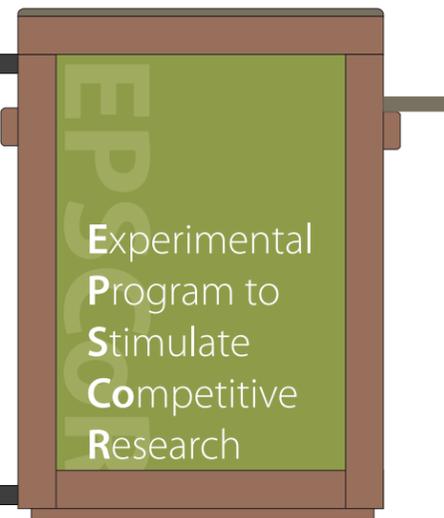
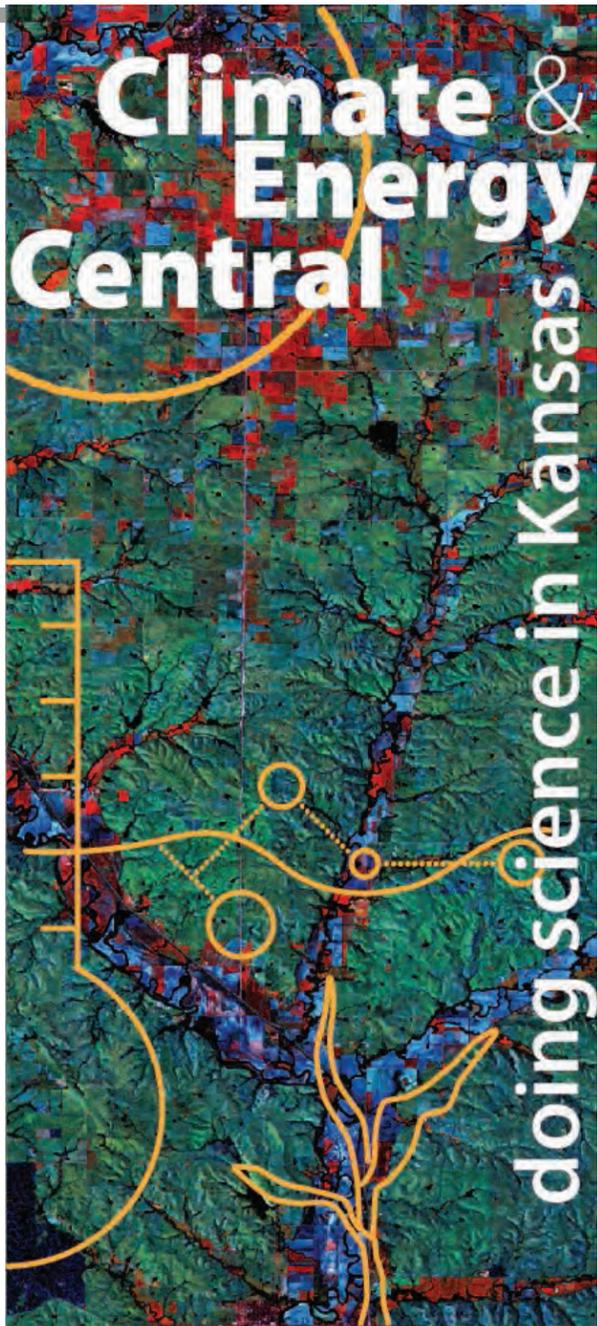
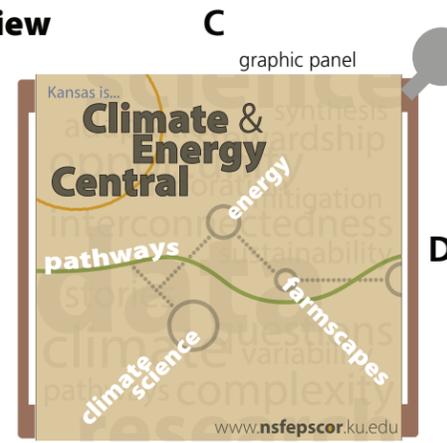


