



Global Flash Flood Guidance System

Status and Outlook

HYDROLOGIC RESEARCH CENTER

San Diego, CA 92130

<http://WWW.HRCWATER.ORG>

Initial Planning Meeting on the WMO HydroSOS, Entebbe, Uganda

26-28 September 2017

The Hydrologic Research Center Staff

<http://www.hrcwater.org>



Hydrometeorology
Dr. Konstantine Georgakakos
Dr. Theresa Modrick

Hydrology
Dr. Eylon Shamir

Meteorology
Mr. Bob Jubach

Training/Education
Dr. Rochelle Graham

Climate
Dr. Nicholas Graham

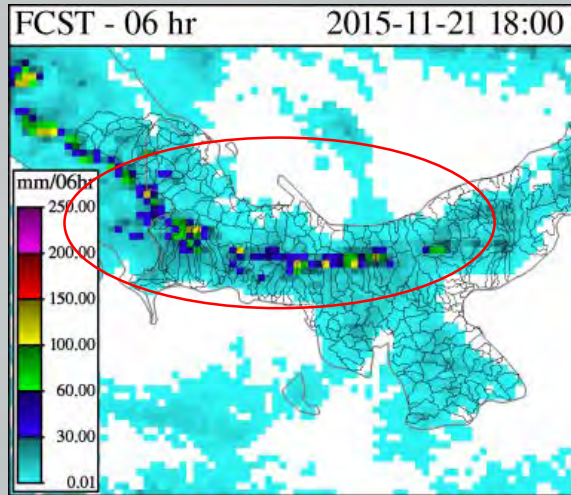
Computer Science/Eng.
Mr. Jason Sperfslage
Mr. Cris Spencer
Mr. Randall Banks

IMAGINE A PANAMA FORECASTER ON 1:00PM LST 21 NOVEMBER 2015 (Saturday)

Panama Time = UTC – 5 hours

It has been raining in Western Panama

What is the rainfall forecast?
FFG System WRF shows:



Home » News » Panama » 12 homes affected in Boquete floods

12 homes affected in Boquete floods

Posted on November 22, 2015 in Panama

HEAVY DOWNPOURS throughout the weekend led to flooding and land slides in Chiriqui and Bocas Del Toro with at least 12 homes affected in the district of Boquete.



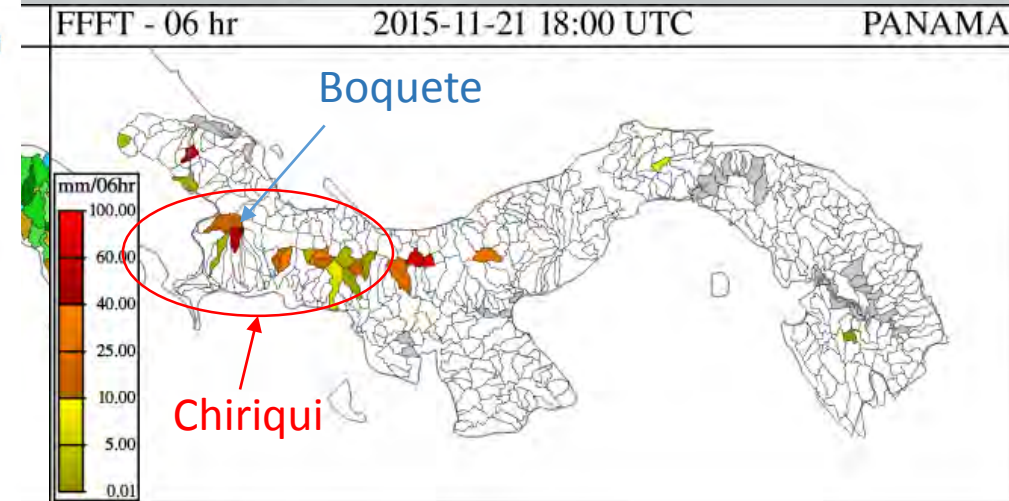
Share: [f](#) [t](#) [G+](#) [✉](#)

Post Views: 562

The Joint Task Force (FTC), led by the National Civil Protection System (Sinaproc), said the torrential rain has wreaked havoc in several localities in western Panama, near the border with Costa Rica.

land?
action:

Which small basins are at risk?
FFG System Flash Flood Threat shows:



What are Flash Floods?

