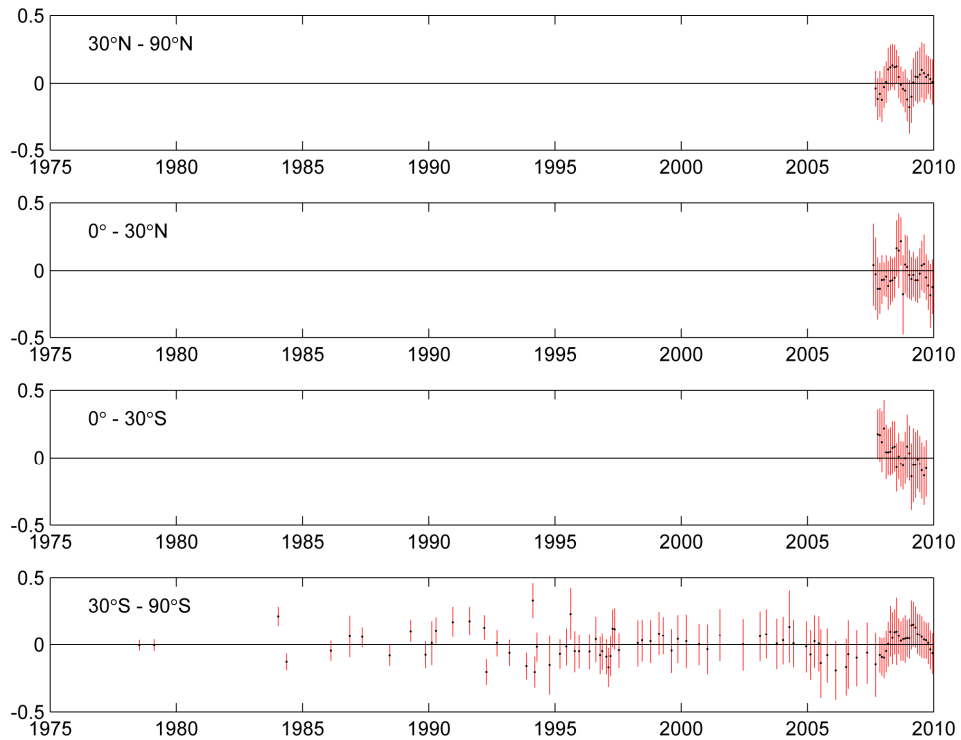1

2   Figure S1:   The linearity of Medusa9 GC/MSD for HFC-23 (CHF_3) was determined by

3   different volume samplings (blue dots with error bars) of a single compressed whole air

4   sample. The normalized quantities were calculated as the ratio of sensitivity or peak (area)

5   response from these samplings to that of nominally 2-L samplings (black open circle) of the

6   same gas that bracket the samplings of different volumes. The instrument was determined to

7   be linear over more than the mole fraction range of the Cape Grim air archive, which includes

8   samples taken from 1978-2006 here.

1

2 Figure S2: Residual differences of the monthly mean HFC-23 (CHF$_3$) mole fraction

3 observations minus the model optimized mole fractions for the four lower tropospheric boxes

4 of the model. Error bars represent 1-σ uncertainties, which include measurement errors along

5 with uncertainties associated with sampling frequency and data-model mismatch.

6