
Medical Ecology
Spring 2007

Medical Ecology

This course is presented in 2 parts:

A. Part 1: Land use, health risks and ecological services and functions

B. Part 2: The Vertical Farm Project

C. The mid-term examination counts as 50% of the final grade

D. The Vertical Farm report counts as 50% of the final grade

Learning objectives:

Students completing Medical Ecology will be able to:

1. Independently evaluate the original literature on land use and health risk assessment.

2. Calculate their own personal ecological foot print.

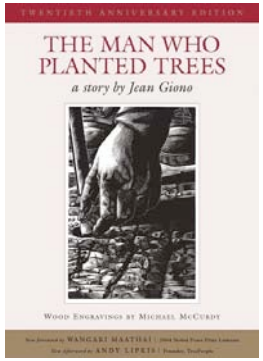
3. Fully grasp the concept of urban sustainability and environmental justice.

4. Visualize the future of cities from the perspective of urban agricultural initiatives.

Required Reading:

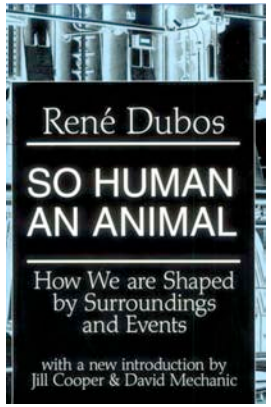
1. *The Man Who Planted Trees*

   by Jean Giono



2. *So Human An Animal*

   by Rene Dubos

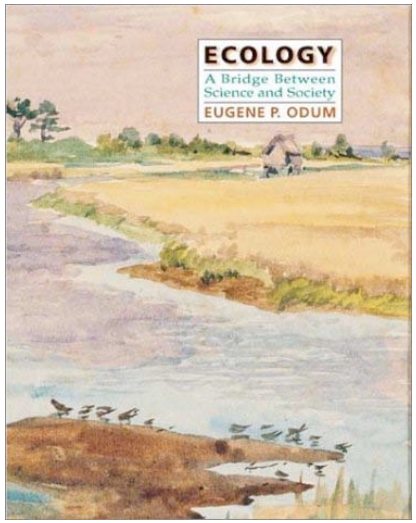


3. The Stern Report on climate change
   (online at www.verticalfarm.com)

Highly Suggested Reading*

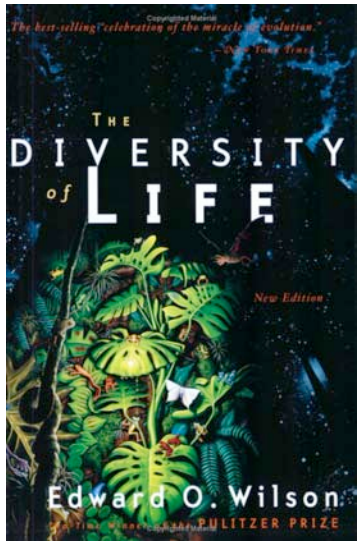
Ecology: a bridge between science and society

