**SUPPLEMENT FIGURES - CAPTIONS**

Figure S01. Moisture convergence (10-5 g kg-1 s-1) at 850 hPa for JJA. The original field of convergence of the ERAI is shown in Figure S01a.

Figure S02. Moisture convergence (10-5 g kg-1 s-1) at 850 hPa for DJF. The original field of convergence of the ERAI is shown in Figure S02a.

Figure S03. Omega bias (Pa s-1) to 500hPa during JJA. The original field of omega of the ERAI is shown in Figure S03u. The HADGEM2-CC model does not provide any omega information.

Figure S04. Omega bias (Pa s-1) to 500hPa during DJF. The original field of vertical velocity of the ERAI is shown in Figure S04u. The HADGEM2-CC model does not provide any omega information.

Figure S05. Precipitation bias (mm dia-1) during JJA.

Figure S06. Precipitation bias (mm dia-1) during DJF.

Figure S07. Sea Surface Temperature bias (°C) during JJA.

Figure S08. Sea Surface Temperature bias (°C) during DJF.