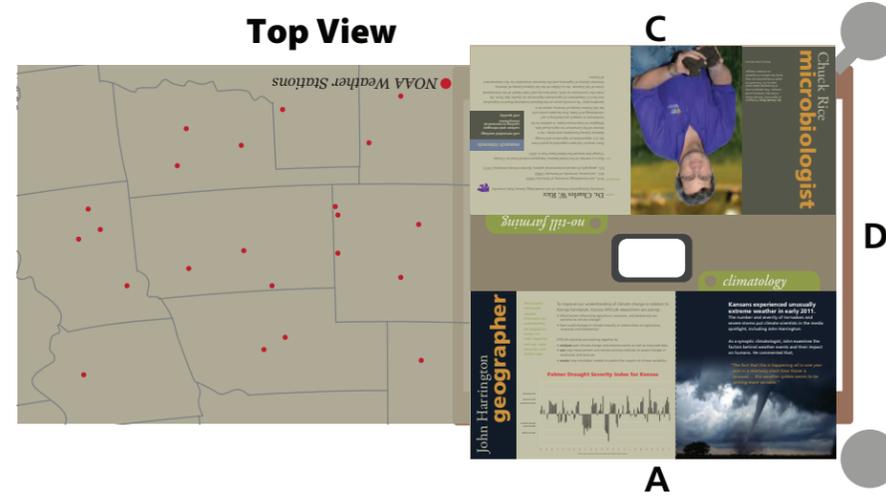
Top View



C

B

A



Is the Kansas climate changing?

Kansas EPSCoR scientists are collecting local data on surface temperature and irrigation practices across Kansas. They are looking for broader climate trends, what the trends mean, and their impact on future decisions.

Climate and our future

The Kansas studies are important because they are larger in scale than previous U.S. research, and because they provide more detail than previous global studies. Research by the Kansas EPSCoR has shown that irrigating agricultural crops will cool surface temperatures during warmer months. This irrigation could be considered evidence of climate warming in our state. Since irrigation water comes from a limited ground water supply, EPSCoR research will provide information to predict how summer temperatures could rise when irrigation slows down.

Now Kansas EPSCoR are using computer modeling to expand our understanding of climate changes. The EPSCoR team is comparing irrigated areas with an area that hasn't been irrigated. They are finding that as temperatures are lowered in the irrigation area, precipitation increases.

mitigation
 refers to decrease the impact, lessen the force, or make something less severe.

A deeper understanding of the interaction of climate and farming practices will help mitigate the impact of climate change.

"By understanding how drought, changes in weather patterns, changes in climate affect cropping systems, we will help buffer the Kansas economy and agricultural community to changes in weather or climate"

"June is becoming like July"

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Will cottonwoods grow here in the future?

Climate scientists have been collecting data over the last century documenting an increase in average temperature for most measurement points across the country. This means that many of the plants and animals once familiar to a specific region are **shifting further north** as the climate of their native regions warms.

USDA Plant Hardiness Zone Map

USDA

The cottonwood became the official state tree of Kansas in 1937.

Can you imagine Kansas without the cottonwood tree?

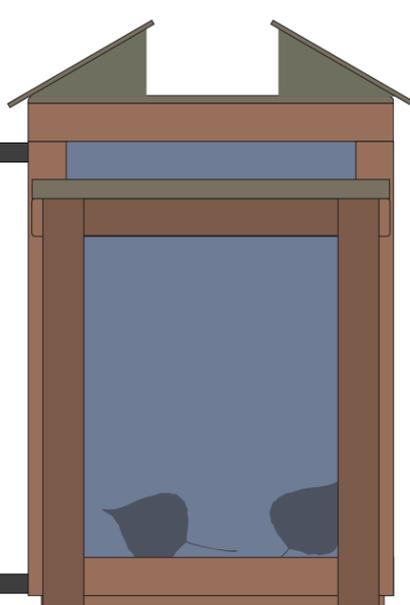
microbiologist
Chuck Rice

no-till farming
Dr. Charles W. Rice

"Thunder is good, thunder is impressive; but it is lightning that does the work."

Mark Twain, Letter, 8/28/1908

stories
climate
 adaptation



geographer
John Harrington

climatology
Kansas experienced unusually extreme weather in early 2011...