By Eugene P. Odum



The Diversity of Life

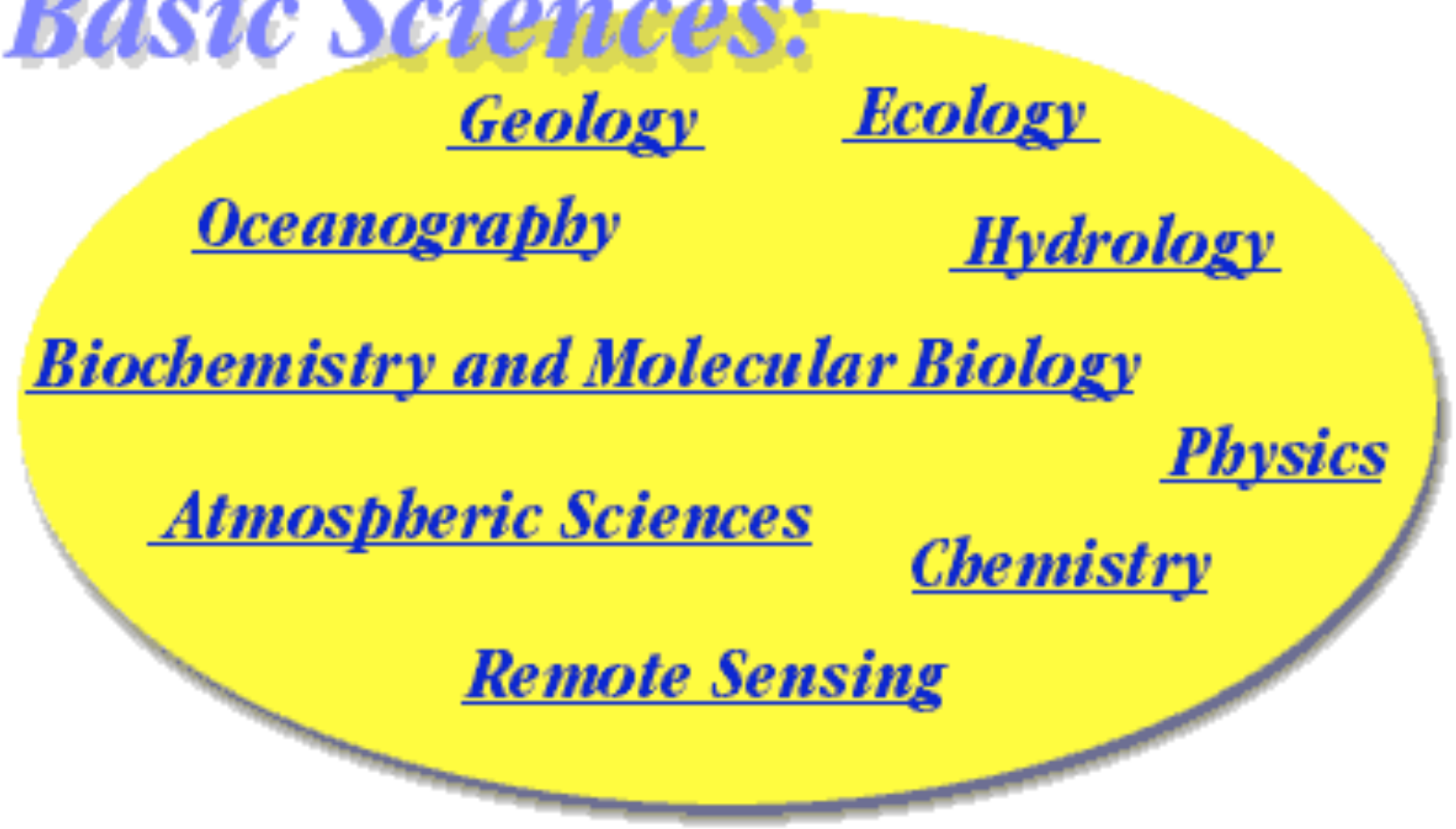
By Edward O. Wilson



* Especially for those without a background in the ecological sciences

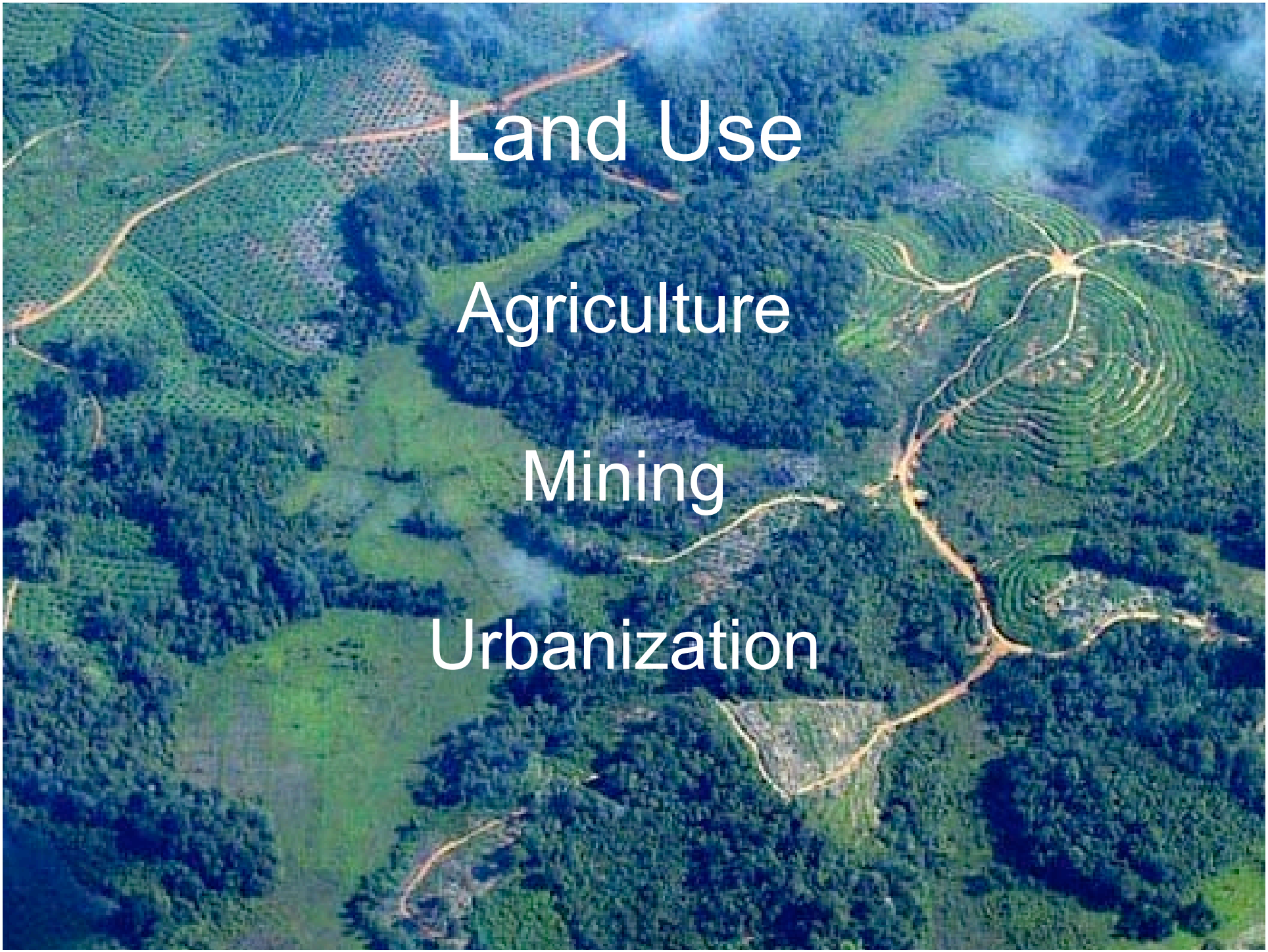

Basic
Science
Medical
Ecology
Applied
Science

Basic Sciences:



Click on any Basic Science to obtain useful links

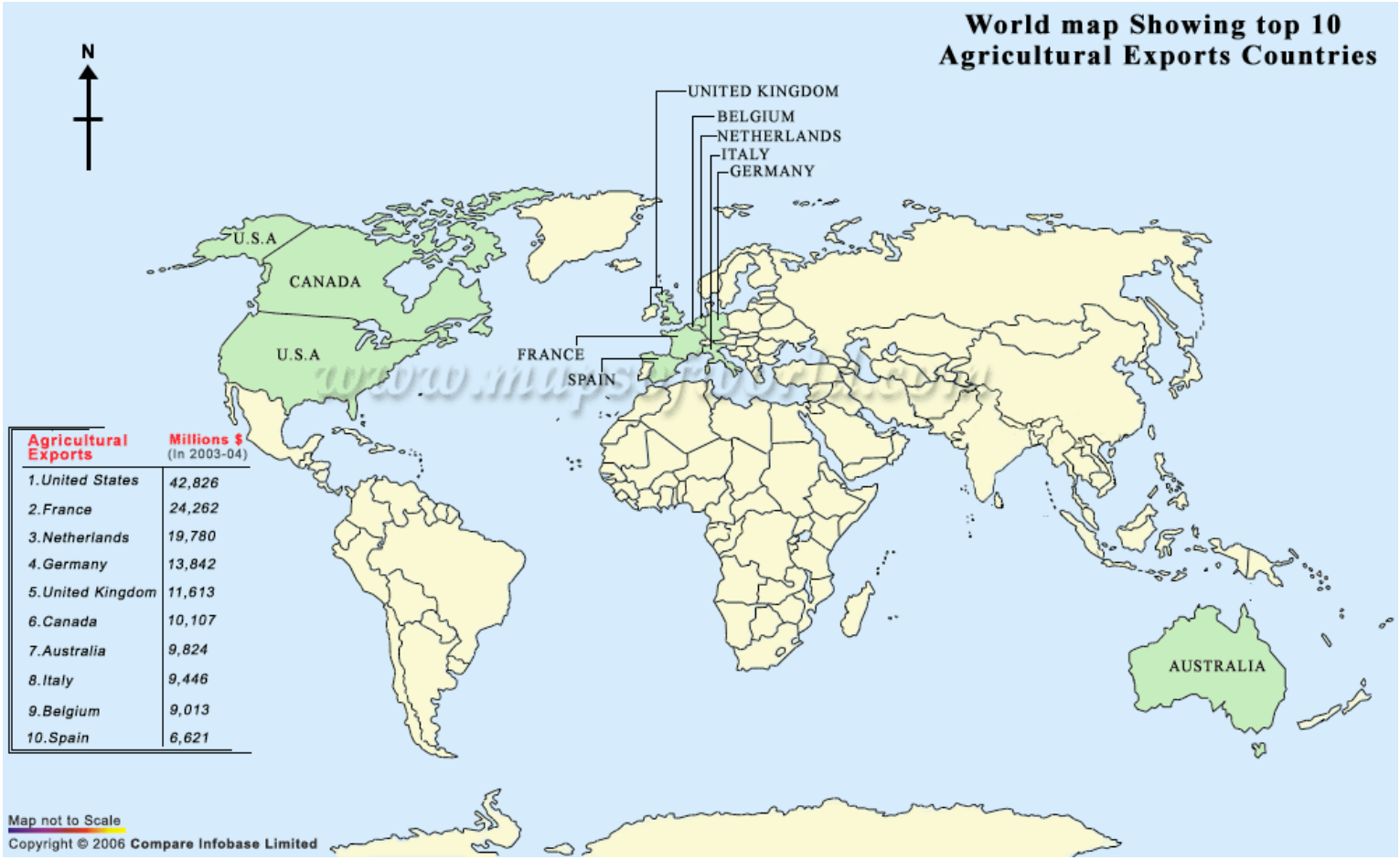
Click on any Applied Science to obtain useful links


Land Use
Agriculture
Mining
Urbanization

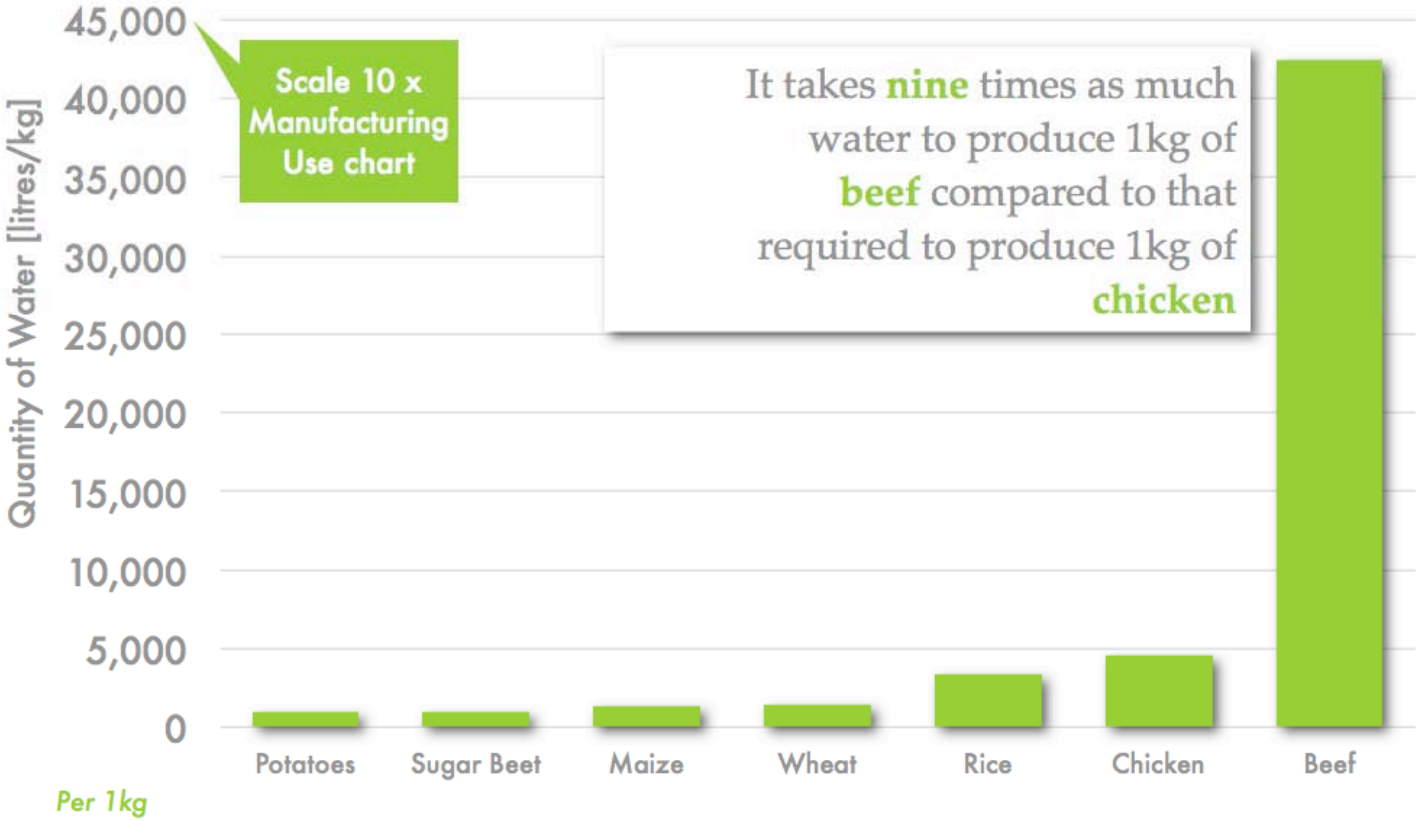
11% of the terrestrial landscape is used for farming. This represents nearly 80% of the land that can be farmed. The rest is mountains, desert, and forests.

90% of the world's freshwater is used for agriculture!

