10.1071/SR11089_AC

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A 32-hr period within the 2003 sampling period of measurements of the atmospheric concentrations of both SO_2 and H_2S at 0.5 m is shown in Figure A. During this period, when the wind constantly traversed the desired fetch, a diurnal pattern is evident, with a marked increase in the concentration of H_2S and a decrease in that of SO_2 during the night; the opposite trend was observed during the daytime. The strong negative association between the concentrations of the two gases is confirmed by a negative correlation with an r^2 of 0.80.

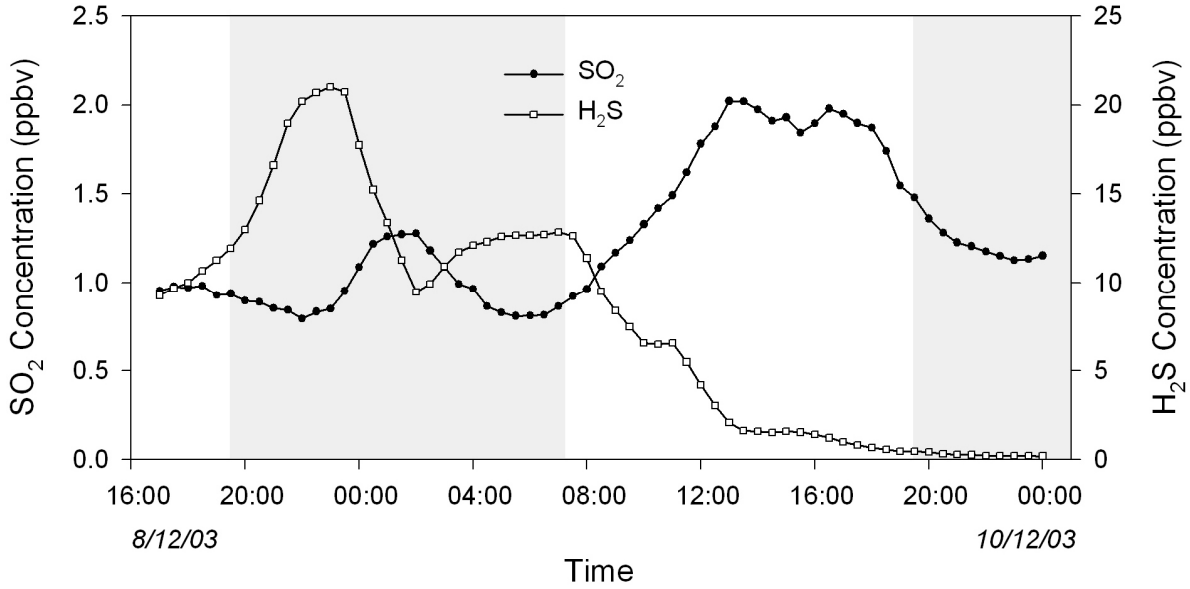

Figure A. SO_2 and H_2S concentrations across a 32-hr interval within the 2003 sampling period. Measurements were made at 0.5 m above the ground surface and were averaged 30-min time points.

The concentration of H_2S at 0.5 m was much greater than that of SO_2 at the same height. However, the relative magnitude of vertical fluxes of the two gases over the same 32-hr time period differed (see Figure B). Over this time interval the primary evolution of SO_2 occurred during the daylight period and the flux of SO_2 peaked at over 40 ng S m^{-2} s^{-1}. The H_2S flux is less diurnally pronounced with variable emission and uptake across the 32-hrs.

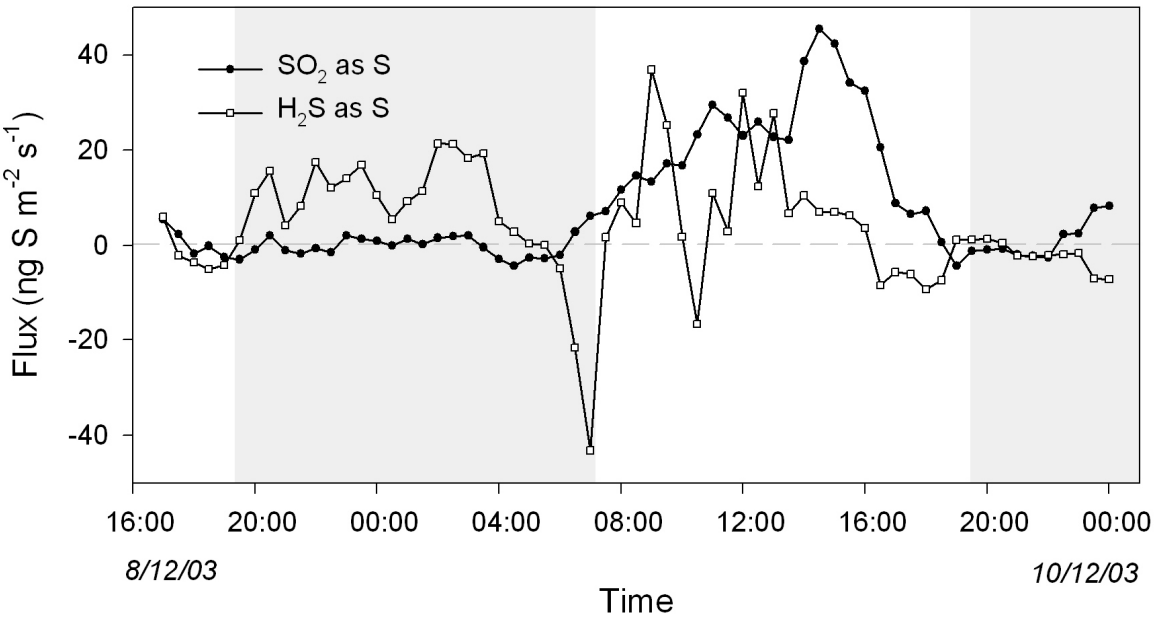

Figure B. SO_2 and H_2S fluxes (as ng of S m^{-2} s^{-1}) across the same 32-hr interval within the 2003 sampling period.

