MS-GIST Projects Summer 2023

Thursday, July 27

***\* There will be 5 minute breaks between each back-to-back presentation to facilitate transitions in Zoom.
\*\* Zoom links are available on request. Please contact Andrew Grogan - atgrogan@arizona.edu***

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| **Date/Time** | **Presentation Title** | **Student Name** |
| 07/27/2303:00 - 03:25 PM |  [Is there a Spatial Relationship Between High PFAS Contamination in Surface Water and Communities of Color In Michigan based on 2021 Census Data?](#Rameshbabu)  | Poonam Rameshbabu |

 **Is there a Spatial Relationship Between High PFAS Contamination in Surface Water and Communities of Color In Michigan based on 2021 Census Data?**

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07/27/23, 03:00 - 03:25 PM

**Abstract:**

Per- and Polyfluorinated substances, also known as PFAS, are a very large group of synthetic chemicals that include Perfluorooctanoic acid (PFOA), Perfluorooctane sulfonic acid (PFOS) and thousands of other compounds. Due to their strong carbon-fluorine bonds, PFAS are called forever chemicals and there is evidence that continued exposure above specific levels to certain PFAS may lead to harmful health effects. This project focuses on the geospatial analysis of the levels of most common PFAS compounds PFOA and PFOS detected in 2,047 surface water samples collected between 2001 and 2021 by the State of Michigan’s Water Resources Division, published in November 2021. The objective of this Master’s Project is to identify if there is a relationship between high PFAS contamination in surface water to communities of color at a census tract level based on 2021 census data. This evaluation uses geospatial visual and regression analysis to provide an understanding of the relationship between PFOA and PFOS contamination in surface water compared to areas of significant African American, American Indian/Alaskan Native and Asian population. It can be concluded that there is a spatial relationship between high PFOA and PFOS contamination in surface water and minority population in Michigan. Although the results of this analysis generally identify a spatially clustered, significant relationship between the variables, this project uses publicly available data and did not consider other factors that could influence population and /or PFAS contamination in surface water. So, further analysis and consideration of other environmental factors that could influence the variables may be necessary.

**Keywords:** Spatial analysis, polyfluoroalkyl substances, PFAS, PFOA, PFOS, contamination, regression analysis, surface water