Much of what we grow is for export



Agriculture



Mining uses a lot of water, too

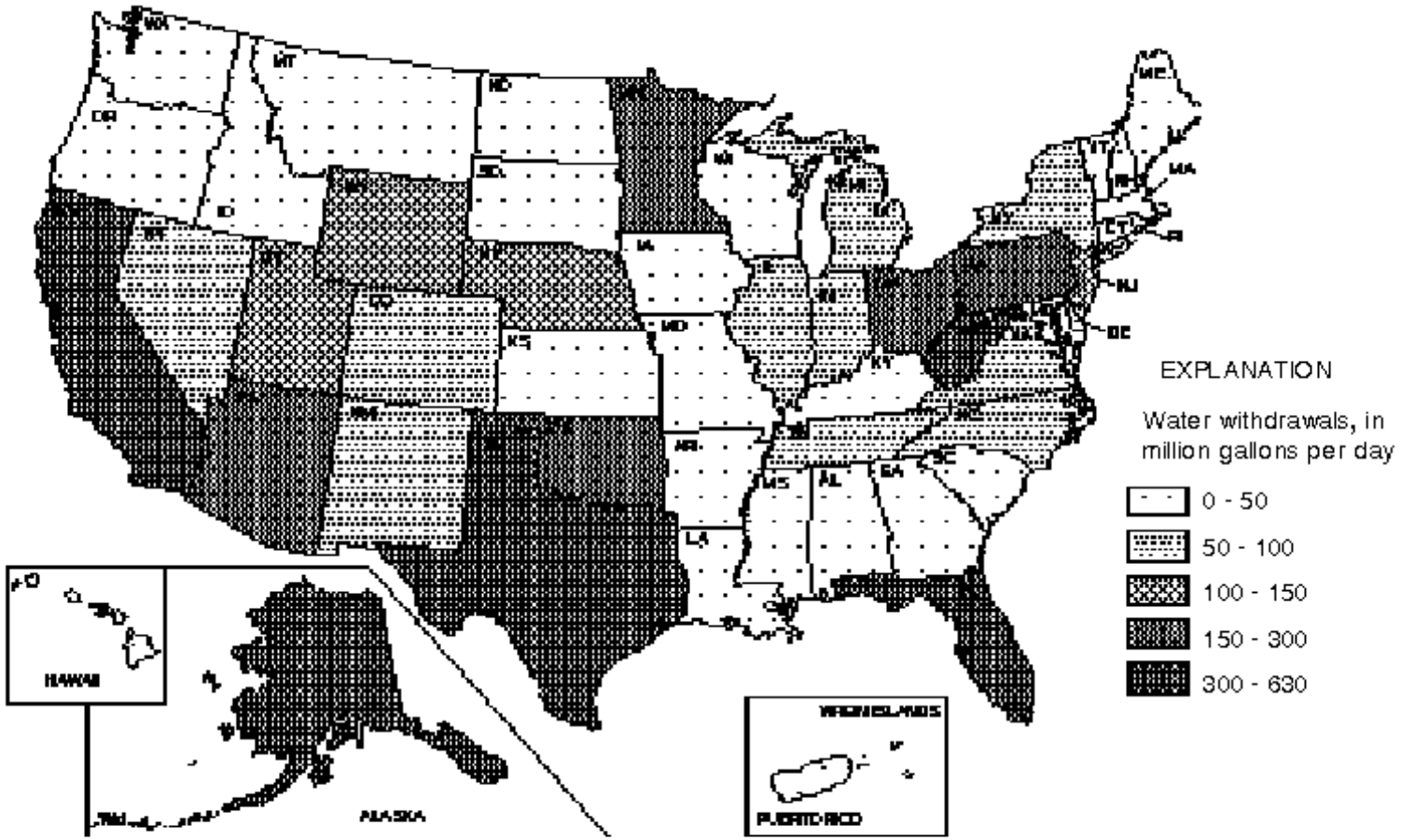
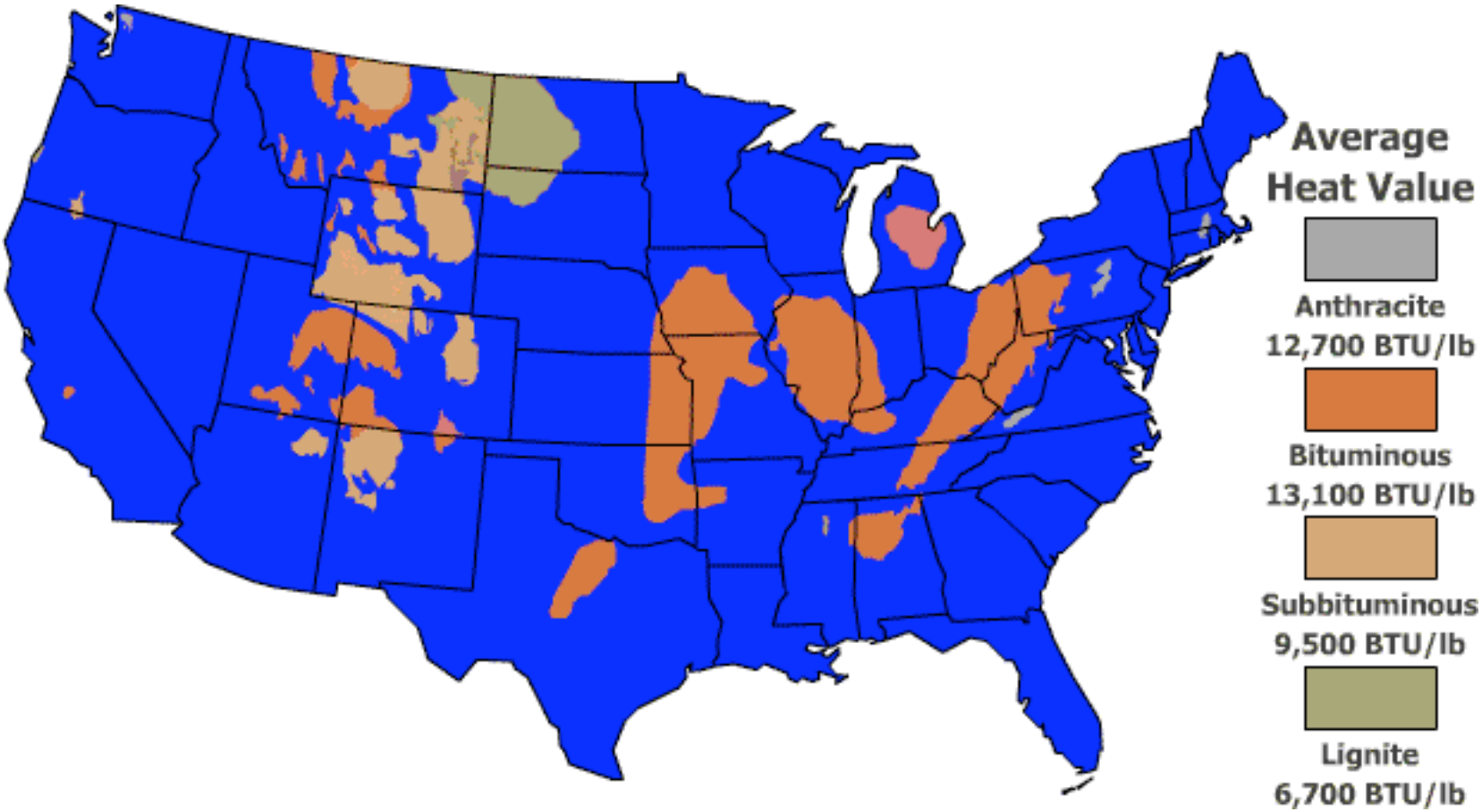
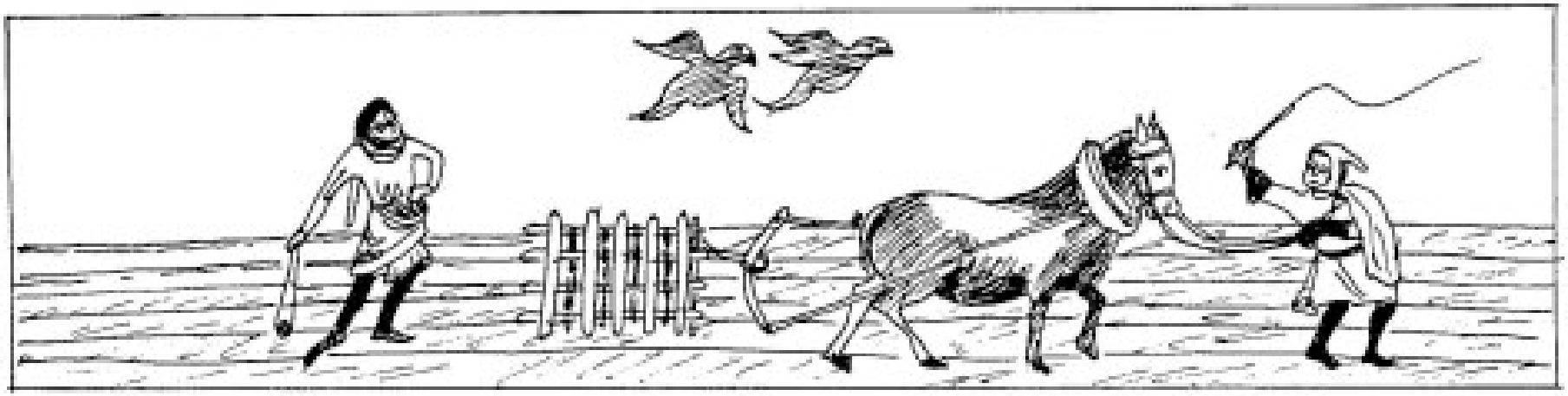


