HDRFFG System: Data Requirements for FFGS Implementation

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Motivation of this Presentation

For country NMHSs which choose to participate in HDRFFG System, they will receive a request for data. Objective of this presentation is to outline the data required and generally how it will be used.

DATA REQUESTED FOR SEEFFG SYSTEM DEVELOPMENT AND COMPLETION

(As available in each country)

Logistical Data (Metadata)

- Longitude and latitude coordinates (in decimal degrees) and elevation (in meters) of all sensors providing real time data and historical data, type of data, units of measurement and sensor.
- Longitude and latitude coordinates (in decimal degrees) of dams and reservoirs
- Evaluation of basin delineation: initial delineations based on hydrologic processing of the SRTM (90-m) resolution digital elevation data and hydrographic information from the Digital Chart of the World
  - Evaluation of the delineation results with local knowledge and expertise is required for final quality assurance
  - Delineation maps may be provided in GIS format, shapefile is preferred.

Spatial Digital Data or Maps (for areas of interest)

- Digitized stream network data
- Digitized country catchment boundaries data
- Land-use and land-cover data
- Soils data to include soil texture or FAO soil classification or soil properties data, and

depth of upper soil and sub-soil

- Local stream cross-sectional survey data for natural streams draining 10-2000km^2, including any reports of regional relationships between channel cross-sectional characteristics and catchment characteristics
- GIS map of bedrock and alluvial channels
- Population distribution data

Reports

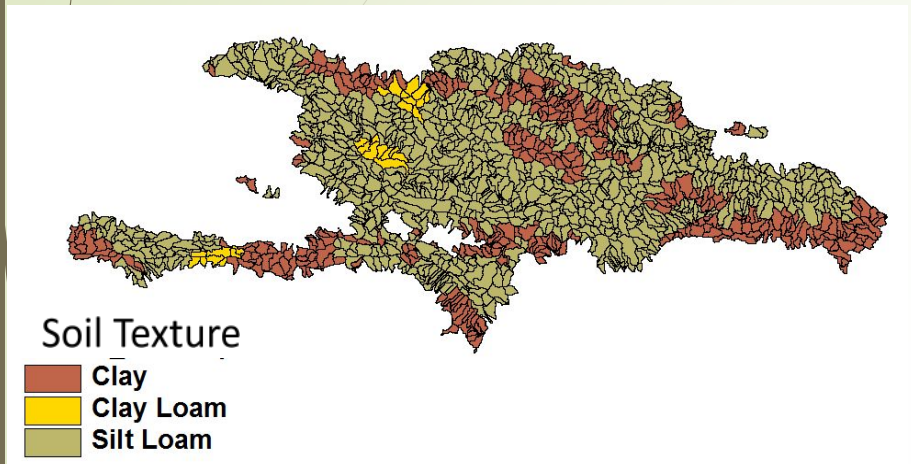
- Flood Frequency Analysis (regional and local)
- Flash Flood Occurrence (regional and local)
- Stream geometry studies for small streams
- Climatological precipitation and flood studies

Historical Data

- Precipitation data (hourly, daily, monthly, climatology)
- Air temperature data (hourly, daily, monthly, climatology)
- Pan evaporation data (daily, monthly, climatology)
- Soil moisture data for top 1 meter of soil (weekly, monthly, climatology)
- Streamflow discharge data for local streams with drainage areas less than 2000 km^2 (hourly, daily, monthly, climatology)
- Spring discharge data
- Stream stage data (hourly, daily, monthly, climatology) and associated stage-discharge curves (rating curves), also for local streams