World Meteorological Organization (WMO):

“ A flood of ***short duration*** with a relatively high peak discharge ”

American Meteorological Society (AMS):

“ A flood that ***rises and falls quite rapidly*** with little or no advance warning,
usually the result of intense rainfall over a ***relatively small area*** ”

A local hydrometeorological phenomenon that requires:

1. BOTH Hydrological and Meteorological expertise for real time forecasting/warning
2. High Spatial and Temporal resolution in modeling and warning
3. Local Knowledge and Information of up to an hour for effective warning

Usually, flow crest is reached within 6 hours of causative event

The Global Initiative for Flash Floods

The **Hydrologic Research Center (HRC)** has signed a joint MoU to implement regional flash flood guidance systems worldwide with:

*the United Nations – World Meteorological Organization (**WMO**),*

*the U.S. Agency for International Development/Office of U.S. Foreign Disaster Assistance (**USAID/OFDA**),*

*and the U.S. National Oceanic and Atmospheric Administration (**NOAA**).*

GOAL:

To support **National Meteorological and Hydrological Services** worldwide to:

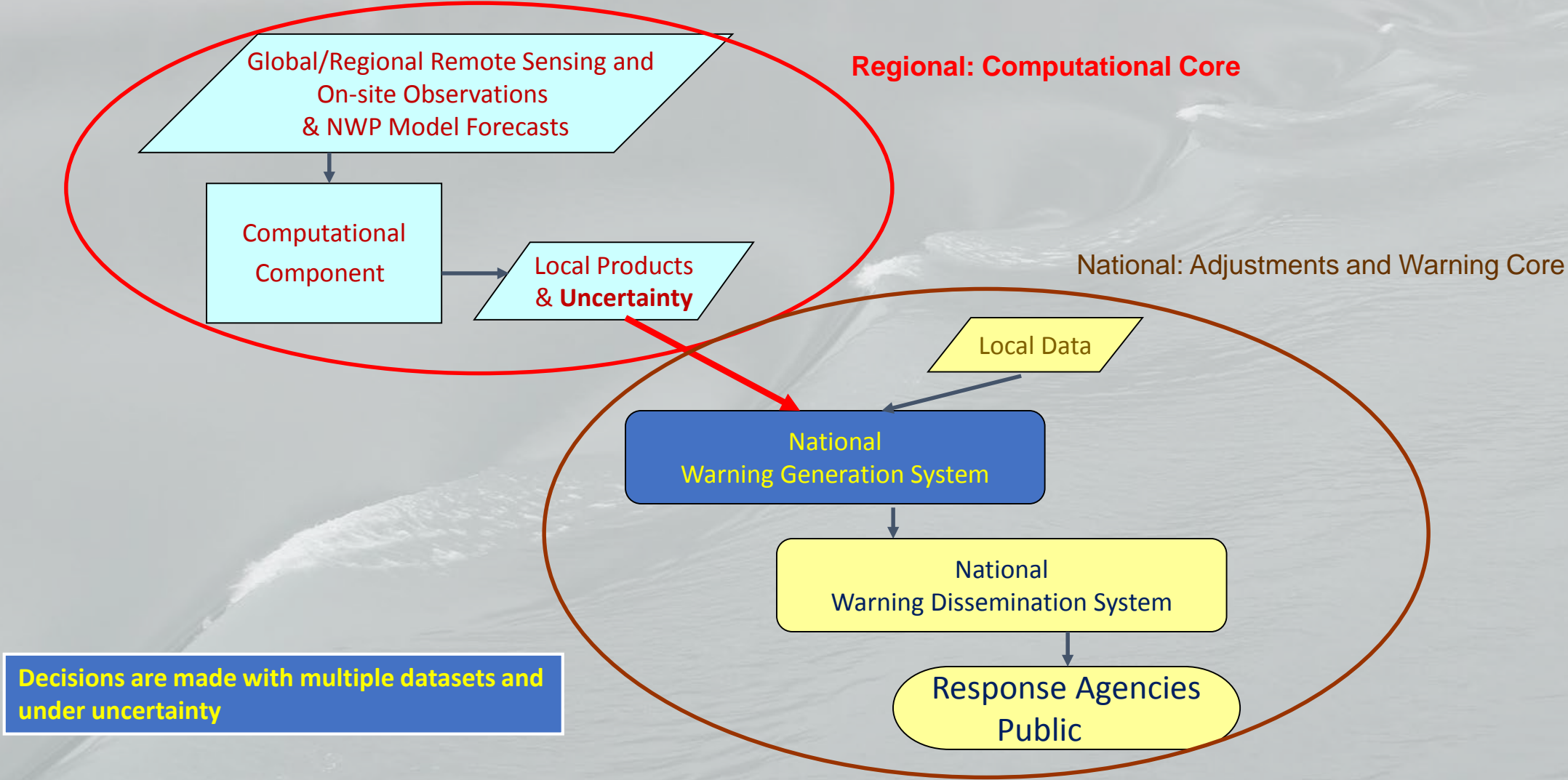
1. provide reliable and effective flash-flood warnings and
2. improve disaster management efficiency



