

Validation of the Tiedke Scheme over RegT-band

Group Members:

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The Abdus Salam
International Centre for Theoretical Physics

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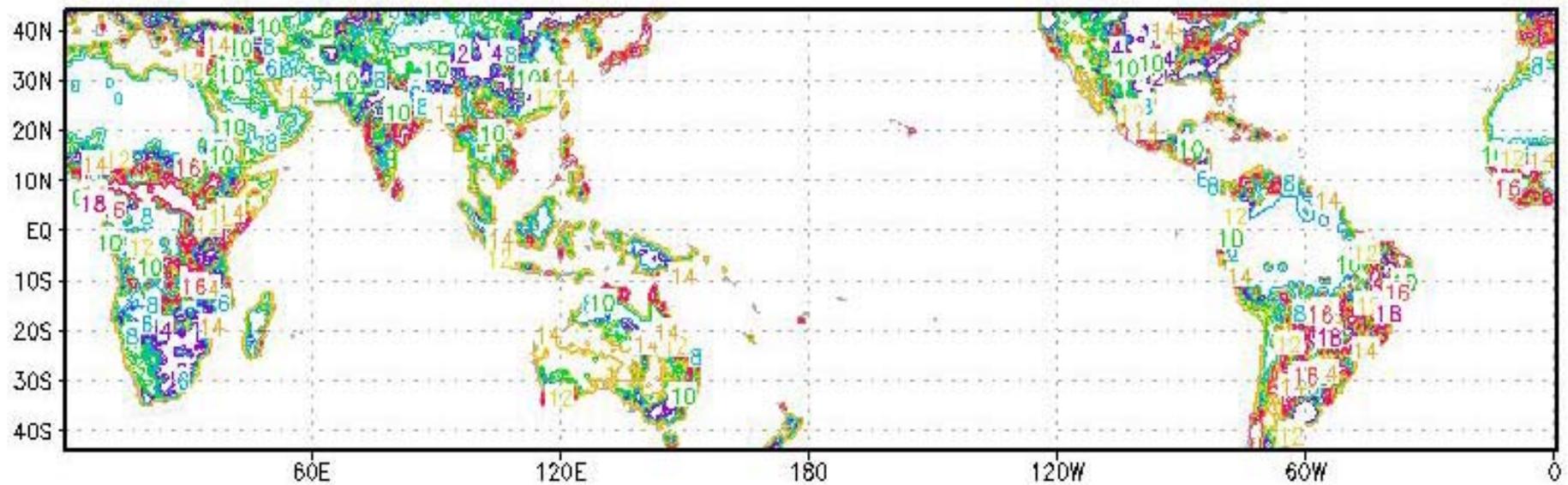
Motivations and Objectives

- We intend to investigate and validate the performance of the newly introduced Tiedke scheme over RegT-Band.
- The results from these simulations are compared with TRMM and CRU. The previous work presented by **E. Coppola**. (E. Coppola, et al. 2012) was taken as baseline.

Experiment Design

Resolution:	80Km
Model Domain:	Tropical band 50° S to 50° N
Boundary Conditions:	ERA-Interim
Period:	1998
Number of simulations:	5
Variables:	Precipitation & Temperature

Experiment Domain



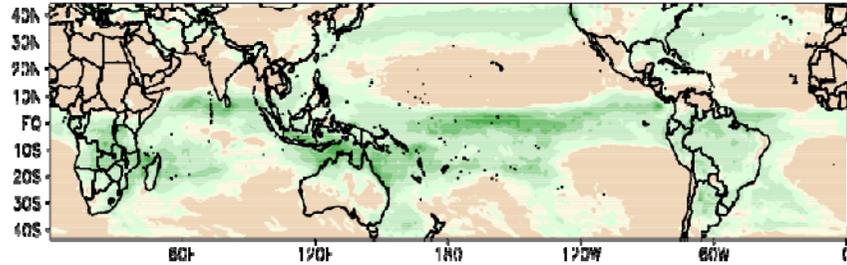
Experiment Design

Five different simulations with variation in the value of the following three parameters:

- Default Parameter Tiedke
- T-Band with Grell from E. Coppola simulation
- Entrpen ! Entrainment rate for penetration
- Cmtcape ! CAPE adjustment timescale parameter
- Cprcon ! Coefficients for determining conversion
- Changes in Trigger Function