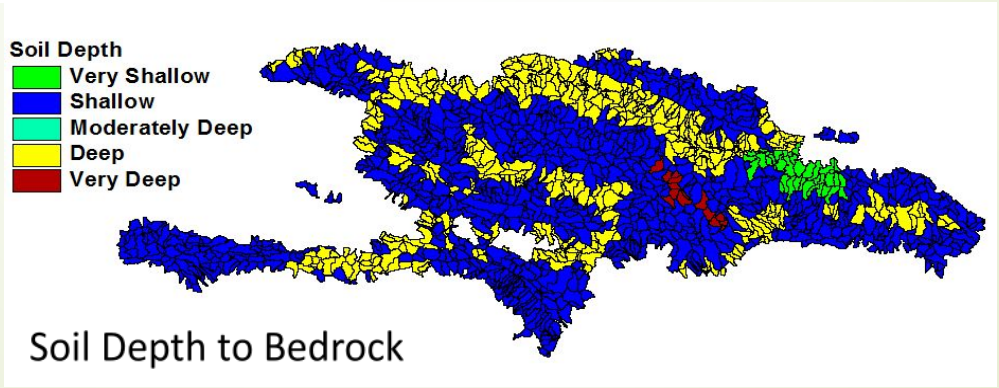
Spatial Data

FAO-UNESCO Soils Map



Purpose: Aide in parameterization of models
(*digital format preferred, country data*)

- Soils information (soil type, soil depth)
- Land cover / land use data
- Maps of bedrock, karst, alluvial channels



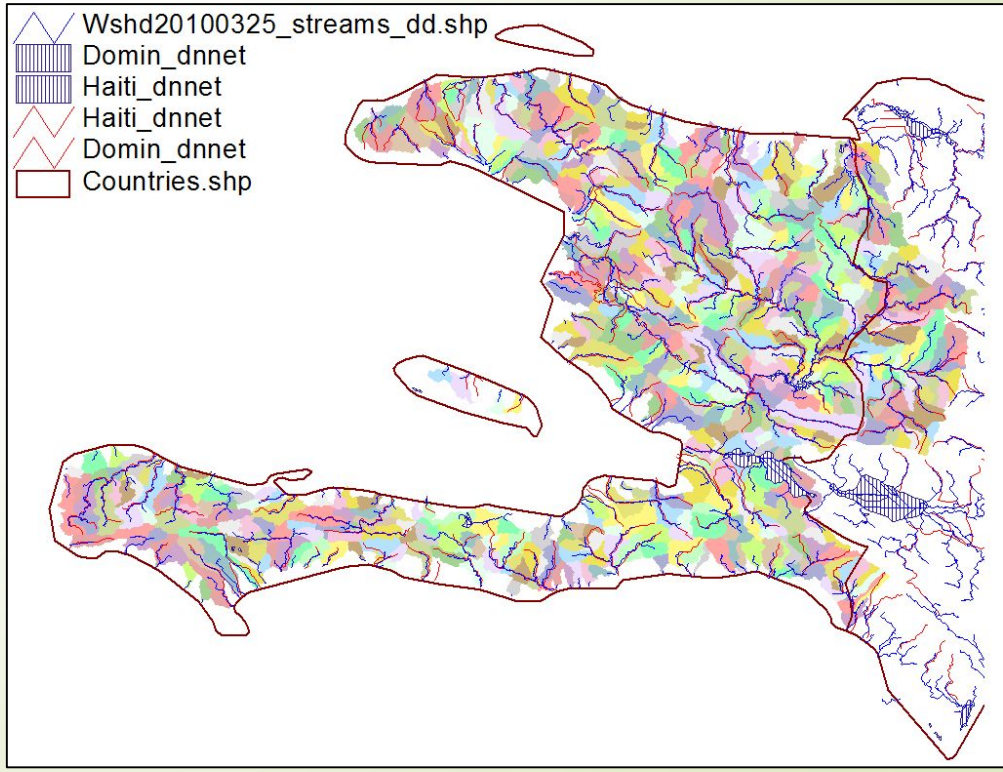
Local data from country agencies are preferred over global datasets, especially if resolution and/or spatial detail is improved.