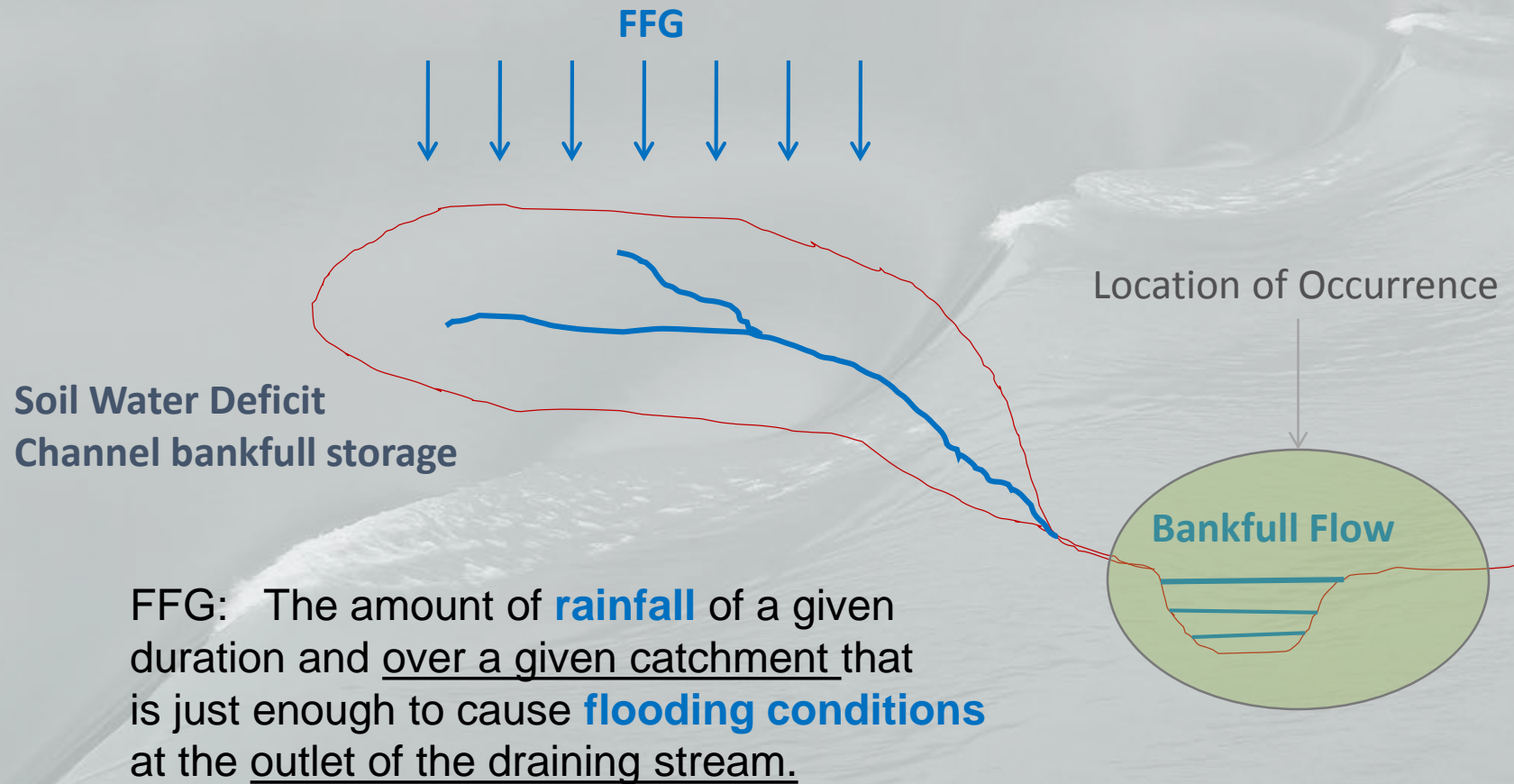
More than 50 countries are covered by 9 regional systems that are currently running *operationally*.

