

High-resolution CAM 5 runs with and without a deep convection parameterization (w and w/o DCP)

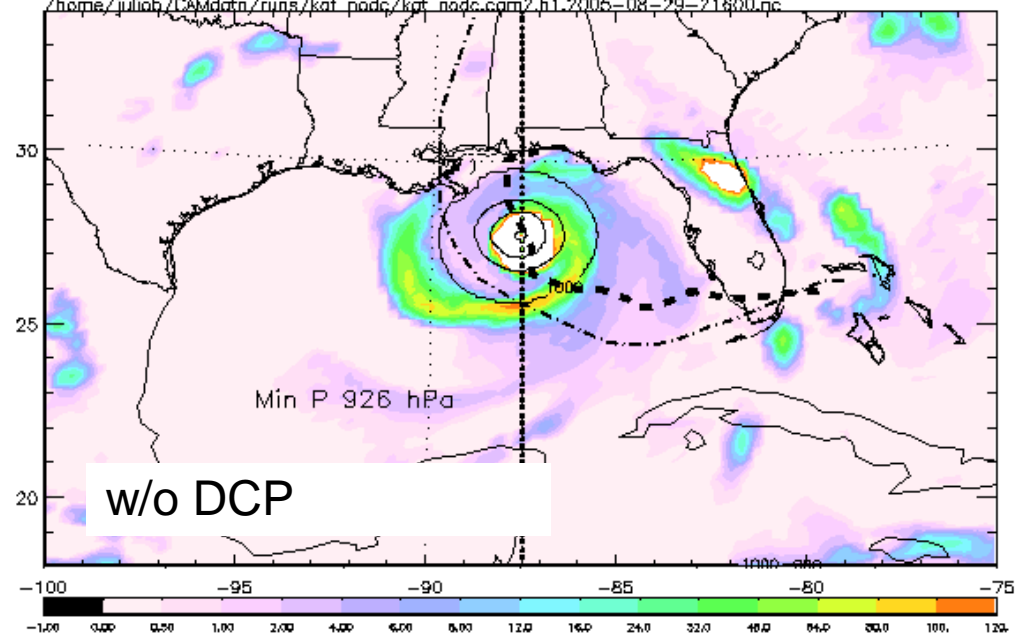
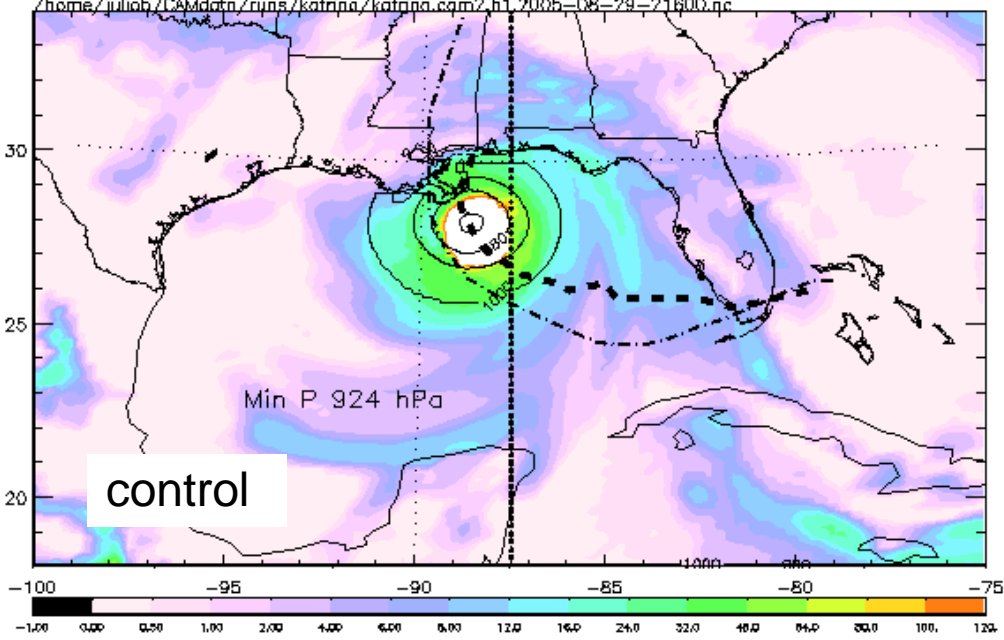
3.1708 [-90,90]
3.6937 [-40,40]

2005-08-29-21600 06Z

3.3357 [-90,90]
3.9413 [-40,40]

/home/juliob/CAMdatn/runs/katrina/katrina.com2.h1.2005-08-29-21600.nc

/home/juliob/CAMdatn/runs/kat_nadc/kat_nadc.com2.h1.2005-08-29-21600.nc

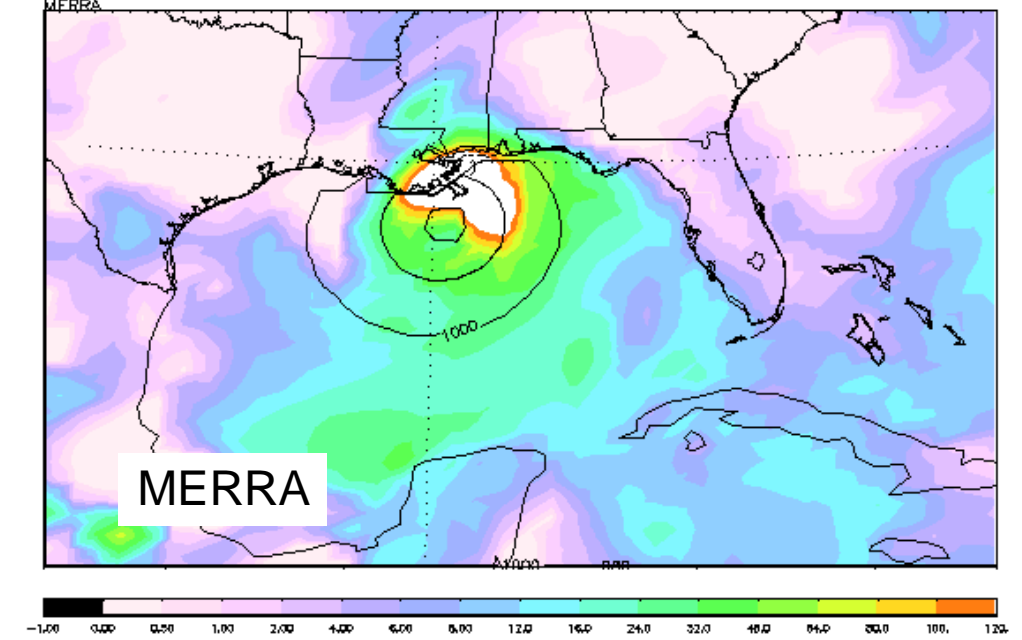
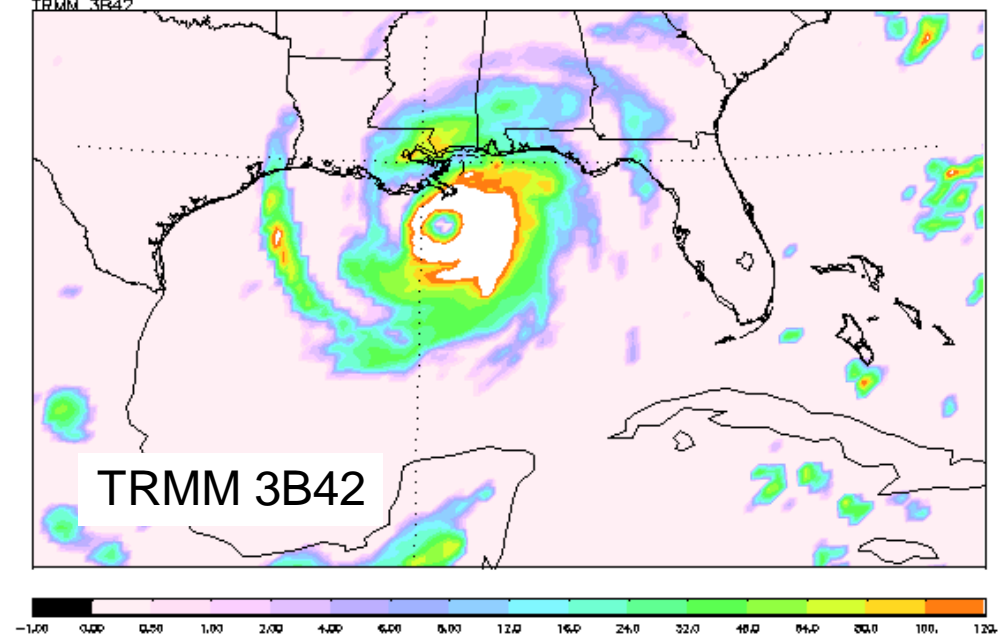


