

## Less-developed countries with high climate risk need better access to weather and climate data



NOAA's GOES East satellite captured this image of Hurricane Irma on the morning of Sept. 5, 2017, as it approached the Caribbean as a Category 5 hurricane. Credit: NASA/NOAA GOES Project, CC BY 2.0

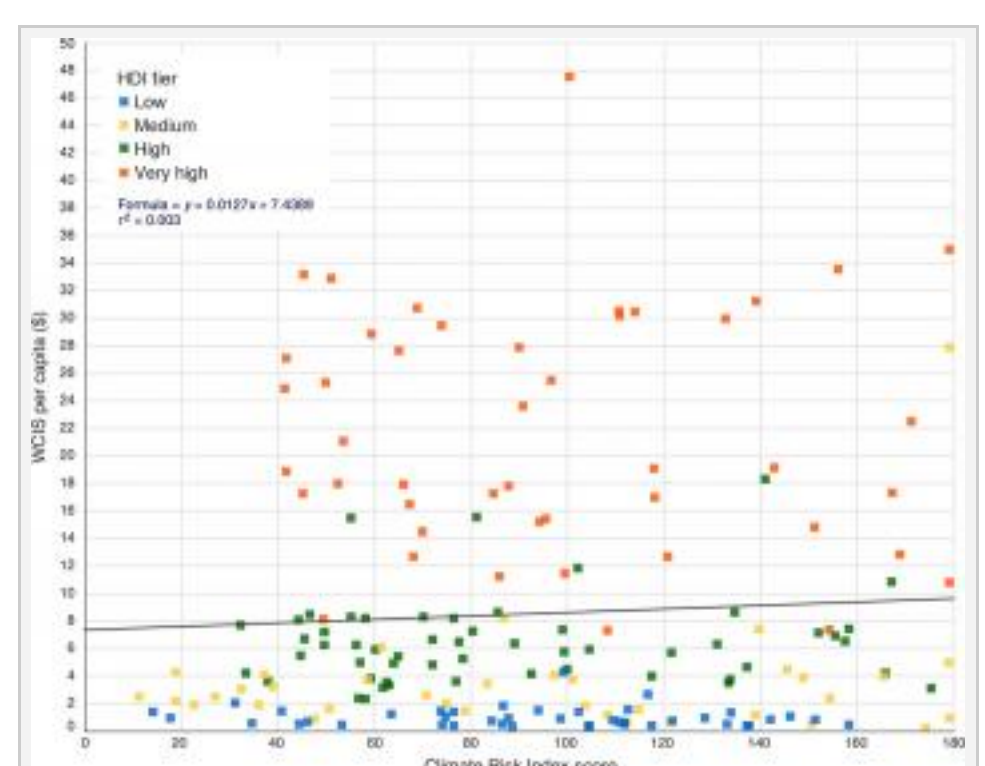
Rising seas, more persistent droughts and more frequent severe weather events are predicted to occur in the coming decades as the planet continues warming. In a new [study](#), researchers who analyzed spending internationally on weather and climate information services (WCIS) suggest that access to reliable WCIS is becoming more vital for communities and governments looking to assess their vulnerability and to safeguard people and property amid changing climates.

Making sense of raw weather and climate data can be challenging for nonexperts who must make decisions based on their understanding of current and future conditions. “There is a difference between making data available, and people being able to use that data as an information input to make decisions,” says [Lucien Georgeson](#), a geographer at University College London and lead author of the new study. For instance, farmers trying to decide when to harvest crops can’t easily make use of broad-scale weather or climate datasets.

Weather and climate information services offer analyses and interpretations of data that can be used more readily by countries, communities or organizations in weather- and climate-related decision-making. Such services are typically distributed in two main ways: through national meteorological organizations and other government agencies, which commonly provide free access to datasets but generally focus on large-scale climate and weather patterns; or through commercial enterprises that are often set up to tailor analyses and interpretations — at a cost — to regional or local areas and/or for specific client needs.

In the new study, Georgeson and his colleagues assessed spending on commercially provided WCIS by both private organizations and public agencies in 180 countries between 2010 and 2015. By analyzing the amounts that organizations spent on these services in conjunction with each country’s potential vulnerability to severe climate and weather impacts, the team determined how weather and climate information is distributed across regions of varying socioeconomic and developmental statuses.

For each country in the dataset, the team considered several factors, including per capita spending on commercial WCIS and whether the information was related to weather, climate or both; the percentage of gross domestic product (GDP) spent on these services; which industrial sectors purchased the information; the United Nations Development Program’s [Human Development Index](#) (HDI), which uses socioeconomic indicators to assess development in a country; and each country’s climate and extreme weather risk based on the [Climate Risk Index](#) (CRI) developed by Germanwatch, a nonprofit research organization focused on trade and environmental issues. The CRI accounts for death tolls and economic damages for each severe weather event. Analyzing which organizations and industries in countries are using various WCIS, as well as how much they are spending on these services, will “help to build a picture of where the gaps [in the information and distribution] might exist, and where more services need to be developed,” Georgeson says.



This chart shows the relationship between Climate Risk Index score (1995-2014), a measure of vulnerability to severe climate and weather impacts, and per capita spending on weather and climate information services for 180 countries, color coded by Human Development Index tier. Credit: Georgeson et al., *Science Advances*, May 2017, CC BY 4.0

The team found significant differences in per capita spending on commercial WCIS, with more developed countries generally spending more. These countries typically have greater resources and “more expensive assets and capital to protect,” Georgeson notes, so they can afford to spend more on WCIS and have vested interests in doing so. Spending on WCIS did not, however, correlate with vulnerability and risk levels as gauged by the CRI. The team also found that lower-tiered HDI countries actually spent higher percentages of their GDPs on WCIS than higher-tiered countries. This observation could indicate that these developing countries, despite spending less per capita, actually value WCIS to a greater extent, although Georgeson notes that the GDP data “should be treated with a little bit of caution because of the differences in data collection and robustness between countries.”

Lower spending levels on WCIS by less developed countries likely represents an inability to pay for commercial services that provide more specifically tailored and localized information. “There is a very clear suggestion that [these countries] are struggling to pay for the more specialized information,” Georgeson says. Therefore, the information necessary for mitigating climate and weather related risk is not reaching the countries that would benefit from it the most, he says.

There is a need for increased availability of specialized and tailored WCIS for less developed countries that rank high on the CRI, according to the study. More needs to be done in developing countries vulnerable to weather and climate hazards “in terms of providing the exact kind of information they need,” Georgeson says. This could mean lowering the costs of WCIS, potentially through subsidies, or developing internationally funded programs that work to improve the availability of these types of services in developing countries. There are several programs and initiatives at the international level, such as the European [Copernicus Climate Change Service](#), that work to “increase access to climate information and variables,” Georgeson says, “but [this information also] needs to be better tailored to countries that really need access to that data.”

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