Supplement of Atmos. Meas. Tech., 15, 4373–4384, 2022
https://doi.org/10.5194/amt-15-4373-2022-supplement

Atmospheric Measurement Techniques
Open Access
EGU

Supplement of

Development and testing of a novel sulfur dioxide sonde

Subin Yoon et al.

Correspondence to: James H. Flynn (jhflynn@central.uh.edu)

Supplementary Data

Table S1: Results of lower limit of detection calculation (LLOD, 3σ) at various altitudes (via density correction calculation) from laboratory testing of SO_2 sonde with a 0.25 µA biased current using dry zero air.

Altitude, km	0.25 uA		
	LLOD, 1s (ppbv)	LLOD, 20s (ppbv)	ULOD (ppbv)
0	0.21	0.17	12
5	0.35	0.28	19
10	0.62	0.50	35
15	1.32	1.07	74
20	2.89	2.35	163
25	6.46	5.25	363
30	14.10	11.50	796

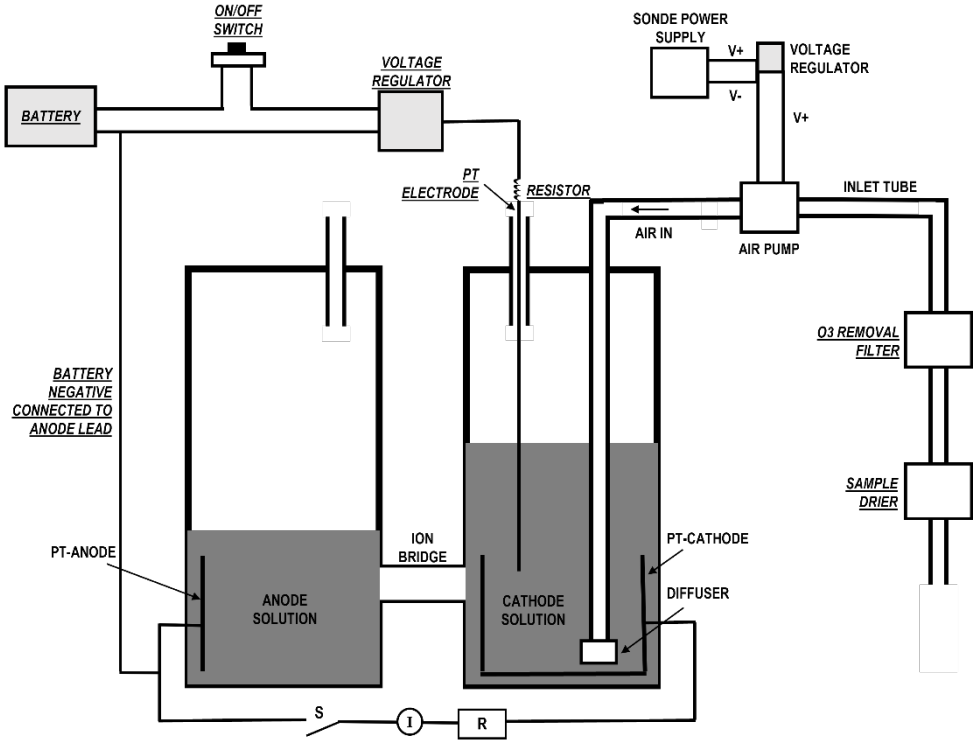

Figure S1: Schematic of the electronic concentration cell (ECC) for the SO_2 sonde. All italicized and underlined labels are items that were added to the traditional ECC for the SO_2 sonde.[1]

