GLOBAL LAND USE DATA
FOR INTEGRATED ASSESSMENT MODELING

Final Report
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ABSTRACT

Changes in land use and land cover have been one of the major drivers of global change over the last three centuries. Detailed spatially-explicit data sets characterizing these historical land cover changes are now emerging. By synthesizing remotely-sensed land cover classification data sets with historical land use census data, our research group has developed comprehensive databases of historical land use and land cover change. Moreover, we are building estimates of the land suitability for agriculture to predict the constraints on future land use. In this project, we have interacted with the Global Trade and Analysis Project (GTAP) at Purdue University, to adapt our land use data for use with the GTAP database, a baseline database widely used by the integrated assessment modeling community. Moreover, we have developed an interactive website for providing these newly emerging land use data products for the integrated assessment (IA) community and to the climate modeling community.

FINAL REPORT

Our project has accomplished two major tasks:

1. Working with the Global Trade and Analysis Project (GTAP) at Purdue University to adapt our land use data for the GTAP database.
2. Developed an interactive user-friendly website for disseminating our emerging land use products to the integrated assessment and climate modeling community.

Below, we briefly describe the methods and achievements.

1. Development of Global Land Use Data Sets

I worked with the Global Trade and Analysis Project (GTAP) at Purdue University to incorporate land use into their database. To make the SAGE land use data useful for global economic modeling, additional developments were made to the land use data:

1. A database of Global Agro-Ecological Zones (GAEZ) was developed to represent “land endowments” within each country in the GTAP database. The national land use data were thus disaggregated to consider 18 AEZs within each country.
2. Development of spatially-explicit crop yield and production data is still in progress. Therefore, as a provisional measure for the GTAP database, we derived yield and production information from a database obtained from FAO for 94 developing countries.

This product is currently being reviewed by the integrated assessment modeling community.

2. Development of Web Site

We have developed a website, IAMDATA (<http://www.sage.wisc.edu/iamdata>) (see figure 1), to allow users to interactively manipulating our land use data sets, and download it in easy-to-use formats. The website allows the user to download data in either spatially-explicit gridded format, or aggregated by administrative units (i.e., world macro regions). We have added several new variables (including data disaggregated by AEZ) on the website (Table 1).

Table 1. Status of data on website

Variables	Year
Land Area	N/A
Population	1990, 1995
Land cover (6 types+other) by AEZ	1992
Major crops (18 crops+others) by AEZ	1992
Historical land cover (4 types+other)	1700 to 1992, in 10-year intervals
Potential natural vegetation by AEZ	
Land suitability for cultivation by AEZ	

We have advertised this website during multiple talks given to economic modelers over the past year, including at the EPA in Washington D.C., and the EMF meeting in Snowmass, Colorado. It was also referred in a recent news release from the University of Wisconsin. We have fixed bugs and incorporated suggestions from users of the website.

3. Conclusions

We have developed a website, IAMDATA, to disseminate our global land use data to global economic modelers. We have also incorporated our land use data within the GTAP database. We have worked with GTAP to make our land use data compatible with the needs of economic models.

Figure 1. Snapshot of front page of IAMDATA website.