Human Decisions and Landscape Change
1 day, Social Studies/Geography

Images and information about specific places in the world will be used to teach students how farming and land use decisions affect the environment and one food source. Using the information provided, students will locate these places on world maps to strengthen map reading skills.

• Students will use world maps indicating drought and agricultural output to dollars to see the economic effects of agricultural decisions and a series of land use maps of Arizona showing changes over time.

• Drought and poor agricultural practices in the 1920’s and 30’s dried out much of the soil in five states causing the dust bowl.

• Soil was carried by wind in large dust storms, turning millions of acres of farmland and making over 500,000 people homeless.

• This region in the United States is referred to as the Great Plains and lies between the Mississippi River and the Rocky Mountains.

Calculating Landscape: Arizona through Time
1 day with extensive activity, Social Studies/Geography class

• Students will read a story about the history of land use in Arizona beginning with the Hohokam and fill in a timeline based on the information provided, focusing on the decisions and actions people make that change the landscape and the effect these changes have on how people live and sustain their populations.

• Students can also read the article provided about the pros and cons of farming in Arizona today and setup a debate on this issue in their own classroom.

Calculating Imports: Our Choices
1 day, Science, Math or Social Studies class

• Replacing variables based on soil type and environmental factors in the Revised Universal Soil Loss Equation (RUSLE), students will determine the rate at which soil erodes from different geographic areas. This information will then be used to find archaeological sites on maps created by the Medland team using GIS software. Students can also locate these places on Google Earth to see the area and land forms.

• Students will understand that different farming decisions affect the rate of soil erosion in different areas.

Calculating Soil Loss
1 day, Science, Math or Social Studies class

Soil Loss = (Soil Erodibility Factor) (Rainfall)(Slope)(Crop Management)

Neolithic Survivor
1 day, Social Studies class

• Similar to the live action game, each group of students is given a game board divided into 16 plots to see how the model finished the story.

• Students will begin by setting a short story about Neolithic farmers migrating into a new area. They will then set the variables on the model to show the model finished the story.

• Students can also read the article provided about the pros and cons of farming in Arizona today and setup a debate on this issue in their own classroom.

Calculating Landscape Dynamics K-12 Educational Outreach
Laura Anne Swantek (School of Human Evolution and Social Change, Arizona State University)

Background
The Mediterranean Landscape Dynamics Project (Medland) was developed by an international, interdisciplinary team of researchers to study the long term human interactions with and impacts on natural systems in the Mediterranean Basin from the inception of farming during the Neolithic through the Bronze Age. Using the archaeological, geological and paleoecological records from Spain and Jordan, the team of researchers headed by Dr. Michael Medland of the School of Human Evolution and Social Change at Arizona State University and funded by a grant from the National Science Foundation have modeled the effects of agro-pastoral land use on the landscape through a combination of geospatial modeling and agent simulation.

One component of the Medland Project is K-12 educational outreach developed through partnerships with the School of Human Evolution and Social Change, the Ecology Explorers Education Team at The Global Institute of Sustainability and the Arizona Geographic Alliance at ASU and teachers from Phoenix area school districts. Through this collaboration, seven classroom lessons were created in accordance with Arizona State Education Standards as well as a “Modeling Our Choices: A Teacher’s Guide to the Medland Project.” The lessons use the agent based model created by the Medland team and the data derived from their experiments to teach students about archaeology, human impacts on the environment, computer modeling, GIS and sustainable decision making. Each lesson was tested in Phoenix area school by the Medland educational outreach team and participating classroom teachers and is now available along with the teacher’s guide on the Medland Website: http://www.asu.edu/clas/shesc/projects/medland/education.html

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Images Credit

• All other pictures courtesy of the Arizona State University, Social Change, Global Archive, K-12 Education Outreach Group

• Images of California Desert: www.geograph.org.ukphoto1256456.jpeg

• Wadi of America Symposium, September 2006, Tucson, AZ.

• National Science Teachers Association (2001).

• Museums in Western & Central Arizona: www.geograph.org.ukphoto1256456.jpeg


• Arizona Neolithic Survivor: www.geograph.org.ukphoto1256456.jpeg

• National Science Teachers Association (2001).