2.4330 [-90,90]
2.6896 [-40,40]

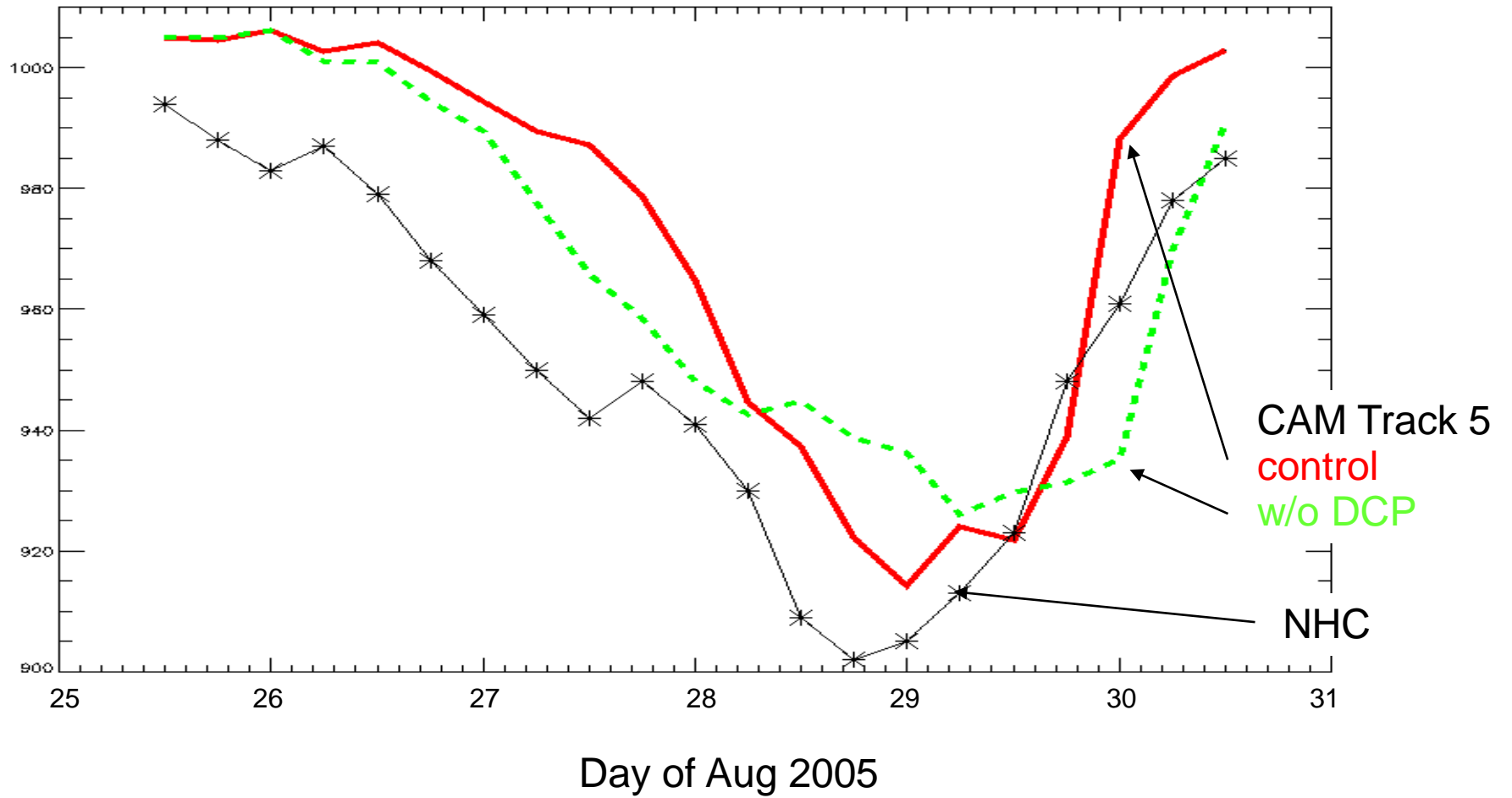
3.0918 [-90,90]
3.5851 [-40,40]

