



Colorado Science and Engineering Fair

2024 Individual Project Abstract Form

Please print 2 copies of the completed form. Sign both copies, keep 1 for your notebook and submit 1 copy to your Regional Fair Director with your other paperwork.

Title of Project: Anthropogenic impacts on Rainfall: a data science approach

Finalist's Name: Ria Rajasekharan

School and City: *school name, school city

Sponsor's Name: Vishnu Rajasekharan

Category: Earth & Environmental Sciences (EAEV) **Division:** Senior (9th - 12th grades)

Abstract (250 words or less):

Global warming is the most pressing issue of our generation. Global warming is when greenhouse gases get trapped within our atmosphere this causes our planet to heat up, making glaciers melt, sea levels to rise, and flowers to grow in the arctic circle. Within the anthropogenic practices that heat up our planet, two activities stand out the most: vehicle exhaust and factories waste products generated by burning fossil fuels. This, in turn impacts the global temperature and rainfall. Rainfall depends on several factors including windspeed, pressure and temperature. This leads to disproportionate distribution of rainfall that leads to flooding in some places while drought and water scarcity in others.

The impact of anthropogenic activity on the climate crisis happening is making the oceans become warmer overall, which causes more evaporation which in turn leads to more intense precipitation that leads to flooding according to the US environment protection agency. This flooding can severely affect peoples lives and can cause extensive damage to not only cities but the world as a whole.

For example, heavy rainfall and lack of preparation for flooding has claimed the lives of over 290 people in Chennai, India last year. Leaving suburbs submerged and ceases all forms of transport to safety. In this study, I have used python coding language to build prediction models using statistical approaches like ARIMA, Gradient Boosting, and Random forest regressors to accurately forecast rainfall patterns. This will enable the city planners and the public to prepare for the future.

I hereby certify that the above statements are correct and the information provided in the Abstract is the result of one year's research. I also attest that the above properly reflects my own work.

Finalist's Signature: *Ria*

Date: *02/27/24*

In addition, all students must complete the ISEF Student Checklist (1A), Research Plan, Approval Form (1B), and Checklist for Adult Sponsor (1), and any other ISEF forms required for this type of project. See the International Rules and Guidelines for form requirements. Return COPIES of all of these forms to your Regional Fair Director with you Finalist Verification/Permission Form. A signed copy of this form must be included in your notebook.

Signature: *Ria*

Email: *riavr20@gmail.com*