Predicting Flash Floods: What tools do we have? Overview of the Flash Flood Guidance System (FFGS)

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ABSTRACT

The primary purpose of the Global Flash Flood Guidance (GFFG) system is to provide real-time guidance products to forecasters worldwide pertaining to the threat of potential small-scale flash flooding over large regions with high resolution. The system provides the necessary products to support the development of warnings for precipitation induced flash floods through the use of real time in situ and remotely sensed data, numerical spatially distributed land surface hydrological models, and mesoscale numerical weather prediction models.

The GFFG system consists of regional systems that allow the incorporation of local information in the system products and the development of regional cooperation in hydrometeorological forecasting. Gauge-adjusted satellite-based rainfall estimates and, when available, radar-rainfall estimates provide real time information on precipitation. The system is complemented with an extensive training program and is designed to allow forecaster adjustments to the system products in real time on the basis of local experience and local up-to-the-minute information not incorporated in the system products. The design aims at the reduction of the loss of life and human suffering from the devastation caused by flash floods, and it is consistent with an end-to-end forecast response process. Enhancements include modules for riverine routing and seasonal to subseasonal ensemble predictions, and urban flash flood prediction with very high resolution.

There are currently 64 countries served by the GFFG system, covering more than 30% of the earth's population. The GFFG system builds capacity of the hydrological and meteorological operations of participating countries; improves service delivery to the National and Regional Disaster Management agencies and DRR users through improved warning dissemination (e.g., lead time, message content and impact information); and, enhances severe weather disaster awareness, preparedness and response.

Examples of its use by forecasters in operations are discussed.

See also:

https://public.wmo.int/en/projects/flash-flood-guidance-system-global-coverage-gffg

https://library.wmo.int/doc_num.php?explnum_id=4448 (pg. 37)