

# **NATIONAL OPERATIONAL HYDROLOGIC REMOTE SENSING CENTER MODEL EXPANSION AND FORECAST PRODUCTS**

## **Part I – Mission Connection**

### a. Product Description –

The National Weather Service's (NWS) Office of Hydrologic Development (OHD) maintains the National Operational Hydrologic Remote Sensing Center (NOHRSC). The NOHRSC operates a spatially distributed energy and mass balance snow model to provide estimates of hourly snow water equivalent and other snowpack properties across the CONUS and southern Canada on a 1 kilometer grid. The NOHRSC snow model is forced using output from mesoscale atmospheric models. All available ground based, airborne, and satellite derived snow observations can be manually assimilated into the model to produce a best estimate of snow water equivalent and other snowpack properties.

The NOHRSC is implementing the following two model enhancements:

- Expanding the model's geospatial domain into Canada to include the Great Lakes drainage area, and
- Executing the model in a 72 hour forecast mode where the first 18 forecast hours are forced by output from the Rapid Refresh (RR) model and the remaining 54 hours are forced by output from the North American Mesoscale (NAM) model.

### b. Purpose –

In areas where seasonal snow cover is a significant hydrologic variable, NWS river forecast centers (RFCs) and weather forecast offices (WFOs) use NOHRSC products when developing spring flood outlooks, water supply outlooks, river and flood forecasts, reservoir inflow forecasts and other hydrologic products.

### c. Audience –

The NOHRSC's primary stakeholders are RFCs and WFOs serving areas where seasonal snow cover is a significant hydrologic variable. Public sector stakeholders, private industry and researchers also use the NOHRSC's products and services. The NOHRSC's new products and services are available to anyone with a web browser and access to the Internet.

d. Presentation Format –

Non-forecast products are available in a variety of formats including;

- On the NOHRSC interactive website
- As gridded products and SHEF messages distributed through the NWS telecommunications gateway
- As gridded GIS-ready products available via:
  - The NOHRSC FTP-based data subscription service
  - The NOHRSC anonymous FTP site
  - The National Snow and Ice Data Center.

Forecast products are available only on the NOHRSC interactive web site.

e. Feedback Method –

The NOHRSC is always seeking to improve the availability and quality of its products and services based on user feedback. Comments regarding these changes to the NOHRSC's products and services should be emailed to the NOHRSC Director at [andy.rost@noaa.gov](mailto:andy.rost@noaa.gov). Comments may also be submitted on the NOHRSC web site. The feedback period for these experimental products and services extends from October 17, 2011 through July 1, 2012.

## Part II – Technical Description

### a. Format and Science Basis –

The experimental NOHRSC products and services are generated by a spatially distributed, full physics energy and mass balance snow model. The model is forced by mesoscale atmospheric model data and produces hourly gridded snowpack state variables (e.g. snow water equivalent) at a 1 kilometer spatial resolution.

Non-forecast products are available in a variety of formats:

- SHEF messages transmitted via the NWS telecommunications gateway and available on the NOHRSC web page.
- GRIB1 and GRIB2 gridded files transmitted via the NWS telecommunications gateway
- ArcInfo BIL, GRIB1, GRIB2, and flat raster gridded files transmitted via the NOHRSC FTP-based data subscription service
- ArcInfo BIL, GRIB1, GRIB2, and flat raster gridded files available on the NOHRSC anonymous FTP site
- Flat raster gridded files available on the National Snow and Ice Data Center web site.
- Time series data for state variables are available on the NOHRSC web page.

Forecast products are available only on the NOHRSC interactive web site.

### b. Product Availability –

NOHRSC products and services are available 24 hours a day, 7 days a week. The models run on 1 hour time steps, on a 6 hour model cycle. The NOHRSC maintains a remote hot backup facility to ensure uninterrupted products and services.

### c. Additional Information -