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From: Wanqiu Wang
 Chief, Operational Monitoring Branch
 NCEP/Climate Prediction Center

Subject: Soliciting Comments on the Proposed Upgrade of the Ultraviolet
Index (UVI) Forecast through June 30, 2023

The Climate Prediction Center (CPC) is proposing to upgrade the NWS Ultraviolet Index (UVI) forecast model from v1.1.1 to v2.0.0 on October 30, 2023. The upgrade will improve the accuracy and fidelity of UVI forecasts from upgrades to aerosol inputs and increased spatial and temporal resolution.

The proposed UVI upgrades involve changes in the following three components: 1) Replacement of the climatological aerosol inputs with Global Ensemble Forecast System (GEFS) forecasts; 2) Increased temporal and spatial resolution of forecast inputs and outputs; 3) Several bug fixes. The upgraded UVI model has been tested and validated over a one-year period from July 2021 through June 2022 and has shown improvement in accuracy.

1. 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, the GEFS 3-hourly aerosol forecast at 0.25 degree replaces the climatological distribution.

2. 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 on with a resolution of 0.25 degree.

3. Bug fixes:

- Albedo effect calculation error.
- Aerosol effect calculation error.
- 1-degree interpolation error of UVI field to city/state location.
- Composite noontime map, daily maximum calculations, and daily dosage calculations use incorrect forecast hours for regions of longitudes 0 to

180 degrees East.

These upgrades will be reflected in the UVI products found at:

https://www.cpc.ncep.noaa.gov/products/stratosphere/uv_index/uv_current.shtml

and on the NOAA Operational Model Archive and Distribution System (NOMADS) at:

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

Please send comments on this proposal through June 30, 2023 to:

Laura Ciasto
Meteorologist
Operational Monitoring Branch, CPC
laura.ciasto@noaa.gov

National Public Information Statements are online at:

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

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