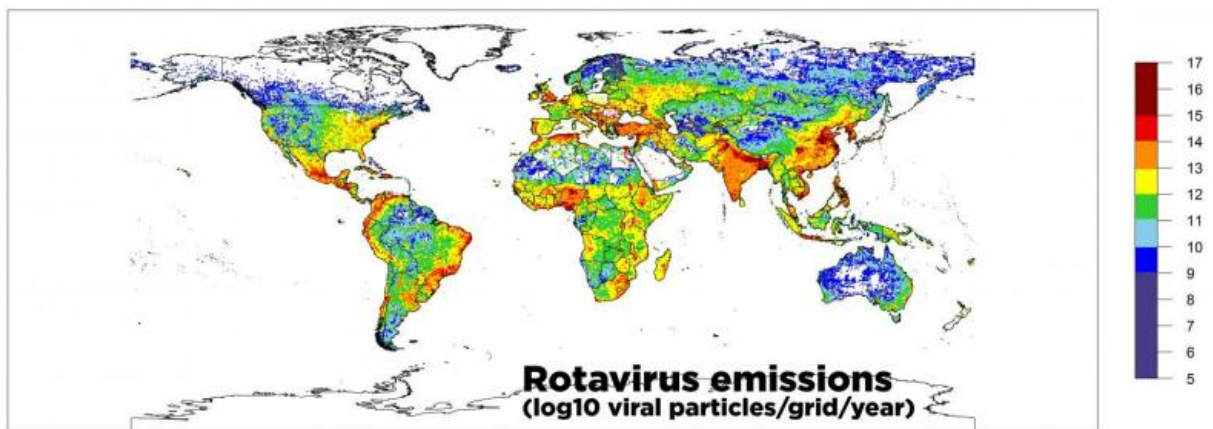


Tracking the viral parasites cruising our waterways

June 16 2015



A map of fecal viruses across the globe. Red shades indicate severe concentrations of the deadly rotavirus (based on data from approximately year 2010). Credit: Map via Kiulia et. al.

Humans aren't the only ones who like to cruise along the waterways, so do viruses. For the first time, a map of fecal viruses traveling our global waterways has been created using modeling methods to aid in assessing water quality worldwide.

"Many countries are at risk of serious [public health](#) hazards due to lack of basic sanitation," said Joan Rose, Homer Nowlin Chair in water research at Michigan State University. "With this map, however, we can

assess where viruses are being discharged from untreated sewage and address how disease is being spread. With that, we can design a treatment and vaccination program that can help prevent sewage-associated diseases."

The study, conducted by Rose and an international team of researchers, focused on rotavirus, a pathogen found in human sewage, which is suspected of causing more than 450,000 deaths globally each year. Rotavirus severity rates are highest among young children under two. Because the disease spreads quickly - and via water - a deeper understanding of the transmission of rotavirus is key to combatting it.

The modeling approach used in the study was designed to better understand the global distribution of potential viruses in water sources. The model provided a grid that helped pinpoint "hotspots" where emission sources were greatest. According to Rose, those areas can now be selected for monitoring and control programs.

"The great advantage of a modeling approach is getting a better understanding of the situation in areas where no monitoring data exist, but where we do have model input available," she said.

The study, published in the journal *Pathogens*, directly addresses the Sustainability Development Goals outlined by the United Nations. SDGs are being developed to extend public health goals that were not achieved by the original Millennium Development Goals set by the UN in 2000, including cutting the proportion of the global population without access to safe sanitation in half by 2015.

"Achieving the SDGs is important for reducing waterborne diseases," Rose said. "Rotavirus epitomizes the danger of these diseases and represents the ongoing effects that sewage contamination of water has on global public health."

The study is part of the Global Water Pathogens Project, an initiative led by Rose that aims to obtain a better understanding of pathogens in sewage and surface [water](#).

More information: www.waterpathogens.org/

Provided by Michigan State University

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