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1.0 INTRODUCTION

In addition to the data collection portion of a field project, the data management phase includes a variety of tools that enable the user to obtain a comprehensive overview of the dataset as well as provide an avenue to select a subset of the data for analysis.

2.0 RECENT DEVELOPMENTS

Recent developments in ATD include the utilization of XML (Extensible Markup Language) as a means to store project meta-data. XML is a text based markup language that allows data interchange on the web. Once meta-data are stored in xml files, a variety of products can be generated including web pages, text documents or other XML files. In addition, recent developments include on-line and mass store data archival, automated data retrieval, and remote distribution utilizing Unidata's DODS (Distributed Oceanographic Data System) servers. Developed by Unidata, DODS provides data access to remote locations regardless of local storage formats.

Additionally, ATD and Unidata have collaborated to incorporate atmospheric radar data into the IDV (Integrated Data Viewer), which is a web-based application for scientific analysis and display.

2.1 META-DATA

Meta-data pertaining to a particular dataset are obtained during the field phase of a project and provide a basis for a variety of products that describe the dataset. The primary use of the meta-data assists in "search and discovery", thereby providing information that facilitates the selection of a subset of data for analysis.

Some examples of these products include web pages containing images for perusal,

documentation relaying information such as any known problems, correction factors, geographical and time boundaries, and any logs generated during data collection.

Meta-data can also be used to generate a variety of catalogs describing the physical organization of the dataset as well as information pertaining to the data itself such as geographical and temporal boundaries. For example, a THREDDS (Thematic Realtime Environmental Data Distributed Services) catalog can be generated from the project meta-data and utilized in a variety of applications that employ the DODS servers to access the data. THREDDS, also developed by Unidata, provides the necessary infrastructure for publishing and accessing scientific data. Using DODS allows the physical location of the data to be transparent to the application so that one catalog may contain datasets from different platforms that reside in different locations.

Using the same meta-data, a variety of other catalogs can also be generated, thereby allowing access to ATD data in other data catalogs. For example, a THREDDS catalog describing the IHOP (International H2O Project) dataset is part of the UCAR wide initiative that is developing xml standards for a prototype catalog allowing ATD data to be included with data from other divisions and institutions.

3.0 RECENT DEVELOPMENTS

Figure 1 demonstrates a prototype application developed for the ELDORA radar during IHOP field experiment. Once the initial quality control procedure is executed, the remaining information is generated dynamically. This allows for data access almost immediately after the flight.

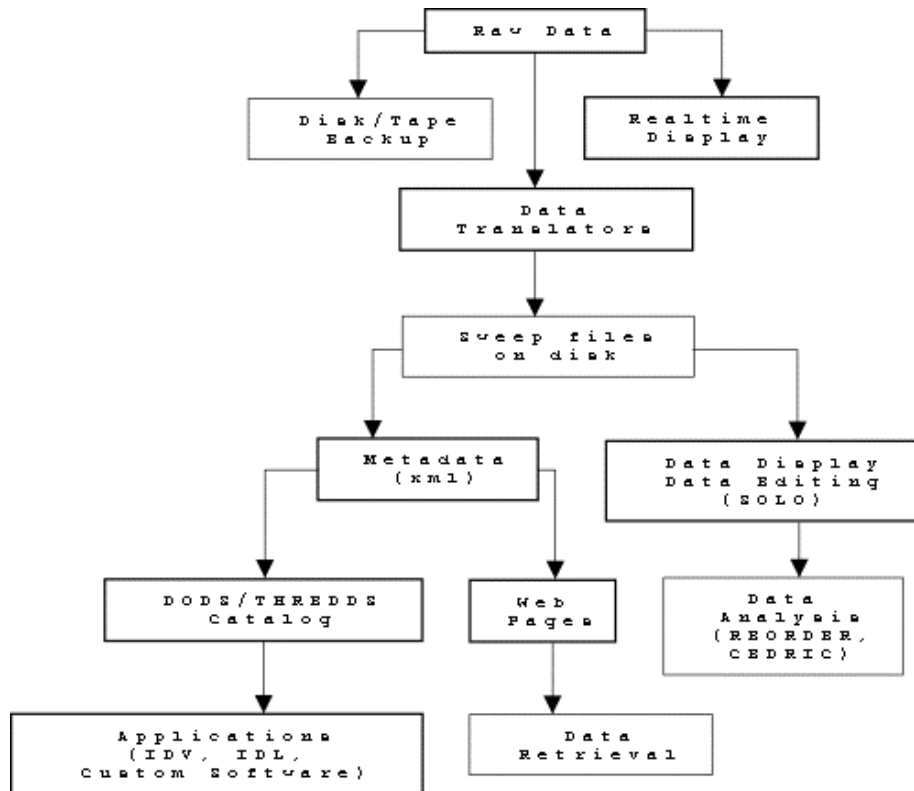


Figure 1: ELDORA data processing algorithm for IHOP

4.0 EXISTING SOFTWARE

Existing software developed to enhance ATD data management including ZEBRA, which is software developed in ATD for integration, display and management of diverse environmental datasets, SOLO for radar data perusal/editing and the data translators for translating data formats. Data retrieval products include a variety of web-based applications that allow for data transfer via ftp. Although these applications are relatively new within ATD, they have been utilized frequently and provide a simple system

for obtaining ATD data.

5.0 FUTURE DEVELOPMENTS

Future developments include further enhancement of the IDV to incorporate some of the functionality of ZEBRA, allowing for entire data set transfers via the Internet, participation of the incorporation of meteorological data into a GIS system and participation in DLESE (Digital Library for Earth System Education) digital library. DLESE is a digital library of educational resources to support Earth System science education.