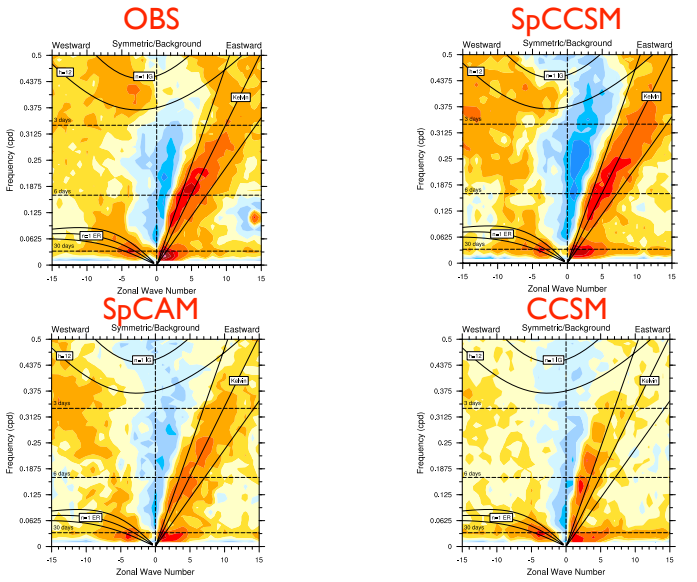
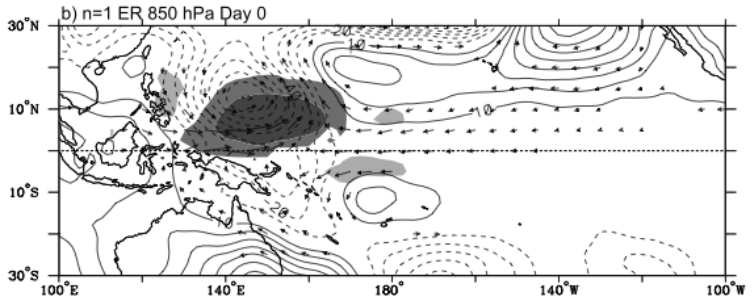
Equatorial Waves (sym)

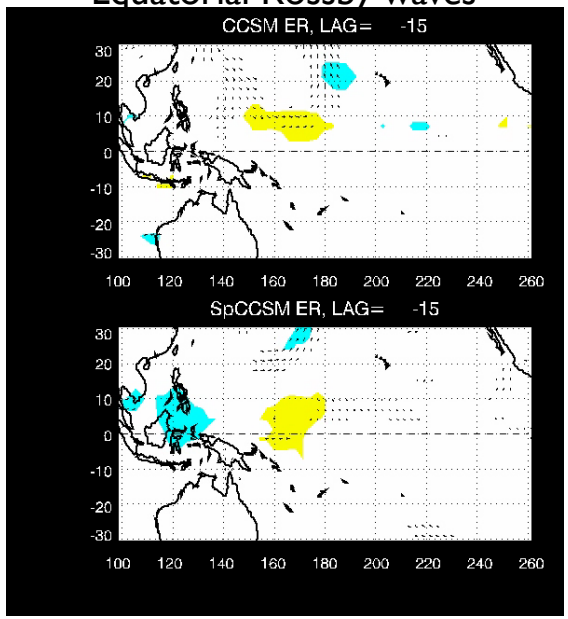


These are plots of the OLR signal-to-noise ratio for observations and the three simulations.
Before we look at the n=1 ER, first note how the Sp models do a better job of coupling convection to wave disturbances (Kelvin modes).
Second, note how the MJO improves from CCSM, to SpCAM, to SpCCSM. This is the eastward-propagating mode of the summer monsoon.
Now, note that all models appear to have a good representation of the n=1 ER in this spectral representation.
Transition: But, it is important to see if spectral similarity translates to geographical similarity, and if SNR translates to overall variance.
To do this, we extract only the n=1 ER wave from the data...

