

OU collaborates with universities to create weather drones

Andrew Clark, Assistant News Managing Editor Aug 27, 2015



Phillip Chilson, OU's principal investigator of the CLOUD MAP project and professor of meteorology at OU holds up a newly-purchase weather drone as he describes what each part of it does and how it will help future researchers to understand and forecast weather phenomena better. The OU School of Meteorology was awarded a \$6 million grant to help with research and development, which it will split with three other universities.

Jackie Eby/The Daily

The National Science Foundation has awarded a \$6 million grant to OU and three other universities to take part in a project to develop drones with sensors to measure atmospheric conditions. The project has been dubbed **CLOUD MAP**, for Collaboration Leading Operational UAS Development for Meteorology and Atmospheric Physics.

The development of the drones will help meteorologists measure and predict atmospheric and weather conditions more accurately than if they were using solely ground-based measurement tools, according to Phillip Chilson, OU's lead principal investigator of the CLOUD MAP project and a professor of meteorology at the university.

"You have to know how the temperature, pressure and humidity is changing as a

function of height in order to measure atmospheric stability," Chilson said, describing the importance of the project.

The University of Kentucky, the University of Nebraska and Oklahoma State University will also be lending their talents to the project. **Each school brings different expertise to the table:** OU's meteorology expertise, OSU's expertise in aircraft development, Nebraska's expertise in atmospheric physics and Kentucky's knowledge of sensor technologies.

Unmanned aircraft systems add another dimension to forecasting weather conditions, Chilson said.

"You get a lot of data from ground-based measurements, but for the actual stability or instability parameters of the atmosphere, you have to have information in height," he said.

The drones have technology installed that collects data, such as temperature, pressure and humidity, from the atmosphere while flying. Simultaneously, the aircraft sends the data back to a ground-based computer so meteorologists and researchers can analyze it.

For now, using drones for measuring atmospheric characteristics is considered innovative. In the future, it could be normal.

"Use of unmanned aircraft will eventually be a common tool in both meteorology and atmospheric physics, but there is a lot of research that needs to be accomplished first in technical, operational and regulatory areas for that to happen," Jamey Jacob, an aerospace engineering professor at OSU, said in a press release.

In addition to the development of the drones, Chilson said the project will also focus on trying to loosen flying regulations the Federal Aviation Administration (FAA) places on drones. Currently, OU must give the FAA two days notice before

flying drones up to 3,000 feet in the air at the Kessler Atmospheric and Ecological Field Station. A team of at least six people must also be present during the flying to meet the administration's requirements.

"We need to try to move forward in a safe way so that they can give us a bit more rope that we can operate with, because it's really restricted right now," Chilson said. "We're trying to find ways we can get these aircraft into the air without so much bureaucracy.

"When there's big weather brewing, you don't know that two days in advance. If

While the project can greatly extend the capabilities of meteorologists and weather researchers, its success can also benefit the average person, according to James Grimsley, the associate vice president for research at OU.

"You're going to see improved storm prediction times," he said. "We still lose too many lives because of severe storms. We would love to see the day where we can say we lost zero lives."

"We would love to say our weather prediction models are so good that we can predict when, where and how (severe weather) is going to transpire," Grimsley said.

Tangible benefits of the project could appear in a matter of five years, he said.

"This is going to change the landscape for forecasting," Chilson said. "Not next year, maybe not in three years, but eventually we're going to get more and more of these operating, and it's going to dynamically change how forecasts are made."

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Andrew Clark is a journalism senior and currently the news managing editor for The Daily. Andrew has previously worked as the assistant news managing editor, news editor, L&A editor and a reporter for The Daily.