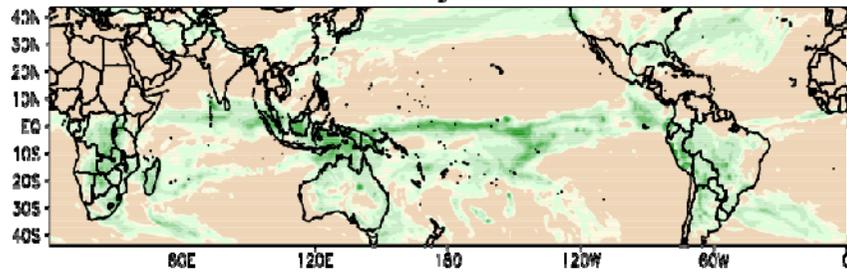
Grell from E. Coppola

PRE RegCM4_BAND_CORDEX_SRFDJF



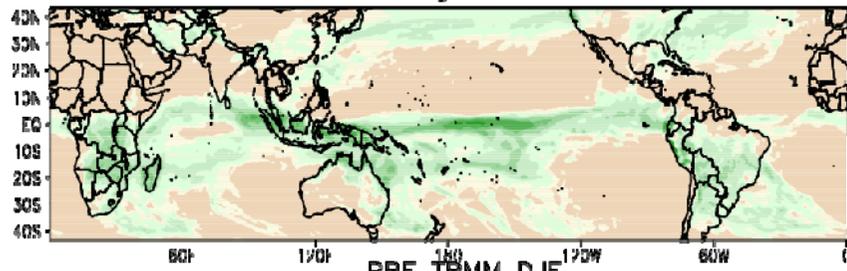
CMTCAPE=20 Tiedke

PRE RegCM4 DJF

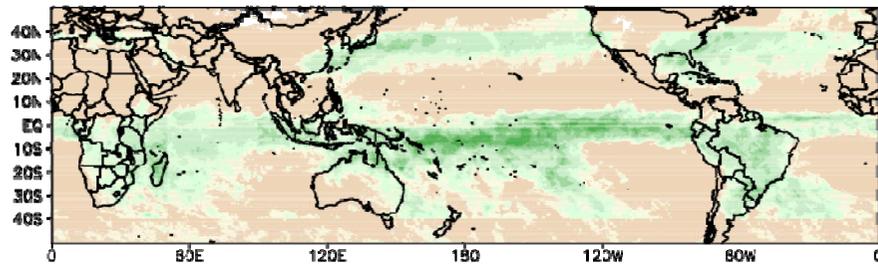


Entrpen=0.5 Tiedke

PRE RegCM4 DJF

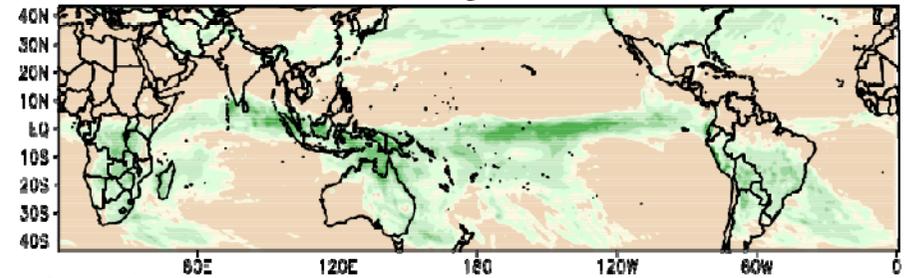


PRE TRMM DJF



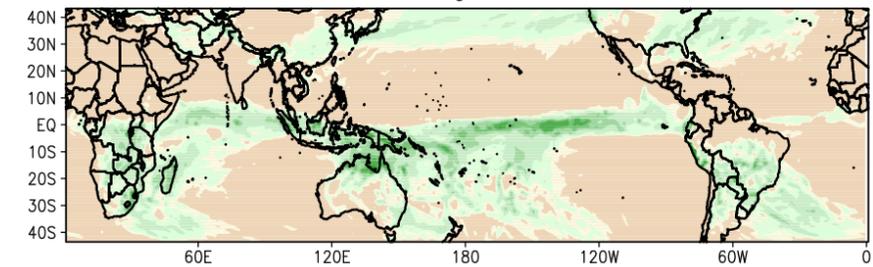
Default Tiedke 40, 1, 1, 1

PRE RegCM4 DJF



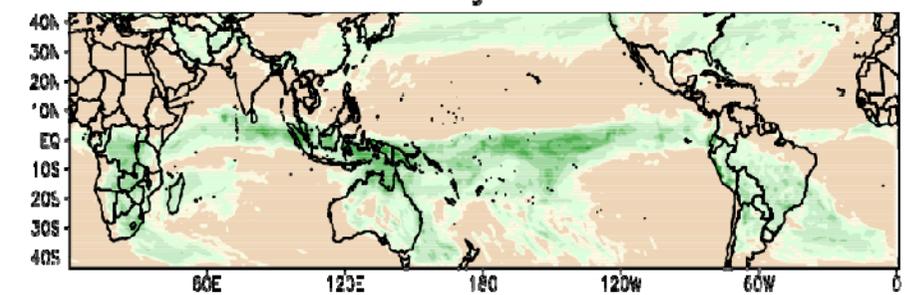
