

**PACKAGE ID** - 001166SPARC00 SPATIALDATASET

**KWIC TITLE** - Suite of Software Objects for Arbitrary  
Spatial Partitioning of Modeling Dataset

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**LIMITATION CODE** -COPY                   **AUDIENCE CODE** - LIM

**COMPLETION DATE** - 08/01/1996   **PUBLICATION DATE** - 08/01/1996

**DESCRIPTION** - SpatialDataSet is an abstract superclass for a suite of object classes which associate data structures with specific regions (Cells) or points (PCells) in two or three-dimensional space. The data structure carried by these Cells/PCells are arbitrary in layout, but the same layout is used for every Cell/PCell within the SpatialDataSet. The SpatialDataSet objects are used within ANL's Dynamic Information Architecture System (DIAS) to carry spatially distributed attributes of terrestrial, aquatic, and atmospheric objects in a simulation domain. DIAS is a flexible object based software framework for concurrent, multidisciplinary modeling. The SpatialDataSet allows access to the information carried within them without requiring knowledge of the details of the spatial partitioning of the data on the part of the requesting agent. The suite of SpatialDataSet objects can be used within object based software architectures other than DIAS. SpatialDataSet has many subclasses covering different modes of partitioning two or three dimensional space, including various forms of grids, meshes, networks, patchworks, etc.

**PACKAGE CONTENTS** - Media Directory; Software Abstract; Media Includes Source Code;

**SOURCE CODE INCLUDED?** - Yes

**MEDIA QUANTITY** - 1 3.5 Diskette

**METHOD OF SOLUTION** - Flexible object based representation of spatially distributed datasets within a geographical area of interest. These datasets are carried as complex attributes of spatially distributed objects in the modeling domain. For example, a DIAS Atmosphere might carry wind vectors, air temperatures, and humidities in a single three dimensional SpatialDataSet, and carry precipitation rates in a dfferent, two dimensional Spatial DataSet.

**COMPUTER** - SUN SPARC

**OPERATING SYSTEMS** - Sun Solaris Version 2.4 or later

**PROGRAMMING LANGUAGES** - Smalltalk

**SOFTWARE LIMITATIONS** - None designed into the software. Users are limited by their individual computing environments.

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**SOFTWARE LIMITATIONS - (CONT)**

**SOURCE CODE AVAILABLE (Y/N)** - Y

**UNIQUE FEATURES** - The SpatialDataSet object classes provide a highly flexible and generic means for maintaining spatially distributed data in a wide variety of forms, and for allowing access to these data independent of the details of the spatial partitioning approach.

**RELATED SOFTWARE** - SpatialDataSet was designed to operate within DIAS, a proprietary modeling and simulation architecture developed at Argonne. It could be operated under an alternate object based modeling and simulation architecture.

**HARDWARE REQS** - A unix workstation is required to host this software. The hardware requirements are determined by the simulation architecture that uses the SpatialDataSet objects. DIAS needs a workstation with 128 Mbytes of RAM and 2 Gbytes of disk space for a typical application.

**TIME REQUIREMENTS** - Running time is completely dependent on the scope and detail of the situation represented in a modeling scenarion. Contributing factors include the complexity of the region modeled, the specific models executed, desired spatial and temporal resolution, etc.

**ABSTRACT STATUS** - Submitted May 1 1997. Released AS-IS June 20, 1997.

**SUBJECT CLASS CODE** - R

**KEYWORDS** -

S CODES  
ENVIRONMENTAL EFFECTS  
COMPUTERIZED SIMULATION  
DATA ANALYSIS  
ENVIRONMENTAL IMPACTS  
GEOGRAPHY  
LAND USE  
MAPPING  
MATHEMATICAL MODELS  
TOPOGRAPHY  
COMPUTER PROGRAM DOCUMENTATION

**EDB SUBJECT CATEGORIES** -  
990200

**SPONSOR** - DOE/ER

**PACKAGE TYPE** - AS - IS