



Supplement of

Measurements of diurnal variations and eddy covariance (EC) fluxes of glyoxal in the tropical marine boundary layer: description of the Fast LED-CE-DOAS instrument

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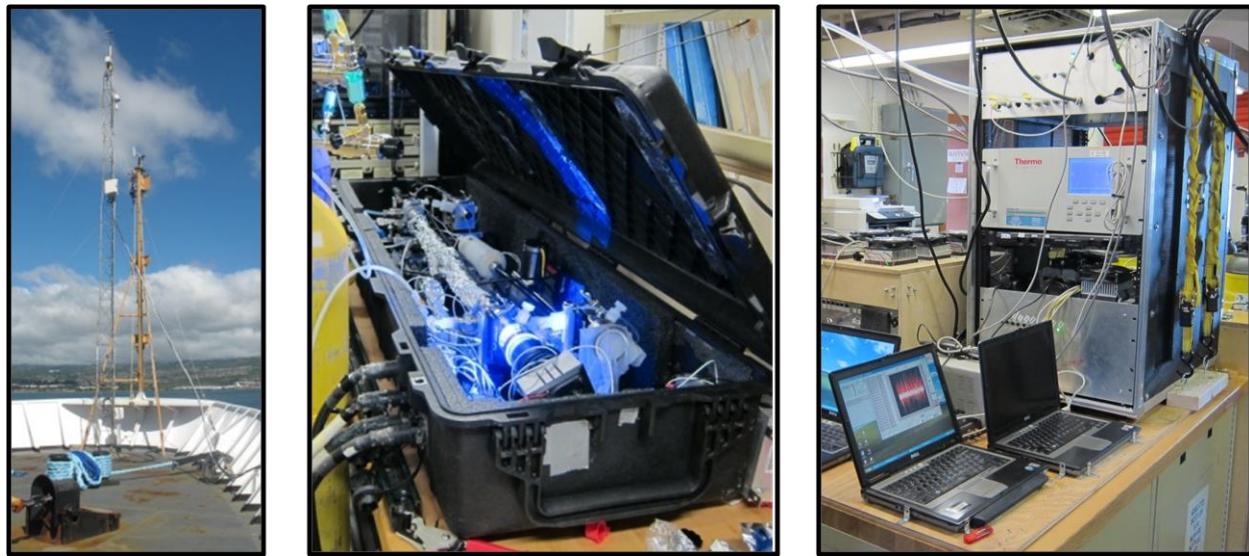


Figure S1 Photographs of the instrument set up aboard the RV *Ka 'imimoana* during the TORERO 2012 field experiment. Left panel shows the instrument inlets, sonic anemometer, and motion system mounted to the jackstaff on the bow of the ship. Middle panel shows the Fast-LED-CE-DOAS instrument, and the right panel shows the instrument rack containing all of the controlling electronics for the cavity as well as the spectrometer/detector.

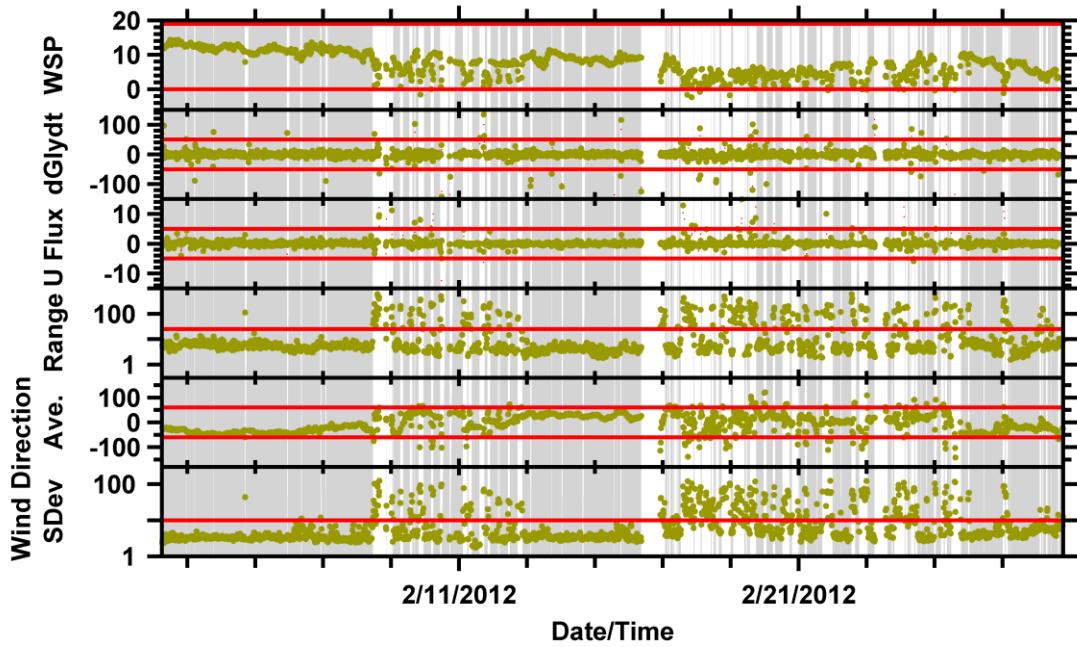


Figure S2 Time series of parameters used to filter fluxes. Grey shaded background represents times suitable for flux calculations, determined only by these parameters. Each data point represents a 30min average with 50% overlap to adjacent points. Horizontal red lines indicate the limits for the different filters.