CPRCON=0.5 Tiedke

PRE RegCM4 DJF



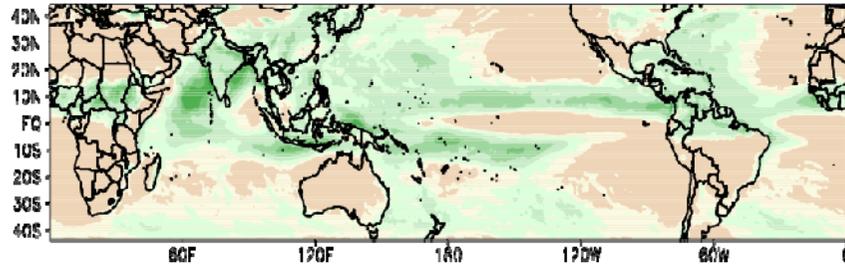
Trigger changes in function Tiedke

PRE RegCM4 DJF



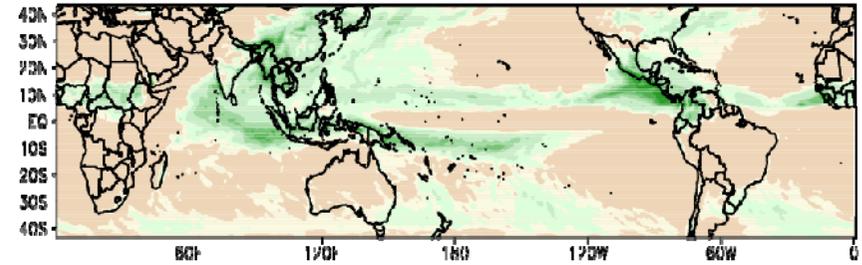
Grell from E. Coppola

PRE RegCM4_BAND_CORDEX_SRFJJA



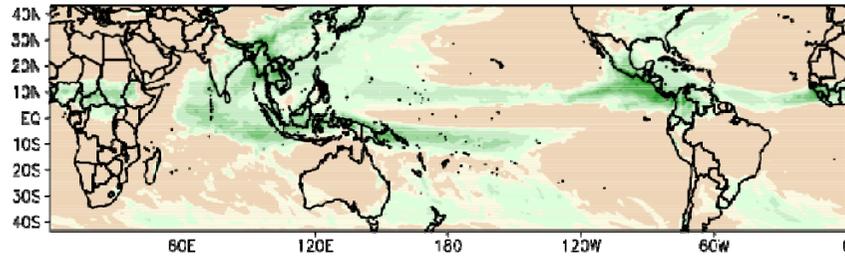
Default Tiedke 40, 1, 1, 1

PRE RegCM4 JJA



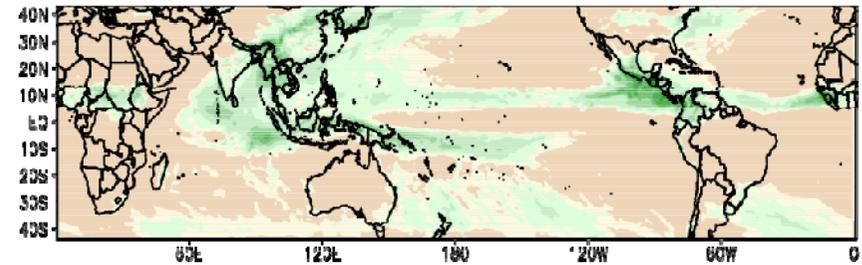
CMTCAPE=20 Tiedke

PRE RegCM4 JJA



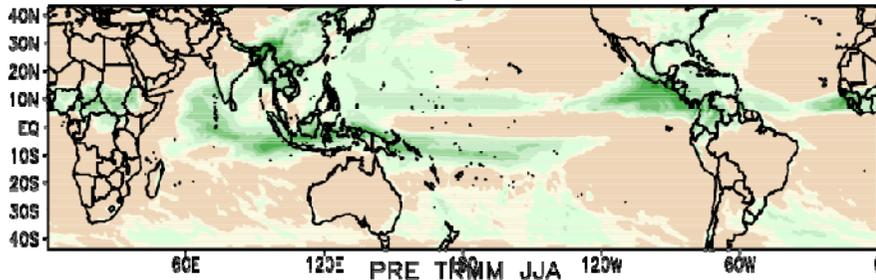
CPRCON=0.5 Tiedke