FLASH FLOOD GUIDANCE SYSTEM

From Global Data and Regional Hydrometeorology to Country Data and Warnings

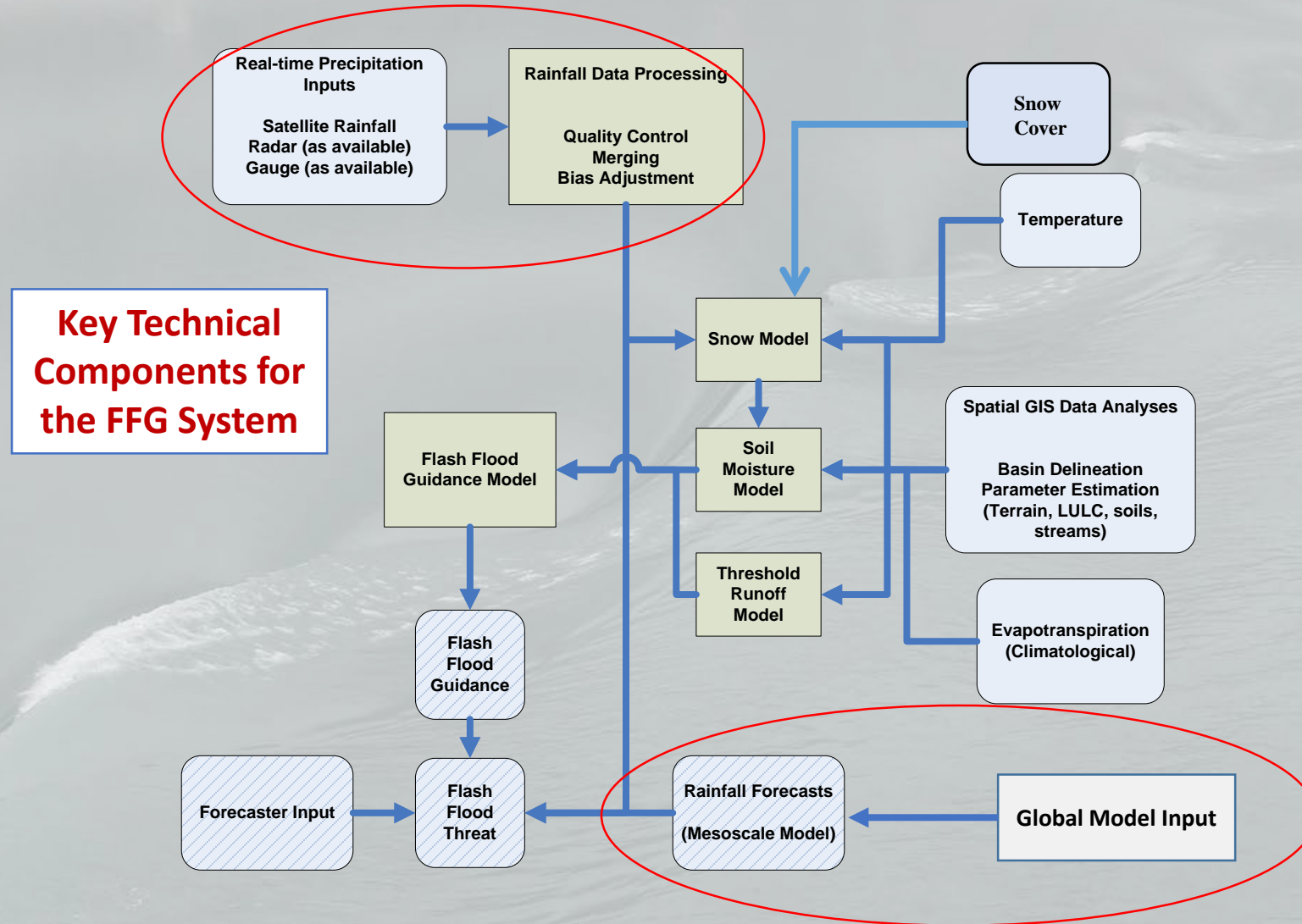


What is flash flood guidance?



Threshold exceedance concept to estimate occurrence only!