TRMM 3B42

MERRA

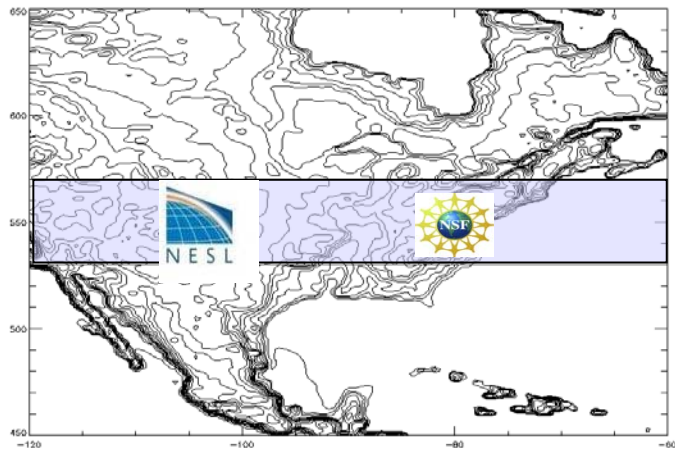


Minimum Surface Pressure

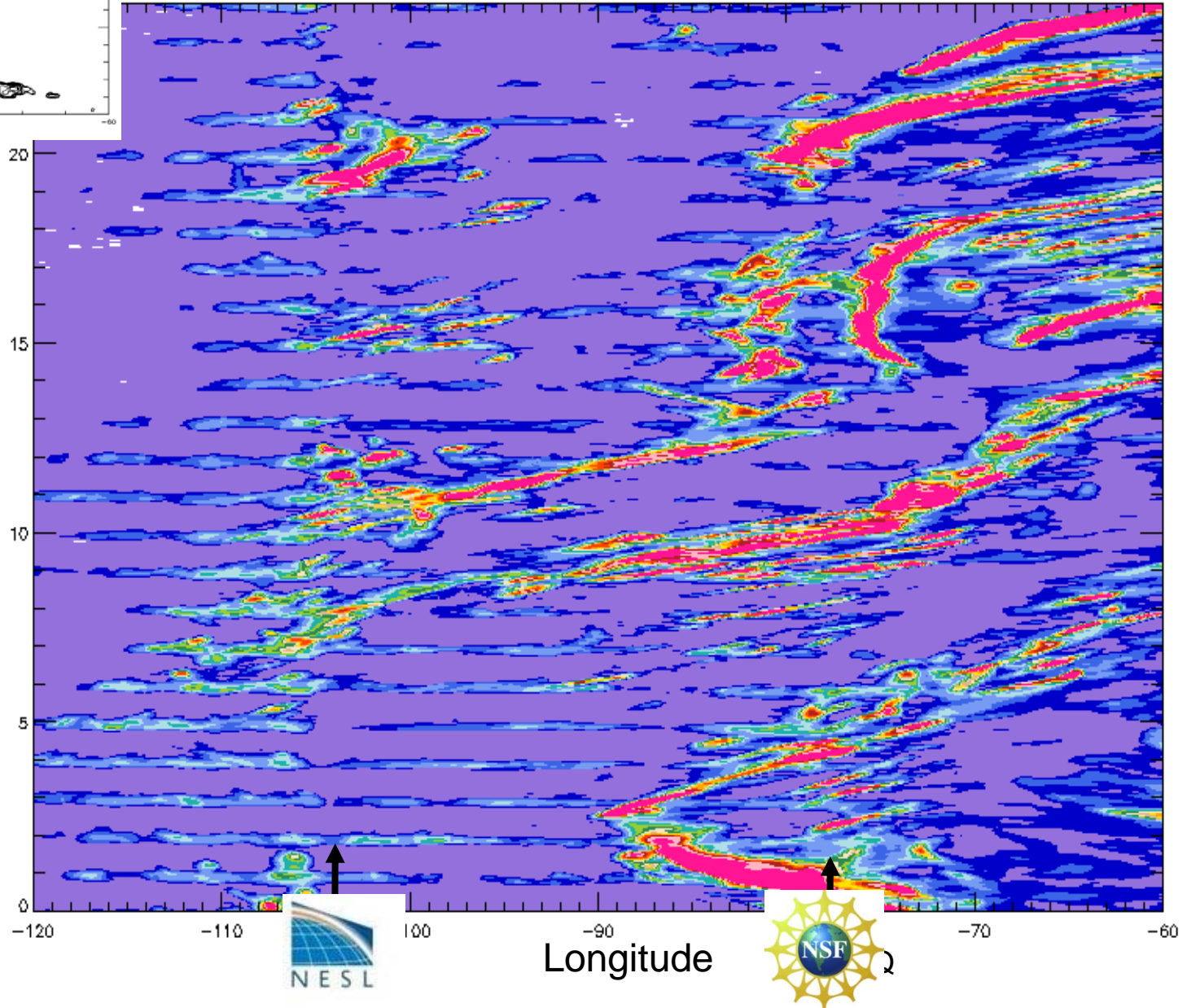


Propagating MCC's?

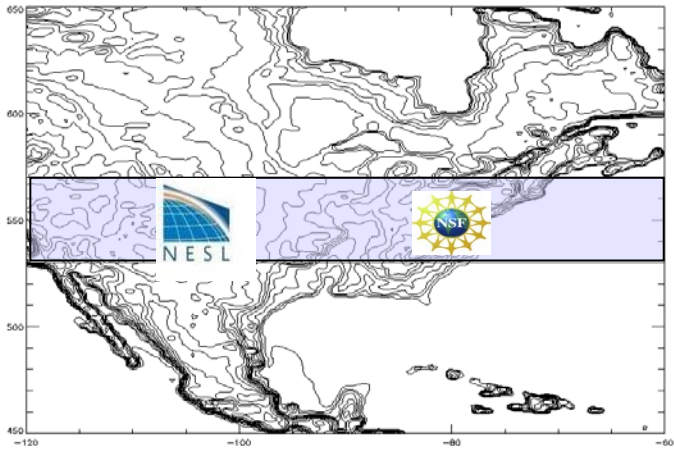
Hourly precip CAM-5(b) *without deep convection parameterization*



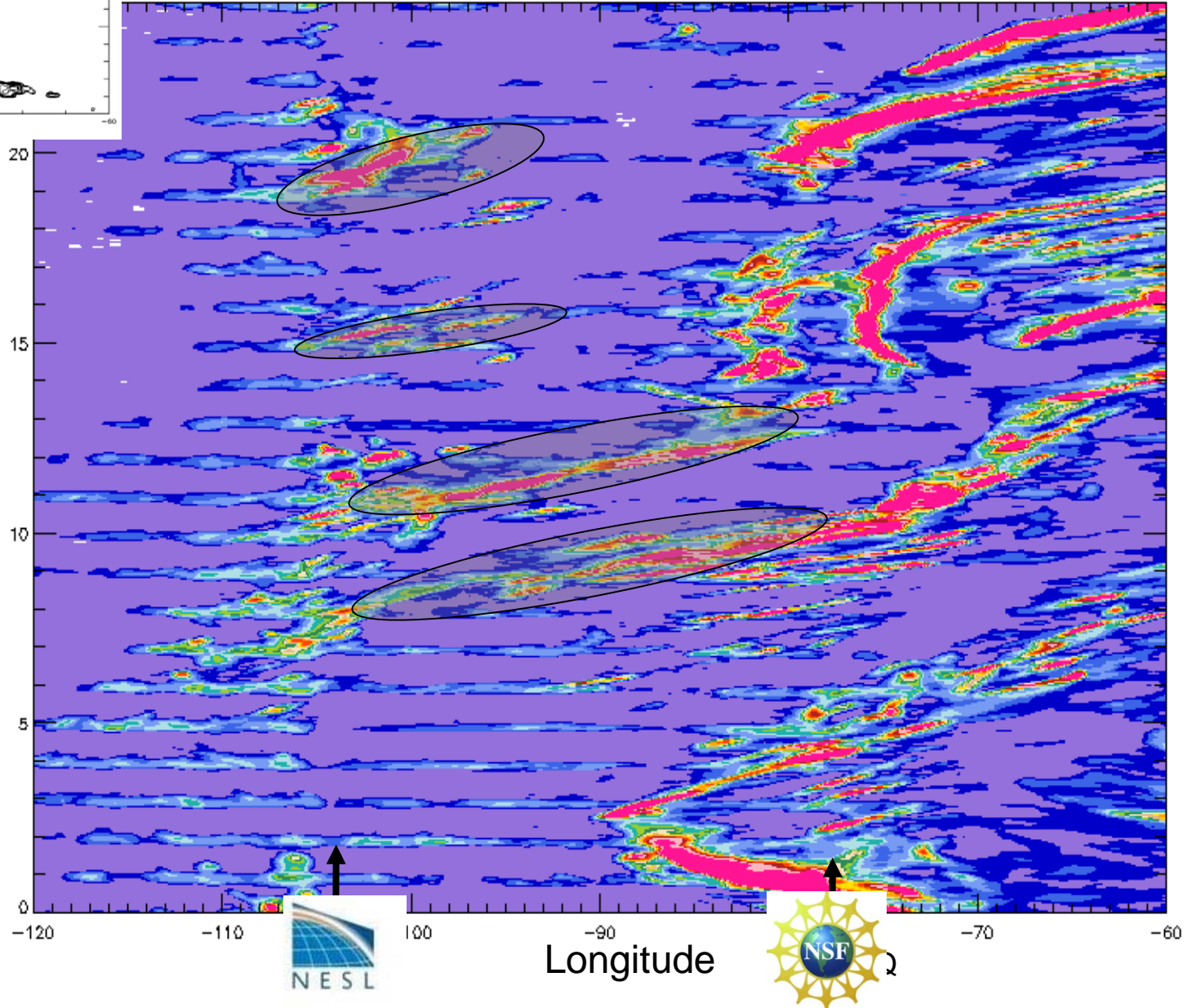
Days since Aug 1 2005



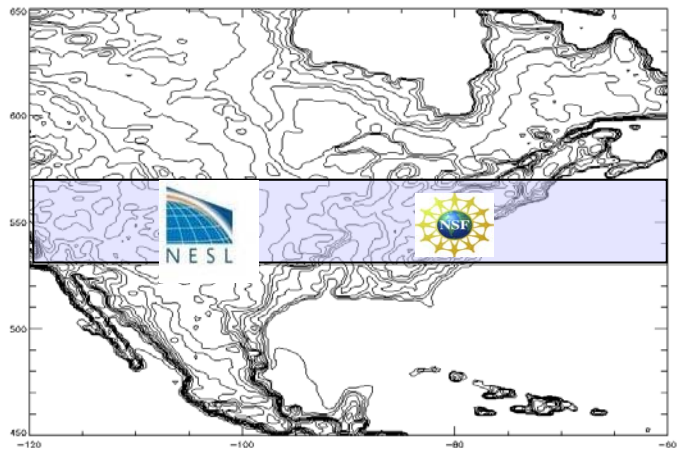
Hourly precip CAM-5(b) *without deep convection parameterization*



