Bias Control
Cumulative distribution-transform (CDF-t)
\( \bar{F}_{r,f}(x) = \bar{F}_{r,h}(\bar{F}^{-1}_{m,h}(\bar{F}_{m,f}(x))) \)

Climate Data

<table>
<thead>
<tr>
<th>Climate data</th>
<th>Event Track Record</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reanalysis ERA5</td>
<td>IBTrACs (Cyclones tracks)</td>
</tr>
<tr>
<td>CMIP5 Evaluation (histo.)</td>
<td></td>
</tr>
<tr>
<td>CMIP5 Projection (RCPs)</td>
<td></td>
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</tbody>
</table>

Cyclogenesis

*Spatial prob.* based on coordinates of first observation from past cyclones
*Frequency* defined with Poisson laws

Displacement

Fitted on past cyclone tracks
(Auto-regressive process)

Wind / Pressure (WPR)

\[ V = f(\text{Pressure drop}) \]

Max. Pres. Drop (MPD)

\[ \text{MPD} = f(\text{SST}) \]

Potential intensity (MPI)

\[ \text{MPI} = f(\text{SST}, y, RH, T_{tropo}) \]

Pressure variation (DD)

\[ \Delta P_c(t) = f(\text{MPI}, P_c(t-1)) \]

Decay relationship (SDR)

\[ V = f(V_0, t, D) \]

Cyclone synthetic database

Physical Damage

EM-DAT & Physical Asset value & CLIMADA environment

Vulnerability Calibration

\[ v_h = f(\text{SED/NED}) \]

Exposure projection

\[ \Phi = f(L_p) \]

Physical Damages

\[ D = f(V, k, v_h) \]

SSPs projections

SSP Database IIASA & R32 GDP per capita & NASA SEDAC gridded population