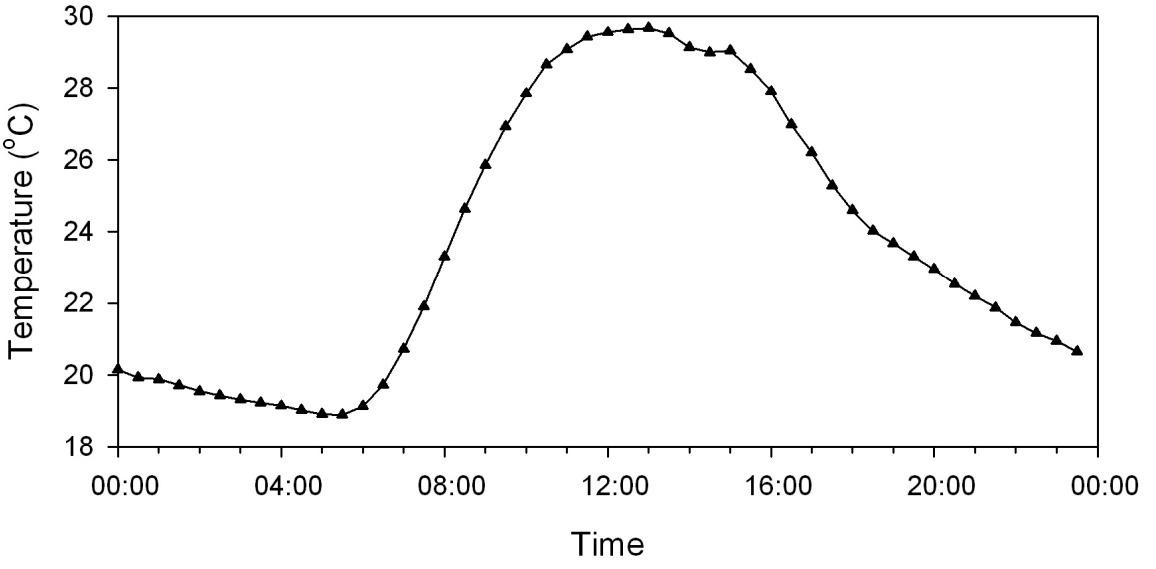

Figure C. Average air temperature during the 2005 sampling period.

Figure D shows two separate rainfall events during the 2005 sampling period along with concurrent SO_2 and H_2S flux measurements. From the two events available, there appears

to be a period of 'near-zero' gas flux for both SO_2 and H_2S extending for around 8 to 14 hours after rainfall.

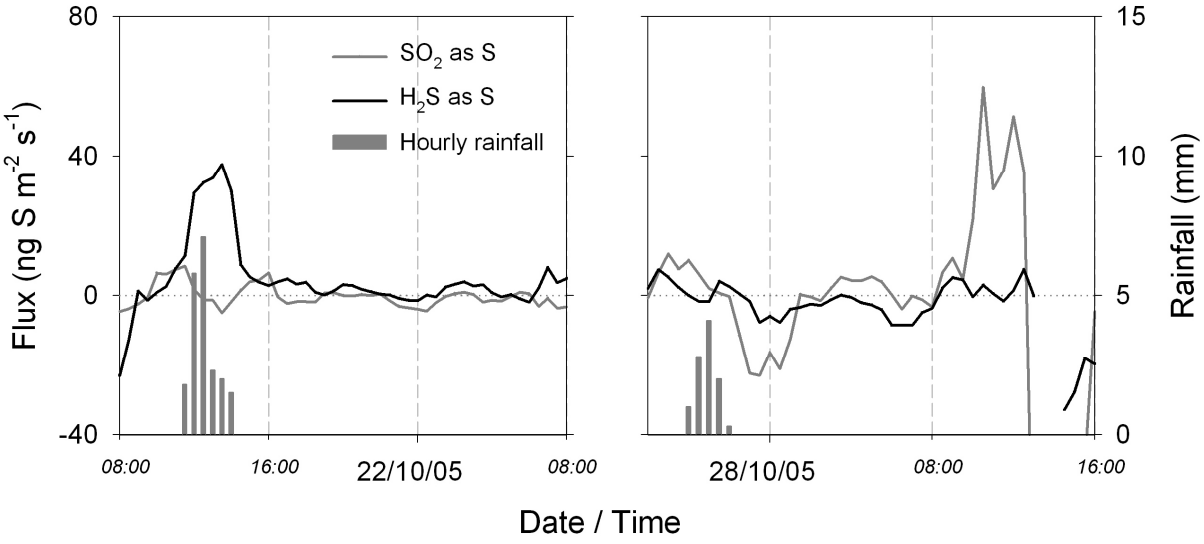

Figure D. Two separate rainfall events and the proceeding flux values for SO_2 (as S) and H_2S (as S) within the 2005 sampling period.