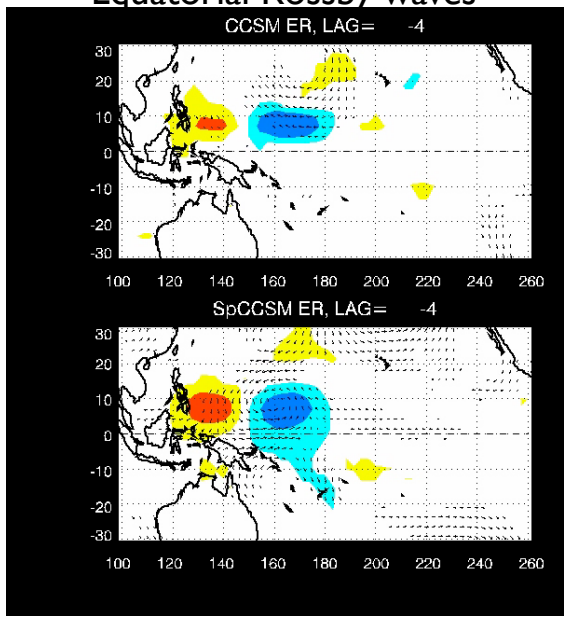
Equatorial Rossby waves



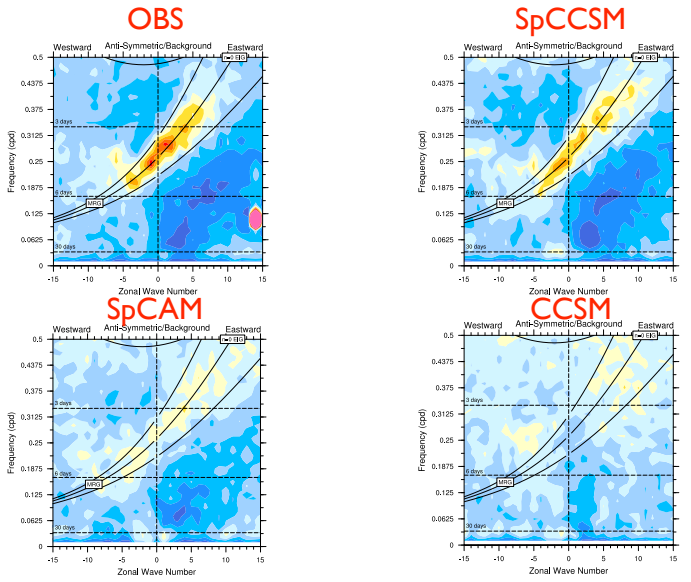
Equatorial Rossby waves



Equatorial Rossby waves

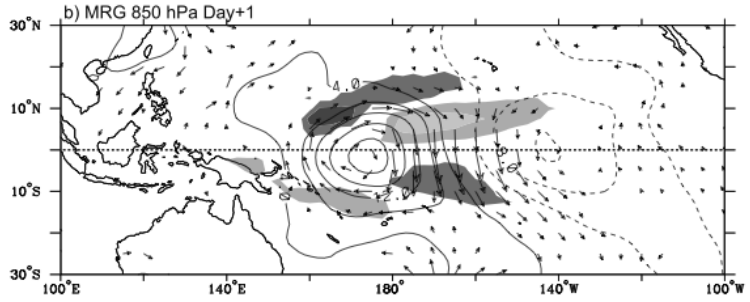


Equatorial Waves (asym)

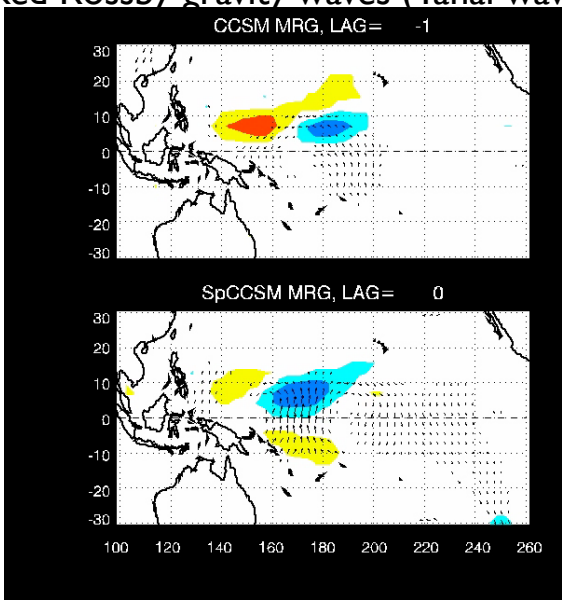


Now let's look at MRGs.
Note that MRGs are higher-frequency disturbances than ERs.
For this wave type, Sp alone cannot produce realistic spectra in the MRG region.
Sp AND coupling are needed to produce this wave type.
Could this wave type impact the simulated northward-propagation of the monsoon?
To find out, we now extract just the MRG from the data.

Mixed Rossby-gravity (Yanai) waves



Mixed Rossby-gravity waves (Yanai waves)



Mixed Rossby-gravity waves (Yanai waves)