PRE RegCM4 JJA



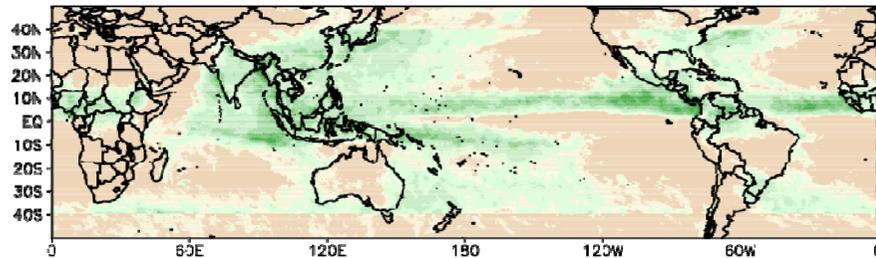
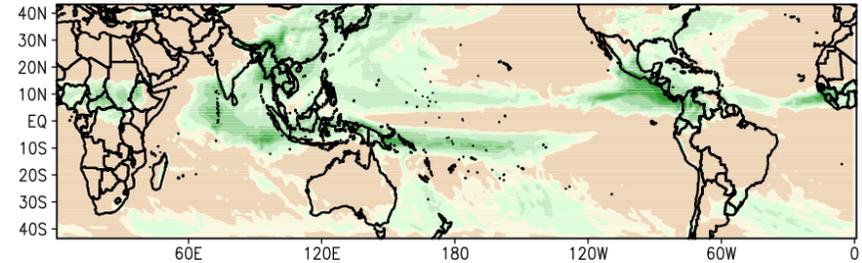
Entrpen=0.5 Tiedke

PRE RegCM4 JJA

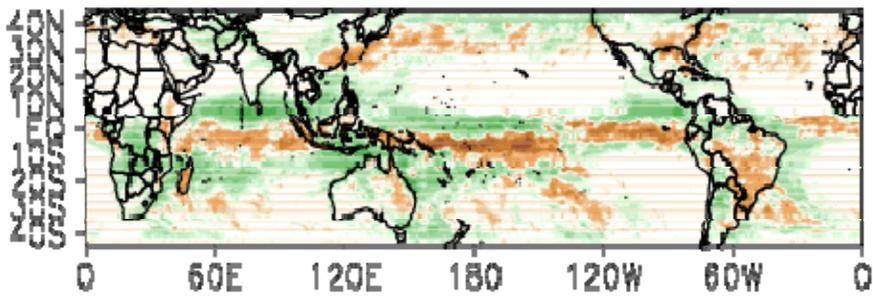


Trigger changes in function Tiedke

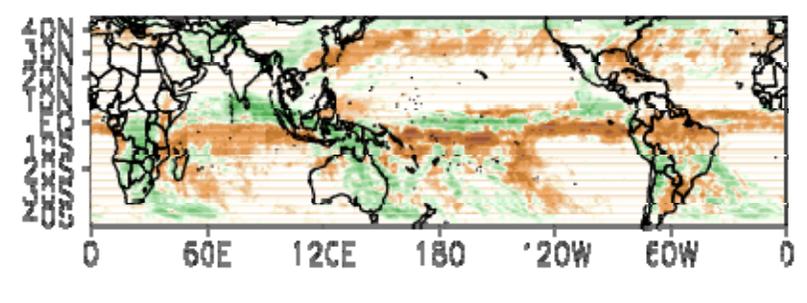
PRE RegCM4 JJA



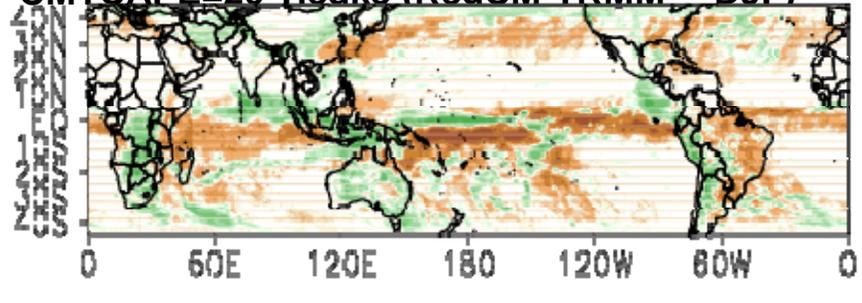
Grell from E. Coppola (RegCM-TRMM--- DJF)



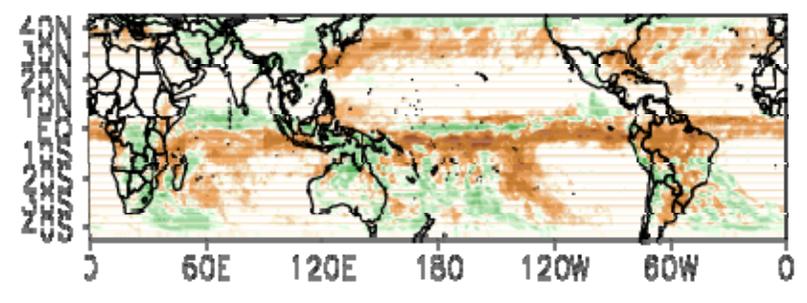
Default Tiedke (RegCM-TRMM--- DJF)



