Information about Level 4 – Scatter plots for multi-model assessment (Metric)

At this level the code produces scatter plots between physically-linked variables that underscore models' fidelity in representing "chain of processes" that deem responsible for ENSO-induced teleconnection.

The necessary input data are calculated in **Levels 1-3.** To run this level diagnostic a user needs to process the data at **Levels 1-3** first. The AMIP5/6 model results are already provided as "predigested data". The results of the current model diagnosed will be incorporated and scatter plots are made along with the "predigested data". Users can infer the current/new model's ability in representing processes compared to AMIP5/6 models.

At this level the following scatter plots are generated:

- Equatorial Pacific precipitation (x-axis) *versus* subtropical upper-level divergence (y-axis)
- subtropical upper-level divergence (x-axis) *versus* RWS terms (y-axis)
- east Asian monsoon precipitation (x-axis) versus RWS terms (y-axis)
- east Asian monsoon precipitation (x-axis) versus total RWS along jet (y-axis)
- subtropical upper-level divergence (x-axis) *versus* PNA index (y-axis)
- total RWS subtropics (x-axis) *versus* PNA index (y-axis)
- total RWS subtropics east of dateline (x-axis) *versus* PNA index (y-axis)
- Beta* longitudinal shift (x-axis) *versus* standardized PNA index (y-axis)
- Beta* longitudinal shift (x-axis) *versus* standardized Aleutian low index (y-axis)
- Equatorial Pacific precipitation (x-axis) *versus* standardized PNA index (y-axis)

In each of the scatter plots, number 5 corresponds to AMIP5 and, 6 corresponds to AMIP6 models, and the color of the numbers correspond to the model's name.

The list of models + observation data included in the scatter plots are given at:
~/diagnostics/inputdata/obs_data/ENSO_RWS/SCATTER/

<u>Final output directories:</u>
Graphical output is in

~/wkdir/MDTF_$model_$first_year_$last_year/ENSO_RWS/model
(e.g. $model = CESM1, $first_year = 1950, $last_year = 2005).