

GLOBAL PRECIPITATION MEASUREMENT MISSION APPLICATIONS



Development and Public Health

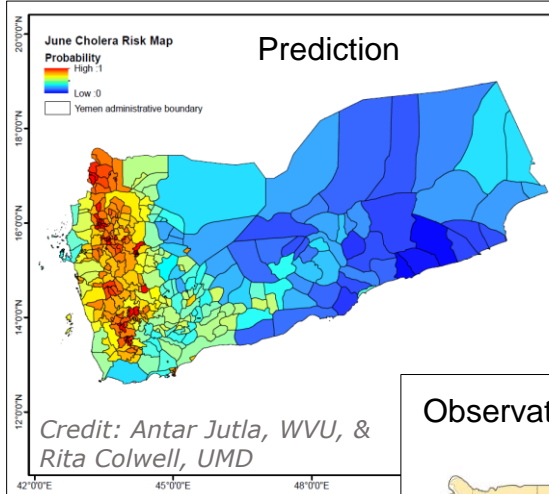


Precipitation extremes, from heavy rainfall to droughts, pose great risks to a country's economic development and human health. Standing water and flooding resulting from heavy rainfall has created societal vulnerabilities to vector and waterborne disease outbreaks such as malaria, schistosomiasis, cholera, and chikungunya, among others. Drought and extreme heat conditions have been associated with a wide range of health hazards including degraded air and water quality. These meteorological extremes also impact human migration and damaged transportation networks. The Development and Public Health applications area encourages the use of satellite precipitation data from the GPM mission to inform development and public health decisions, particularly involving socioeconomic development issues and infectious diseases.

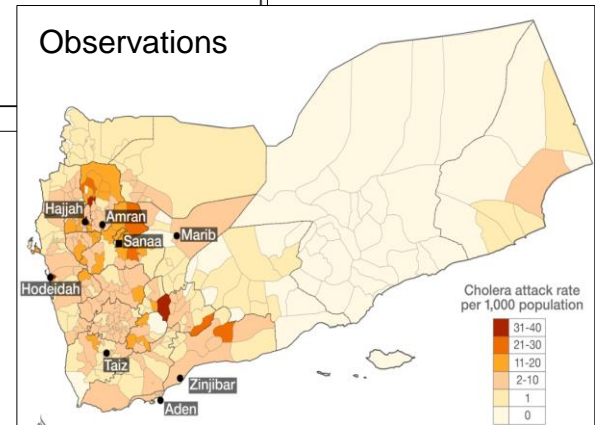
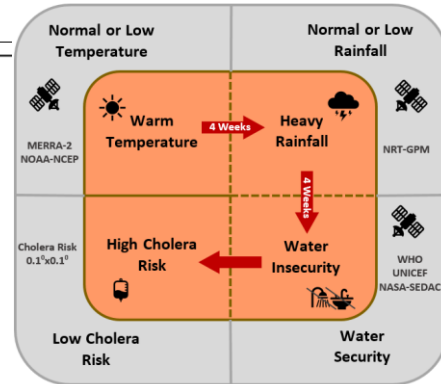
Credit: U.S. Peace Corps



CASE STUDY: Predicting Cholera using NASA Satellites



Flow chart to determine areas at high cholera risk using satellite data (top right). Real-time cholera risk prediction map for Yemen in June 2017 (top left). Areas in red have the highest risk of cholera outbreak. In-country records that a cholera epidemic occurred in June 2017 (right).



Cholera, a waterborne bacterial disease, infects millions of people each year, leading to thousands of deaths. Predicting favorable conditions for cholera infection relies on identifying areas of above average temperatures and rainfall, poor water infrastructures and changes in land use. To tackle this problem, scientists from West Virginia University and University of Maryland are monitoring regional hydroclimatic processes and changes in the aquatic ecosystem with NASA satellite data, including precipitation from TRMM and GPM and air temperature from MERRIS to develop forecasts for the risk of a cholera outbreaks across developing countries such as Yemen, Haiti, South Africa and Bangladesh. These data, along with data from other sensors and socioeconomic data, are used to assess the areas most at risk of cholera. Project findings are being used to map unsafe water sources, prepare warnings related to water quality, and predict the potential of disease outbreaks.



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