The Climate and Corn-based Cropping Systems CAP (CSCAP) is a transdisciplinary partnership among 11 institutions creating new science and educational opportunities. The CSCAP seeks to increase resilience and adaptability of Midwest agriculture to more volatile weather patterns by identifying farmer practices and policies that increase sustainability while meeting crop demand.

THE ISSUE
Corn is essential in America. The highly versatile crop is an economic powerhouse, employing millions and producing food, feed and fuel. American farmers heavily invest their time, land and money in the crop’s production, planting more than 20 percent of all U.S. cropland to corn.

Global and domestic demand for corn continues to rise. However, there is increasing uncertainty about how long-term U.S. climate trends are impacting corn-based cropping systems and threatening agricultural investments. In response, farmers are seeking new ways to ensure continued crop productivity while also minimizing environmental impact.

THE PROJECT
This five-year project assesses the environmental, economic and social impacts of long-term climate variability on corn-based cropping systems. The project gathers data from more than 20 field test sites in 8 Midwestern states to focus on ways to best promote the system’s long-term sustainability and productivity.

THE RESEARCH
Researchers from a variety of disciplines are working together to unleash groundbreaking collaborative work. In field sites across the Midwest, researchers are measuring carbon, nitrogen, greenhouse gas and water flows from crop management practices, including tillage, cover crops, corn-soybean rotation, extended crop rotations, controlled drainage water management and nitrogen management techniques. Some researchers are using models to explore how crop management practices on variable soil types and climate conditions affect carbon and nitrogen levels in the water and air. Others are surveying farmers’ current management practices and their adaptation to changing weather patterns.

This diverse team is sharing data in a single comprehensive database to bring about greater knowledge and insight on the various implications of the research. Extension and education specialists are using this enhanced understanding to create programs for farmers, teachers and students, and are working to connect them with valuable project resources and analyses.
THE PARTICIPANTS

Ten Midwestern land grant universities and a USDA Agricultural Research Service laboratory are partnering with USDA - National Institute of Food and Agriculture.

Project partners are placing a strong emphasis in establishing lasting research networks, working with farmers and producers to encourage resilient decision-making, and training the next generation of scientists to work with a wide array of partners. This project directly involves farmers and local watershed groups across the region who are engaged in co-learning with the scientific team.