Supplementary Methods

Bubble gas concentrations were determined by injecting samples into a stream of zero-grade carrier gas stream flowing into the cavity of a Los Gatos Research (Mountain View, California) DLT-100 greenhouse gas analyzer and presented as a peak. Peak areas were determined using Shimadzu EZStart software. The CV of repeat check standards was less than 10% and sample calibration curves had an $R^2$ of 0.999 with consistent slopes between runs. The range of detection was 1 – 100,000 ppm. Samples outside of this range were diluted prior to analysis and the dilution was accounted for in the reported final concentration.