

Interactive comment on “Wind regimes during the Last Glacial Maximum and early Holocene: evidence from Little Llangothlin Lagoon, New England Tableland, eastern Australia” by James Shulmeister et al.

Anonymous Referee #3

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This is a nicely written paper from an important location, however, as it stands, to me, the conclusions are too far reaching given the presented data.

Do you really know the lunette is LGM aged? The dating results show three ages from the LGM from different positions in the lunette and one from the Holocene. In the three cores dated from the LGM the majority of the each core occurs above the LGM date, for example in LL2, a 1 m core has a date of 18.9 ka at 0.6 m depth, while in LL3 a 1.5 m core has a date of 20.6 m from 1 m depth. All of the material above these depths (ages), i.e. the majority of core, may therefore be younger than the LGM? Of course

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the only way to ascertain this would be to date multiple samples from the same core. In addition, age alone is not the only measure of accumulation, mass is also important. Calculating mass accumulation rates through time, using bulk density and depth (which again require multiple dates from the same core) is the best way to constrain the timing of accumulation of the lunette. Admittedly, this is not straight forward, however, when you have multiple age populations in the same sample.

In the conclusion it is suggested that the results imply that there has been limited change in circulation patterns (presumably the position of the westerly winds) in the last 25 ka. The study site currently experiences westerly winds. One hypothesis is that the westerly winds moved north during the LGM, meaning the site would have also experienced westerly winds at that time, so how does the site prove one way or the other on its own whether the westerly winds have shifted or not? The North Stradbroke Island data that are cited indicate the opposite, i.e. that southwesterly winds affected that site more frequently during the LGM.

My final question concerns the source of the material in the lunette. In the paper it is suggested that the quartz rich sands in the lunette were derived from granites in the eastern side of the lagoon rather than from basalts in the western catchments (it would be nice to see some supporting mineralogy or elemental data to demonstrate this). Could it be that this pattern is a result of weathering i.e. the basalts are weathering to finer grainsizes that subsequently being deposited in the centre of the lagoon, with the larger sands are deposited on the lake edge where they are worked by wave action to the eastern shoreline and ultimately deposited in the lunette?

I have made additional minor comments in the attached pdf

Please also note the supplement to this comment:

<http://www.clim-past-discuss.net/cp-2016-41/cp-2016-41-RC3-supplement.pdf>

Interactive comment on Clim. Past Discuss., doi:10.5194/cp-2016-41, 2016.