

**National Digital Forecast Database (NDFD)  
Ice Accumulation Grids  
NWS Product Description  
Document (PDD)  
October 15, 2013**

**Part 1 - Mission Connection**

- a. Product Description – The [National Digital Forecast Database \(NDFD\)](#) contains a seamless mosaic of digital weather forecasts from National Weather Service (NWS) field offices and the National Centers for Environmental Prediction (NCEP).

This forecast element is currently available for the contiguous U.S. (CONUS) sector at the following locations listed below and the 16 pre-defined NDFD CONUS subsectors.

Southern Region: All WFOs from 10 degrees N.

Central Region: Aberdeen, SD; Bismarck, ND; Central Illinois (Lincoln), IL; Chicago, IL; Des Moines, IA; Detroit, MI; Dodge City, KS; Duluth, MN; Grand Forks, ND; Goodland, KS; Grand Rapids, MI; Hastings, NE; Indianapolis, IN; Jackson, KY; Kansas City/Pleasant Hill, MO; La Crosse, WI; Louisville, KY; Milwaukee, WI; Minneapolis, MN; Gaylord, MI; Northern Indiana (North Webster), IN; North Platte, NE; Omaha, NE; Paducah, KY; Quad Cities, IA; Rapid City, SD; St. Louis, MO; Sioux Falls, SD; Springfield, MO; Topeka, KS; Wichita, KS; Marquette, MI; Green Bay, WI.

Eastern Region: All WFOs.

Western Region: Pendleton and Portland, OR.; Spokane, WA.

- b. Purpose – In support of the mission described in the *National Weather Service Strategic Plan for FY2005 - FY 2020*, "expanded digital services allow communication of forecast information with greater resolution in time and space and facilitates the integration of data in all service program areas." The NDFD is the primary means by which digital information is available to customers and partners. As part of this digital database, Ice Accumulation grids are available in response to growing user needs for planning purposes and critical safety decisions. Future digital datasets will continue to be developed in accordance with growing user needs.
- c. Audience - The audience for the ice accumulation grids elements includes large volume users of forecast information, emergency managers, the media, numerous local, state, and federal government agencies (including NWS field offices), academia, and many other users. They are also for anyone who wishes to decode and

explore various potential applications of the ice accumulation data, or simply to view, post, or distribute the graphic images.

- d. Presentation Format – As with all NDFD elements, these elements are available in Gridded Binary Data Edition 2 (GRIB2) via file transfer protocol (ftp) or hypertext transfer protocol (http), eXtensible Markup Language (XML), and as graphics via the web browser. The Ice Accumulation elements are only available for the CONUS and for the [16 pre-defined NDFD CONUS subsectors](#).

1. GRIB2 format at 5 km horizontal grid spacing, via file transfer protocol (ftp) or hypertext transfer protocol (http): The GRIB2 files can be decoded and converted to other formats, such as shapefiles, netCDF files, etc. A tutorial to download NDFD elements, decode them and generate images is [available online](#).

These elements are available in GRIB2 from the [NWS ftp server](#) for the CONUS and/or for the [16 predefined NDFD CONUS subsectors](#). A user-defined GRIB2 access method is also available. That service allows the user to input latitude/longitude points for two corners and select a single weather element. The resulting GRIB2 message is built “on-the-fly” and downloaded by the user. For more information about User Defined GRIB2 access, please refer to the [Service Description Document](#).

2. Extensible Markup language (XML): Users can request NDFD elements over the Internet using the NDFD XML Simple Object Access Protocol (SOAP) server. The response to the user request is returned in XML format. For more information, please refer to the [NDFD XML Service Description Document](#).
3. Online NDFD graphics: Ice Accumulation images may be accessed from the [NWS homepage](#) by clicking on the [Graphical Forecasts](#) tab. To access these and other NDFD elements, or for further availability and technical information (e.g., temporal and spatial resolutions, forecast projections, and geographic coverage), please refer to the [NDFD technical details page](#).

- e. Feedback Method – The comment period for this forecast element occurred during the 2011-12 winter season. There were no negative comments received.

## **Part II – Technical Description**

- a. Format and Science:

*Definition:* Six-Hour Ice Accumulation grids: The expected new ice accretion on all exposed surfaces (in hundredths of inches) during a 6 hour period.

*Issuance:* An ice accumulation grid will be specified whenever at least a trace of ice

accumulation is forecast for any hour during a valid period. Valid periods for the NDFD begin and end at 0600, 1200, 1800, and 0000 UTC.

- ***NDFD Grid Availability:*** Ice Accumulation grids will be available each 6 hour period out to 48 hours from 00 UTC Day 1.
  - ***Collaboration Threshold:*** 0.1 inch difference for ice amounts <0.5 inches, 0.2 inch difference for ice amounts <1.0 inch; and 0.4 inch difference for ice amounts  $\geq 1.0$  inch. Enforce if at least one WFO has forecast  $>0.1$  inch.
- Ice Accumulation grids will be produced on a regular basis, as is done for Snow Amount. Thus, on most days, the Ice Accumulation grids will have zero values.
  - If a WFO is not producing a Snow Amount grid for zero amounts, a WFO is not required to produce an Ice Accumulation grid for zero amounts. However, all WFOs must create ice accumulation grids when at least a trace of ice is in their forecast.
  - Text and online formatters will mention non-zero ice accumulations through 48 hours to cover the Day 2 daytime period.
  - The Ice Accumulation forecast length will be equal to the Snow Accumulation forecast length. The temporal resolution of these grids will be set to synoptic times identical to those for the Quantitative Precipitation Forecast and Snow Amount grids. A Storm Total ice grid may also be used if desired, using methods similar to those for populating a Storm Total rainfall or snow grid.
  - The Ice Accumulation grid can be created using any of the recommended tools listed in the coordination memo and provide to each region. Note that the Hydrological Prediction Center provides ice accumulation guidance as part of their Winter Weather Desk operations, and this may be useful in many situations.
  - The Ice Accumulation grid will be sent to the NWS Information Dissemination Services and will be used to generate the web image on the WFO scale NDFD graphical images page on a seasonal basis.
- b. Product Availability – See Part 2, Section A for details.
- c. Additional Information – Detailed information about the NDFD is also [available online](#).