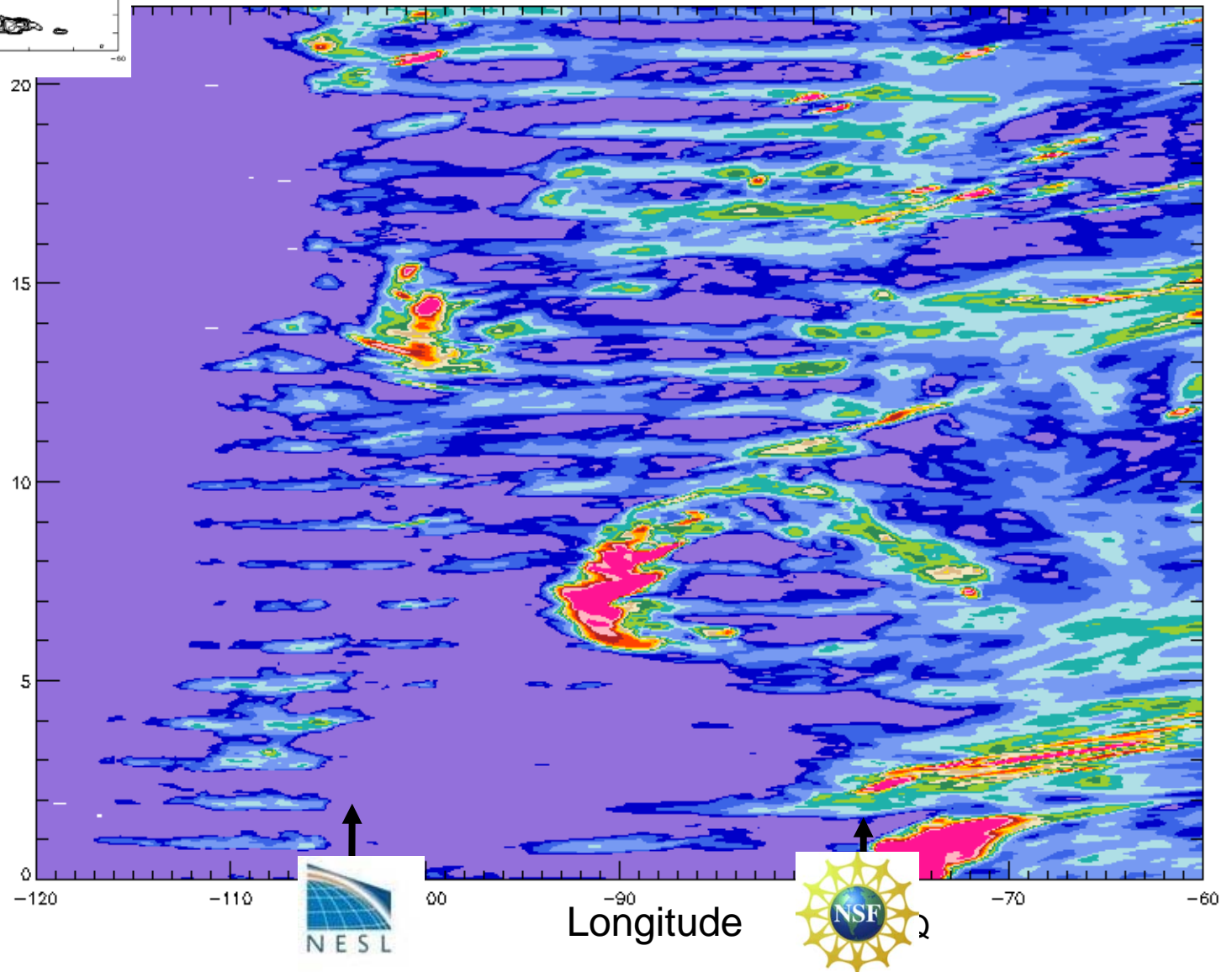
Days since Aug 1 2005



Hourly precip CAM-5(b) default



Days since Aug 1 2005



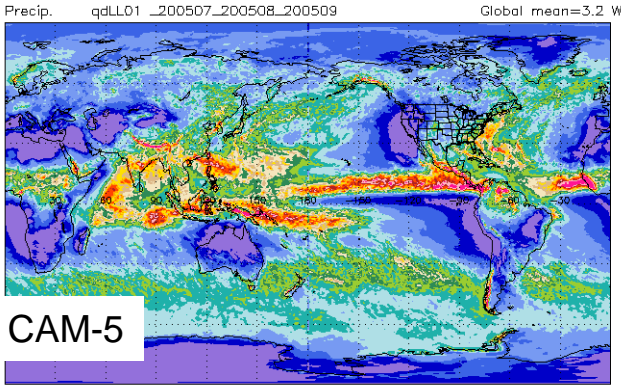
Seasonal Means (JAS 2005)

Runs initialized June 1, 2005

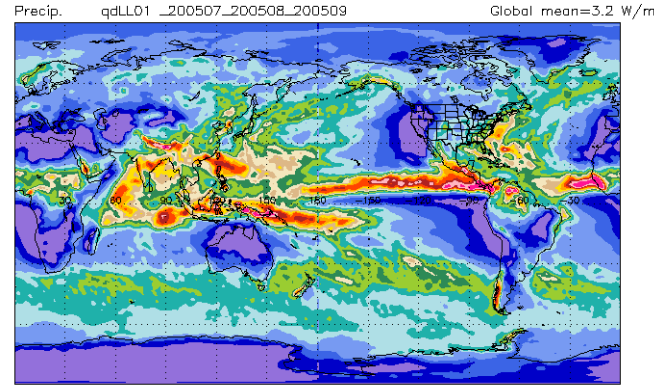
(Comparisons with 2.0x2.5)

CAM-5(b) and CAM-5(b) w/o deep convection param JAS 2005

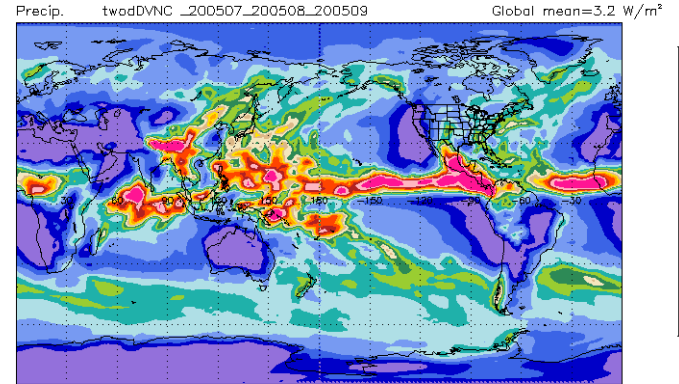
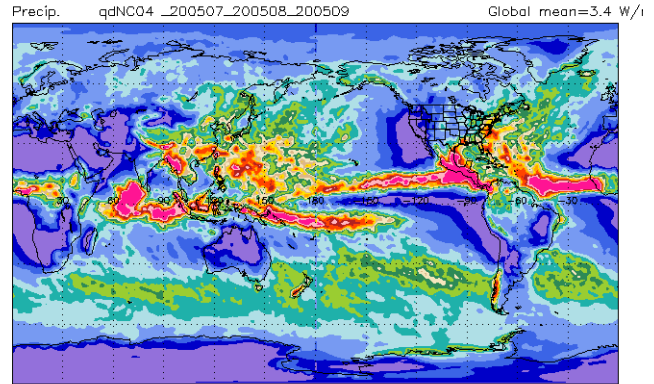
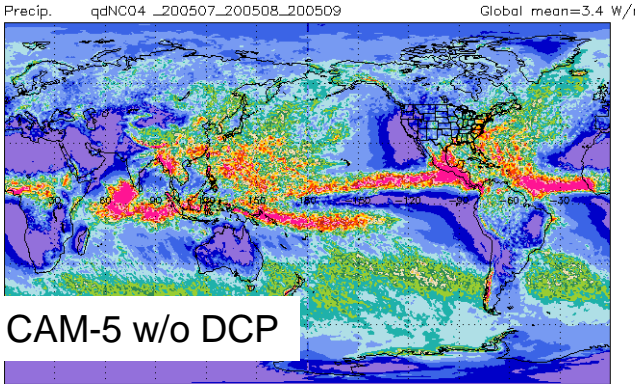
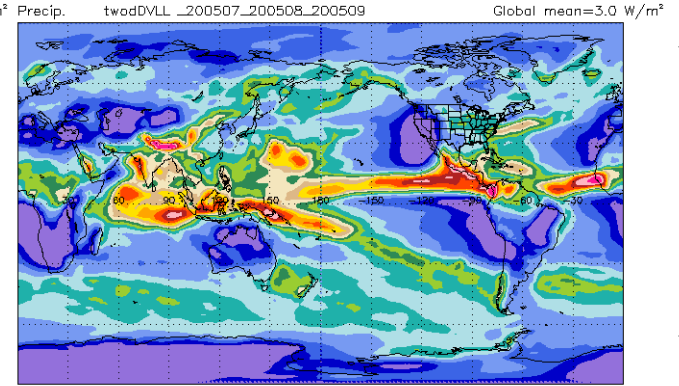
raw 0.23x0.31