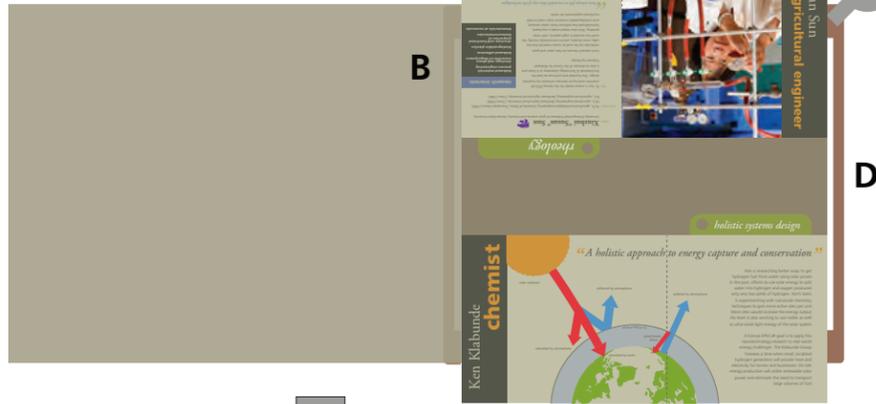
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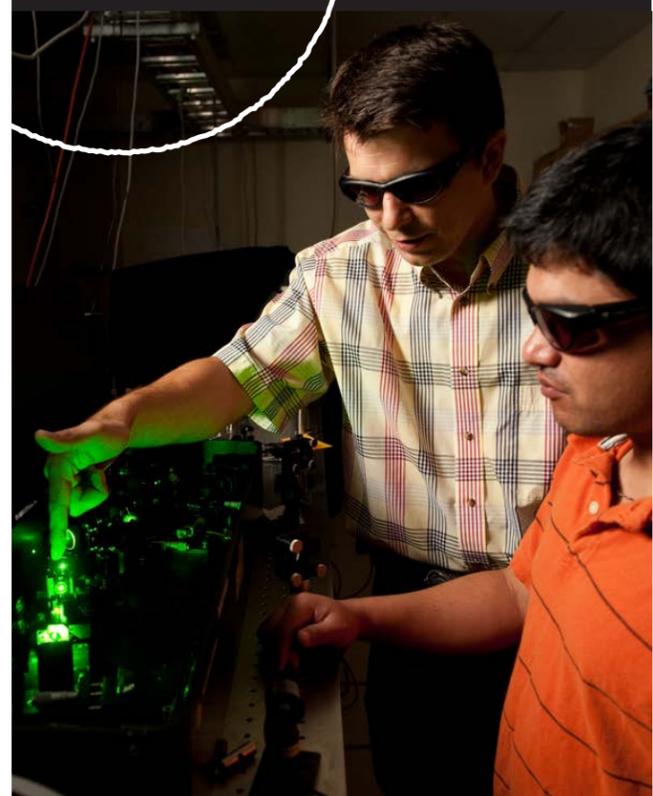
A

Top View

C



energy



Where will we find enough energy for the future?

"The sun's energy is the singular solution for our increasing energy needs."

Every year, we use the equivalent of one hour's worth of the sun's energy. Imagine what we could do if we could collect even a small portion of that clean, renewable resource. That's the challenge that Kansas scientists are working to solve.

Growing our own energy

Kansas EPSCoR researchers developed the first protein-based solar cell. MgP is an inexpensive bacterial protein that grows easily in sunlight. When mixed with other ingredients, MgP collects solar energy in a process similar to photosynthesis in plants. It becomes a solar cell when light is converted to electrons and electricity.

The goal is to "grow" this solar cell wherever there is sunlight. Growing our own energy means we can reduce manufacturing and shipping costs. MgP solar cells are truly "green" energy.



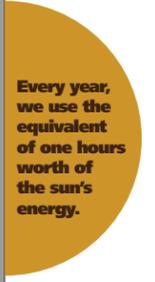
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nano-technology

We are using up many of the earth's energy resources. Solar energy offers impressive potential to help solve this problem. Kansas EPSCoR scientists say that the next generation of solar energy capture depends on nanotechnology.

new directions with

How do you explore something you can't see? In the last few hundred years, scientists have been studying particles that are too small to be seen by the naked eye. Now, Kansas EPSCoR researchers are applying that knowledge to nanotechnology for renewable energy.

