NATIONAL WEATHER SERVICE
PRODUCT DESCRIPTION DOCUMENT (PDD)
TYPE: Enhancement to an Official Product or Service

Enhanced Service: User Defined Area Forecast (UDAF) Application

Part 1 -Mission Connection

1   Product/Service Description:

The User Defined Area Forecast (UDAF) is an Internet-accessible application which allows direct interaction with the full resolution (2.5km horizontal grid spacing) NWS netCDF forecast data base to obtain forecast information within a geographic area specified by the user. The interface allows an individual to define geographical boundaries in both area and elevation, and submit those values to retrieve a forecast directly from the digital forecast data base populated by NWS meteorologists at local weather forecast offices (WFOs) responsible for that user-defined polygon. Output is presented in the same format as the Point-and-Click (P&C) forecast, but based on an average value of the area specified. Additionally, a table with maximum and minimum values is created, along with statistics about the size and elevation range of the selected area. The area itself is displayed graphically to ensure the area from which the data is derived matches the user's identified zone of interest.

2   Purpose/Intended Use:

The UDAF helps satisfy e-gov initiatives by offering an easy, intuitive interface from which users may obtain government-provided data. It also offers a platform for supporting the planning activities of emergency response partners and other key customers, by conveying expected timing, location, ranges of values, and implied impacts associated with upcoming hazardous weather events, climate and hydrologic outlooks, etc. Other interested audiences may include media partners, local and state officials, law enforcement agencies, departments of transportation, school superintendents, spotters, even the general public. Through this medium, these entities are able to designate for themselves the appropriate area to meet their critical decision-making needs. As such, this application represents an enhancement to the NWS suite of pre-formatted products, and to the single point forecast option available on the existing P&C interface.

3   Audience:

The target audience for this service encompasses national, state and local emergency managers or responders; community leaders; media partners; government and military agencies; and the general public. It is available to anyone who has an Internet Connection and needs to assess official NWS forecast weather conditions for a defined area and time.

4   Presentation Format:

All interaction occurs via a user interface on our standard NWS web pages. Local forecast data base queries are entered by defining a polygon of interest, refining the selection via

pull-down menus, and submitting the request to the data base. Forecast data is presented in a combination map/text/table format. Restrictions are encoded within the program to ensure requests will not place undue burden on the data processing required to produce the output.

5   Feedback Method:
National Weather Service offices participating in this experiment will post a link to a formal customer survey as a means of soliciting feedback on this product. The survey will remain available for the duration of the experimental period. It can be accessed through the following URL: [ENTER CUSTOMER SURVEY LINK HERE]

Additional feedback will be obtained through Focus Groups, Media and Emergency Manager Workshops, professional conferences, and other direct customer interactions.

Technical and policy questions and comments for the User-Defined Area Forecast application may be addressed to:

> National Weather Service
> Central Region Headquarters
> ATTN: Kim Runk
> 7220 NW 101st Terrace
> Kansas City, MO 64153

Part 2 -Technical Description

1   Format and Science Basis:
The product is displayed in a tabular, alphanumeric format, accompanied by a graphical map of the user-defined area. Output contains an image of the polygon area superimposed on a map background, some statistical information about that area, and weather forecast information stratified chronologically and drawn directly from the netCDF data base. The forecast presentation is patterned after the existing point-and-click application, with a "Forecast at a Glance" section and a "Detailed 7-day Forecast" section. The former depicts icons with high or low temp (depending on time period) and a concise summary of the weather in a word or two (e.g., breezy, mostly sunny, etc.). The detailed forecast section, as suggested by the title, displays a more complete narrative, in the style of the traditional NWS zone forecast products.

Production of the UDAF page is accomplished through a combination of C, PHP, and Java script. Within a defined polygon, individual grid points are averaged together and the resulting values are processed by a modified version of the current point forecast algorithms.   This gives the customer the same general word structure they are accustomed to with the point forecast pages, while using established code algorithms to generate the forecast phraseology.   The C code, which extracts the gridded data from the netCDF files, uses an algorithm that minimizes the number of grids actually queried, while still giving a representative average forecast for the selected area.

The code for this application has been developed with sensitivity to the need for efficient processing. For example, the size of the user defined polygon is restricted to 3000 square miles using Javascript within the browser. Thus, a user is not permitted to request an area so large that it would produce undue strain on NWS bandwidth. This boundary value could be changed if deemed necessary to be even more restrictive.

