7B.2 EARTH SYSTEM CASE STUDIES FOR RESEARCH AND EDUCATION

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1. INTRODUCTION

The Unidata Program Center has embarked on a new effort to develop a content management system and publishing platform for Earth Science data. RAMADDA (**R**epository for **A**rchiving, **M**anaging and **A**ccessing **D**iverse **DA**ta) is a web application that supports a broad range of data publishing, cataloging and access mechanisms. The initial effort was driven by the vision to provide an environment for end-user communities to create and evolve case studies. However, as the work has matured our view of the domain of use has considerably broadened beyond the initial case study focus.

Much of our efforts are motivated by the overall evolution of content management and publication systems on the web. There has been an amazing evolution in how people and user communities can create, organize and share content. The common thread among sites such as YouTube, Flickr and facilities such as wikis and weblogs is that they are services that facilitate publishing, organizing and accessing information and content. Our goal for RAMADDA is to provide the same level of functionality for the earth science community.

2. RAMADDA SERVICES

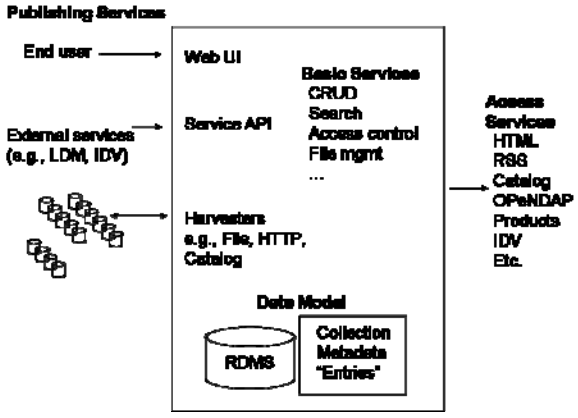

Figure 1 Functional Overview

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The services that RAMADDA provides include publishing services, content management and access. RAMADDA supports publishing via web-based interfaces, external client access through a web-service API and automatic harvesters that ingest content from the server file system or from external web resources.

RAMADDA also provides a suite of services for content management. Data and other content within the repository is not static, rather, the end user needs to be able to create, read, update and delete (CRUD) this content.

RAMADDA provides a broad range of access mechanisms. There are a number of HTML views (timeline, calendar, map, etc.), RSS and Catalog xml views, and data access views (e.g., OpenDAP, data subsetting, etc.)

RAMADDA is data agnostic, although created with earth system science in mind, it can handle any data type. Some services are data-centric, but the architecture of RAMADDA allows 3rd party developers to add support for new types of data, metadata and views of the content.

3. CASE STUDIES

We have been engaged in providing RAMADDA access to a large suite of existing case studies as well as creating a suite of new case studies.

The COMET/Unidata Case Study project was active form 1993 to 2001 and resulted in the development of 44 separate case studies of important weather events. These 44 case studies in total comprise approximately 600,000 separate data files ranging from model output, satellite and radar imagery and surface observation data sets. This suite of case studies can now be accessed via both OpenDAP and HTTP within RAMADDA. One of the key abilities that RAMADDA brings is the ability to add to these existing case studies. Users can comment on them through the RAMADDA comment system as well as adding

new materials (e.g., images, animations, educational content).

We have also used the 2008 hurricane season to explore facilities within RAMADDA for creating new case studies. We have collected a range of data and generated image products through the automatic harvesting of web. One of our future efforts is to automatically collect real time data feeds from Unidata's Internet Data Distribution system (IDD) and archive the data in RAMADDA. In a way we visualize a "record" button within RAMADDA for automatically capturing important weather events.

4. IDV INTEGRATION

RAMADDA is also closely integrated with Unidata's freely available 3D visualization client, the Integrated Data Viewer (IDV). One can directly access the data via the IDV and publish content directly back to the RAMADDA, allowing ease in navigating the full cycle of data use: discovery, access, format conversion, 3D visualization, and publication back to RAMADDA. Figure 3, below, shows IDV generated content within RAMADDA. These capabilities lend themselves well to educational and research environments, and also facilitate collaboration.

5. SUMMARY

RAMADDA is currently in an early release alpha state and we are planning on a public release of the software in early 2009.

