NASA picks top Earth Data Challenge ideas, opens call for climate apps

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OpenNEX Challenge Phase II. Credit: NASA

NASA has selected four ideas from the public for innovative uses of climate projections and Earth-observing satellite data. The agency also has announced a follow-on challenge with awards of $50,000 to build climate applications based on OpenNEX data on the Amazon cloud computing platform.

Both challenges use the Open NASA Earth Exchange, or OpenNEX, a data, cloud computing, and knowledge platform where users can share modeling and analysis codes, scientific results, information and expertise to solve big data challenges in the Earth sciences. OpenNEX provides users a large collection of climate and Earth science satellite data sets, including global land surface images, vegetation conditions, climate observations and climate projections.

The four winners of the "ideation" stage of the OpenNEX challenge, which ran from July 1 through Aug. 1, will share a $10,000 award for their ideas on novel uses of the datasets. Abdal Elhassani of Indiana University, Bloomington, proposed an app to predict how plant hardiness zones will change in the future with a changing climate. Edward Aboufadel of Grand Valley State University, Allendale, Michigan, suggested using the data to compare a local community's future predicted climate with the historical record of another community.

A team led by Raymond Milowski of San Francisco proposed converting the storehouse of OpenNEX climate model data to formats compatible with the Open Web Platform to facilitate wider use by web developers. Reuben Cummings from Peoria, Illinois, suggested a web application to map potential and actual climate-related environmental hazards such as wildfires, flood, and drought across the United States.

"The ideas generated by this OpenNEX challenge demonstrate the value of these NASA data assets when put in the hands of citizen scientists," said Ramakrishna Nemani, principal scientist for the NEX project at NASA's Ames Research Center in Moffett Field, California. "Our second challenge seeks to rapidly turn these ideas into practical applications."

The second "builder" challenge that opens Friday offers awards for the development of an application or algorithm that communicates climate

change impacts to the general public using the OpenNEX data. Submissions based on the winning proposals in the "ideation" challenge are encouraged, in addition to new ideas that focus on climate change impacts.

Applications should communicate through concise summaries of impacts over time that can be easily related to familiar climate-related events and processes. The summaries may rely on key climatic events or observable events dependent on climate, such as changes in the timing of snow melt and runoff, plant flowering and the start of the allergy season, and the annual migration of birds. Developers are not limited to these examples, and are encouraged to consider solutions that incorporate other scientifically-based climate summaries and analogs.

"NASA is committed to engaging and enabling individuals and groups to make use of these high-quality scientific data and innovative technologies to better communicate climate change impacts to the general public," said Tsengdar Lee, program manager in the Earth Science Division of the Science Mission Directorate at NASA Headquarters in Washington.

Entries are due by Oct. 21 and NASA plans to announce the winners on Dec. 15.

NASA's OpenNEX challenge ties in to a number of White House initiatives, including Open Data, Big Data and Climate Data. These initiatives advance national goals to address climate change impacts on economic growth, health and livelihood, and include the use of competitions and challenges to foster regional innovation.

The challenges are managed by NASA's Center of Excellence for Collaborative Innovation. The center was established in coordination with the White House Office of Science and Technology Policy to

advance NASA's open innovation efforts and extend that expertise to other federal agencies. The challenges are released on the NASA Innovation Pavilion, one of the center's platforms available to NASA team members, through its contract with InnoCentive, Inc.

OpenNEX is hosted on the Amazon Web Services (AWS) cloud and available to the public through a Space Act Agreement. Challenge developers are eligible for credits on the AWS platform to build their applications.

More information: To educate citizen scientists about how the data on OpenNEX can be used, NASA has created a series of online video lectures and hands-on lab modules. To view this material, and for information on registering for the challenges, visit: nex.nasa.gov/OpenNEX

Provided by NASA

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