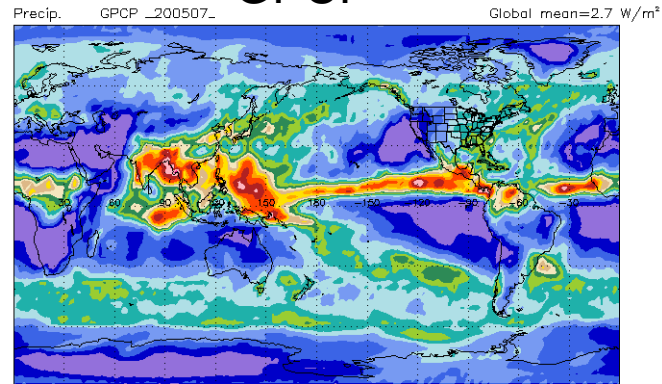
0.23x0.31 coarsened to 2x2.5



2x2.5

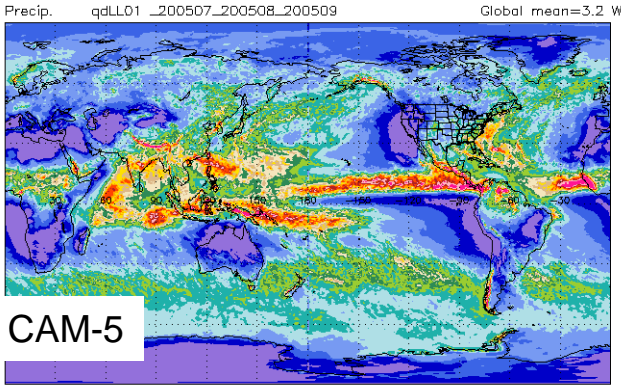


GPCP

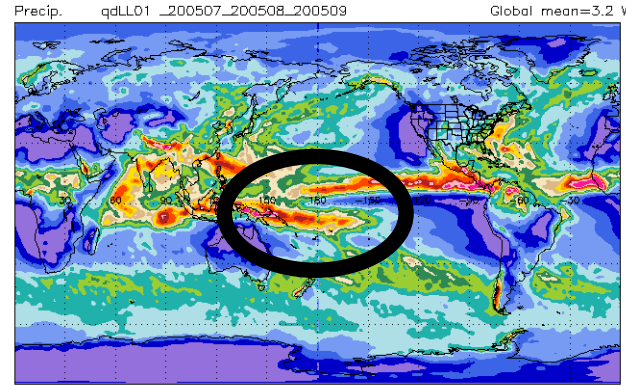


CAM-5(b) and CAM-5(b) w/o deep convection param JAS 2005

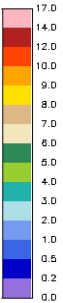
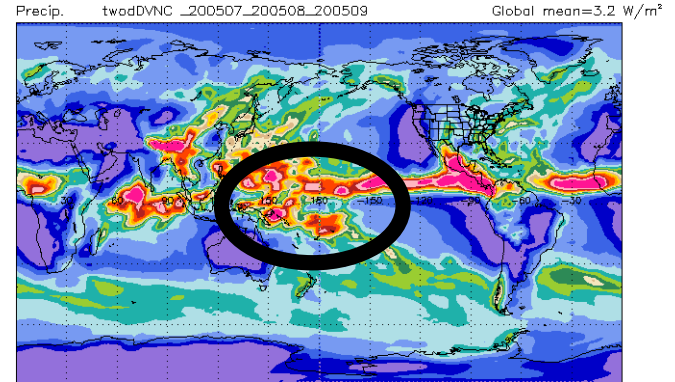
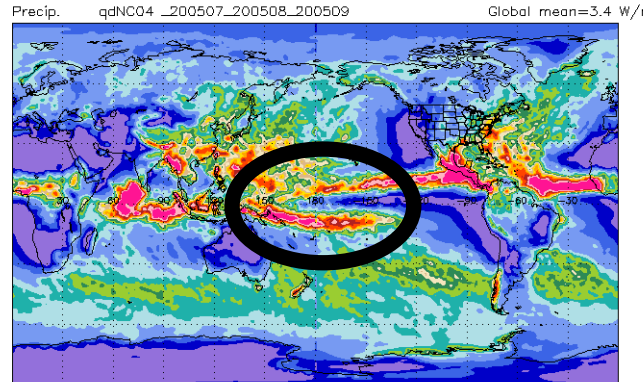
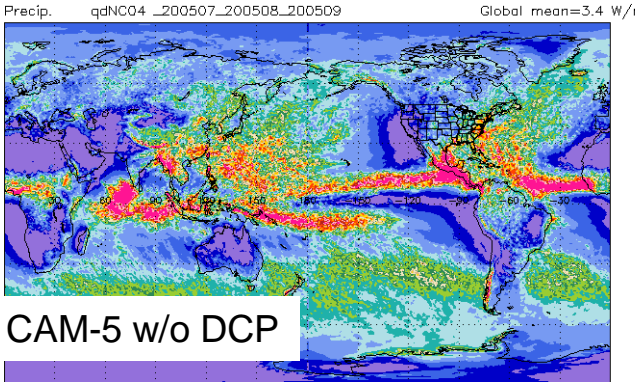
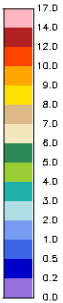
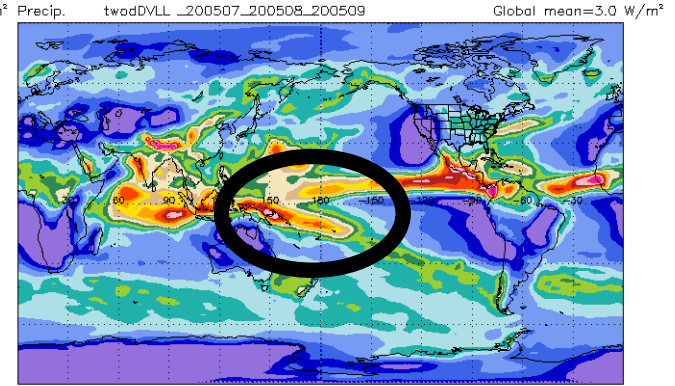
raw 0.23x0.31



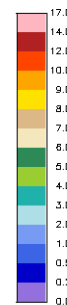
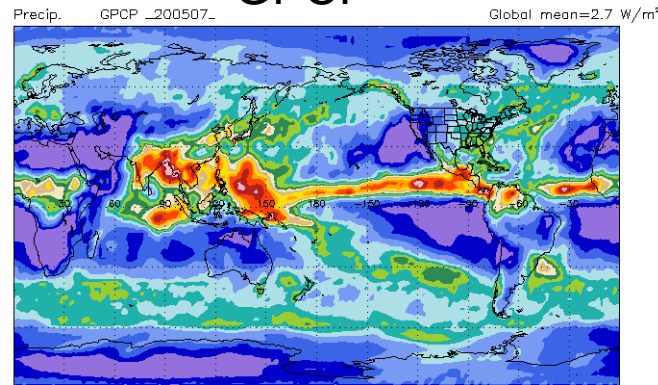
0.23x0.31 coarsened to 2x2.5