6. LINKS

RAMADDA documentation and downloads:
http://www.unidata.ucar.edu/software/ramadda

RAMADDA in action:
http://motherlode.ucar.edu/repository

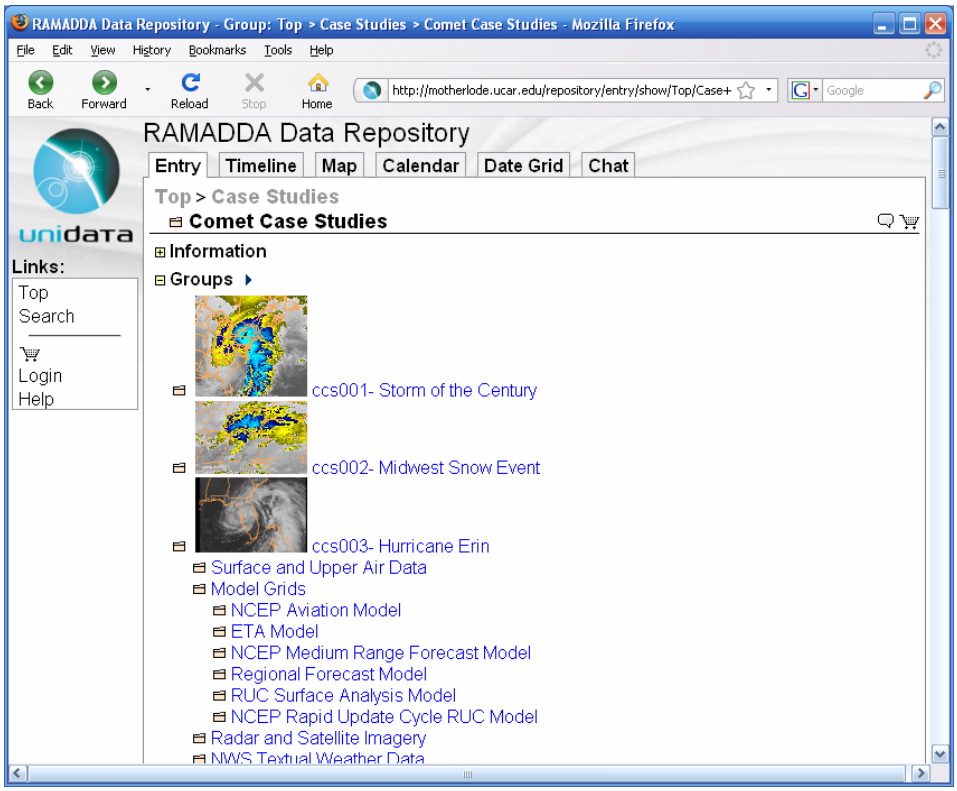

Figure 2. COMET/Unidata Case Studies

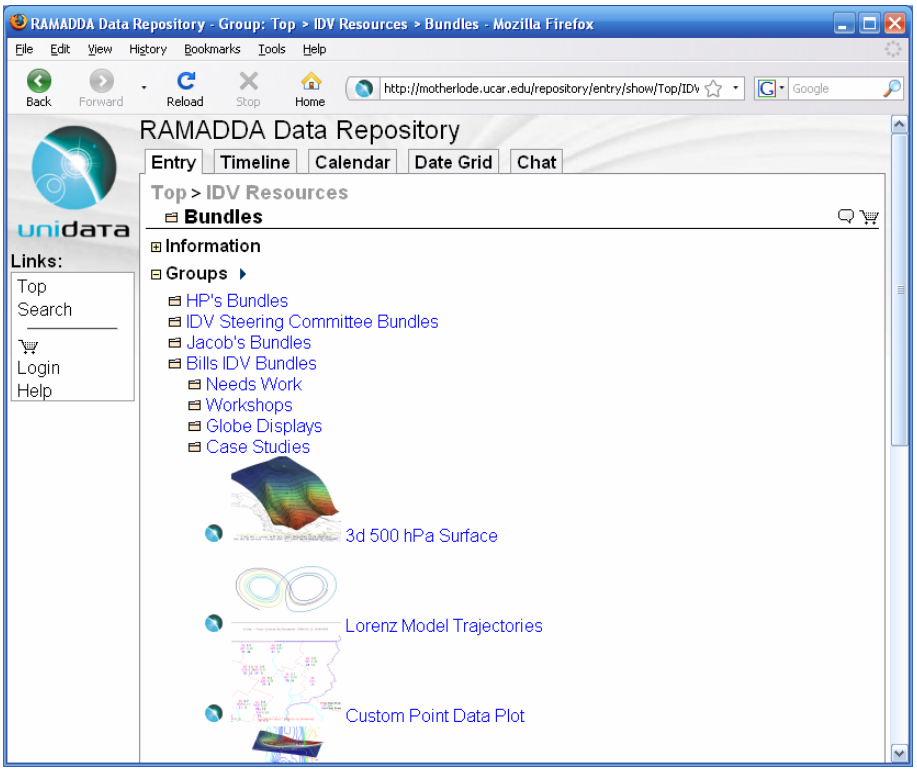

Figure 3. Integrated Data Viewer published content.