Figure 24. Mining withdrawals (fresh, saline) by State, 1990.

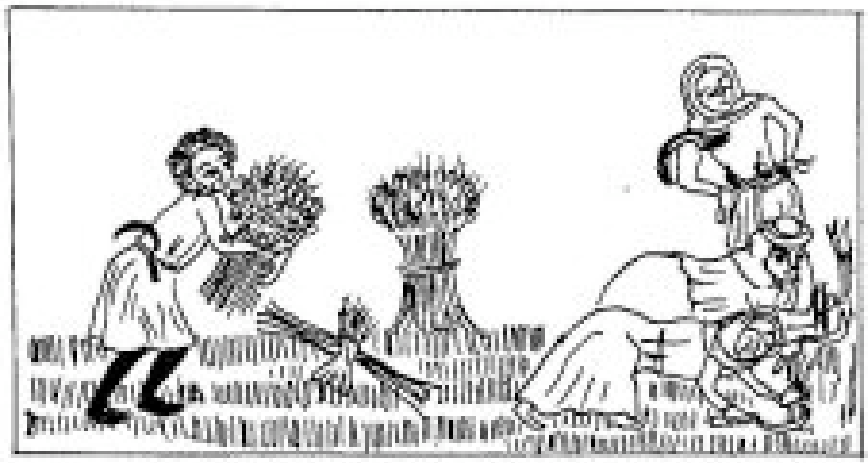
US Coal Mines



A very brief history of agriculture



Harrowing



Harvesting

Threshing

Fertile Crescent

This region gave birth to Middle Eastern civilization more than 8,000 years ago. Plant and animal domestication, irrigation, and new tools launched an agricultural revolution that transformed roaming hunter-gatherers into a socially complex, permanent society.

http://images.google.com/imgres?imgurl=http://solar-center.stanford.edu/AO/images/machu-picchu-gilbert.jpg&imgrefurl=http://solar-center.stanford.edu/AO/&h=399&w=532&sz=56&tbnid=QnWbTNTc6mrkjM:&tbnh=96&tbnw=129&hl=en&start=6&prev=/images%3Fq%3Danasazi%2Bcalendar%26svnum%3D10%26hl%3Den%26lr%3D%26ie%3DUTF-8%26c2coff%3D1