Spatial Data

Purpose: Validation of watershed delineation and hydrologic network

- Digitized watershed boundaries
- Digitized stream network
- Channel surveys for small watersheds
- Coordinates of reservoirs (lat, lon)

Digital Chart of the World Stream Network



Real-Time Gauge Data

Purpose: provides real-time information to System for:
(a) rainfall processing and dynamic accounting of event precipitation bias, and (b) hydrologic modeling components (soil water, snow, FFG).

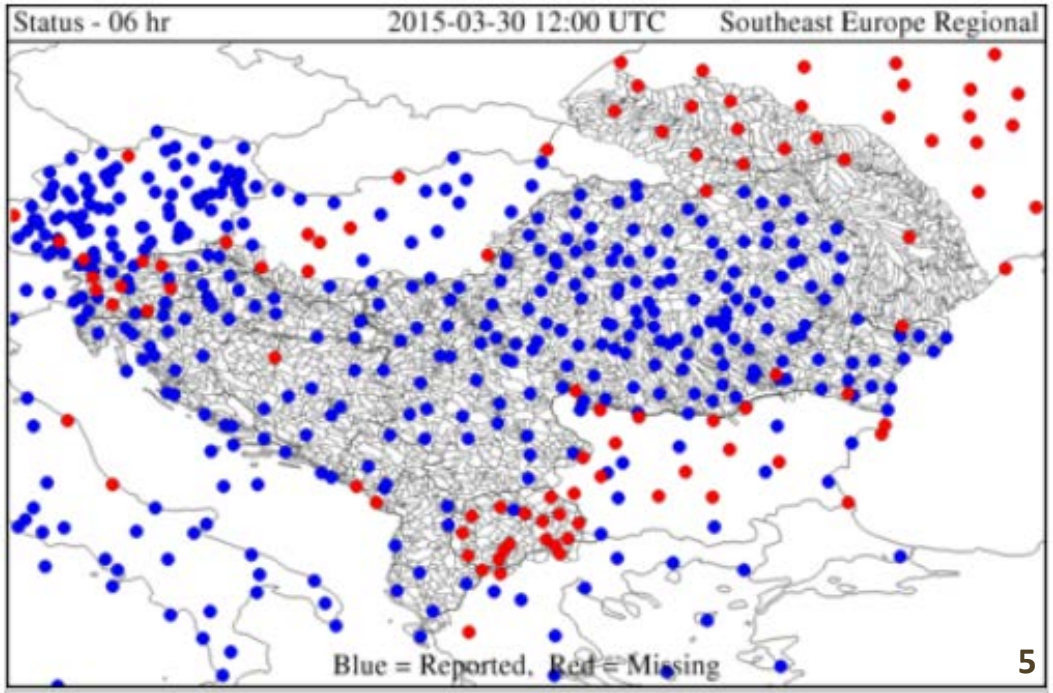
Real-time gauge data includes:

(1) precipitation (2) temperature
(3) snow depth or SWE (4) stream discharge

Needs:

- Logistical data (metadata) including latitude/longitude coordinates of available automated stations
- discussion of accessibility and transfer to Regional Center