FFGS Information Sources: Data, Models, and Forecaster Input



CAFFG - Central America Flash Flood Guidance System

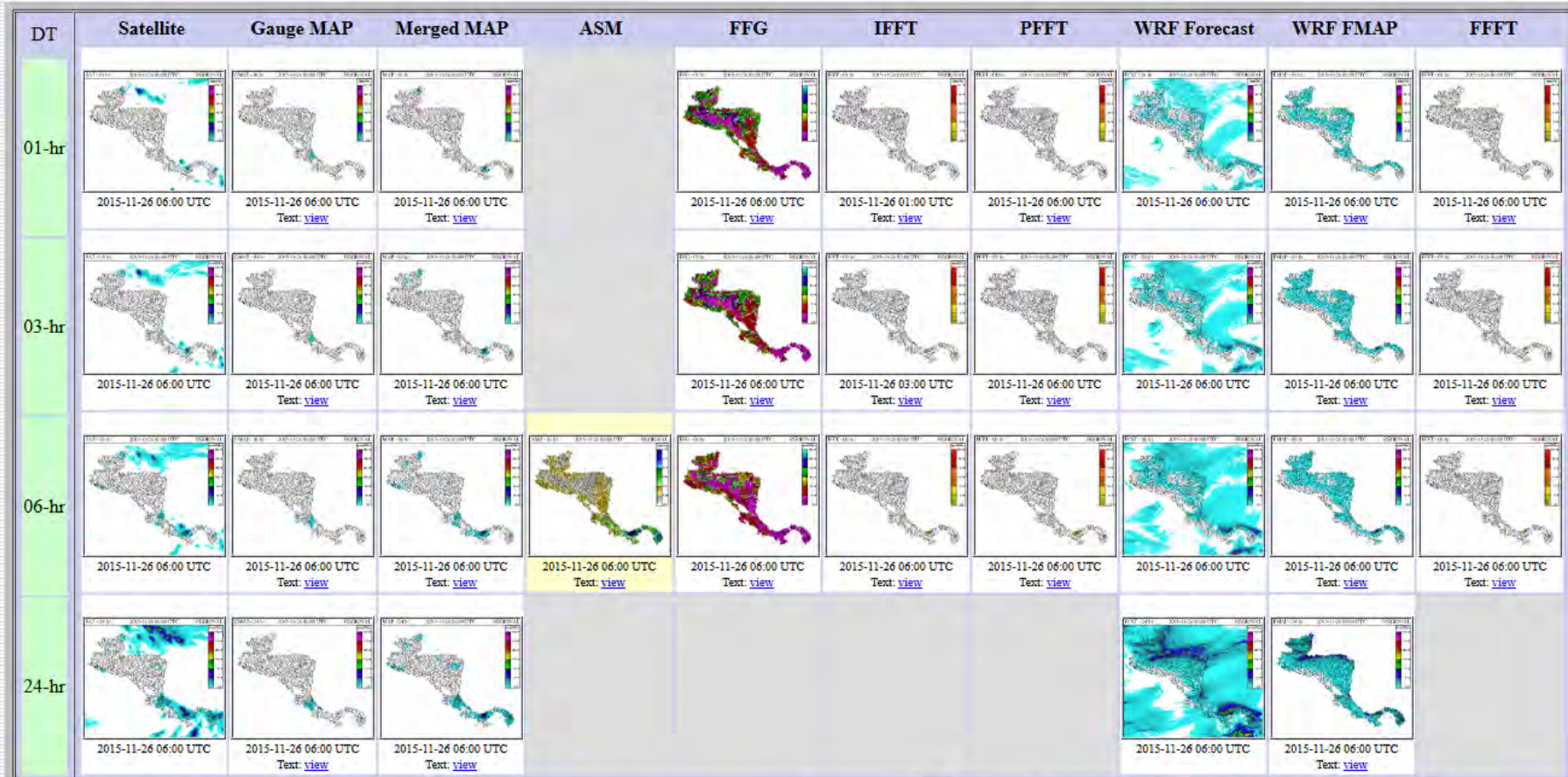
Current Date: 2016-02-01 06:12 UTC

Nav Date: 2015-11-26 06:00 UTC

Year: 2015 Month: 11 Day: 26 Hour: 06 REGION: REGIONAL OPTION: MEDIAN Submit

-1 Month -1 Day -6 Hours -1 Hour +1 Hour +6 Hours +1 Day +1 Month

Prev 6-hr Interval (00 UTC) Reset to Current Next 6-hr Interval (12 UTC)



Composite Product... [text](#), [DBF](#)

SFTP data transfer (requires SFTP Client): [EXPORTS/REGIONAL/2015/11/26](#)

Surfmet Gauge Observations at 2015-11-26 06:00 UTC

Station Identifier	Station Name	01-hr Accumulated Precipitation (mm)	01-hr Average Temperature (C)	Region	Latitude	Longitude	Enable Precipitation Flag	Enable Temperature Flag
0500072A	EL BOQUETE	No Report	No Report	NICARAGUA	11.982222222	-86.394722222	Disabled	Disabled
0500145C	EL ROSARIO	0.00	No Report	NICARAGUA	11.846111111	-86.166666667	Enabled	Disabled
