**Information about Level 4 – MSE scatter plots (Metric)**

At this level the code produces scatter plots between MSE budget terms and precipitation.

The necessary input data are calculated in **Level 1** and **Level 2.** To run this level diagnostic

a user needs to process the data at **Level 1** and **Level 2** first and for all models considered.

To select this level set the parameter SCATTER = 1 in mdtf.py python file.

At this level the following scatter plots are generated:

a) precipitation (x-axis) *versus* horizontal moisture advection (y-axis)

b) precipitation (x-axis) *versus* net radiative flux divergence (y-axis)

c) precipitation (x-axis) *versus* vertical advection of MSE (y-axis)

d) precipitation (x-axis) *versus* total heat flux (latent + sensible) THF (y-axis)

All are seasonal El Niño composite anomalies averaged over:

a) Equatorial Central Pacific 180o–200oE 10oS – 5oN

b) Equatorial Eastern Pacific 220o–280oE 5oS – 5oN

All variables are expressed in W/m-2.

The list of models + observation data included in the scatter plots is given in:

~/var\_code/ENSO\_MSE/SCATTER/list-models-historical-obs.

Final output directories:

Graphical output is in ~/wkdir/MDTF\_SCATTER.