NATIONAL WEATHER SERVICE SERVICE DESCRIPTION DOCUMENT

National Digital Forecast Database User Defined GRIB2 files

TYPE: *Official Product*   *DATE: March 20, 2009*

Part 1 – Mission Connection

1.   **Service Description**: Gridded forecasts requested by a user from the National
        Digital Forecast Database (NDFD) are encoded into GRIB2 and transmitted to
        that user via the World Wide Web (WWW). A user can be any member of the
        public, a government agency, or a commercial enterprise. The user chooses one of
        the weather elements that is available in the NDFD and specifies the bounding
        latitudes and longitudes of the grid that will be transmitted via a Web CGI
        interface. GRIB2 is data encoding standard described by the World
        Meteorological Organization in its document FM92 GRIB, Edition 2, Code Form
        and Tables.

        The weather parameters contained in NDFD User Defined GRIB2 files are the
        same as those in the NDFD (maximum, minimum, 3-hourly, and dewpoint
        temperatures, probability of precipitation, precipitation amount, sky cover, wind
        direction and speed, weather, and wave height). A description of NDFD data,
        including weather parameter temporal and spatial resolution, is available at the
        following URL:

        http://www.nws.noaa.gov/ndfd/

        User defined GRIB2 access is a service that allows the user to provide lat/long
        points for two corners and a weather element. A resulting GRIB2 message is built
        "on the fly" and downloaded by the user. While this approach allows the user to
        select the area they are most interested in, it has the disadvantage of placing
        additional load on computing resources on the NWS web architecture and is
        recommended for customers and partners interested in collecting datasets on a
        regular schedule and then using the data locally.

2.   **Purpose/Intended Use:** User defined GRIB2 access will allow NWS customers
        to maximize the economic value of NDFD data by making it available for user-
        defined geographical areas. GRIB2 is a standard of the World Meteorological
        Organization. Because of computing resources used in the production of the user-
        defined GRIB2 files, it is recommended user defined messages be downloaded on
        a regular schedule and used for local applications. Since the source NDFD files

are not updated more then once an hour, no advantage is gained by retrieving user-defined GRIB2 files more often then once an hour.

By virtue of its support of machine-to-machine transfer and reliance on the GRIB2 standard, this technique supports the *National Weather Service Strategic Plan for FY2003 – FY2008* by contributing to "…evolving our services from a text-based paradigm to one based on making NWS information available quickly, efficiently, and in convenient and understandable forms…" and "…by taking advantage of existing and emerging technologies to disseminate this information…"
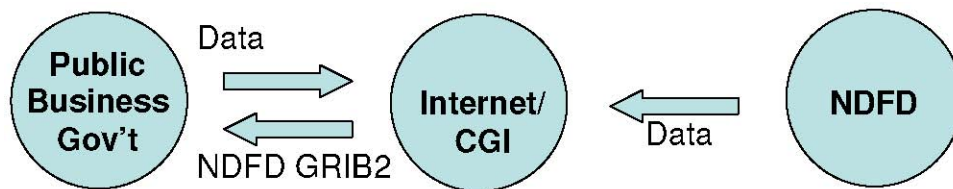

Figure 1: Data Flow

1   **Audience:** User defined GRIB2 access is intended primarily for commercial and public sector partners who have experience in NWS datasets and need NDFD data for modest-sized (1-2 state) areas.
2   **Presentation Format:** The product is presented as a data stream that is formatted as a GRIB2 message. Decoding software for GRIB2 is available:

   http://www.nws.noaa.gov/mdl/NDFD_GRIB2Decoder/

   Additional information about GRIB2 is available:

   http://www.nws.noaa.gov/datamgmt/doc/GRIB2_encoding.html

5. **Feedback Method:** Users of NDFD XML are encouraged to provide feedback using the OMB approved Customer Survey for Experimental Products/Services available on the National Catalogue of NWS Products web site. This survey can be e-mailed to robert.bunge@noaa.gov or mailed to the following address:

   Office of the Chief Information Officer
   Attn: Robert Bunge, W/OCIO
   1325 E-W Highway, SSMC2
   Silver Spring, MD 20910

Part 2 – Technical

1   **Format and Science Basis**: A technical description of the NDFD data contained in the NDFD user defined GRIB2 is available at:

                http://www.nws.noaa.gov/ndfd/technical.htm

2   **Availability**: NDFD user defined GRIB2 is continuously available from the NWS web site at the following URL.

                http://www.weather.gov/mdl/NDFD_grib2Decoder/custmgrd.php#offical

Technical interface is via web CGI followed by file download.

The NDFD data that are encoded into GRIB2 are revised at the local Weather Forecast Office on an event-driven basis. The updated information is then uploaded to the NDFD server shortly after the top of each hour.