Extreme La-Nina 2010/11 and the vigorous flood at the north-east of Australia.

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Main goal: synoptic analysis of the vigorous Australian flood, occurred during the extreme La-Nina 2010/11 years.

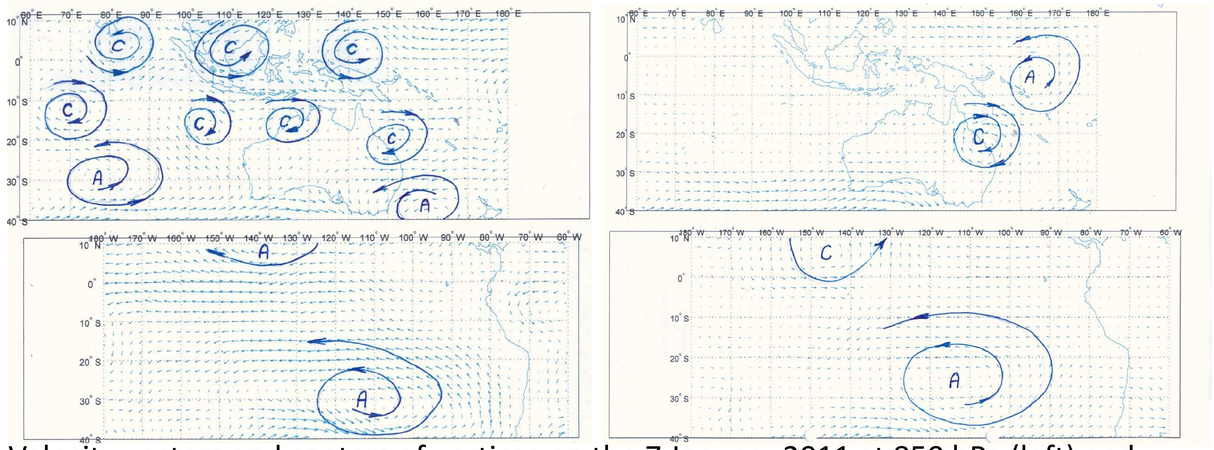
Data: NCEP/NCAR Reanalysis

- 2011 January and February *dailies*: ***u*** and ***v*** (m/s), ***τ*** (hPa/s) – on 850, 700, 500 and 200 hPa pressure levels, ***OLR*** (W/m^2), ***precipitation*** (mm/day) for tropical region of **Pacific and Indian Oceans;**
- *Monthly* ***SSTAs*** by Kaplan for December, 2010, January and February 2011.

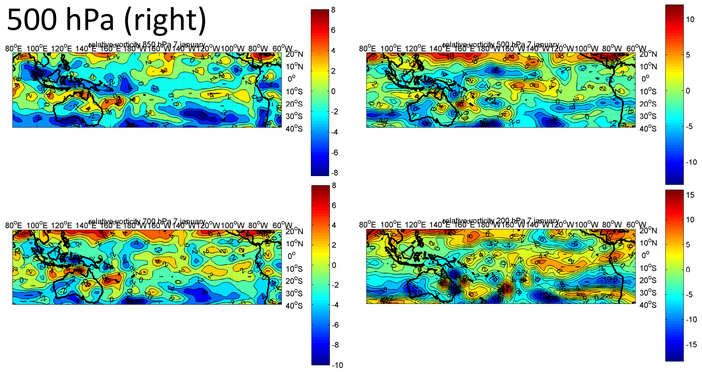
There were two periods of **tropical cyclones activity** at the *summer Australian monsoon system.*

First period (7 – 11 January 2011)

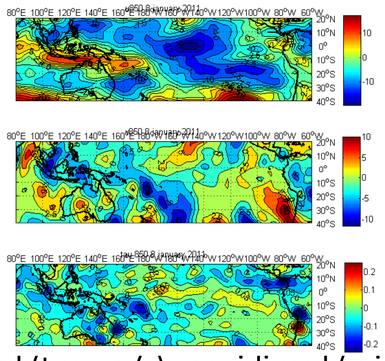
Active tropical cyclogenesis at the ***Indian ITCZ branch***.



Velocity vectors and centers of vortices on the 7 January 2011 at 850 hPa (left) and 500 hPa (right)



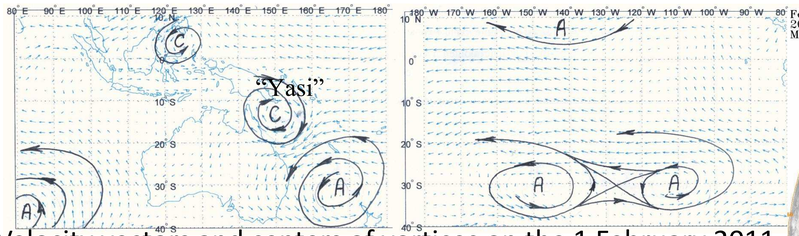
Relative vorticity (s^{-1}) on the 7 January 2011 at 850 hPa (top, left), 700 hPa (bottom, left), 500 hPa (top, right), 200 hPa (bottom, right) pressure levels.



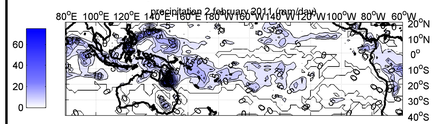
Zonal (top, m/s), meridional (middle, m/s) and vertical (bottom, hPa/s) velocities on the 7 January 2011 at 850 hPa pressure level

Second period (30 January – 3 February 2011)

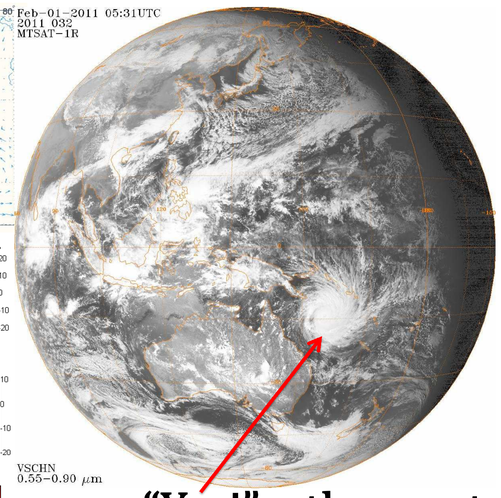
Active tropical cyclogenesis at the ***Pacific ITCZ branch***.



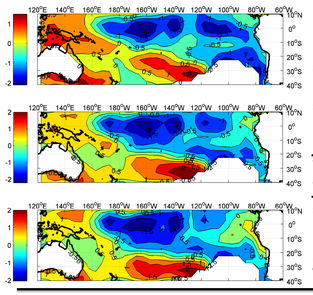
Velocity vectors and centers of vortices on the 1 February 2011 at 850 hPa pressure level



Precipitation (mm/day) on the 2 February 2011



"Yasi" – the most vigorous hurricane in the modern Australian history!!!



Zonal (top, m/s), meridional (middle, m/s) and vertical (bottom, hPa/s) velocities on the 7 January 2011 at 850 hPa pressure level

Left: La-Nina 2010/11. SSTA (^{0}C)on December 2010 (top), January (middle) and February 2011 (bottom). It is possible to call it as La-Nina "Modoki".

Conclusion. The most destroying flood in the modern Australian history was associated with very intensive La-Nina 2010/11 and unusual activity of tropical cyclogenesis at the summer Australian monsoon system as at Indian, so that at Pacific ITCZ branches. The negative SST anomalies occurred over the majority of tropical Pacific and shifted to the central Pacific. This allows to call La-Nina 2010/11 as **La-Nina "Modoki".**