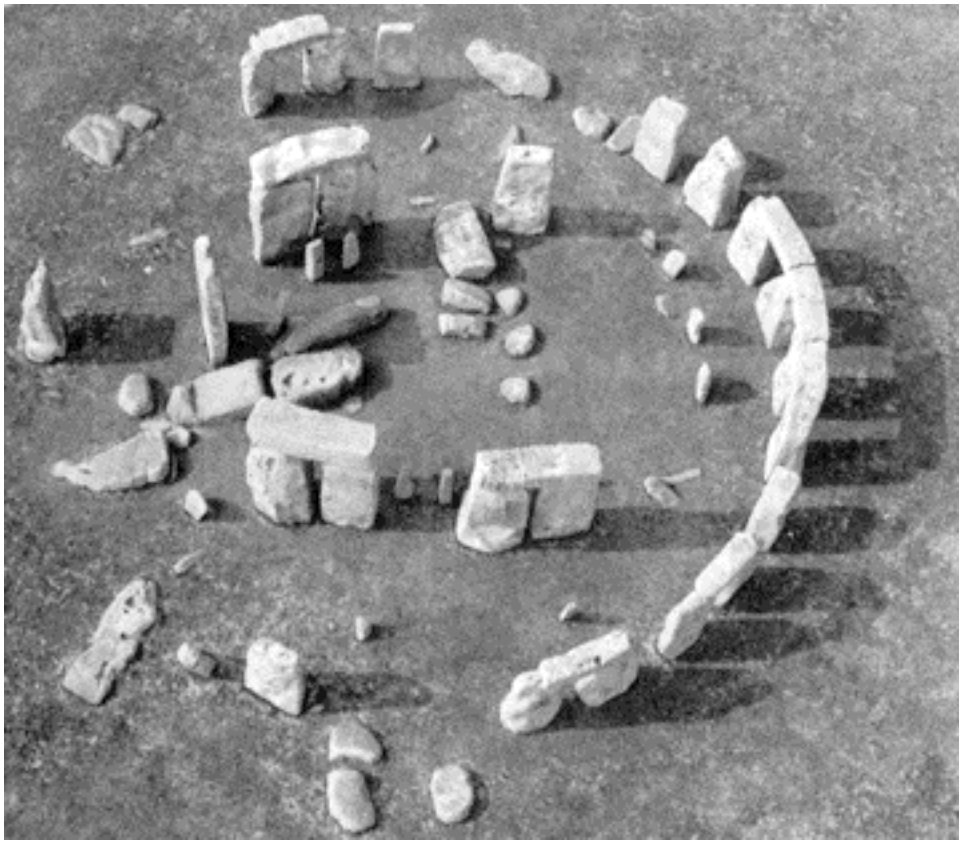
Newgrange Solar Observatory, Ireland

4,000 years old

Stonehenge, England

4,000 years ago

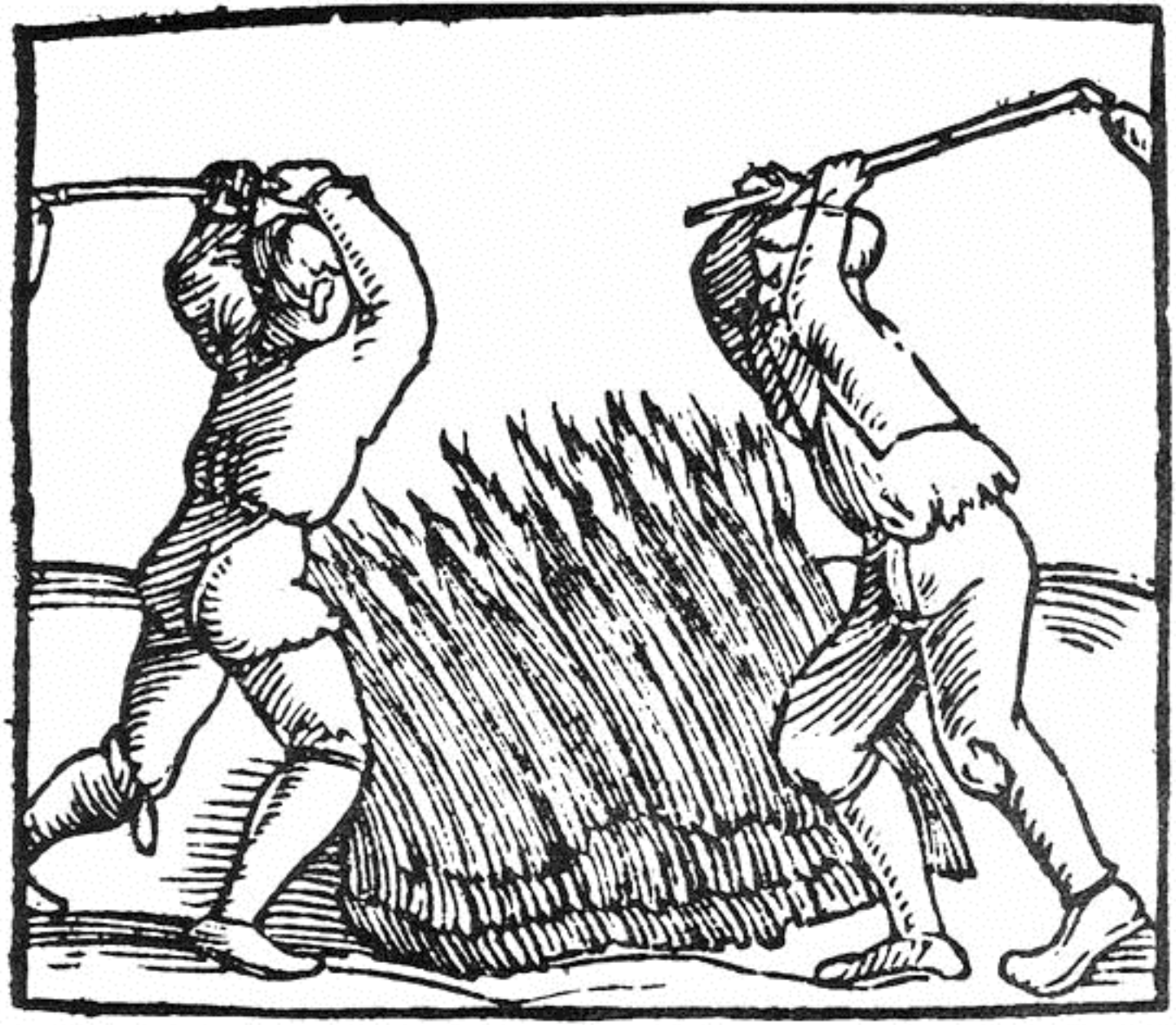
Stonehenge from above



Sundial from Qumran

Sophisticated Farming Technologies in Egypt

3,000 years ago



Bhutan rice harvest

Winnowing buckwheat in Bhutan

Bhutan lettuce harvesting