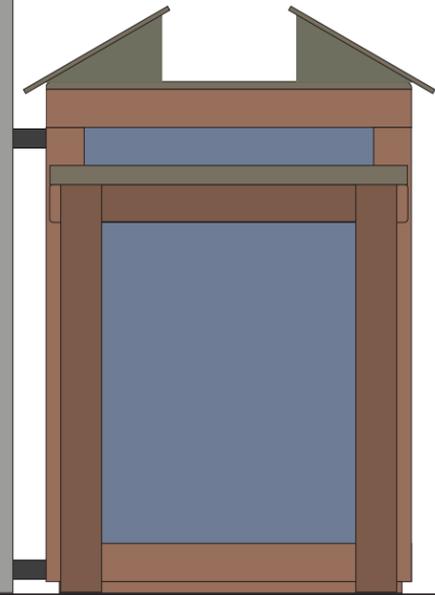
The team is working with nanocomposite materials for high-performance, low-cost conductors for solar cells. Because Kansas has abundant resources for solar energy, innovations in nanotechnology can have a high impact on the economy of Kansas.

"This entire process involves biology, chemistry, physics and engineering."

Judy Wu, physicist, University of Kansas

NRE

Nanotechnology for Renewable Energy



"A holistic approach to energy capture and conservation"

Ken Klabunde, chemist

C

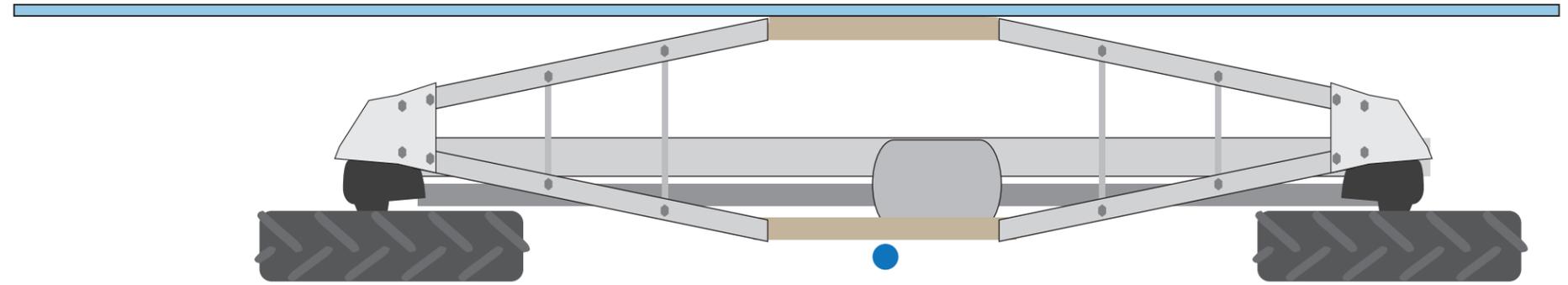
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A

Kansas EPSCoR Exhibit Project: **Centre Pivot Layout**

Based on parts to be supplied by Inman Irrigation/Valley
Background image from Valley- "Holdrege"
Flint Hills Design/Kauffman Museum, 3/27/12, KM 12/3/2015

Scale: 1/2" = 1'



Mural size: 240" x 100"



Intro/ice core data mural

KM/FHD cr 3/28/12

"Dangler" which gives latest CO2 number

Scale : 1" = 10"

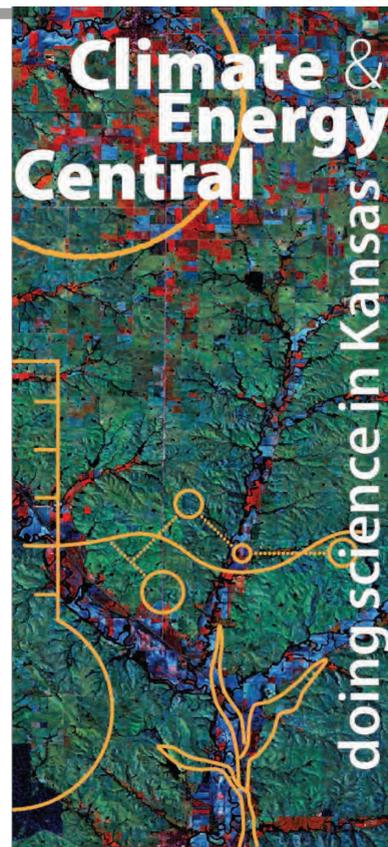
Banner width- 20'

Science is:

- asking questions
- gathering data
- being open to new answers
- creating a process for change
- communicating what we know

"We are addressing the question: Can we do better?"

The National Science Foundation supports research that brings Kansas scientists together to solve complex issues of climate and energy. The Kansas Experiment of Programs is designed to support research in climate and energy. For more information, visit www.kanclimate.org.



Experimental Program to Stimulate Competitive Research

