## Aerosol Responses to Precipitation Along North American Air Trajectories Arriving at Bermuda

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- 4 Hossein Dadashazar<sup>1</sup>, Majid Alipanah<sup>2</sup>, Miguel Ricardo A. Hilario<sup>3</sup>, Ewan Crosbie<sup>4,5</sup>, Simon
- 5 Kirschler<sup>6,7</sup>, Hongyu Liu<sup>8</sup>, Richard H. Moore<sup>4</sup>, Andrew J. Peters<sup>9</sup>, Amy Jo Scarino<sup>4,5</sup>, Michael
- 6 Shook<sup>4</sup>, K. Lee Thornhill<sup>4</sup>, Christiane Voigt<sup>6,7</sup>, Hailong Wang<sup>10</sup>, Edward Winstead<sup>4,5</sup>, Bo
- 7 Zhang<sup>8</sup>, Luke Ziemba<sup>4</sup>, Armin Sorooshian<sup>1,3</sup>
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- <sup>9</sup> <sup>1</sup>Department of Chemical and Environmental Engineering, University of Arizona, Tucson, AZ,
- 10 USA
- <sup>2</sup>Department of Systems and Industrial Engineering, University of Arizona, Tucson, AZ, USA
- <sup>3</sup>Department of Hydrology and Atmospheric Sciences, University of Arizona, Tucson, AZ, USA
- <sup>4</sup>NASA Langley Research Center, Hampton, VA, USA
- <sup>5</sup>Science Systems and Applications, Inc., Hampton, VA, USA
- 15 <sup>6</sup>Institute for Atmospheric Physics, DLR, German Aerospace Center, Oberpfaffenhofen,
- 16 Germany
- <sup>17</sup> <sup>7</sup>Institute for Atmospheric Physics, University of Mainz, Mainz, Germany
- 18 <sup>8</sup>National Institute of Aerospace, Hampton, VA, USA
- <sup>9</sup>Bermuda Institute of Ocean Sciences, 17 Biological Station, St. George's, GE01, Bermuda
- 20 <sup>10</sup>Atmospheric Sciences and Global Change Division, Pacific Northwest National Laboratory,
- 21 Richland, WA, USA
- 22
- 23
- 24 \*Correspondence to: Hossein Dadashazar (<u>hosseind@arizona.edu</u>)
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## **Table S1. Number of points that were used to calculate statistics presented in Table 2.**

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	High-rain (APT > 13.5 mm)/Low-rain (APT < 0.9 mm)				
Parameter	DJF	MAM	JJA	SON	
NO (ppbv)	232/147	252/206	166/112	290/141	
NO <sub>2</sub> (ppbv)	232/147	252/206	166/112	290/141	
NO <sub>x</sub> (ppbv)	232/147	252/206	166/112	290/141	
CO (ppbv)	356/171	308/244	173/120	307/148	
PM <sub>2.5</sub> (µg m <sup>-3</sup> )	244/132	290/242	168/111	255/117	
$PM_{2.5}/\Delta CO \ (\mu g \ m^{-3} \ ppbv^{-1})$	224/87	278/209	154/78	215/98	
Sea-Salt (µg m <sup>-3</sup> )	356/171	308/244	173/120	307/148	
Sea-Salt <sub>PM2.5</sub> ( $\mu g m^{-3}$ )	356/171	308/244	173/120	307/148	
Dust ( $\mu g m^{-3}$ )	356/171	308/244	173/120	307/148	
$Dust_{PM2.5} (\mu g m^{-3})$	356/171	308/244	173/120	307/148	
Sea-Salt/ $\Delta$ CO ( $\mu$ g m <sup>-3</sup> ppbv <sup>-1</sup> )	327/124	294/210	157/85	259/124	
Sulfate/ $\Delta CO$ (µg m <sup>-3</sup> ppbv <sup>-1</sup> )	327/124	294/210	157/85	259/124	
Dust/ $\Delta$ CO ( $\mu$ g m <sup>-3</sup> ppbv <sup>-1</sup> )	327/124	294/210	157/85	259/124	
BC/ $\Delta$ CO ( $\mu$ g m <sup>-3</sup> ppbv <sup>-1</sup> )	327/124	294/210	157/85	259/124	
$OC/\Delta CO \ (\mu g \ m^{-3} \ ppbv^{-1})$	327/124	294/210	157/85	259/124	
Sea-Salt <sub>PM2.5</sub> / $\Delta$ CO ( $\mu$ g m <sup>-3</sup> ppbv <sup>-1</sup> )	327/124	294/210	157/85	259/124	
$Dust_{PM2.5}/\Delta CO \ (\mu g \ m^{-3} \ ppbv^{-1})$	327/124	294/210	157/85	259/124	
$Wind_{SF} (m s^{-1})$	356/171	308/244	173/120	307/148	
APT <sub>6h</sub> (mm)	356/171	308/244	173/120	307/148	
APT (mm)	356/171	308/244	173/120	307/148	
	All	-			
$V_f / \Delta CO \times 10^4  (\mu m^3  \mu m^{-2} pp bv^{-1})$	16/19				
$R_{eff-f}(\mu m)$	16/19				
$R_{f}(\mu m)$	16/19				
$\sigma_{\rm f}$	16/19				
$V_c~/\Delta CO \times 10^4~(\mu m^3~\mu m^{2}~ppbv^{1})$	16/19				
$R_{eff-c}$ (µm)	16/19				
$R_c (\mu m)$	16/19				
σ <sub>c</sub>	16/19				





Figure S1. Seasonal maps (a-d) showing the probability density of trajectories calculated

- based on 10-day HYSPLIT backward trajectories reaching Bermuda (32.30° N, 64.77°W), denoted by the pink star, at 500 m (AGL). This analysis is based on trajectories between 01
- January 2015 and 31 December 2019.



38 39 Figure S2. Seasonal maps (a-d) showing the probability density of trajectories calculated

40 based on 10-day HYSPLIT backward trajectories reaching Bermuda (32.30° N, 64.77°W),

denoted by the pink star, at 1 km (AGL). This analysis is based on trajectories between 01 41

42 January 2015 and 31 December 2019.



Figure S3. Seasonal (panels a/c/e) and day-of-week (panels b/d/f) box notch plots of PM<sub>2.5</sub>, NO<sub>x</sub>, and PM<sub>10</sub> measured at Fort Prospect in Bermuda between 1 January 2015 and 31 December 2019. The middle, bottom, and top lines in each box represent the median, 25<sup>th</sup> percentile, and 75<sup>th</sup> percentile, respectively. Markers show extreme values identified based on 1.5×IQR (interquartile range) distance from the top and bottom of each box. Whiskers represent maximum and minimum values excluding extreme points. Boxes with notches and shaded regions that do not overlap have different medians at 95% confidence level.



53 Figure S4. Day-of-week box notch plots of PM<sub>2.5</sub> for (a-d) different seasons measured at







58 Figure S5. Day-of-week box notch plots of NO<sub>x</sub> for (a-d) different seasons measured at Fort

59 Prospect in Bermuda between 1 January 2015 and 31 December 2019.