EPA Science Matters Podcast Script

July 2012

Episode:

Philip Morefield on **EPA's Integrated Climate and Land Use Scenarios (ICLUS)** project.

[Philip Morefield]

Hi, my name is Phil Morefield and I'm a researcher at EPA's National Center for Environmental Assessment. I'm going to talk for just a few minutes about EPA's Integrated Climate and Land Use Scenarios project, which I'll refer to as ICLUS in this podcast.

ICLUS is intended to help us address a very broad research objective, which is to understand the effects of future interactions between climate and land-use change for the United States. Many assessments of future impacts show that these interactions can create serious challenges for aquatic ecosystems, air and water quality, and human well-being. It's clear that while land use change can exacerbate climate change impacts; land use planning, management, and policies can also create important adaptation opportunities that increase the resilience of sensitive ecological or socio-economic systems.

In order to better understand these interactions and potential outcomes, we've developed a project that integrates the national scale effects of both climate and land use change. The ICLUS model is based on simple demographic processes that drive demand for housing. The ICLUS population growth scenarios were designed to be consistent with the Intergovernmental Panel on Climate Change's greenhouse gas emissions storylines, but are constrained by actual US Census Population Projections.

We used these National Census Population Projections to develop five unique scenarios of population growth and migration that extend to the year 2100 in five-year time steps. This county-level population information is then used as input into a spacial allocation model which calculates the subsequent increase in housing units across the landscape. In addition to the county-level population information, there are GIS-ready housing density and impervious surface data available for download.

All of the outputs of the ICLUS model are available at our website at www.epa.gov/ncea/global/iclus. We've also produced an ArcGIS toolbox that allows users to create and manipulate all of the ICLUS datasets. For example, the tools let users create customized housing density projections that go beyond the five scenarios we've produced here at EPA. We've also included tools that make batch processing a little easier and make it easier to prepare the data for other analyses. In the newest version of the ICLUS toolbox, we're including a tool that will extract a subset of the population data by ethnicity, age, or gender, allowing users to explore the implications of climate change for environmental justice, for example.

In our latest addition to the ICLUS project is the ICLUS+ Web Viewer. This interactive tool can be accessed from our Web page, and lets users dynamically explore and compare ICLUS datasets and scenarios in detail without going through the process of downloading, extracting, and loading the data into a geographic information system. In the future, this tool will become a portal for the viewing and distribution of all of our ICLUS-related products.

I want to thank you for listening to this podcast, and I encourage you to visit our website if you'd like to learn more about any part of the ICLUS projects. The Web page is www.epa.gov/ncea/global/iclus. You can also contact me directly at morefield.philip@epa.gov. Thanks very much.