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Can machine learning be applied to **downscale coarse**-resolution climate data for **high**-resolution impact studies?

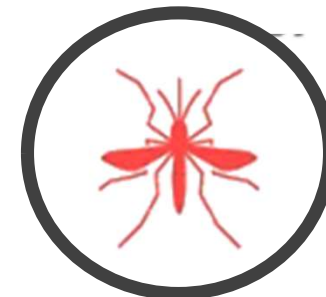
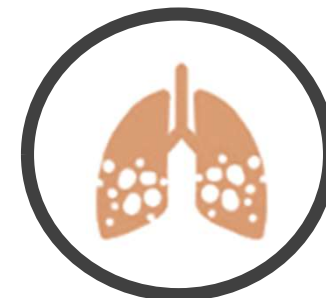
What data we have:

Earth System Model Output

- Temperature
- Rain
- Wind
- Sunlight
- Humidity
- ⋮

**1 degree resolution
(111 × 111 km Equator)**

Impact models: **10 × 10 km**





Observation:

The European Centre for Medium-Range Weather Forecasts
Reanalysis v5 (**ERA5**) 1975-2014

Climate Model Historical Simulation:

The Community Earth System Model historical run
1975-2014

Climate Model Future Simulation:

The Community Earth System Model SSP2-4.5 run
1975-2014

Collaborate with NCAR and UCT to compare our results with
statistical downscaling and dynamic downscaling