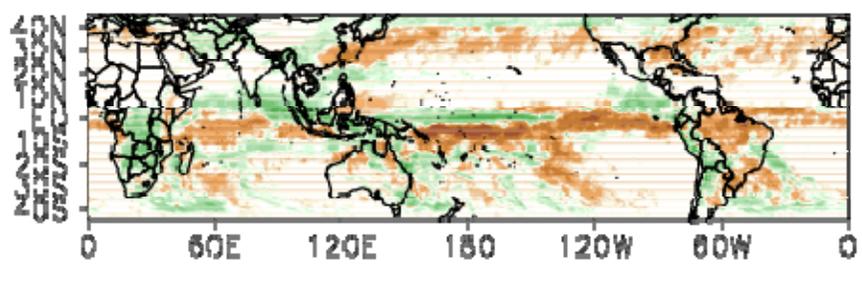
CMTCAPE=20 Tiedke (RegCM-TRMM--- DJF)



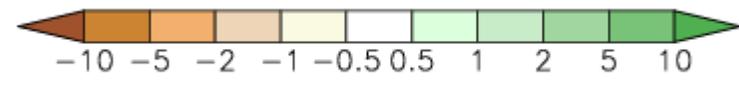
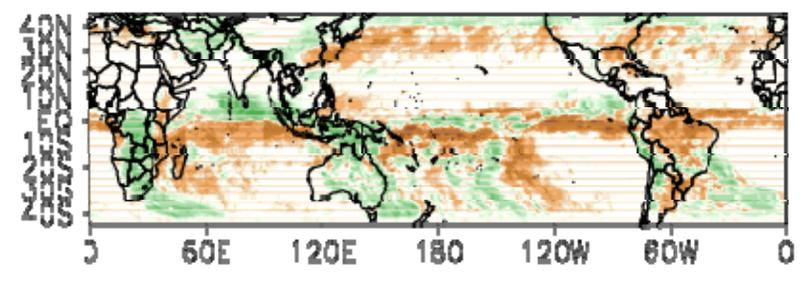
CPRCON=0.5 Tiedke (RegCM-TRMM--- DJF)



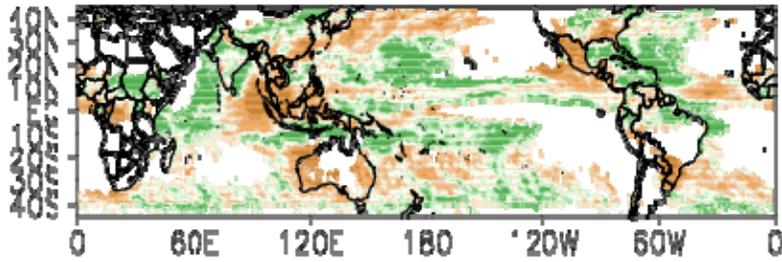
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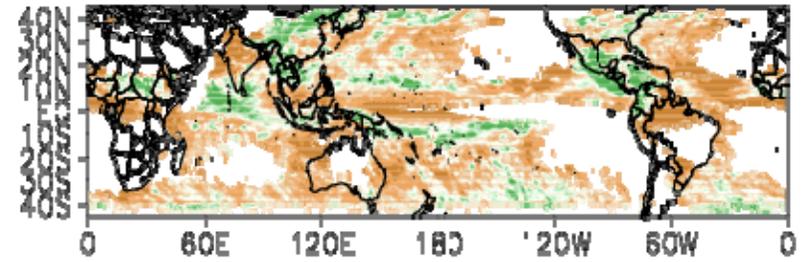
Trigger changes in function Tiedke (RegCM-TRMM--- DJF)



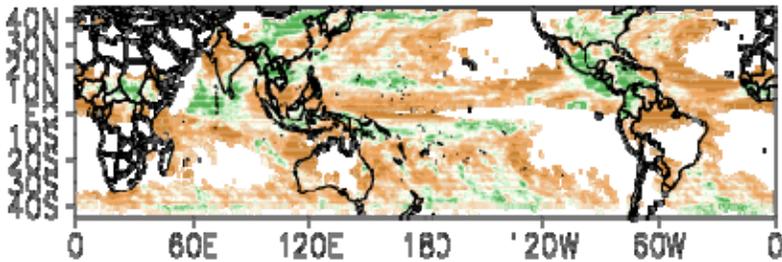
Grell from E. Coppola (RegCM-TRMM--- JJA)



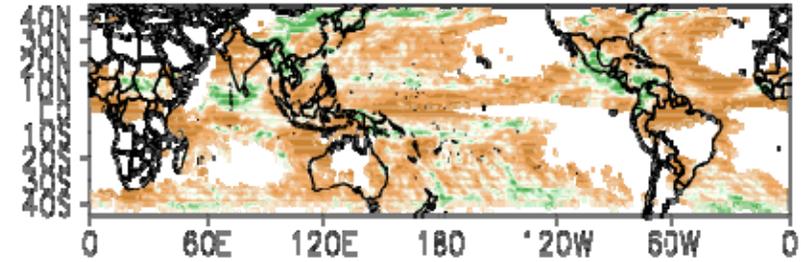
Default Tiedke (RegCM-TRMM--- JJA)



