

Interactive comment on “The VAMOS Ocean-Cloud-Atmosphere-Land Study Regional Experiment (VOCALS-REx): goals, platforms, and field operations” by R. Wood et al.

Anonymous Referee #2

Received and published: 4 October 2010

Journal: ACP Title: The VAMOS Ocean-Cloud-Atmosphere-Land Study Regional Experiment (VOCALS-REx): Goals, platforms, and field operations Author(s): R. Wood and A.N.D. Numerous-coauthors MS No.: acp-2010-579 MS Type: Research Article, Special Issue: VAMOS Ocean-Cloud-Atmosphere-Land Study (VOCALS) (ACP/OS Inter-Journal SI)

General Comments

This article provides basic information about VOCALS science goals/hypotheses (well stated) and summary of the participating observing systems and sampling strategies (pretty well done). Figures and Tables are pretty well done. The font size is too small

C8236

in some cases.

What is a bit surprising is that a basic meteorological summary was not provided, other than one sentence that I recall. Similarly, almost no samples of the unique VOCALS data that was acquired are shown, nor are any early science highlights/ results listed. This is pretty standard in such papers, especially given the time that has passed. Is there a companion paper that does this?

Except for brief summary of various trajectory model calculations, the modeling component of VOCALS is not described.

Science Issues

20773, 9: The statement that “Aerosol effects on warm clouds are poorly understood” seems inaccurate. Much has been learned about this issue in the 35 years since Twomey first published on this topic. While understanding can definitely be further improved, we know a lot and “poorly” exaggerates the state of affairs when applied so globally to warm clouds.

20774, 1-5: This statement doesn't seem well supported by the cited paper which states that “We hypothesize that these fluctuations in droplet concentration are a result of the large scale meteorology and their correlation with cloud macrophysical properties should not be used as evidence of aerosol effects.” So, maybe the statement is not unreasonable as regards the magnitude of the effect, and potential consequences (following sentence), but would be more congruous if corresponded to the main conclusion of that paper.

20774, At 4 occurrences (and 2x in Table 1), I was thrown by the usage of “fresh water” as descriptor of water in the ocean. I thought conventional usage of “fresh water” meant water without significant salt content. This cannot be the meaning here (water from upwelling, occurring well below the surface). The authors should use some alternate terminology to communicate their meaning.

C8237

Table 2: A simple succinct listing of the cloud probes that were deployed on each aircraft should be provided. Much detail is given about the aerosol measurements, but, except for the G-1, the cloud measurements are summarized too briefly as “cloud water and cloud microphysics”. I believe the cloud measurements will also be key to addressing the science hypotheses, and cloud specialists probably care about what probes were used.

20780, and other places (Table 3, 4, 5, 2/7 and associated text): There is inconsistent level of information given about sondes. For a couple of the systems, it is explicitly stated that RS92G sondes were used. For others, no info is provided. Given lower tropospheric focus here, this is not so big an issue, but it seems to me that if this info is worth giving for one system, then it should be provided for all the sonde systems.

Section 4.2: The summary of XS missions flown (Table 8) is fine. I might have stated in text that there were 3 instances where full multi-aircraft XS pattern was successfully flown. No such information is given about the other mission types, except for the intercomparison legs. Maybe such info can be pulled out of the platform mission summary tables (Tables 6-10), but those tables had variable level of information detail and it would be challenging to do. Particularly for the POC missions (2), I would like to see some sort of summary like Table 8. For others, maybe some quantification of how much flight time was devoted to these patterns would suffice. Alternatively, or maybe additionally, the authors could add annotation to the Tables (6-10) to indicate in what patterns the aircraft platform participated on each mission day. I think that would be effective.

I reiterate that the level of detail in the Aircraft Mission Summaries (Tables 6-10) is quite uneven. Some communicate a lot, others not very much. Obviously, the former are more useful than the latter.

Technical corrections

20769: Meaning of VAMOS needs to be given right away. A simple footnote would do.

C8238

This info was not provided until late in the paper. A citation would be nice.

20773, 15: “Earth’s”

20773, 19: suggest “small” for “low”

20774, 20 “its”

20775, 2: “role in”

20779, 4: “Aircraft Studies”

20779, 8-9: At first usage, I suggest refer to Fig 2 where Point Alpha is shown. I missed this until way later in the paper and kept wondering about it.

20788, 18: “. . .ocean fronts. . .”. Similarly, at 20821: suggest “cyclonic and anticyclonic eddies”.

20789, 6: “Tenth GOES” is not conventional terminology. GOES-10 is pretty universal.

20789, 9: “. . .for the region bounded by . . .”

20794, 21: maybe

Interactive comment on Atmos. Chem. Phys. Discuss., 10, 20769, 2010.

C8239