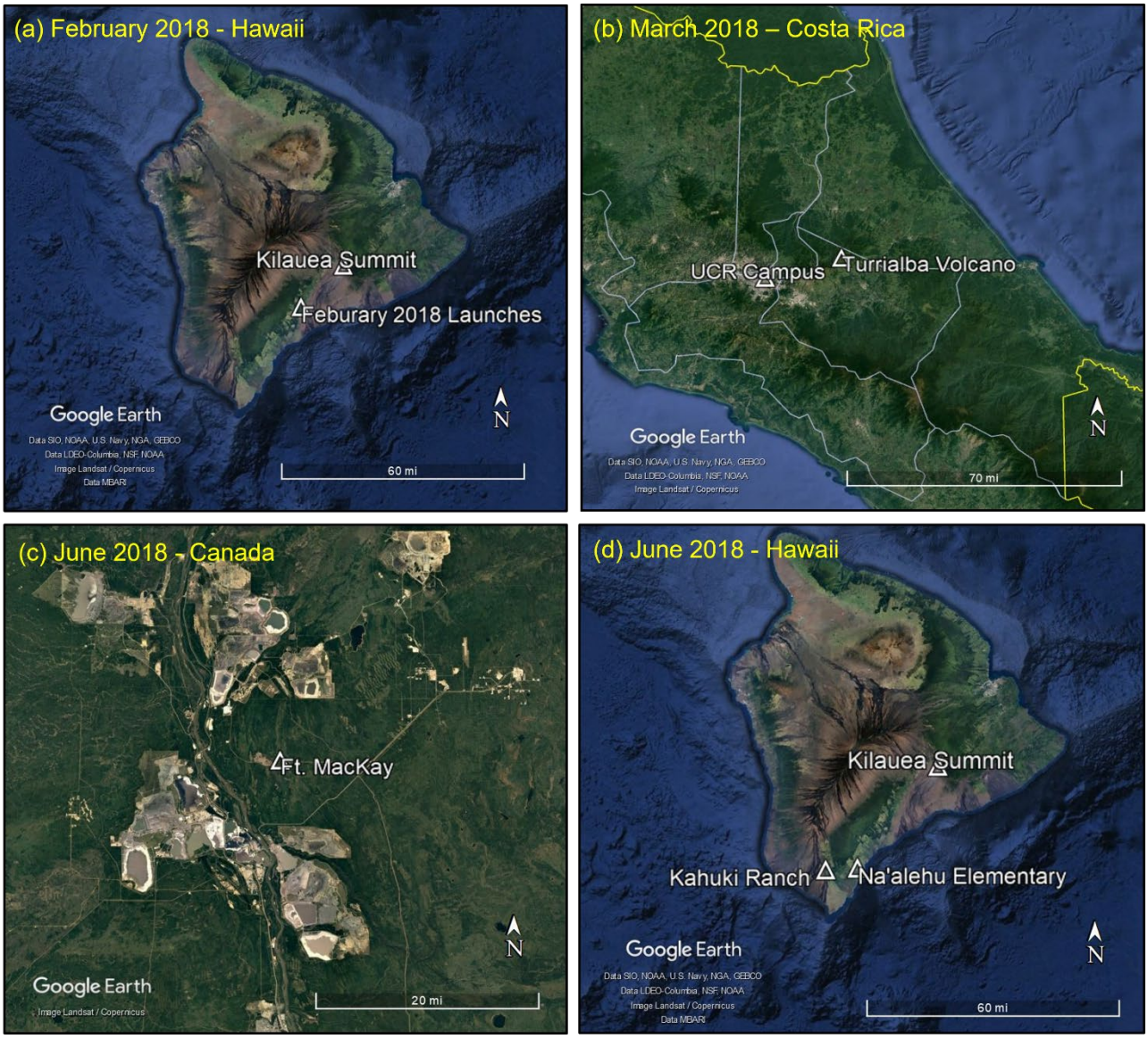

Figure S2: Field sites of SO_2 sonde launches (a) in Hawai'i during the H3C from February 3-10, 2018; (b) in Costa Rica on March 23, 2018; (c) in the Athabasca Oil Sands from June 10-16, 2018; and (d) in Hawai'i during BISOS in June 2018. Maps are from Google Earth.

[1] Flynn, J. and Morris, G. A.: A method for directly measuring SO2 and other trace gases by electrochemical cell (ECC) sonde, United States Patent 11,150,217, 2021.