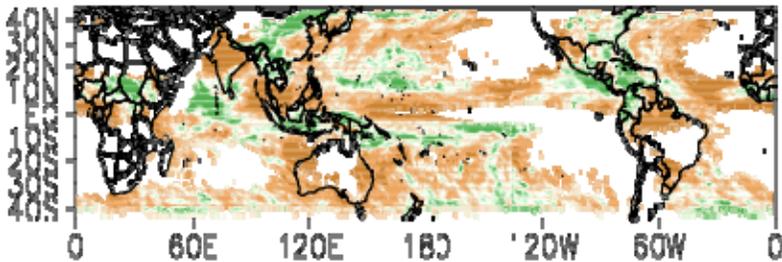
CMTCAPE=20 Tiedke (RegCM-TRMM--- JJA)



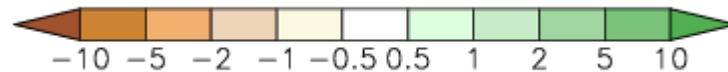
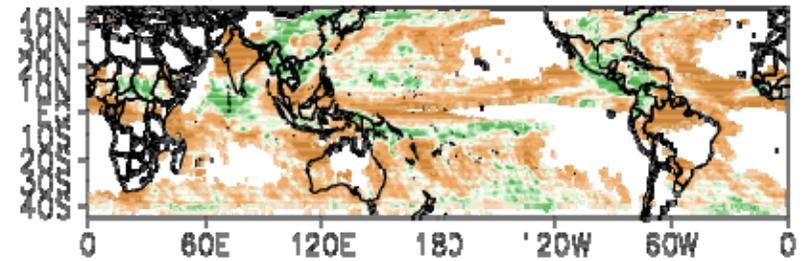
CPRCON=0.5 Tiedke (RegCM-TRMM--- JJA)



Entrpen=0.5 Tiedke (RegCM-TRMM--- JJA)

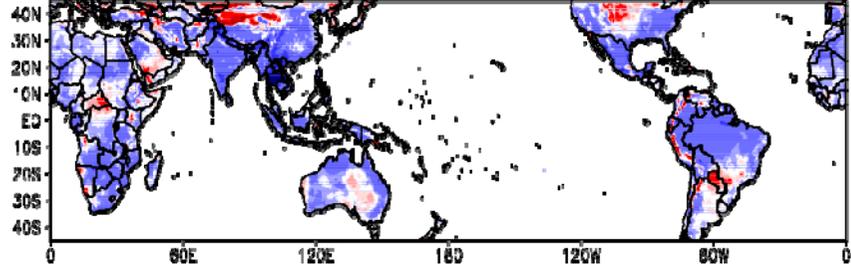


Trigger changes in function Tiedke (RegCM-TRMM--- JJA)



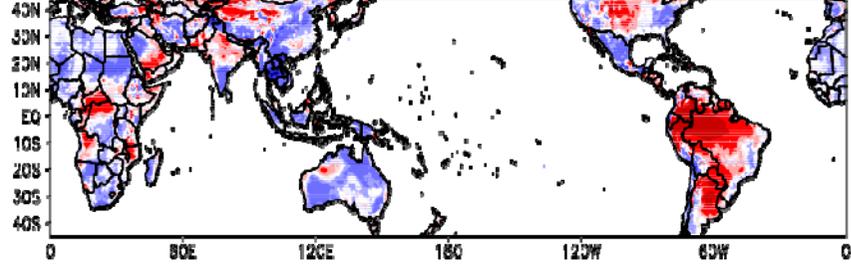
Grell from E. Coppola (TMP_RegCM-CRU--- DJF)

TMP RegCM4 minus CRU degC DJF



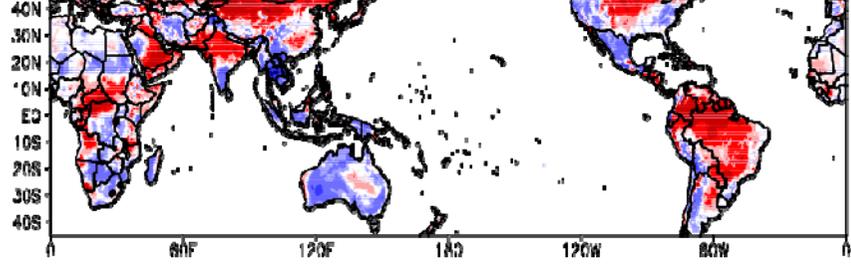
Default Tiedke (RegCM-CRU--- DJF)

