

***NATIONAL WEATHER SERVICE
PRODUCT/SERVICE DESCRIPTION DOCUMENT (PDD)
TYPE: Experimental Product
DATE: August 28, 2003***

SERVICE DESCRIPTION DOCUMENT:
INTERNET MAP SERVICE FOR EMERGENCY MANAGERS

Part 1 - Mission Connection

1. Product/Service Description:

The prototype Internet Map Service (IMS) for Emergency Managers allows users to create maps of National Weather Service (NWS) tropical cyclone information. Users can select information currently produced by the NWS and combine it with locally developed Geographic Information System (GIS) information to tailor maps for emergency operations. Providing NWS data via an IMS will share disparate data sets such as forecast grids, river level information and satellite and radar imagery in GIS ready format. (Additional information on IMS is included in Part II, Section 1, Format & Science Basis.)

This prototype will not include the full range of information provided by the NWS it will focus on a limited set of products that provide weather information related to an approaching tropical cyclone (e.g., storm track, winds, flooding, severe weather). While the geographic scope of the prototype is limited to coastal states from Texas through the Carolinas, some information covers the entire U.S. and adjacent oceans (e.g., satellite).

The service can be accessed at: <http://ims.nws.noaa.gov/emhurr/>

2. Purpose/Intended Use:

The service is intended to provide emergency managers with easy, flexible and consistent access to a range of NWS information concerning tropical cyclones using IMS technology. Emergency managers can effectively incorporate rapidly-changing weather and flood conditions into their operations, easily integrating NWS information into their own GIS systems that may also include features such as road networks, population maps, as well as evacuation centers, hospitals, locations of emergency response assets, etc. Users without GIS capabilities will be able to access and manipulate NWS information provided by the IMS site using a standard Web browser (Note: because of features included in this IMS site, use of Internet Explorer 5 or later, or Netscape Navigator 6 or later, is necessary).

The prototype is considered experimental by the NWS. The purpose of an experimental service is to obtain user feedback on potential new services. At the end of a fixed period, an evaluation is made to determine whether the service warrants the commitment of NWS resources to provide it permanently. In order to make this decision, user comments and input will be collected during the experimental period and will be evaluated. Not only does this help the NWS determine whether to continue the provision of the service, it identifies changes

that could be made to better serve user needs.

The experimental period for the IMS prototype will be from September 2 through November 30, 2003. As the service is experimental, NWS does not guarantee it will be continuously available throughout this period. However, every effort will be made to assure reliable provision of this service, in particular during times when tropical cyclones affect the prototype area.

3. Audience:

The intended audience is emergency managers, including those who use GIS as a tool to manage and visualize information. They are expected to benefit most from the IMS prototypes integration of disparate NWS formats such as forecast grids, river level information, and satellite and radar imagery into a common georeferenced framework.

4. Presentation Format:

This information will be delivered over the Internet in GIS format (i.e., Environmental Systems Research Institute (ESRI) shapefiles). Users will be able select desired weather information produced by the NWS and display it in map format using only a standard Web browser. Related information, such as storm track and a cone of track uncertainty, will be provided in what is called a layer in GIS terminology. Multiple layers can be displayed at the same time. The user has the option of selecting which layers to display and the ability to control the area and scaling of the display.

In addition to using a Web browser, users may download ArcExplorer, a free viewer from ESRI (available at <http://www.esri.com/software/arcexplorer/>). Using either ArcExplorer or any GIS that accepts ESRI shapefiles as input, users can connect to the NWS IMS server and add their own local GIS layers to create custom maps for display and analysis.

5. Feedback Method:

The NWS seeks to improve its services based on user feedback. A feedback form is provided on the IMS Web site, <http://ims.nws.noaa.gov/emhurr/>. Comments regarding the Internet Map Service for Emergency Managers can also be sent to:

National Weather Service
Attn: Frank Richards, W/OS31
1325 East-West Highway #13460
Silver Spring, MD 20901

Or via e-mail to: Francis.Richards@noaa.gov

Part 2 - Technical

1. Format and Science Basis:

The NWS Internet Map Service (IMS) is based on the ESRI product suite, which has been identified as the NWS standard for GIS needs (NWS Information Technology Architecture - Vol. VII, Technical Standards and Policies, 2002). The IMS software is ArcIMS. An IMS allows the user to view themes or layers of geographic information. This information can be viewed and interacted with via a standard web browser, or, the IMS server can feed data

directly to a users compatible desktop GIS or ArcExplorer.

The most common options available to the IMS application users are described in the following sections.

- (a) Map Layers: The types of map layers which can be made available in IMS are points, lines, polygons and images. Associated with each map layer is a database table that contains attributes for the layer. The layers contain individual items which are called features. Each feature has a corresponding record in the database table. Point layers include features at specific locations (radar sites, temperatures, dew points, storm report locations, etc.). Line layers include features depicting linear objects such as roads or rivers. Polygon layers include features that depict objects that are areal in nature (e.g., counties, warning area boundaries). Images are raster layers (satellite images, gridded data). Each layers attributes are stored in fields of the database record associated with each feature. For example, each county in a county (polygon) layer may have attributes such as the county name, FIPS code, state name, etc.
- (b) Capabilities: The most basic capability allows users to manipulate the available map layers. The IMS application allows the user to turn various layers on and off rendering the layer visible or invisible. Another basic capability allows the user to pan and zoom to an area of interest to more closely examine the features in the area. This gives the user the option to navigate to anywhere on the map rather than being constrained to the hardwired navigation of a static map solution. Stepping up the ladder of complexity is the ability of the user to click on a feature and see the record in the layer's database table corresponding to the location clicked.
- (c) IMS relation to Geographic Information Systems: An IMS is NOT a GIS although both deal with displays of geospatial data. In addition to the functions described above, GIS software provides additional capabilities over IMS. Not only can a user display and query layers in a GIS, but the user can create, edit, or change data. Some of the most powerful features of a GIS allow the user to write programs to analyze geospatial data. GIS allows advanced querying, and spatial and 3-dimensional analysis of data. In effect, IMS provides a subset of the functionality of a typical GIS, but it does so over the Internet.

Layers provided by the NWS may include: hurricane track and uncertainty; storm surge; winds; significant river flood outlook; current river stage observations and forecasts; hydrographs; 1-, 3-, and 5-day precipitation forecasts; flash flood guidance; recent precipitation; 24-hour and 7-day precipitation totals; radar; satellite; as well as text products such as, hurricane watches and warnings, hurricane local statements; severe weather watches and warnings; tornado watches and warnings; and flood/flash flood watches and warnings. These layers represent information currently available from the NWS. A complete description of layers available on the NWS IMS site can be found at: <http://weather.gov/ims/layers.html>.

2. **Availability:**

Starting on or about September 2, 2003, information provided by this service will be updated as it becomes available. Information on normal update cycles is provided at: <http://weather.gov/ims/layers.html>.

This service is provided exclusively over the Internet (however, most of the information provided is also available from standard NWS operational sources). The NWS has no control

over the reliability of the Internet. Users need to factor this uncertainty into their decision to use this service.

Because the product is experimental, the NWS does not guarantee the service will be continuously available. However, every effort will be made to assure reliable provision of this service, in particular during times when storms affect the states indicated above (Part I, Section 1, Service Description).

3. Additional Information: N/A