

1. Introduction

1.1 Identification

This Release B JPL PO.DAAC Design Specification for the ECS Project, Contract Data Requirement List (CDRL) Item 046, with requirements specified in Data Item Description (DID) 305/DV2, is a required deliverable under the Earth Observing System Data and Information System (EOSDIS) Core System (ECS), Contract NAS5-60000.

1.2 Scope

Release B of ECS supports functional capabilities and services required to meet driving requirements and milestones, including:

- Functionality/services required to support mission operations for the continuation of TRMM, as well as the initiation of LANDSAT 7, COLOR, ADEOS-II, and EOS AM-1. This includes planning and scheduling, command and control, production data processing, data distribution and other ECS functions.
- Functionality/services required to support mission operations for the initiation of SAGE III (METEOR) and ACRIM Flight-Of-Opportunity (FOO). This includes production data processing, data distribution and other ECS functions.
- Provide information management, data distribution and a high level archive for the SAR data from the ERS-1/2, JERS-1 and RADARSAT spacecraft.
- Functionality/services required to support EOS ground system interface testing which includes end-to-end mission simulations, communication services for EBnet, network management services and other ECS services.
- Functionality/services required for V0 Interoperability.
- Functionality/services required for Science Software I&T Support for TRMM, LANDSAT 7, COLOR, ADEOS-II, EOS AM-1, SAGE III (METEOR), and ACRIM FOO.

Several of the driving requirements and milestones were initially supported by Release A but are expanded upon for Release B. For example, infrastructure Data Flow and End-to-End Testing and Simulation Readiness Testing were supported by Release A, and are fully supported by Release B during the final phases of testing. Likewise, V0 interoperability (one way) is supported by Release A for GSFC, LaRC, and EDC DAACs and is expanded to two way interoperability for all DAACs at Release B.

ECS will provide support to eight Distributed Active Archive Centers (DAACs). The DAACs are tasked with generating EOS standard data products and carrying out NASA's responsibilities for data archive, distribution and information management. The DAACs serve as the primary user interface to EOSDIS. These DAACs are located at: Goddard Space Flight Center (GSFC) Greenbelt, MD; Langley Research Center (LaRC) Hampton, VA; Oak Ridge National Laboratory (ORNL) Oak Ridge, TN; EROS Data Center (EDC) Sioux Falls, SD; National Snow and Ice Data Center (NSIDC) Boulder, CO; Jet Propulsion Laboratory (JPL) Pasadena, CA; the Consortium for

International Earth Science Information Network (CIESIN) in University Center, MI; and the Alaska SAR Facility (ASF) at the University of Alaska Fairbanks.

This document is part of a series of documents comprising the Science and Communications Development Office (SCDO) design specification for the Communications and System Management Segment (CSMS) and the Science and Data Processing Subsystem (SDPS) for Release B. The series of documents includes an overview, a design specification document for each subsystem, and a design implementation document for each DAAC involved in the release, as well as one for the System Monitoring and Coordination (SMC) center.

This document specifically focuses on the JPL Physical Oceanography DAAC (PO.DAAC) ECS configuration and capabilities at Release B. It is released and reviewed at the formal Release B Critical Design Review (CDR).

This document reflects the February 14, 1996 Technical Baseline, maintained by the ECS Configuration Control Board in accordance with ECS Technical Direction No. 11 dated December 6, 1994.

1.3 Purpose

The purpose of this document is to show the elements of the Release B ECS science data processing and communications design and implementation that will support the ECS portion of the PO.DAAC in meeting its objectives. The Release B SDPS/CSMS Design Specification Overview for the ECS Project provides an overview of the ECS subsystems and should be used by the reader in order to get a basic understanding of ECS design components. The Release Plan Content Description Document provides a detailed mapping of functional capabilities and services that will be available for each release. While some DAAC configurations vary depending on the mission or capability requirements for ECS at their DAAC, the PO.DAAC at full ECS capability will include all of the ECS subsystems.

1.4 Status and Schedule

This submittal of DID 305/DV2 meets the milestone specified in the Contract Data Requirements List (CDRL) for Critical Design Review (CDR) of NASA Contract NAS5-60000. The submittal will be reviewed during the Release B CDR

1.5 Document Organization

This document is organized to describe the design of the ECS portion of the PO.DAAC as follows: Section 1 provides information regarding the identification, scope, status and schedule, and organization of this document.

Section 2 provides a listing of the related documents which were used as source information for this document.

Section 3 provides a description of the ECS design at the PO.DAAC. It includes a description of the DAAC external interfaces, ECS software implementation, including identification of Off-the-Shelf (OTS) products, hardware configuration and operational activities.

- Subsection 3.1 establishes the context for the technical discussions with an overview of the specific ECS portion of the PO.DAAC mission and PO.DAAC Release B operations. It

identifies the key ECS related mission and operations activities that are supported via the ECS functionality at the DAAC.

- Subsection 3.2 addresses the external interfaces of the ECS subsystems as implemented at the ECS portion of the PO.DAAC. Major interfaces include those with the SeaWinds project.
- Subsection 3.3 provides a software component analysis. There are 10 ECS data processing and communications subsystems that contain Hardware Configuration Items (HWCI) and Computer Software Configuration Items (CSCI). This section addresses the CSCIs and their corresponding lower level Computer Software Components (CSC). The CSCs are described in detail in their respective subsystem design specification documents. In this section, the CSCs are captured in a single table, broken down by Subsystem/CSCI. The table lists the CSCIs and the associated CSCs. Notes are provided to expand upon generic explanations from the body of the Subsystem Design Specifications to describe what makes the particular CSC specific to the DAAC. In addition, when a CSC is identified as Off-the-shelf (OTS), the candidate product is identified, if possible.
- Subsection 3.4 provides a DAAC-specific discussion of the ECS data processing and communications Hardware Configuration Items (HWCI). This section identifies the HWCI components and indicates the specific components and quantities that are resident at the DAAC. It includes the Local area network (LAN) configuration and the rationale for the specific hardware configuration.
- Subsection 3.5 provides a software-to-hardware configuration mapping.

Section 4 gives a description of what can be expected in the next release of ECS.

Appendix A provides detailed configurations for the Data Processing Subsystem's Science Processing hardware suite.

The section "Abbreviations and Acronyms" contains an alphabetized list of the definitions for abbreviations and acronyms used in this document.

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