We would like to thank the anonymous reviewer for his/her constructive comments and suggestions that helped us to improve the manuscript.

The thrust of the argument seems to be that a) no non-linear lee waves are seen in these sections, and b) no solitary waves are seen in these sections, and therefore the conclusion is that lee waves have been suppressed by a baroclinic density gradient across the sill.

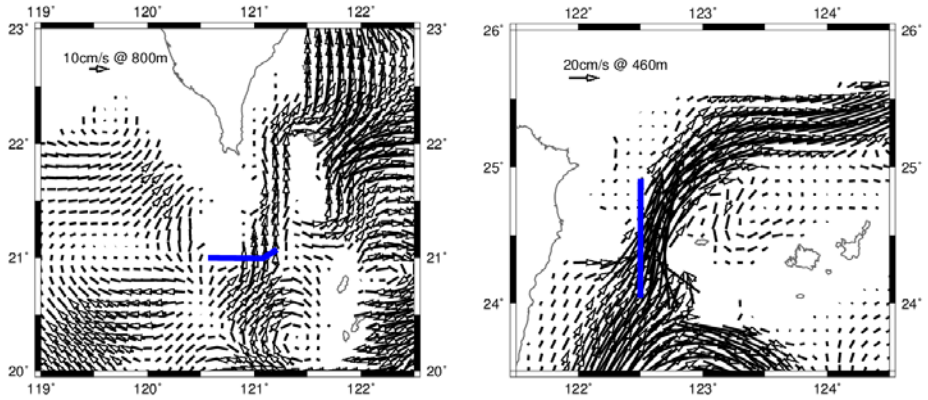
The first observation would be interesting if the authors could show that they were passing the sill crest at a time non-linear lee waves would have been expected. There is substantial observational (Alford et al 2007) and modelling evidence (Buijsman et al 2013) that there are substantial lee waves in Luzon Strait generated during off-ridge flow. However, the authors do not test the tidal flow for the presence of lee waves, and indeed erroneously exclude the possibility of the tide forming the structures they find because they are too long to have been formed during a tide. (This last supposition is particularly unlikely, as the reflector is likely a water mass boundary, and there is no reason to believe that it is caused by instantaneous flow character. Or if it were, it would be associated with an internal tide phase speed (>1 m/s) not the advective flow speed). So without more clearly showing that the ship passed the crest of these sills when lee waves are expected to be present, I don't see that they have much evidence that there are no lee waves.

The evidence for the subtidal flows moving in one direction or another is very flimsy, and not very convincing. The mean flows alternate direction all the time in this region due to the eddy-rich influence of the Kuroshio.

A: These reflectors are the water mass boundaries because of the strong reflective contrasts caused by the different physical properties of the water masses, whose reflective features below and above the reflectors are distinct. A possible dynamic process should dominate because the boundaries only appear at one side of the ridges and right at the depths of the sill crests. Thus we interpret the strong reflectors are the water mass boundaries between the intruded waters and the deep waters in the troughs; the shapes and positions of the boundaries indicate a dynamic process of flow separation.

We do not deny that lee waves does not exist or impossible to be generated at the sill crests. But the local/temporal processes, such as eddies, tides or flows, may induce/control the separation phenomenon as we observed along the sections during certain time period. As for the expected lee waves generated at Luzon Strait during off-ridge flow, we also expect that they can be captured by the seismic image and can be supported by numerous previous studies.

Although the reliability of the OGCM (OFES here) is affected by many factors, the derived mean currents show that current directions in the study regions are consistent with our expectation.



Currents extracted from the OFES model data near Luzon Strait (left) and East Taiwan Channel (right).

The second supposition is that because we do not see solitary waves then a "lee wave" was not produced. This is not consistent with our understanding of solitary waves in the South China Sea, which is that the solitary waves are a steepening of the internal tide (see Farmer and Li, Helfrich et al). I don't think anyone has taken the "lee wave hypothesis" seriously for quite a while (certainly not the papers cited). A lack of solitary waves so close to the ridge is not surprising.

I think the null hypothesis - that there is a water mass boundary near the sill depth because there is little exchange below the sill - is the easiest explanation of a strong reflector at these depths. That there is a flow separation should the shallow water flow out over the deep would not be a very surprising observation, even if there was more compelling evidence from these images.

A: We are very sorry for the unclear expression about the solitary waves. Actually, existence of the internal solitary waves during the spring tide is a premise of our conclusion. We do not see lee waves generated or radiated along the whole seismic line (not limited to the section shown in Figure 3; Dong et al., 2009). Thus, this is not consistent with the so called "lee-wave mechanism", with the implication that other mechanisms, such as internal tide mechanism, may responsible for the internal solitary waves in the northern South China Sea.

If it's just a simple water mass boundary, it must be disturbed by kinds of dynamic processes, such as tides, currents, as well as the lee waves as expected, near the rugged sill crest of Luzon Strait. Further, the degradation of the reflector from the sill crest to the trough center also indicates that the interface is not stable enough and the exchange must be very strong. So, without a persistent flow that sustaining the separation, the boundary will not be existing for a certain time.

Nevertheless, considering that this paragraph is mainly to argue against the "lee wave mechanism" of generating of the internal solitary waves, which is not a crucial issue with the flow separation and probably out scope of the discussion, we would like to remove this paragraph from the discussion.

References:

Dong, C. Z., Song, H. B., Hao, T. Y., Chen, L., and Song, Y.: Studying of oceanic internal wave spectra in the Northeast South China Sea from seismic reflections, Chin. J. Geophys., 52, 2050-2055 (in Chinese), 2009.