

## ***Interactive comment on “An empirical method for absolute calibration of coccolith thickness” by Saúl González-Lemos et al.***

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This paper is concerning about a calibration between coccoliths thickness and their optical properties under circular polarized light microscope. And the usage of calcite wedges for the calibration provides a possibility and also a criteria to compare coccolith thickness and weight as estimated by their optical features when using light microscopes and cameras with different settings in other labs. The paper is well written, and authors provide a detailed technological processes for calcite wedges manufacture, and for measurements of the thickness of calcite wedges. So I see this study is important and recommend it can be published in Biogeosciences. Still, I have several questions that listed below: I have found inverse relations between grey level and width of *Rhabdosphaera* species (R9, R10) in figure 6A. Are these specimens poorly

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preserved? These specimens may not be considered for calibration. It can be found that the linear K values of relation between grey level and width of *Rhabdosphaera* increase with the incensing of their width, when the width is  $<0.6 \mu\text{m}$  most *Rhabdosphaera* measurements are below the calcite wedge curve, and when  $>0.6 \mu\text{m}$  most *Rhabdosphaera* are above the calcite wedge curve. So compared with the calcite wedge, all the *Rhabdosphaera* measurements make their calibration be more like a sigmoidal function. Is the background grey levels of the coccolith sample slides considered in the *Rhabdosphaera* calibration? And how about the grey level threshold for *Rhabdosphaera* coccoliths outline constrain? This is important for calibration, since for lighter/brighter part of *Rhabdosphaera* robs, their width could be overestimated due to dispersion. Technical corrections: Page 4 line 12: the other one “above”... below

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