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Atmospheric Chemistry and Physics Discussions

Interactive comment on "VOCALS-CUpEx: the Chilean Upwelling Experiment" *by* R. D. Garreaud et al.

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Review Summary:

This article is general presentation of mostly the meteorological setting for an interesting Chilean upwelling field experiment. It is successful in presenting the essential meteorological aspects of this coastal area. Many of the figures nicely present complex results in a succinct and engaging manor. In addition, the manuscript includes a review of the recent meteorological publications along the Chilean coast which would be helpful for those not familiar with the area. If there is a short coming of this manuscript, it is the almost total lack of direct recognition of the similar conditions and previous publications in other geographical areas. By similar conditions, I am thinking of the meteorology and oceanography on the eastern side of the oceans near the subtropics.

This traditional practice is helpful for newer investigators and non-specialists searching out on what has been done. However, there is no need to disrupt the flow and focus of this manuscript. This duty could be handled efficiently with a table of the key reference/review(s) for of the worlds main three other geographical areas and a single sentence in the text body. Otherwise, I only have some small suggestions. I recommend publication.

Minor Suggestions:

Abstract, Page 26438, Line 18: southerly winds - winds from the south

Abstract, Page 26438, Line 21: northerlies - winds from the north

Section 1: Almost no reference is made to other eastern boundary current meteorology. A key summary reference for each would be helpful for interested readers are not aware of the literature. This could be in the form of a table.

Section 1 or 2: State that wind direction is expressed as from in the meteorological convention.

Page 26489, Line 14, here and elsewhere: "and a more synoptically active region to the south." I know what is meant, but might this be better expressed as " the zone of eastward migrating systems".

Page 26489, Line 15: "edge of the SEP stratocumulus (Sc) deck is "and Fig. 1. Caption and figure - suggest change "Deck" to "layer" as is more formal. Use "overcast layer" if cloud layer is solid.

Fig. 2. Nice presentation of topography, station location, radar coverage and bathymetry.

Fig. 2. Is there a difference between pLdV and LdV? If not, they should be the same throughout the manuscript.

Fig. 3 (a) caption. Choros (Ch) should be Cho to match figure. Fig. 3(b) figure -

labels on figure are a little small to read. Fig. 3(b) figure - add the arrow and LdV and Cho labels Fig. 3(b) figure - could the low cloud frequency be noted for the lowest and highest values?

Page 26443, Line 20. Section 3 Synoptic Variability. It might make sense to have the mean warm/upwelling season climatology either here or, even better, in section 1 to orient the reader to the basics. This could be the mean sea level pressure (Fig 6), surface wind and cloud occurrence (Fig.3).

Fig. 6. Nice presentation of sea level pressure and 500 hPa plots to represent the synoptic scale. I would not have guessed that the 500 hPa height climatology south of about 35 S would not have reflected the presence of the Andes mountains. The difference between the SLP in b) - strong winds from the south and d) relaxation - seems relatively minor. Perhaps it is the structure aloft, represented by the 500 hPA height that is making the key difference? Just wondering, I am not implying anything negative here. Of course, the difference between a) and c) or b) and c) is so extreme that it is easy to appreciate a wind "relaxation" occurring.

Fig.6. Lat and Lon labels are a little small.

Fig. 12. Figure works well for presenting the essentials of a complex case.

Page 26448, lines 23-28. Fig. 13 I believe that it is unusual to obtain such a clear presentation of the diurnally varying ocean current and a measured wind. The authors are to be complemented.

Page 26449, lines 1-17, Fig. 14. The profiles with only two sounding stations is effective in characterizing the lower atmospheric response.

Fig. 15. Caption: (5' up and 5' down) - change to "(sounding up or down took 5 min.)"

Page 26450, line 23/24. "expansion fan" - This should be referenced. For an economic use of text space, you could site Koracin et al 2004 as source for observations, theory and modeling on expansion fans. Ref: Koracin, D and C. E. Dorman and E.

P. Dever, 2004: Coastal Perturbations of Marine Layer Winds, Wind Stress, and Wind Stress Curl Along the California and Baja California in June 1999. Journal of Physical Oceanography, 34, 1152-1173.

Interactive comment on Atmos. Chem. Phys. Discuss., 10, 26437, 2010.