Example from Southeast Europe



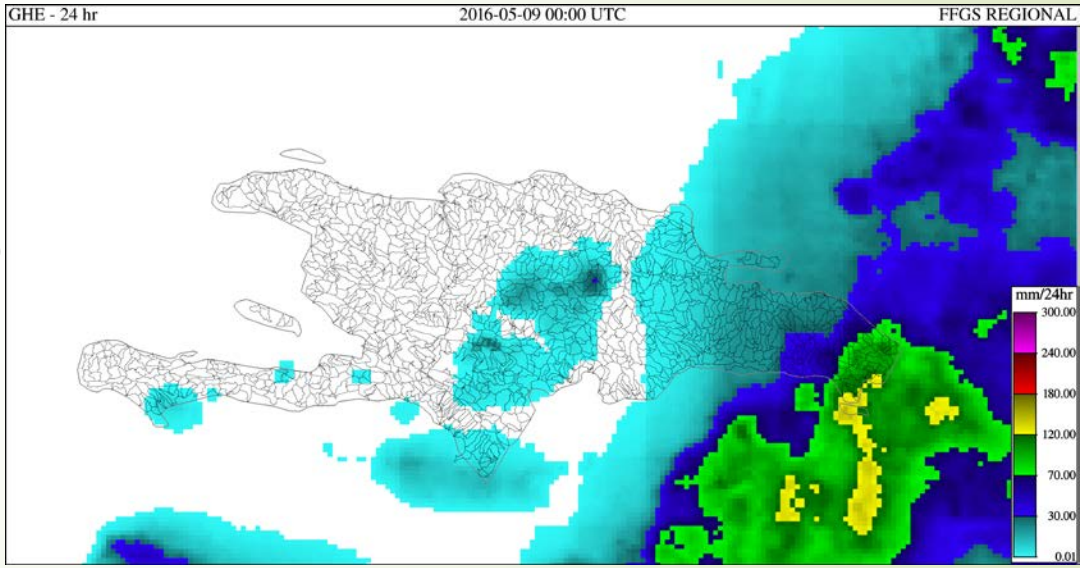
Historical Data

A variety of historical data is required.

All types of station require:

- Logistical data (metadata) including latitude/longitude coordinates of automated and manual stations

Example of daily satellite precipitation



(1) Precipitation data

Purpose: analysis of 'long term' bias in satellite rainfall (climatological bias adjustment)

- Hourly or 6-hourly *preferred* (daily accepted)
  - period: 2012-present

Purpose: calibration of hydrological modeling components and estimation of climatology

- Hourly or daily *preferred* (monthly accepted)
  - period: recent ~10+ years

Historical Data

(2) Temperature

- Historical data, hourly, daily *preferred* (monthly, climatology)
  - estimation of climatology
  - estimation of diurnal cycle
  - estimation of potential evapotranspiration
  - calibration of snow modeling component

(3) Pan evaporation

- Historical data (daily, monthly, climatology)
  - estimation of climatology
  - estimation of potential evapotranspiration

(4) Radiation, Humidity, Wind data

- Historical data (daily, monthly, climatology)
  - estimation of potential evapotranspiration

Historical Data

(5) Snow Water Equivalent

- Historical data (as available)
  - calibration/validation of snow modeling component

(6) Soil moisture data (top 1 m of soil depth)

- Historical data (weekly, monthly, climatology)
  - calibration of soil modeling component

(7) Stream discharge data (or stream stage plus rating curves)

