- pH in cloud water using airborne measurements.
- chemical influence on pH.

- summers, focusing on aerosol-cloud interactions.





![](_page_0_Figure_14.jpeg)

![](_page_0_Figure_15.jpeg)

summer, and summer Bermuda. NW Atlantic summer has pH values greater than 5 between 1000 and 2000 m compared to the other seasons. W Pacific reached the highest altitude with a pH greater than 5 around 5000 and 6000 m.

# **Contrasting airborne cloud water pH measurements in diverse** regions: Statistics and relationships with constituents

Kayla Preisler<sup>1</sup>, Ewan C. Crosbie<sup>2,3</sup>, Grace Betito<sup>1</sup>, Andrea Corral<sup>1</sup>, Eva-Lou Edwards<sup>3</sup>, Miguel Ricardo A. Hilario<sup>1</sup>, Kira Zeider<sup>1</sup>, Armin Sorooshian<sup>1</sup> <sup>1</sup>University of Arizona, <sup>2</sup>AMA, <sup>3</sup>NASA Langley Research Center

> Figure 4. Principal Component Analysis (PCA) plots of explained variance and loadings from each region. Principle component 1 (PC1) explains the most variance in the data, PC2 explains the second most variance and is perpendicular to PC1. Each loading represents its contribution to that PC.

![](_page_0_Figure_20.jpeg)

### Results

	Table 2. p⊦	l equations for each
	5 (Left Colu	mn). In the NW Atlar
	-0.71 and -0	0.54. In the NE Pacifi
_	Region	
	NW Atlantic	nH = 4

Region	Regression Equation
NW Atlantic	$pH = 4.99 - 0.71(C_2O_4) - 0.04(NO_3) + 0.30(NSS - Ca)$
W Pacific	$pH = 5.23 - 0.54(C_2O_4) + 0.03(NO_3) - 0.11(NSS - SO_4)$
NE Pacific	$pH = 4.58 - 0.04(NO_3) - 0.14(MSA) + 0.29(NSS - Ca)$

![](_page_0_Figure_25.jpeg)

**Figure 5. (Left column)** Scatter plots demonstrate predictions of pH from the top three species estimated from correlation bar plots in a) NW Atlantic, b) W Pacific, and c) NE Pacific. (Right column) Correlation bar plot of each region using the common species measured by IC. pH has the highest correlation with NSS-Ca (0.35) in the NW Atlantic, NSS-SO<sub>4</sub> (-0.63) in the W Pacific, and NSS-Ca (0.32) in the NE Pacific.

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![](_page_0_Picture_29.jpeg)

region calculated from the linear regression shown in Figure ntic and W Pacific, oxalate influences pH with coefficients of c, NSS-Ca influences pH with a coefficient of 0.29.

### References

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