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Interactive comment on “Roles of initial ocean surface and subsurface states on successfully predicting 2006–2007 El Niño” by F. Zheng and J. Zhu

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General comments

This is a very nice paper in which the authors have tried to separate the effects of assimilating the surface and sub-surface data into the initial conditions of the model on the model's ENSO forecasting capability. Numerical experiments were performed by assimilating Sea Surface Temperature (SST) and Sea Level (SL) data, either separately or together, and the hind casts were compared. It was found that assimilating both SST and SL yielded the best forecasts with SL playing a greater role than SST. However, it would be great to have some clarification about a few points that I have.

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In figure 1, it is seen that for the initial conditions the strongest positive SST anomalies are more or less co-located with strong positive SL anomalies in the western Pacific. However, in the eastern Pacific, while the strongest negative SST anomalies are at the equator, the strongest negative SL anomalies occur off-equator between 10°N and 15°N. What is the cause for this?

On page 1549 (line 25), it is mentioned that the warm anomaly develops more slowly in the SST assimilation experiment when compared to the SL assimilation experiment. But when you consider the forecasted SST anomalies in figure 1 (bottom row), the SST anomalies in the west Pacific, near 160°E, for the SL assimilation case begin to develop in February 2006, while in the other two experiments they begin to develop a month earlier in January.

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