

Environmental Sciences

Hurricane Effect on Disease Transfer

Although the full aftermath of hurricane Irma and Maria is still unknown, one point of certainty is that the effects have left thousands in need of water supplies, sanitation, food supply, electricity, transportation, shelter, communications, security, medical care, and mosquito control. . The health of many Puerto Ricans have been put in jeopardy due to the catastrophic flooding. The flooding has led to an increase in floodwater related illnesses. Internal and external contact with floodwaters can lead to cases of cryptosporidiosis (parasite), E. coli (bacteria) or giardiasis (parasite), which result in diarrhea, gas, nausea, and vomiting.

With our project, we plan to model the places where people are more at risk for diseases carried in sewage water. Puerto Rico has its sewage system split up into 10 zones with a treatment plant in each zone. The unclean water from each plant would be taken up in the wind and water of the hurricane, and any diseases in the water would be dropped along the path of the hurricane as it travels through.

In order to model this, we will use NetLogo to show a map detailing the sewage treatment zones of Puerto Rico and have a simulated hurricane come onto the island from all directions. The hurricane's initial location and path through the island will be considered in order to map out how the sewage system is able to move down the island thus spreading a wide range of floodwater related diseases as mentioned above.

MEMBERS

Matuke Fomukong  
Naomi Rankin

TEACHER

Debra Johns

MENTORS

Janeen Anderson