Bhutan harvest celebration

Cambodian farmers harvesting rice

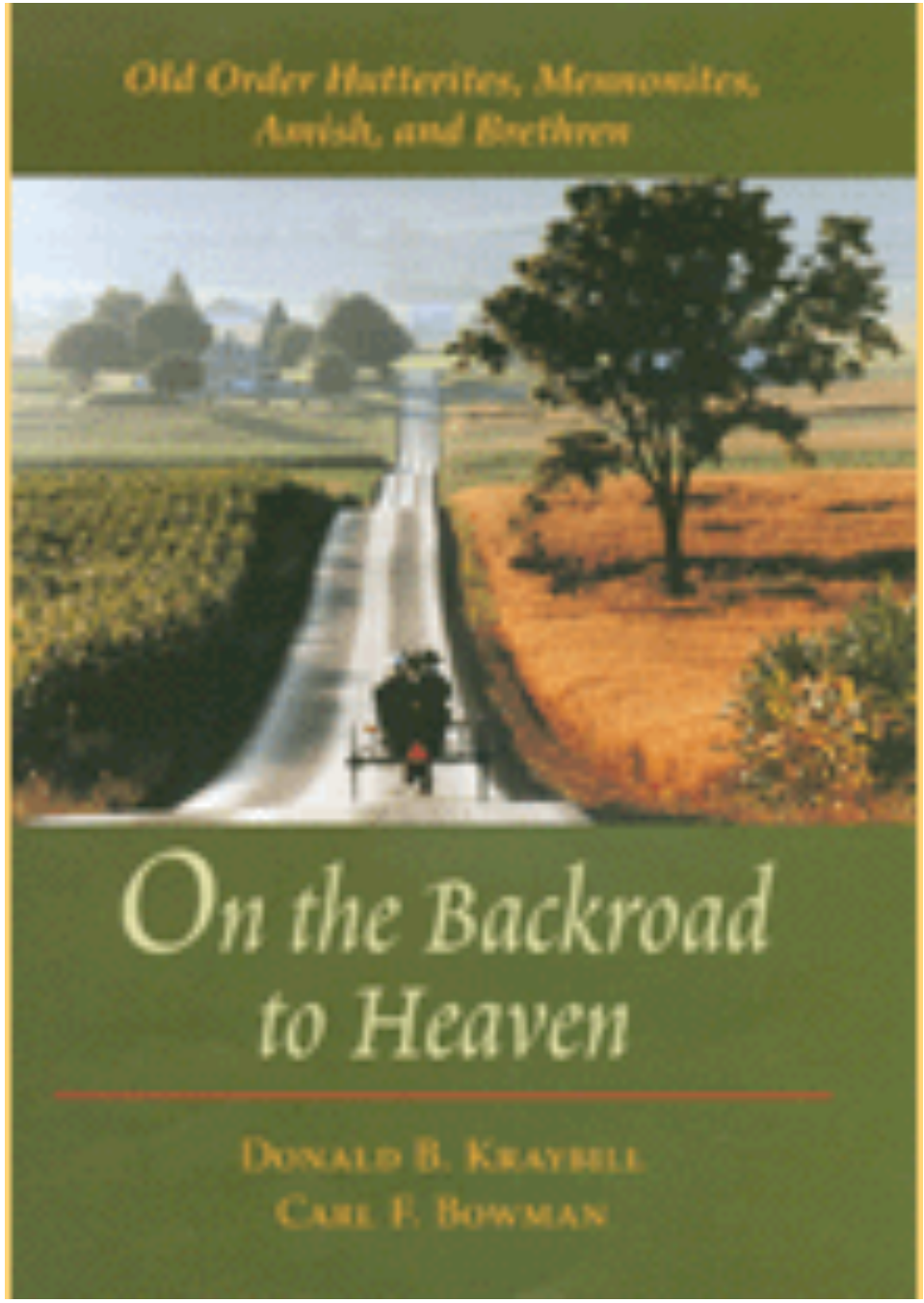
Incan Terraces

Machu Picchu Solar Observatory

Aztec Sun Calandar

Anasazi Sun Dagger Calendar

John Dere, Caterpillar, etc.


Old Order Hutterites, Mennonites, Amish, and Brethren
On the Backroad to Heaven
Donald B. Kraybill
Carl F. Bowman

