

AG RESEARCH SPOTLIGHT



Dev Niyogi

"Creativity is a highly collaborative process. Collaborating with people in a field completely different than my own is a fascinating aspect of what we do at Purdue and in academia in general."

Dev Niyogi, Indiana State Climatologist and Professor, Department of Agronomy and Department of Earth, Atmospheric, and Planetary Sciences

The Ag Research Spotlight shines each month on an individual whose work reflects our commitment to the six strategic themes that guide Agricultural Research at Purdue. Our spotlight for March 2015 underscores the theme, "Facilitating informed decision making to improve economic and social well-being."

THE RESEARCHER: As a curious onlooker walking to his school in the coastal city of Mumbai, India, Dev Niyogi observed a large industrial stack and the daily variations in its emissions patterns. Later, as a civil engineering student, he completed an air-quality project on how smoke disperses from chimneys. He then became the recipient of a national fellowship to study with experts in atmospheric turbulence, which introduced him to the mathematical models of what he'd seen in emissions and clouds. He began looking at engineering programs in the U.S. and Australia—the latter, appealing because of his avid interest in cricket—but couldn't find the right fit. When a U.S. visitor to his research institute in India suggested that Dev's work seemed more atmospheric sciences than engineering, he adjusted his academic goals. A fellowship took him to North Carolina State University, where he earned master's and doctoral degrees in atmospheric sciences. He was the acting state climatologist for North Carolina before coming to Purdue in 2005. "Purdue offered a unique landscape to study the kind of things I was interested in trying to understand," he says.

THE RESEARCH: Niyogi describes his research in terms of "understanding the role of land and how it affects the environment around it." He specifically explores how urbanization, population growth, stress

on resources, and agricultural intensification changes nearby weather, water availability, and regional climate—and conversely, the effect of weather and climate on these entities. Current projects involve understanding climatic impacts on agriculture and cities and developing tools to develop decisions, improving severe weather prediction for a wide range of atmospheric processes ranging from thunderstorms, heavy rains and land-falling tropical cyclones to droughts, using detailed computer models and satellite remote sensing datasets. Niyogi and his team are part of the consortiums that develop the computer models used by forecasters.

IMPACT OF FORECASTING: Niyogi strives to communicate both his enthusiasm for the research and the importance of advancing the science of forecasting to his students: "I tell my classes, we have a few basic mathematical equations, and we can help make millions and billions of dollars' worth of decisions with them."

INDIANA STATE CLIMATOLOGIST: Every state has a climatologist and state climate office, the official repository for all weather and climate data; most are based at land-grant institutions. Niyogi's office makes Indiana data available to and translates it for decision makers. Such users might include cities determining their winter salt budgets; companies creating bids to build roads; and counties trying to develop policies related to water and climate. Niyogi most enjoys communicating the interpretation of the data. Likewise, he "relaxes" by writing papers for publication: "It's how you communicate your ideas; it's like any other art," he explains. "That's beautiful."