

## ***Interactive comment on “Fast sulfur dioxide measurements correlated with cloud concentration nuclei spectra in the marine boundary layer” by D. C. Thornton et al.***

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Received and published: 28 September 2011

General Comments:

No flight paths through clouds were described except to note that the non CBL portions of the flight did observe SO<sub>2</sub> in cloud.

SO<sub>2</sub> has long been postulated to be important for aerosol formation in remote areas (Charlson et al., *Nature*, 326, 655-661, 1987). For the mid Pacific Ocean MBL the formation of SO<sub>2</sub> from DMS was established by Bandy et al. (*Geophys. Res. Lett.*, **23**, 741-744, 1996), and oxidation of DMS to SO<sub>2</sub> to sulfuric acid was clearly demonstrated on the NASA PEM Tropics project (Davis et al., *J. Geophys. Res.*, **104**, 5765-5784, C9444

1999). This manuscript is not about the sources of SO<sub>2</sub> but how it could be related to CCN – a subject still to be experimentally determined in the marine atmosphere.

Specific comments

A map of the area is readily available from Google maps or many other map sources, including even a simple atlas of the world. Hardly information scarce or hard to get. In addition, the cited RICO overview paper described the local of the project in detail (Raubert et al.).

Comment on the marine boundary layer makes no sense.

Estimates of the likely composition of the CCN and other aerosols were given in the manuscript: sea salt, ammonium sulfates, and acidic sulfates.

The input of SO<sub>2</sub> is described as not negligible.

Comments on what should have been included in the experimental phase of RICO are not appropriate.

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Interactive comment on Atmos. Chem. Phys. Discuss., 11, 14903, 2011.