Just Add Water

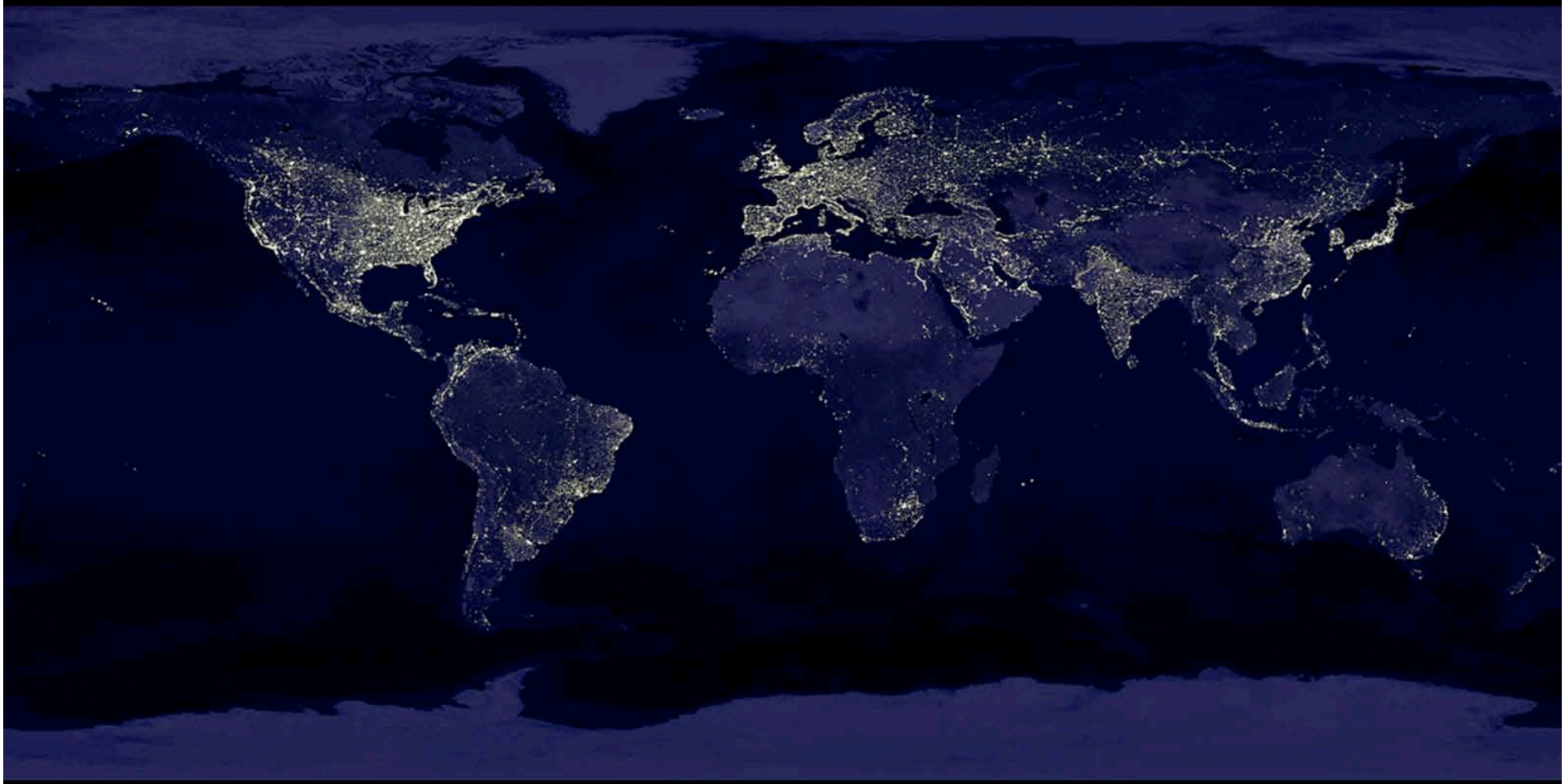
August 23, 1993

August 24, 2002

Urbanization

We Are Here!

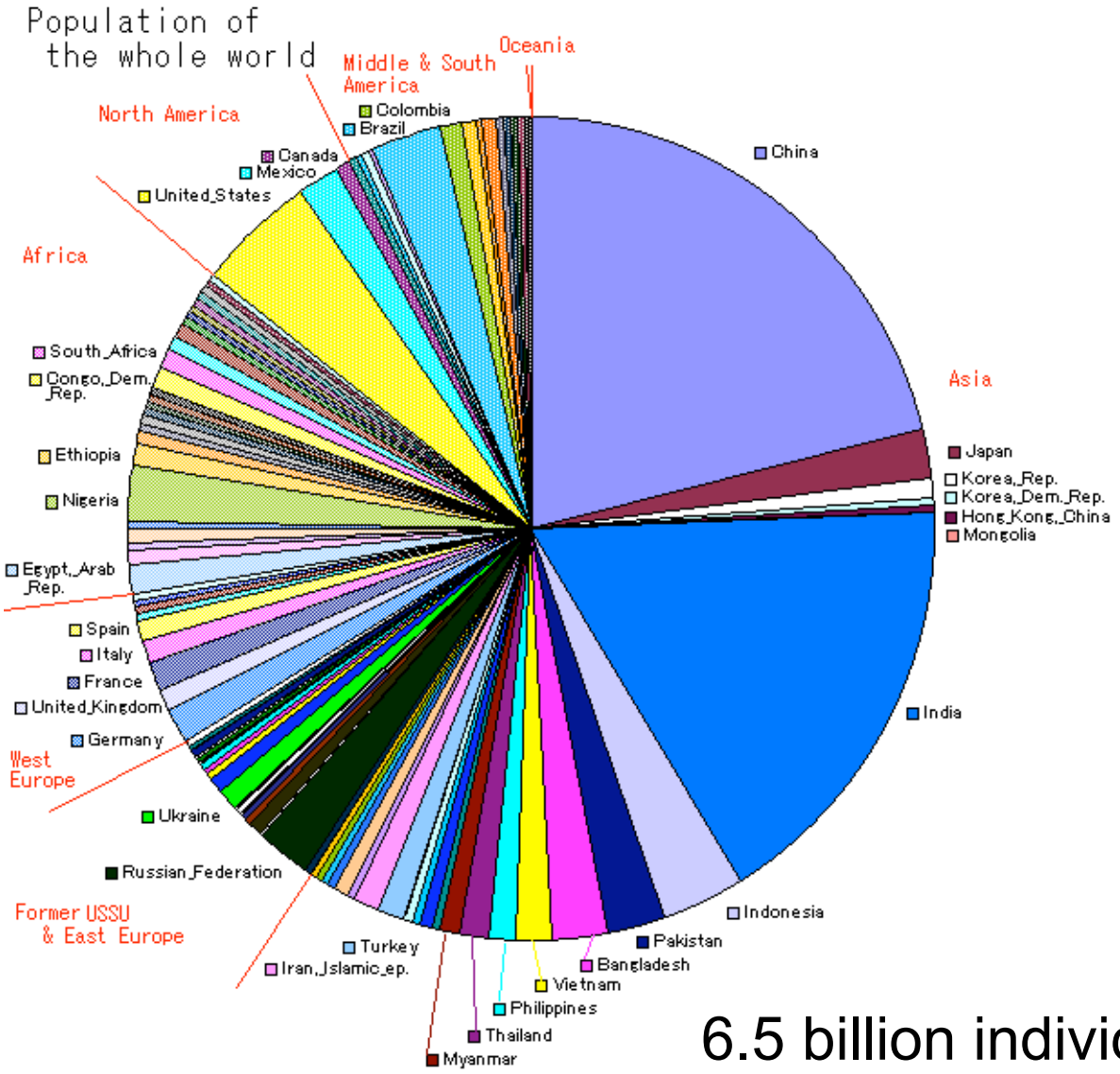
Night on Earth



This image of Earth's city lights was created with data from the Defense Meteorological Satellite Program (DMSP) Operational Linescan System (OLS) Originally designed to view clouds by moonlight the OLS is also used to map the locations of permanent lights on the Earth's surface.

Image Credits: Craig Mayhew and Robert Simmon, NASA GSFC based on DMSP data

Learn more about the Earth Observing System (http://eos.nasa.gov/)
Learn more about the Earth at the Earth Observatory (http://earthobservatory.nasa.gov/)
Get more Earth images at the Visible Earth (http://visibleearth.nasa.gov/)



6.5 billion individuals