



## EOSDIS Earth Observing System Data and Information System

Published on *EOSDIS - Earth Data Website* (<https://earthdata.nasa.gov>)

[Home](#) > [User Resources](#) > [Sensing Our Planet](#) > The Human Equation

### The Human Equation [1]

by **Laura Cheshire**  
Published in 1995

Hunting for elusive answers to a multitude of questions about humanity's role in global climate change, scientists are using human dimensions data from the Socioeconomic Data and Applications Center (SEDAC) to gain a more complete perspective of the impacts of our activities on the planet.

Researchers factor people into Earth system science.

- [About Socioeconomic Data and Applications Center \(SEDAC\)](#) [2]

SEDAC's Model Visualization and Analysis Service, for example, may help a Ball State University researcher in his attempt to find out whether there is a relationship between climatic change and an increase in infectious diseases. Recently, malaria has been resurfacing in many tropical countries, possibly propagated by pesticide-resistant mosquitoes. "The model dealing with temperature change has been very useful to me," says researcher Gopalan Venugopal. "The projected increase in temperature and precipitation could spread the disease into middle latitude countries." Using the model, Venugopal hopes to find that correlation.

Williams College students access SEDAC's online Thematic Guide to Integrated Assessment of Models as part of their reading material for professor Kai N. Lee's Environmental Studies course. Lee tries to instruct the students on as many aspects of the field as possible, including the most up-to-date technology used for modeling. He hopes to introduce students to the kinds of model analysis being used to examine global environmental change. He appreciates having SEDAC's material available on line, and plans to continue using it.

In many developing countries within Africa, socioeconomics and resource scarcity often combine with population density to produce famine conditions. Ron Smith of EROS Data Center analyzes various elements of food security factors for the U.S. Agency for International Development Greater Horn of Africa Task Force. By integrating SEDAC's gridded population data with natural resource and socioeconomic data, Smith attempts to gain an overall view of food security in that region. "It is necessary to understand current and potential food deficits and surpluses, and to develop strategies to enhance food security," he says. He will continue to access gridded population data in his studies.

Paul Sutton, a Ph.D. student at the University of California, Santa Barbara, is also using gridded population data, prepared by Dr. Hendrik Meij, the SEDAC project scientist. "I would like to think that the size and distribution of the human population would be a major component of global research," says Sutton. To measure population density and distribution, he and his colleagues overlaid the grids with DMSF nighttime satellite imagery. They have tested their idea using imagery and population grids for the United States, and discovered a strong correlation between the two. They would like to use this method to gauge population in other parts of the world where census data are not as accurate. "The SEDAC gridded population data are extremely valuable," says Sutton. "Dr. Meij's production of this data set saved me from doing a lot of work that I would not have been able to do as well as he did. It is unique as far as I know."

At the World Bank in Washington, D.C., most searches for environmental treaty information begin with SEDAC's Policy Instruments Database. The database, which resides on the World Wide Web, allows users around the world to search for and browse the full text, summaries, and status of 120 international environmental agreements related to global environmental change.

"This is the only consolidated treaty database that's available globally," says Thompson, World Bank Law Librarian. "We find the database extremely useful and have it bookmarked so we can go straight to it and search."

The Law Library uses the database in environmental impact studies for projects in developing countries.

Feedback

Besides global climate change, the legal instruments included in the database cover stratospheric ozone depletion, transboundary air pollution, land use and land cover change, conservation of biological diversity, deforestation, desertification, oceans and their living resources, trade and the environment, and population.

SEDAC provides access to a variety of data sets that are relevant to human dimensions, providing a bridge between natural sciences and socioeconomic and population dynamics. Making these data available enhances our understanding of human interactions and feedback mechanisms integral to global change research.

**Source URL:** <https://earthdata.nasa.gov/featured-stories/featured-research/human-equation>

**Links:**

[1] <https://earthdata.nasa.gov/featured-stories/featured-research/human-equation>

[2] <https://earthdata.nasa.gov/data/data-centers/sedac>

A vertical blue button with the word "Feedback" written in white text, rotated 90 degrees counter-clockwise.