Samantha (Sam) Kruse

EXPAND Mentor

Analyzing Changes in Particle Size Distribution as a Function of Atmospheric Processes

Slade (Winter, 2021-22)

What you will do

In the Slade lab, we look at how different atmospheric processes, such as atmospheric aging and water uptake, impact the lifetime of different aerosols in the atmosphere. One of the most critical measurements we make, which is necessary for every experiment we do, is size distribution data. With this data, we can see how many particles of a certain size exist in our samples. This informs us of different physical and chemical changes in our sample, as we can observe different types of atmospheric processes such as particle nucleation or volatilization, just from looking at shifts in what sizes of aerosol we see. **Ultimately, this project involves processing raw data, critically analyzing changes in the aerosol size distribution, and interpreting those changes**. You will have the opportunity to both choose the type of experiment you want to analyze (looking at biologically active sea spray aerosol, or toxic plastic additives present in aerosols) as well as what kind of data analysis skills you wish to gain, whether that includes high fluency in Excel, MATLAB, or learning a new programming language. I have prior experience being the primary mentor for two different undergraduate students and teaching them these skills, both of whom are now enrolled in Master's programs.

Skills you will acquire

- Fluency in Excel, MATLAB, or a different programming language of your choosing

- Experience working with large, complex datasets

- Familiarity with atmospheric chemistry and related laboratory experiments

- Exposure to analytical techniques, such as mass spectrometry and particle sizing instrumentation

- Involvement in authoring an academic paper

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