2x2.5



GPCP



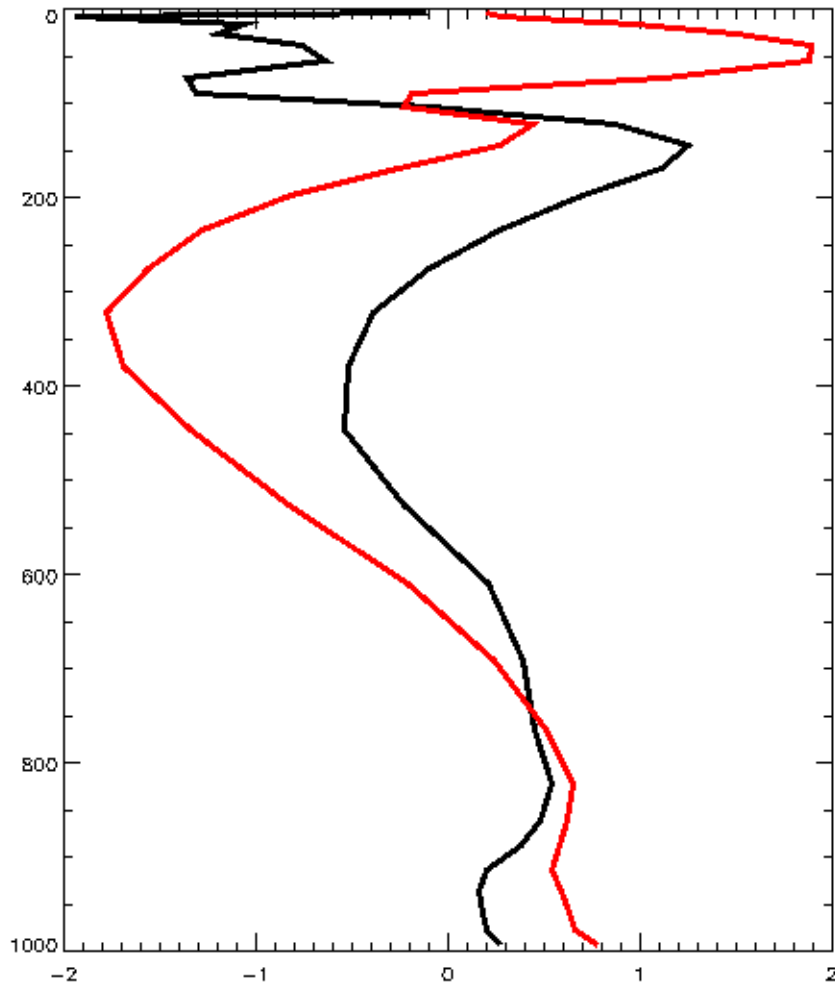
Spurious S Pacific ITCZ gets **worse** at high resolution and worse still without deep conv. param.

Monthly mean tropical difference profiles:

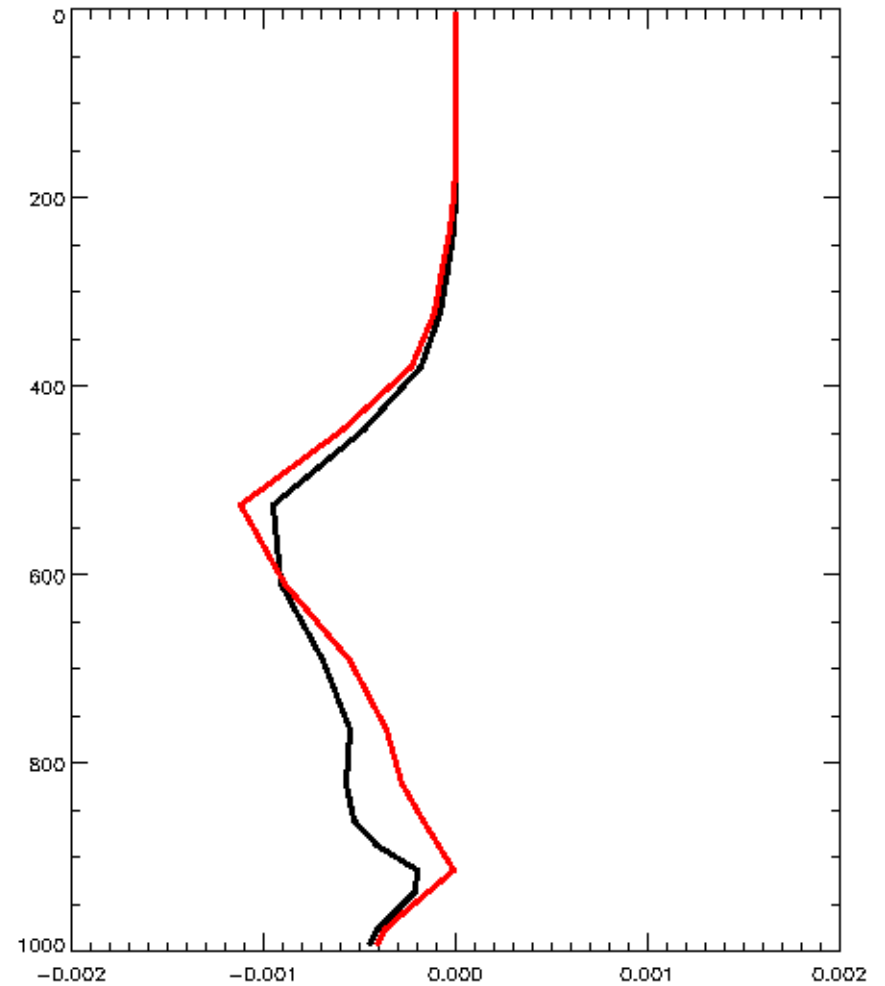
Difference=NoDCP-CTL

Black=0.23x0.31

Red=2.0x2.5



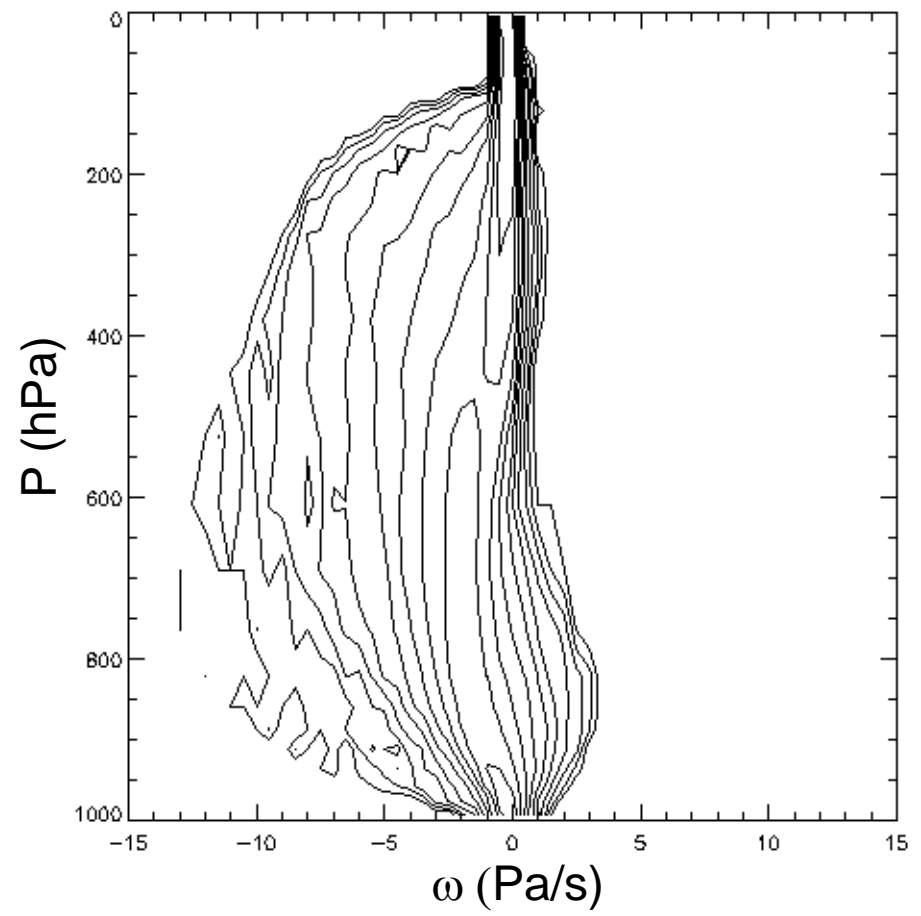
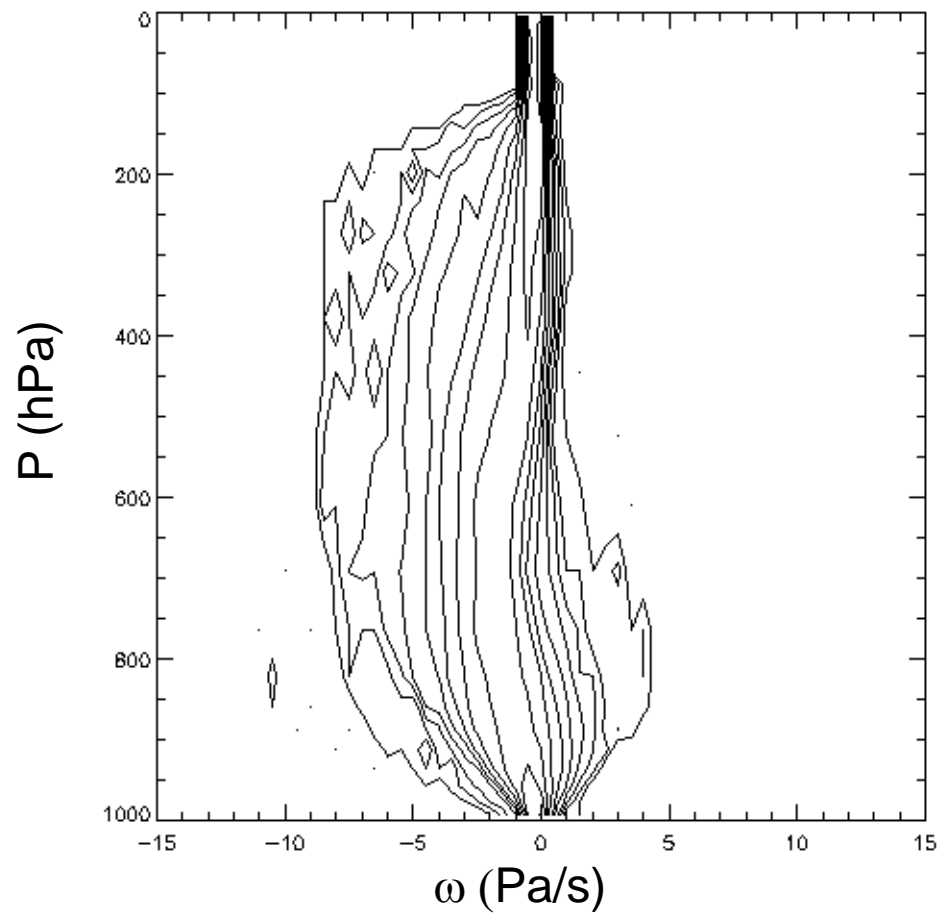
ΔT (20S-20N)



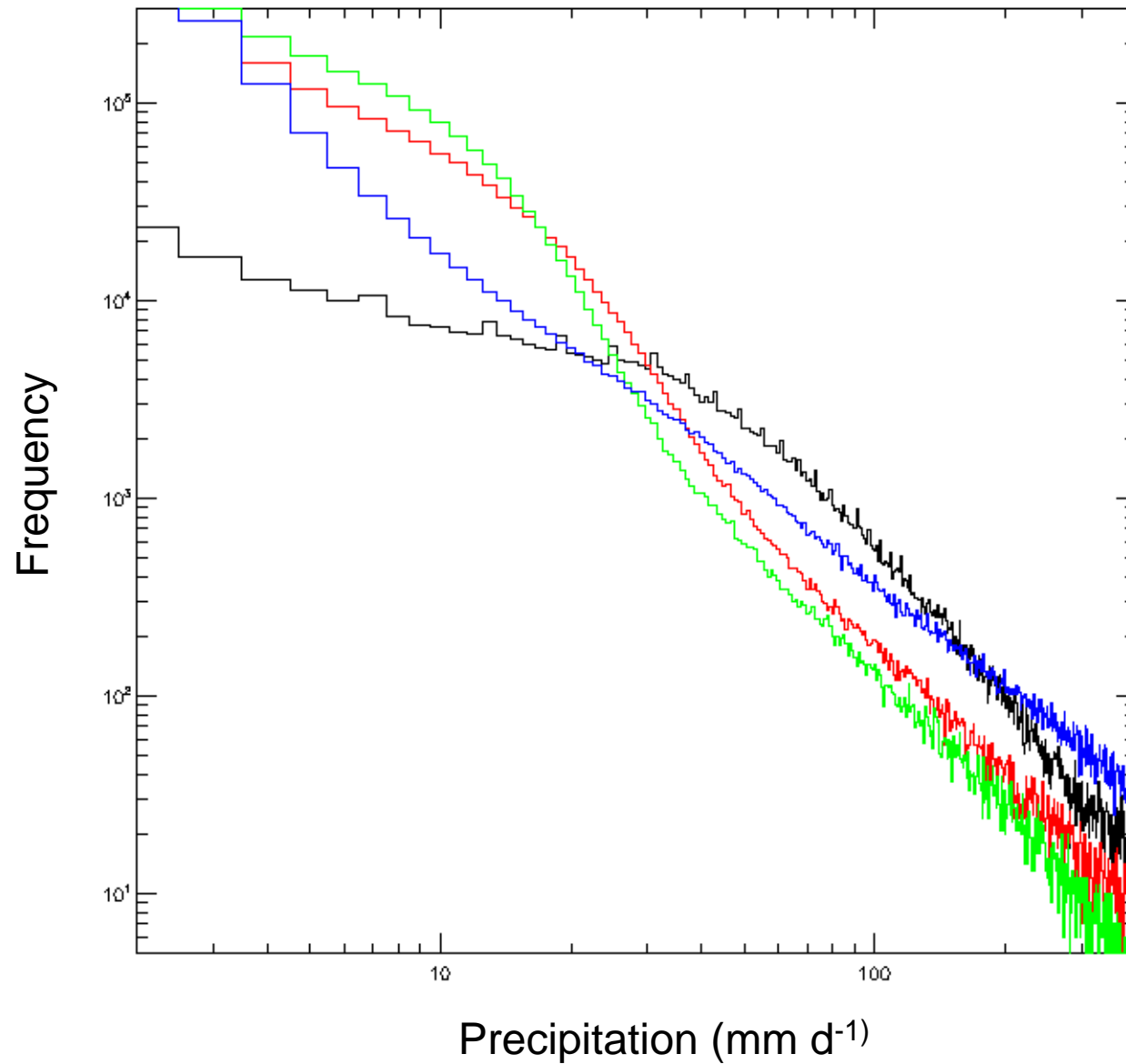
Δq (20S-20N)

Some statistics

Vertical motion coincident with heavy precipitation (>100 mm/d)



