

TC-MIP diagnostics: Phase 2 – Apr. 10, 2009

Detection of tropical lows

Phase 2 of this informal intercomparison project will involve detection of lows in numerical simulations supplied in phase 1, using a common detection algorithm. Two algorithms are suggested: the CSIRO cyclone detection algorithm (Walsh et al. 2007) and the Camargo cyclone detection algorithm (Camargo and Zebiak 2002).

CSIRO detection algorithm

This can be found either on the Wiki at <http://wiki.arcs.org.au/bin/view/Tcmip/TcmipCode> or on the website. Some documentation of the scheme is contained in a README file. We suggest that you perform three detection runs:

- one with a 10 m wind speed threshold of 17.5 ms^{-1} and default values of the other parameters. See the README file for what to do if you don't routinely archive 10 m wind speed.
- the same but with $t_{crit} = -20$, $w_{chkcrit} = -100$, and $t_{300crit} = -20$
- the same as the first detection run, using default values of the criteria, but with a 10 m wind speed threshold based on the solid line in Fig. 2 of Walsh et al. (2007), adjusted for the resolution of your model.

The detection routine will produce detection files that can then be forwarded to us. These are likely to be small in size, so e-mail or allowing us to download them from a web site might be a practical way to do this.

Included in the package is a “terms and conditions” document from CSIRO that details how the detection algorithm. You don't have to do anything or sign anything to use the algorithm. The main condition of use is that you cannot pass on the algorithm without permission (but permission will be easily given to do so – just ask).

Camargo detection algorithm – coming soon.

References

- Camargo, S. J. and Zebiak, S. E. 2002. Improving the detection and tracking of tropical storms in atmospheric general circulation models. *Wea. Forecasting* 17, 1152–1162.
- Walsh, K., M. Fiorino, C. Landsea and K. McInnes, 2007: Objectively-determined resolution-dependent threshold criteria for the detection of tropical cyclones in climate models and reanalyses. *Journal of Climate*, 20, 2307-2314.