Spatial Datasets at NSSL to Support NWS Flash-Flood Operations

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Since the late 1990s, the National Severe Storms Laboratory (NSSL) has been actively involved in developing, maintaining, and serving spatial data to National Weather Service (NWS) users in support of flash-flood operations. One of the first and largest efforts was the creation of a national seamless dataset of flash-flood-scale basins. These basins provide the spatial framework for calculations of average basin rainfall rate and accumulation in the Flash Flood Monitoring and Prediction[1] (FFMP) program used at the NWS Weather Forecast Offices (WFOs). During the past decade, the dataset has been updated and enhanced with features such as seamless hydrologic-connectivity attributes that allow downstream tracing of flow and upstream drainage area selection. This dataset is currently served to users through NSSL's National FFMP Basin Repository and FFMP Basin Customization Repository websites.

As a result of recent NWS Advanced Hydrologic Prediction Service (AHPS) funding, a new repository is being developed to store and serve spatial datasets and other information related to the Gridded Flash Flood Guidance[2] (GFFG) product, which is produced by NWS River Forecast Centers (RFCs). Base data such as DEMs, soils, and land use/cover will be organized into hydrologic units for easy download and application in any type of hydrologic project. GFFG-related datasets derived at the RFCs such as curve number, peak flow, critical flow, and others will also be included in the repository along with GFFG documents, scripts, presentations, and training materials.

A recent unfunded project involves the development of a spatial database of U.S. wind farm locations and associated radar wind turbine clutter (WTC). WTC is a growing issue and area of concern in relation to accurate radar-derived precipitation estimates. Determining wind turbine locations and the occurrence of wind turbine clutter is the first step in the process of developing a WTC mitigation algorithm for NSSL's Next-Generation Quantitative Precipitation Estimate[3] (Q2) products. The wind turbine spatial dataset will also be provided to NWS forecasters at the WFOs and RFCs as another source of information to potentially improve situational awareness.

The presentation will provide a brief description of these spatial datasets and repositories and their role in supporting NWS flash-flood operations.

References:

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[2]Schmidt, J., A. J. Anderson, and J. H. Paul, 2007: Spatially-variable, physically-derived flash flood guidance. *Preprints 21st Conference on Hydrology*, San Antonio, Amer. Meteor. Soc., **6B.2**.

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