Use of FFGS Products in External Models

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FFGS Data Integration Component for Hydrometeorological Modeling and Assessments

Satellite Hydrometeorological Data
Weather Radar Data
Automated Precipitation Gauges
Automated Surface Observation Stations

Pre-Processed-Data Database

Hydrometeorological Data Quality Control (climatological and dynamic)
Delineated Basin Products
River Network Products

Processed-Data Database

User Interface
(Displays and Digital Downloads)

Digital Terrain Elevation Data
Land-Use Land-Cover Data
Soil Type and Depth Data
Stream Cross Sectional Surveys
Reservoir Characteristics and Rules
FFGS Enhanced for Seasonal to Sub-seasonal Land-Surface Prediction

Real-time Precipitation Inputs
- Satellite Rainfall Radar (as available)
- Gauge (as available)

Rainfall Data Processing
- Quality Control
- Merging
- Bias Adjustment

Snow Water Equivalent Ensemble Forecasts (0 – 9 months)
- Temperature
- Prec/Temp Ensemble Forecasts Statistical Downscaling
- LT: 0 – 30 days
- LT: 1 – 9 mos
- Prec/Temp Ensemble Forecasts
- Spatial GIS Data Analyses
- Basin Delineation Parameter Estimation (Terrain, LULC, soils, streams)
- Evapotranspiration (Climatological)

Soil Moisture Ensemble Forecasts (0-9 months)

Channel Routing and Reservoir Simulation Model
- Channel Inflow
- River Flow Ensemble Forecasts (0 – 9 months)

Satellite Rainfall Radar
- Radar (as available)
- Gauge (as available)

Snow Model

Thermal Moisture Model

Threshold Runoff Model

Flash Flood Guidance Model

Prec/Temp Ensemble Forecasts Mesoscale Model

Flash Flood Threat

Mesoscale Model

Flash Flood Guidance

Forecaster Input

Soil Moisture Ensemble Forecasts (0-9 months)

Global Model (LT: 0-9 mos)
Sacramento River Example in California, USA
The Integrated Forecast and Reservoir Management System - INFORM

Shared Modeling Framework of DSS Layers
Climate- Hydrology- Water Resources- Energy- Environment- ...

- Climate Scenarios & Forecasts, Downscaling
- Precipitation, temperature, PET, etc.

- Hydrologic Forecasts (SW- GW- WQ)
- Soil moisture, ET, runoff, water temp., recharge, etc.

- River, Reservoir, Aquifer, Bay Forecasts

- Sectoral Demand Forecasts
  Management & Conservation Policy Options
  Water Deliveries
  Hydropower
  Env. Flows, Ecology, Recreation ...

- Risks, Benefits, Tradeoffs

The DSS layers use different model aggregations based on their own required resolution.

Management Agencies and Stakeholders
Urban Flash Flood Early Warning System Component

**Figure 10.** Inundation polygons derived from different discharge values indicating where inundation is likely to occur (HRC).
Thank You

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