2   Availability:

Since it is designed with the NWS Point-and-Click data base as its information source, the UDAF application will function 24/7 for any area within the United States. It does not represent a new product, per se, but rather a new option for allowing users to display existing NWS forecast information in a domain of their choosing. There is no workload impact since the end result is a product of automated data base queries and display code.

Customer feedback will be evaluated at the end of the experiment to determine whether it is appropriate to transition the application to an officially sanctioned service and move it to the NWS Internet Dissemination Service (NIDS) production environment.

3   Additional Information:

An example of the UDAF output is provided as Appendix 1. In order to interact with the application directly using live data, go to: http://preview.weather.gov/udaf/

During the test period, the application will be assessed for its utility and efficiency in providing useful forecast information for urban and rural settings, complex terrain as well as relatively homogeneous topography, and the option to derive information across the jurisdictional boundaries of NWS regions. Since the first iteration masks out water grid points, there is no need to test marine environments in this phase.

Appendix 1 - Example output from a data request from the user-defined area forecast tool:

Your National Weather Service *forecast*

User Defined Area Forecast

Enter Your "City, ST" or zip code [ ] Go   BOOKMARK

NWS Salt Lake City, UT

Mobile Weather Information | En Español

User Defined Area Forecast: grids

Forecast Valid: 2pm MDT Mar 18, 2013-6pm MDT Mar 24, 2013

Forecast at a Glance

This Afternoon	Tonight	Tuesday	Tuesday Night	Wednesday	Wednesday Night	Thursday	Thursday Night	Friday
Partly Sunny	Partly Cloudy	Mostly Cloudy	Mostly Cloudy	Rain Likely 60%	Rain Likely 60%	Chance Snow 40%	Partly Cloudy	Slight Chc Snow
Hi 51 °F	Lo 33 °F	Hi 56 °F	Lo 39 °F	Hi 56 °F	Lo 37 °F	Hi 46 °F	Lo 30 °F	Hi 45 °F

This table displays the range of values for each weather element during each period. Forecast presented is based on 412 forecast grids, covering an area of 959 sq miles. The elevation ranges from 4149 ft. to 4999 ft.

	Mon		Mon Night		Tue		Tue Night		Wed		Wed Night		Thu		Thu Night		Fri	
Temp (F)	45	55	27	38	53	60	33	44	54	61	33	42	43	50	24	35	42	50
PoP (%)	0	10	0	0	0	10	10	10	60	60	50	60	30	40	10	10	20	20
QPF (in)	0	0	0	0	0	0	0	0	0.18	0.31	0.11	0.25	0.02	0.06				
Snow (in)	0	0	0	0	0	0	0	0	0	0	0	0	0	T				
Sky	0	75	45	75	20	60	70	80	65	95	95	100	75	95	40	75	25	45
Wind (mph)	5	10	5	10	0	15	0	10	0	10	0	10	5	15	0	15	5	15
Wind Dir	S		E		SSE		E		S		S		NW		N		NW	
Weather									Rain		Rain		Snow Showers				Snow Showers	

Hide Table [X]

Detailed 7-day Forecast

This Afternoon: Partly sunny, with a high near 51. West wind 5 to 7 mph becoming south.

Tonight: Partly cloudy, with a low around 33. East southeast wind around 6 mph.

Tuesday: Mostly cloudy, with a high near 56. Southeast wind around 6 mph .

Tuesday Night: Mostly cloudy, with a low around 39. Southeast wind around 7 mph.

Wednesday: Rain likely. Cloudy, with a high near 56. East wind around 7 mph becoming south. Chance of precipitation is 60%.

Wednesday Night: Rain likely, mainly after midnight. Cloudy, with a low around 37. Chance of precipitation is 60%.

Thursday: A 40 percent chance of snow showers. Partly sunny, with a high near 46. New snow accumulation of less than a half inch possible.

Detailed Point Forecast   [Move Down]

Edit map below and click "Get Area Forecast" to redefine your area. Click "Clear Map" to remove the current area.

[above 3000 ▼]   [below 5000 ▼]

Map | Satellite

Brigham City
Ogden
Layton
Bountiful
Tooele
Murray Salt Lake City
Sandy
Pro
Springville

Google   Map Data - Terms of Use Report a map error

■ User Defined Area   ■ Grids Used in Forecast

Get an Area Forecast| Clear Map|