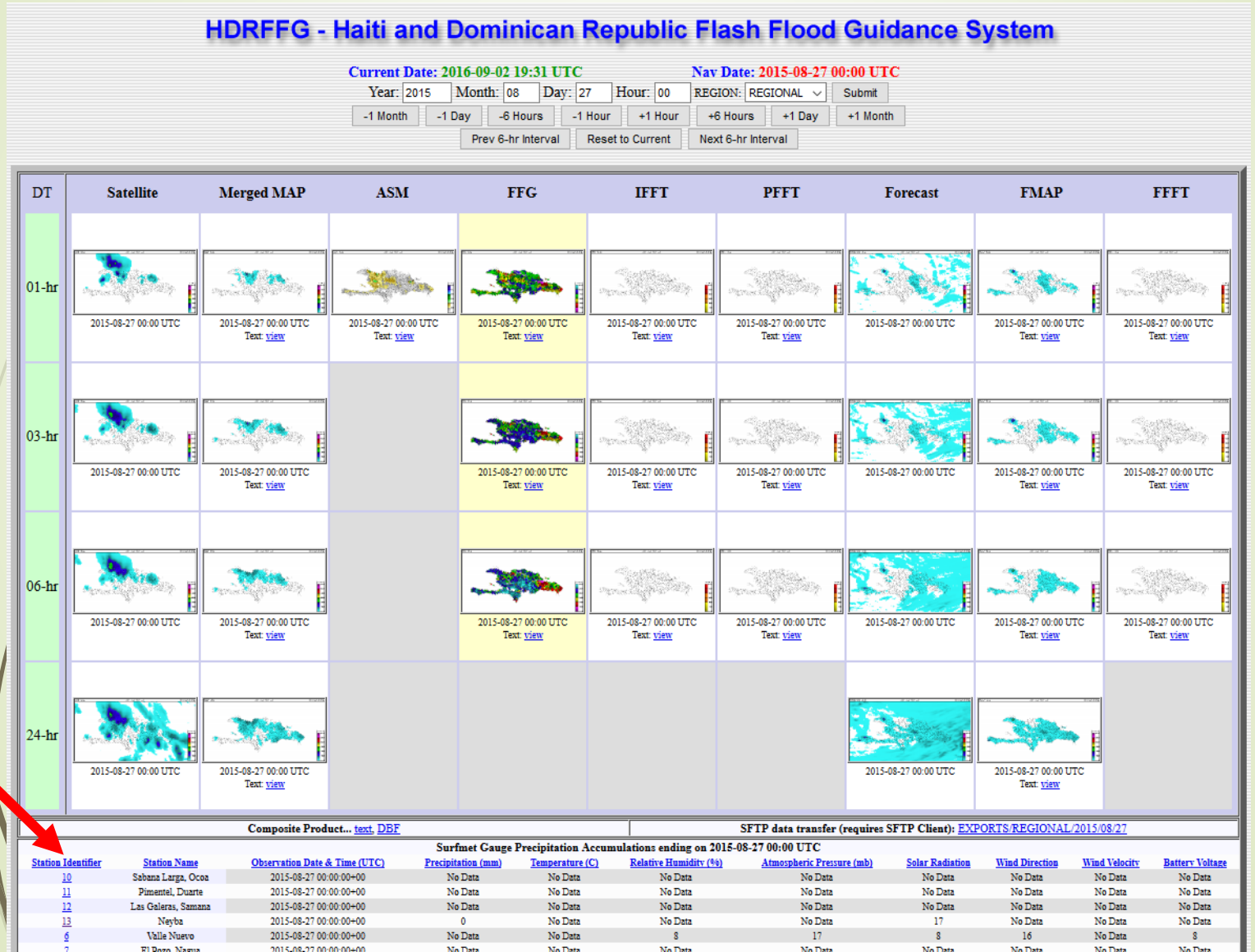
- Historical data, hourly, daily *preferred* (monthly)
  - validation of soil modeling component

(8) Spring discharge data

- Historical data (as available)
  - calibration of soil modeling component

General Data Priorities

(1) Information on real-time stations and establishing data communication



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Surfmet Gauge Precipitation Accumulations ending on 2015-08-27 00:00 UTC

Station Identifier	Station Name	Observation Date & Time (UTC)	Precipitation (mm)	Temperature (C)	Relative Humidity (%)	Atmospheric Pressure (mb)
10	Sabana Larga, Ocoa	2015-08-27 00:00:00+00	No Data	No Data	No Data	No Data
11	Pimentel, Duarte	2015-08-27 00:00:00+00	No Data	No Data	No Data	No Data
12	Las Galeras, Samana	2015-08-27 00:00:00+00	No Data	No Data	No Data	No Data
13	Neyba	2015-08-27 00:00:00+00	0	No Data	No Data	No Data
6	Valle Nuevo	2015-08-27 00:00:00+00	No Data	No Data	8	17
7	El Pozo, Nagua	2015-08-27 00:00:00+00	No Data	No Data	No Data	No Data
8	Higuey	2015-08-27 00:00:00+00	No Data	No Data	No Data	No Data
9	Monte Plata	2015				No Data