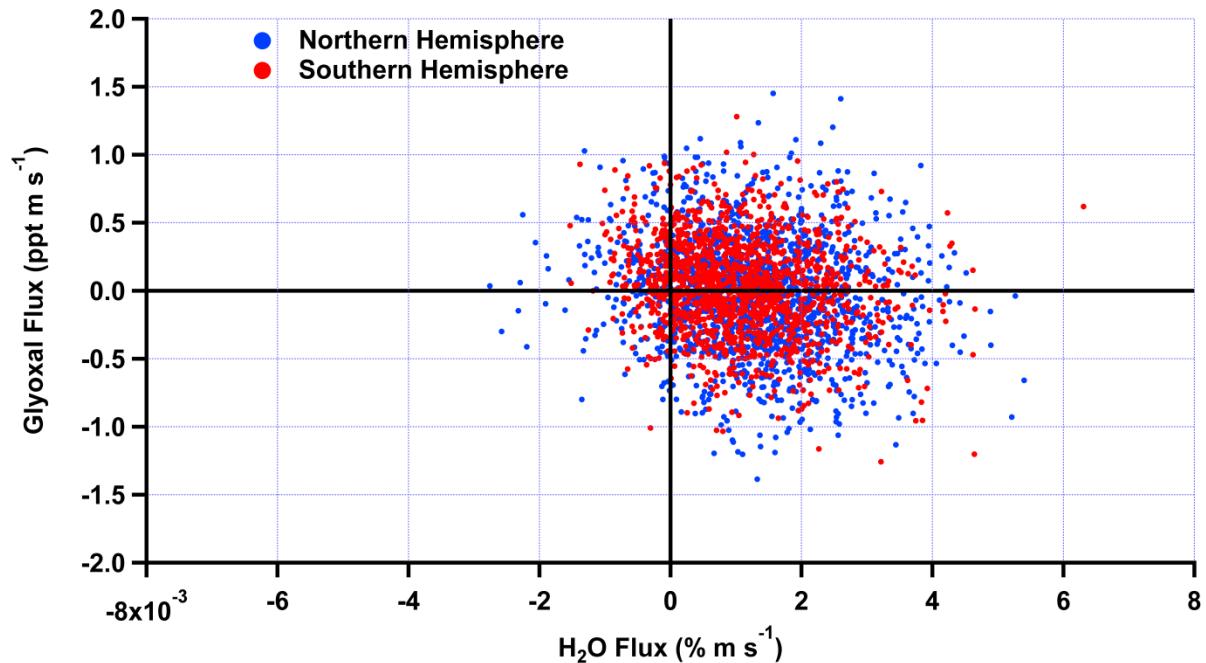


Figure S3 Correlation plot between derived glyoxal and H₂O fluxes based on the Fast-LED-CE-DOAS instrument measurements. Data is separated between the Northern (blue) and Southern (red) hemispheres.

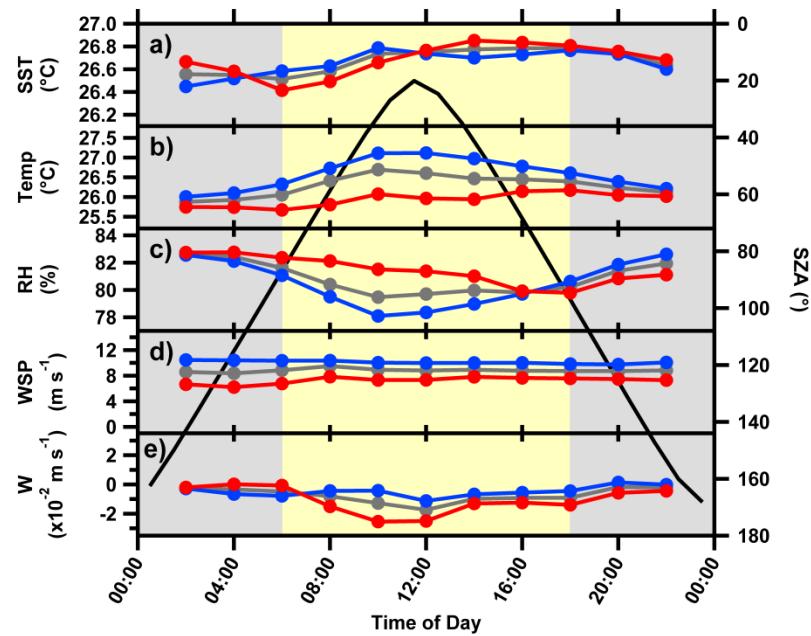


Figure S4 Diurnal variations of sea surface temperature (panel a), air temperature (panel b), relative humidity (panel c), horizontal wind speed (panel d), and vertical wind speed (panel e). Data is separated between the Northern (blue traces) and Southern (red traces) hemisphere, with the global average shown as the grey traces.