

## ***Interactive comment on “27-day variation in cloud amount and relationship to the solar cycle” by Y. Takahashi et al.***

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This very interesting paper reports on the detection of near-27 day spectral power peaks in the OLR data for a part of the equatorial region. A Maximum in the signal is found for the Western Pacific Warm Pool.

I think this is interesting because of the time-scale involved as well as the location of the signal. I have some questions regarding the work:

1) Is the spectral power in the WPWP statistically significant? Reporting on one of the strong peaks in a power spectrum is one thing, reporting a significant amount of power is another. The calculation of levels of significance for spectral peaks should be attempted, I suggest. Otherwise the reader is not sure of the spectral peak is a

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common occurrence in random series of this length and type. Possible methods could include the use of 'surrogate data', generated repeatedly with the aim to make a large sample of 'spectrally realistic but random' data in which to test for the occurrence rate of spectral peaks.

2) The geographic location of the signal is of course interesting for physical reasons, as discussed in the paper. In our own work (Gleisner and Thejll, GRL vol. 30, p. 1711 (2003)) we found a significant 11-year signal in the tropospheric thickness (upper and lower) for all tropical latitudes except the central and eastern Pacific, consistent with the present work. However, we did not find a significant response to the solar cycle in the vertical velocity in the WPWP region. We would expect that a large-scale dynamic signal should be apparent if an external modulating factor was present - but the use of higher-resolution data, as in the Takahashi et al paper may be the key to find these cases.

I also have a few very minor questions to add to the above:

3) Could the "27" day peak be an alias of the MJO signal? That is, a spectral peak artefact, rather than a real signal.

4) If the 1991 spectrum is not omitted, will the conclusions of the paper change?

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