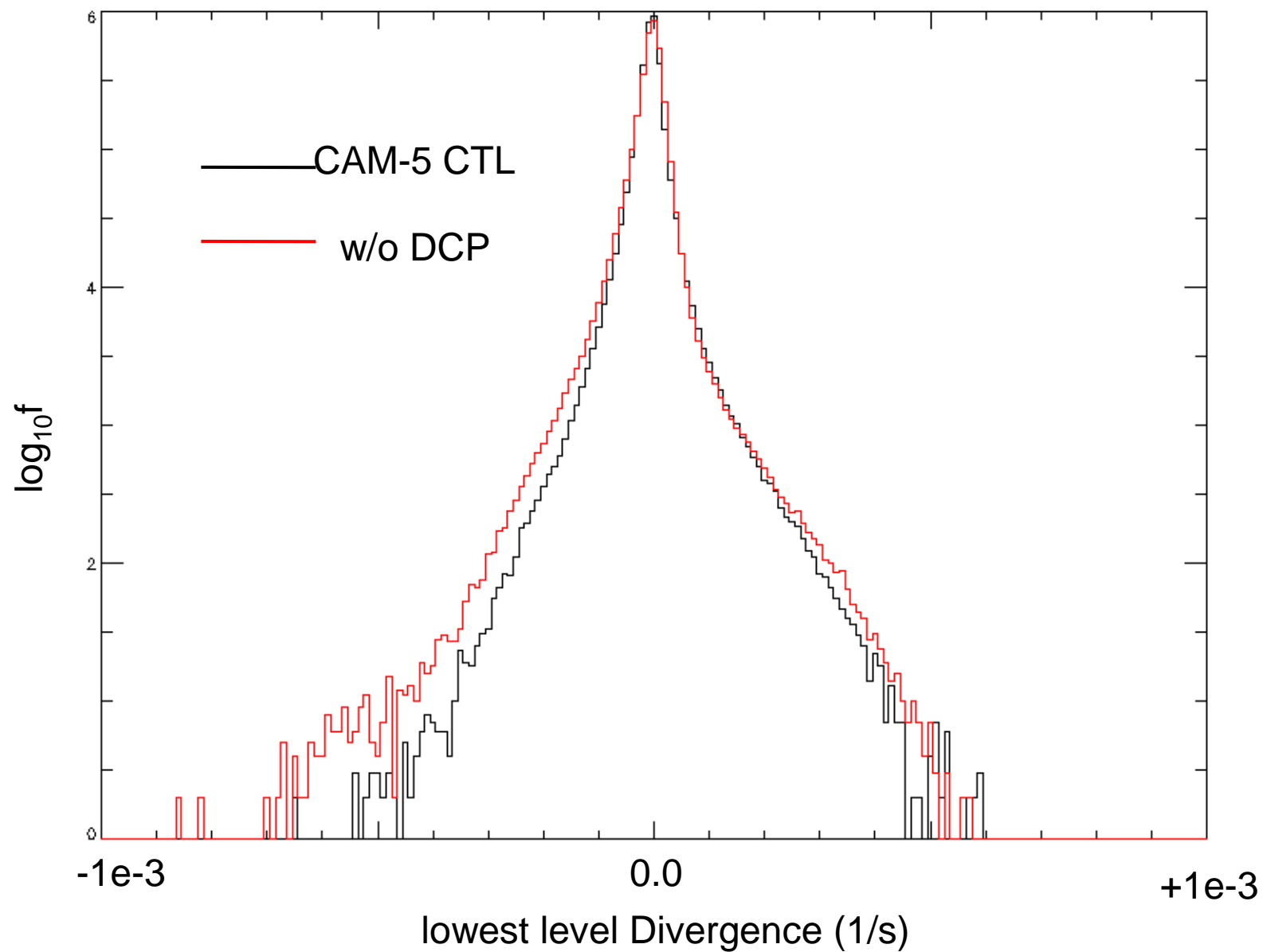
TRMM 3B42 intensity PDF, 5-days, 30S-30N vs
Control (ZM) **RAS** **No-DeepCon**



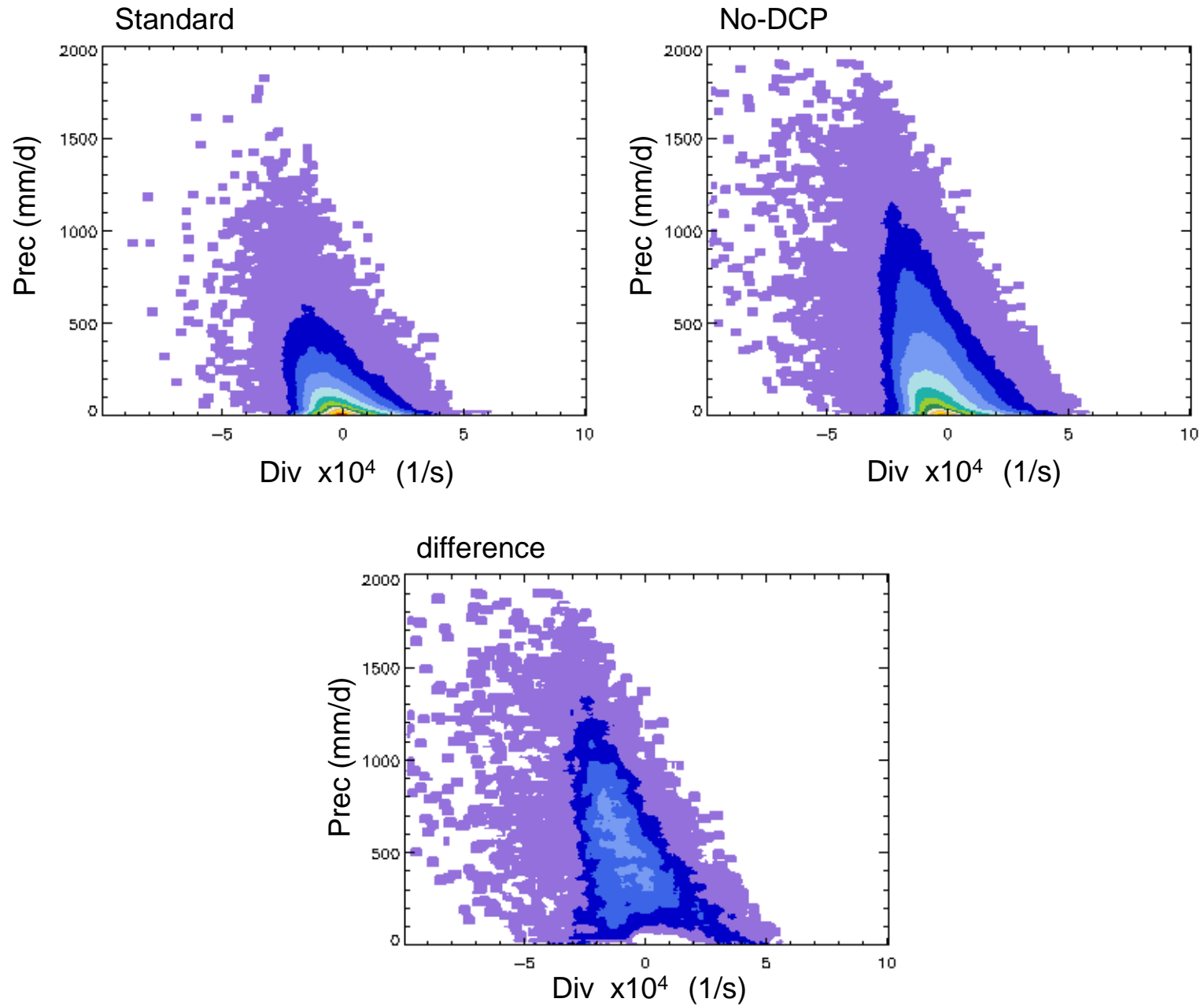
Note: *No-deepCon still has UW shallow convection*

Log-frequency

Instantaneous low-level horizontal divergence Aug 1-7 12S to 12N (6-hrly)



Joint pdfs of low-level divergence and precipitation Instantaneous 4x dly for 7 days 12S to 12N



Summary

Some encouraging aspects in tropical cyclone simulations – both forecast and seasonal

ZMNR deep scheme allows TCs to deepen, but seems to interfere with midwest MCCs.

Precipitation means look similar in high resolution w and w/o DCP
Some biases are worse at high res.

Other climate aspects, e.g.. mean T q profiles similar in 0.25 runs w and w/o DCP.
: Convection-free AMIPs?

Precipitation intensity statistics are different in runs w and w/o DCP
Problems in DCP run: weak extremes, excessive moderate rain

Low level divergence has large extremes in run w/o DCP.



THANK YOU

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**To advance understanding of weather, climate, atmospheric composition and processes;
To provide facility support to the wider community; and,
To apply the results to benefit society.**

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