

The University of Maryland

Land Cover Earth Science Information Partnership

Executive Summary of the June 1, 1998 Milestone Activities
John Townshend, Department of Geography
Joseph Ja'Ja', Institute for Advanced Computer Studies
University of Maryland, College Park

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This report documents the activities and products developed by the University of Maryland ESIP staff for the purposes of fulfilling our June 1, 1998 milestone. In this summary we discuss four central areas of activity including the prototype interface, the status of our current data products, a preliminary look at our user needs assessment, and the progress of our computing and technical resources. We also outline future directions for ESIP activities.

Prototype Interface

Today's Land Cover ESIP is still in its infancy and only contains a few data sets, making lists appropriate to browse the data sets, but as the number of data sets grows, other techniques will be needed. We propose to design highly interactive graphical interfaces to browse the available data sets. The first one is a data set browser in which each data set is described individually. The second version includes an initial preview step where numbers of data sets are given in response to users selections for several data sets attributes. Samples of these interface designs can found here: [Interface Examples](#). This interface developed through the work of the Human Computer Interface Laboratory (HCIL) staff illustrates the components of a user's interactivity with our data and systems. The data holdings can be browsed interactively so that users will have a clear understanding of the types of data sets available to them.

A challenge for the user interface of digital libraries is to provide users with an adequate overview of what the site purpose is, and what type and volume of material it contains. Once users have been able to decide that they in fact have reached a potentially useful site, users will need to search or browse the available materials (here data and services).

The second prototype interface dubbed [KRONOS](#) will allow users to not only access various forms of remote sensing data but to generate custom-tailored data products based on AVHRR level 1b data. Plans are underway for adding the KRONOS functionality into our current query preview interface design. This advance places us well ahead of schedule for creating user specified products for AVHRR data.

Available Data Products

At the center of this ESIP activity are the data sets being made available to a broad user community. The University of Maryland ESIP has made important progress regarding land cover earth science data availability. To date, we have made available three data sets that can

be viewed and downloaded. In the coming months, we will refine and update these data products.

- [Coarse Resolution Global Land Cover data product](#) (1degree and 8km)

The Global Land Cover products are derived from AVHRR data and use the IGBP-DIS land cover classification scheme. Their intended use is for environmental modeling work, primarily at global or regional scales. The training set and testing data sets for this product are also included.

- [Pan-Amazon and Central African Tropical Deforestation data products](#)

These data represent the completed products from the Landsat Pathfinder Tropical Rain Forest Project. The data sets reveal the distribution of rain forest areas as well as areas of clearance and regrowth for the 1970s, 80s and 90s. This project has produced a number of products at varying spatial resolutions.

- [Eastern US Coastal Wetlands data product](#)

The wetlands data reveals the relative health of coastal marsh areas for most of the east coast of the United States for the 1990s. This gridded GIS product allows users to select coastal areas by state units and load these into their own GIS packages. These data are intended for users wishing to identify potential areas of future marsh stress.

Currently work is underway to make available by the December 1998 milestone on-demand atmospherically corrected Thematic Mapper data. Users will provide their own data sets, though some data will be available in-house. Users then will receive full resolution data sets with all the reflective bands corrected for atmospheric effects via tape copy or FTP. Our current work with the KRONOS interface and system is helping to make the implementation of these services possible in a timely fashion.

User Needs Assessment

Users will come to the Land Cover ESIP with problems that vary according to several factors, including: how well-defined the solution to the problem is (e.g., ranging from simple facts to interpretations for complex phenomena) and how well-defined the problem is in the information seekers mind. Such information systems must accommodate different levels of experience with the content area, with the information system itself, and with information seeking in general.

The purpose of the user needs assessment is to provide an informed basis for the interface design and evaluation to be done in the months and years to come. To this end, we reviewed past reports discussing EOSDIS users and needs, interviewed staff working on current Land Cover ESIP data sets and studied current ESIP web site usage logs. In addition, we prepared a "suggestion box" form for inclusion in several places in the early version of the web site, that will facilitate online collection of users' characteristics and needs. Finally we started a collection of representative scenarios of potential use of the ESIP. Those scenarios will be an important part of the design and evaluation process of the ESIP. This initial phase of the users needs assessment started in March 1998. The report will be updated at the occasion of each milestone report of the 1st year. Follow this link to the [User Needs Assessment](#) report.

Before our next milestone we expect to have a variety of tasks completed relating to user needs and overall data access. We are planning to hold a local workshop during summer 1998 of potential land cover data users. We decided that it was preferable to implement the initial prototype of the ESIP before convening a panel of users. This will allow us to collect early feedback and involve users more actively in the design process. We plan to invite users in June for a one day workshop early September. The DC area offers the diversity of academic, government and businesses that is adequate for the initial workshop and we will avoid traveling expenses.

Technology and Computing Resources

The overall system design for our ESIP activities has gone through a significant transformation since our initial milestone including the acquisition of hardware and software needed for achieving stated ESIP goals. Our new 7 node IBM SP system and storage subsystems have been installed and have been tested for over a month. IBM and UMIACS are currently in the process of installing the advanced high performance storage management system, HPSS. We are proud to be one of the first universities to install this software, which was previously only available to large supercomputing centers and government laboratories such as SDSC and Sandia. Upon successful testing of HPSS our system will have the capability to manage the different levels of memory hierarchy including a 10 TB of local online storage.

Development and Implementation

The implementation team which includes, four full-time programmers and two undergraduates has developed a preliminary outline of a multi-release technology implementation plan. This approach allows us to quickly release relatively mature technologies in development after they have been successfully tested.

Version 0.0, which is currently complete, builds and integrates technologies which were previously in stand-alone prototype form. Key features of this release include a two-level graphical interface (data-set browsing and processing), multiple data types, and a DB-2 object-relational database. Future releases are scheduled to deploy more data-sets, increase the storage capacity and speed of the system, extend and integrate new interface technologies, and streamline data ingestion procedures.

Other ESIP Activities

In addition to the central activities noted above, the University of Maryland Land Cover ESIP has been engaged in numerous related endeavors. We are formalizing our management structure by the formation of working groups organized by specific tasks relating to overall ESIP goals. To date we have three primary groups; one relating to interface issues, a second tasked with technology implementation, and a third with forecasting current and future science community needs. These groups have met regularly and provided updated reports to the management team for strategic planning purposes.

Also, we are working to add two staff positions dedicated to customer service functions including user queries about current and future data sets, questions of data formats and data

handling, and Land Cover ESIP outreach activities. These positions will become critical as our ESIP broadens its user base to include both experienced and novice earth science data consumers. Lastly, we are working on fostering ties to other ESIPs by exploring the possibilities and benefits of collaboration. Our attendance at the past Federation meetings has provided us with the crucial contacts needed to establish successful future collaboration activities.