HDRFFG - Haiti and Dominican Republic Flash Flood Guidance System

Current Date: 2016-09-02 19:25 UTC Nav Date: 2015-08-27 00:00 UTC

Station Code	13
Station Name	Neyba
Region	0
Latitude	-999
Longitude	-999
Elevation	-999
Agency	ONAMET
Type	synop
Enabled Precip	Disabled
Enabled Temp	Disabled

HDRFFG Accumulations of Reported Surfmet Gauge Precipitation Observations from Station '13' within the past 30 days

Observation Date & Time (UTC)	Precipitation (mm)	Tempurature (C)	Relative Humidity (%)	Atmospheric Pressure (mb)	Solar Radiation	Wind Direction	Wind Velocity	Battery Voltage
2015-08-27 00:00:00+00	0	No Data	No Data	No Data	17	No Data	No Data	No Data
2015-08-26 23:00:00+00	0	No Data	No Data	No Data	16	No Data	No Data	No Data
2015-08-26 22:00:00+00	0	No Data	No Data	No Data	15	No Data	No Data	No Data
2015-08-26 21:00:00+00	0	No Data	No Data	No Data	14	No Data	No Data	No Data
2015-08-26 20:00:00+00	0	No Data	No Data	No Data	13	No Data	No Data	No Data
2015-08-26 19:00:00+00	0	No Data	No Data	No Data	12	No Data	No Data	No Data
2015-08-26 18:00:00+00	0	No Data	No Data	No Data	11	No Data	No Data	No Data
2015-08-26 17:00:00+00	0	No Data	No Data	No Data	10	No Data	No Data	No Data
2015-08-26 16:00:00+00	0	No Data	No Data	No Data	9	No Data	No Data	No Data
2015-08-26 15:00:00+00	No Data	No Data	No Data	No Data	8	No Data	No Data	No Data
2015-08-26 14:00:00+00	No Data	1	No Data	No Data	8	0	No Data	No Data
2015-08-26 13:00:00+00	0	No Data	No Data	No Data	6	No Data	No Data	No Data
2015-08-26 12:00:00+00	0	No Data	No Data	No Data	5	No Data	No Data	No Data
2015-08-26 11:00:00+00	0	No Data	No Data	No Data	4	No Data	No Data	No Data
2015-08-26 10:00:00+00	0	No Data	No Data	No Data	3	No Data	No Data	No Data
2015-08-26 09:00:00+00	0	No Data	No Data	No Data	2	No Data	No Data	No Data
2015-08-26 08:00:00+00	0	No Data	No Data	No Data	1	No Data	No Data	No Data
2015-08-26 07:00:00+00	No Data	No Data	No Data	No Data	0	No Data	No Data	No Data
2015-08-26 06:00:00+00	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
2015-08-26 04:00:00+00	0	No Data	No Data	No Data	21	No Data	No Data	No Data
2015-08-26 03:00:00+00	0	No Data	No Data	No Data	20	No Data	No Data	No Data
2015-08-26 02:00:00+00	0	No Data	No Data	No Data	18	No Data	No Data	No Data
2015-08-26 00:00:00+00	0	No Data	No Data	No Data	17	No Data	No Data	No Data
2015-08-25 23:00:00+00	0	No Data	No Data	No Data	16	No Data	No Data	No Data
2015-08-25 22:00:00+00	0	No Data	No Data	No Data	15	No Data	No Data	No Data

General Data Priorities

(1) Information on real-time station and establishing data communication

(2) Local spatial data to update model parameterizations

(3) Historical precipitation data for bias analysis

(4) Historical precipitation, temperature, evaporation, soil moisture and/or stream discharge data for hydrologic model evaluation.

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HDRFFG System: Data Requirements

Please send me questions on Data Requirements:
TModrick@hrcwater.org

THANK YOU