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Service Change Notice 23-99
National Weather Service Headquarters Silver Spring MD
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From: Mike Farrar
 Director
 National Centers for Environmental Prediction

Subject: Upgrade Ultraviolet Index (UVI) Forecast: Effective November 14, 2023

Effective November 14, 2023, the National Centers for Environmental Prediction (NCEP) will upgrade the Ultraviolet Index (UVI) forecast from version 1.1 to 2.0.

(A) Enhancements to the Model version 2.0

These UVI upgrades involve changes in the following three components: Replacement of the climatological aerosol inputs with Global Ensemble Forecast System (GEFS) forecasts, increased temporal and spatial resolution of forecast inputs and outputs, and several bug fixes. The upgraded UVI model has been tested and validated over a one-year period from July 2021 thru June 2022 and has shown improvement in accuracy.

- Aerosol inputs into UVI model:

The use of a climatological distribution as the inputs for aerosol conditions in the UVI model lacks dynamic fidelity and less accurate UVI forecasts over areas affected by wildfire and smoke. In this upgrade, GEFS 3-hourly aerosol forecast at 0.25 degree replaces the climatological distribution.

- Resolution upgrades:

The current UVI forecast model uses inputs of 3-hourly Global Forecast System (GFS) forecasts at a spatial resolution of 0.5 degree and outputs hourly forecasts at a spatial resolution of 0.5 degree. In this upgrade, hourly GFS inputs at resolution of 0.25 degree are used and the UVI forecast outputs are hourly with a resolution of 0.25 degree.

- Bug fixes:

- Albedo effect calculation error
- Aerosol effect calculation error
- Interpolation error of UVI field to city/state location

Composite noontime map, daily max calculations, and daily dosage calculations use incorrect forecast hours for regions of longitudes 0 to 180 degrees East.

(B) Model Output Availability

Model output is available on the NOAA Operational Model Archive and Distribution System (NOMADS) and FTTPRD website at:

<https://nomads.ncep.noaa.gov/pub/data/nccf/com/uvi/prod/>
<https://www.ftp.ncep.noaa.gov/data/nccf/com/uvi/prod/>

A consistent parallel feed of the UVI v2.0 upgrade will be available 30 days prior to the upgrade on the NCEP servers via the following URLs:

<https://nomads.ncep.noaa.gov/pub/data/nccf/com/uvi/para/>
<https://www.ftp.ncep.noaa.gov/data/nccf/com/uvi/para/>

As part of this upgrade, the following changes to UVI-related products will be made:

(B1) New Products:

The addition of new clear-sky output files, including four daily noontime composite files and hourly forecast data files

uvucs.noontime.t12z.d1.grib2
uvucs.noontime.t12z.d2.grib2
uvucs.noontime.t12z.d3.grib2
uvucs.noontime.t12z.d4.grib2
uvucs.t12z.grbFF.grib2

Where FF is the forecast hour from 01 to 120.

(B2) Removed products:

Day 0 noontime composite file:
uv.noontime.t12z.d0.dat

(B3) Products changing format:

The following products currently distributed in grib1 (.grb) format will be replaced by the same product in grib2 (.grib2) format.

Old Format		New Format
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uv.noontime.t12z.d1.grb	-->	uv.noontime.t12z.d1.grib2
uv.noontime.t12z.d2.grb	-->	uv.noontime.t12z.d2.grib2
uv.noontime.t12z.d3.grb	-->	uv.noontime.t12z.d3.grib2
uv.noontime.t12z.d4.grb	-->	uv.noontime.t12z.d4.grib2
uv.noontime.t12z.d1.grb	-->	uv.noontime.t12z.d1.grib2

(C) Timing changes

All files will be arriving 50 minutes later to wait for the newly incorporated upstream GEFs forecasts (35 minute delay) and the resulting increased run times from their processing as well as resolution upgrades (15 minute delay).

NCEP encourages all users to ensure their applications are able to handle the changes to these products. For questions regarding these model changes, please contact:

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For questions regarding the data flow aspects of these data sets, please contact:

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National Service Change Notices are online at:

<https://www.weather.gov/notification/>

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