TMP RegCM4 minus CRU degC DJF



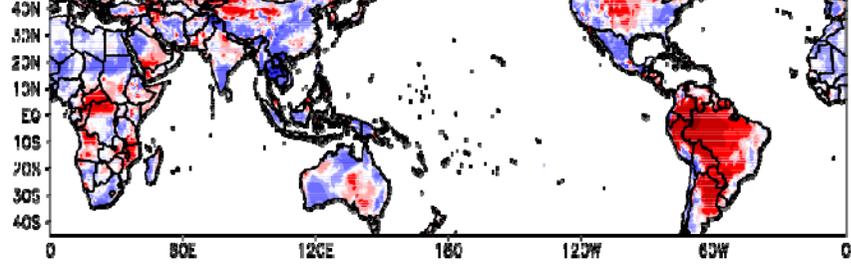
CMTCAPE=20 Tiedke (RegCM-CRU--- DJF)

TMP RegCM4 minus CRU degC DJF



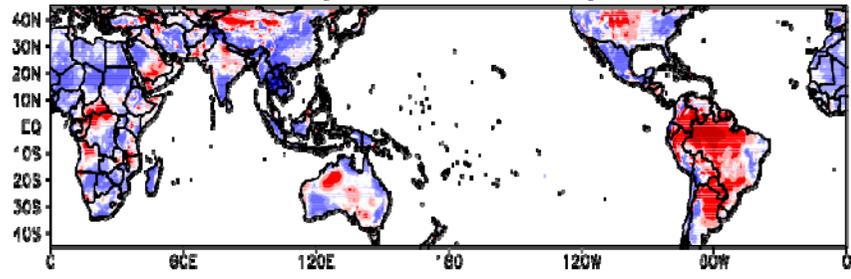
CPRCON=0.5 Tiedke (RegCM-CRU--- DJF)

TMP RegCM4 minus CRU degC DJF



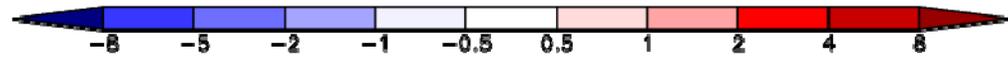
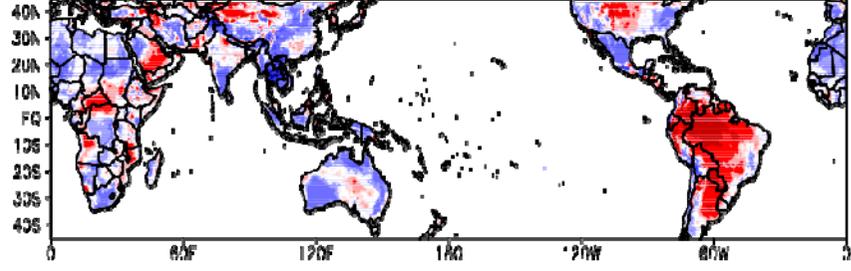
Entropen=0.5 Tiedke (RegCM-CRU--- DJF)

TMP RegCM4 minus CRU degC DJF



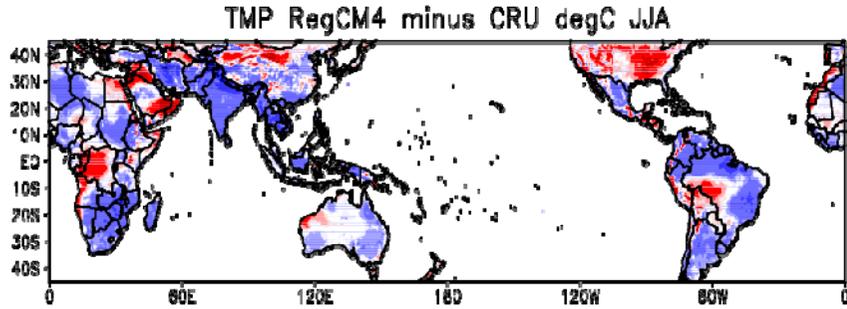
Trigger changes in function Tiedke (RegCM-CRU--- DJF)

TMP RegCM4 minus CRU degC DJF

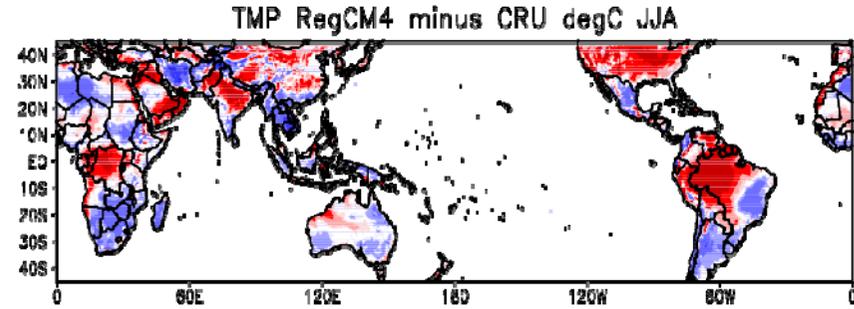


Temperature

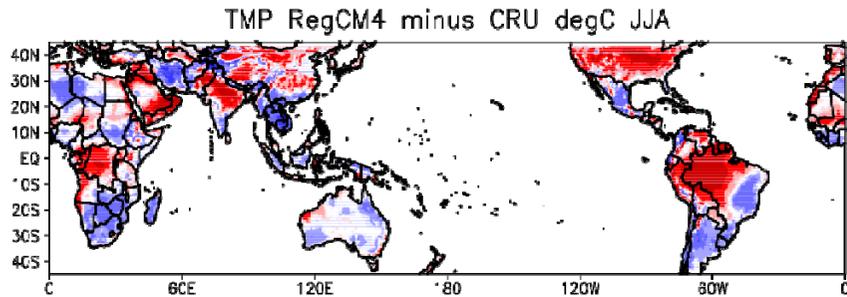
Grell from E. Coppola (TMP_RegCM-CRU--- JJA)



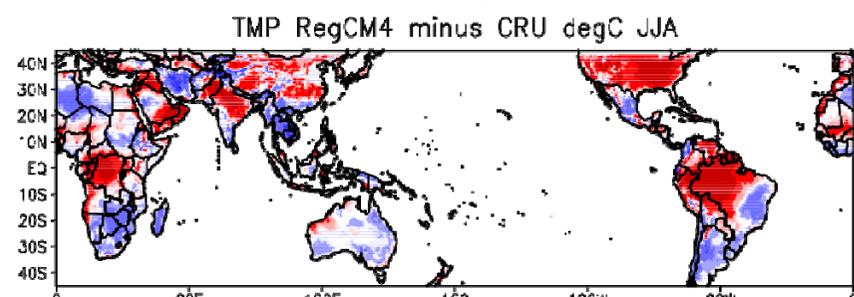
Default Tiedke (RegCM-CRU--- JJA)



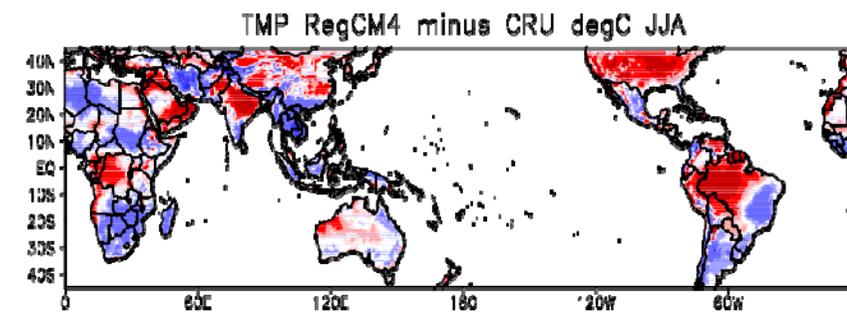
CMTCAPE=20 Tiedke (RegCM-CRU--- JJA)



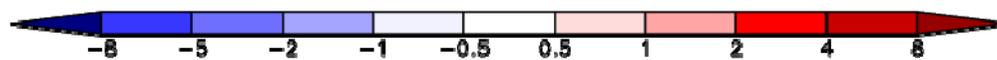
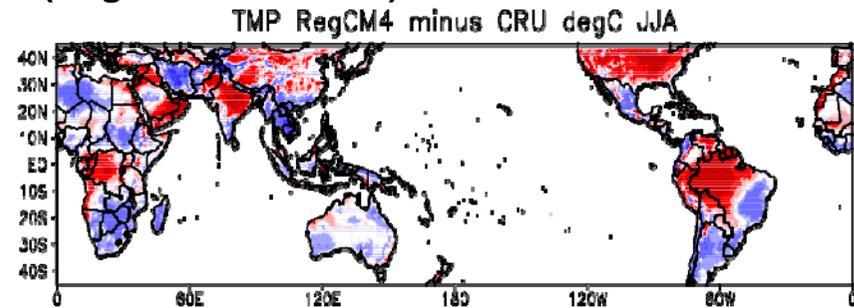
CPRCON=0.5 Tiedke (RegCM-CRU--- JJA)



Entrpen=0.5 Tiedke (RegCM-CRU--- JJA)



Trigger changes in function Tiedke (RegCM-CRU--- JJA)



Temperature

Conclusion

- Tiedke trigger performs better than the others Tiedke experiments, but it is still too dry.
- More simulation years are needed to better test Tiedke over the band.

Thank You!

A handwritten note on a light-colored background. The words "Thank You!" are written in a black, elegant cursive script. Below the text are several horizontal brushstrokes in various colors: blue, purple, pink, red, and yellow. At the bottom, there are faint, light-colored scribbles.

grazie

A square-shaped card with a textured, light brown or tan background. The word "grazie" is written in a dark brown, cursive script in the center. The card is framed by a decorative border consisting of a repeating pattern of dark red and light yellow triangles. In each of the four corners, there is a small, hand-drawn illustration of a sprig of green leaves with small dark berries and a tiny red flower.