050071BA	ALTAMIRA (ARROCERA)	No Report	No Report	NICARAGUA	12.133055556	-85.713611111	Enabled	Disabled
0500C234	MATAGALPA	No Report	No Report	NICARAGUA	12.947777778	-85.871111111	Disabled	Disabled
0500E4D8	SIUNA	0.00	No Report	NICARAGUA	13.716111111	-84.775	Enabled	Disabled
050146DA	SAN DIONISIO	No Report	No Report	NICARAGUA	12.756388889	-85.845833333	Enabled	Disabled

SARFFG - Southern Africa Region Flash Flood Guidance System

2017-08-31 17:22:47 UTC

Product Date Selection

Product Date: 2017-04-01 00:00 UTC

00	01	02	03	04	05
06	07	08	09	10	11
12	13	14	15	16	17
18	19	20	21	22	23

Prev Timestep	Next Timestep
Prev 6hr Interval	Next 6hr Interval
Prev Day	Next Day

MAP-06hr 2017-04-01 00:00 UTC

MAP 06hr (mm/6hr)

90.0+

60.0

40.0

20.0

SARFFG - Southern Africa Region Flash Flood Guidance System

2017-08-31 19:52:00 UTC

FFG-Gram plot demo - 1-hr, 3-hr, and 6-hr durations - Basin: 2002702501

Start: 2017-03-20 18:00 UTC End: 2017-04-04 18:00 UTC

Product Date: 2017-04-04 18:00 UTC

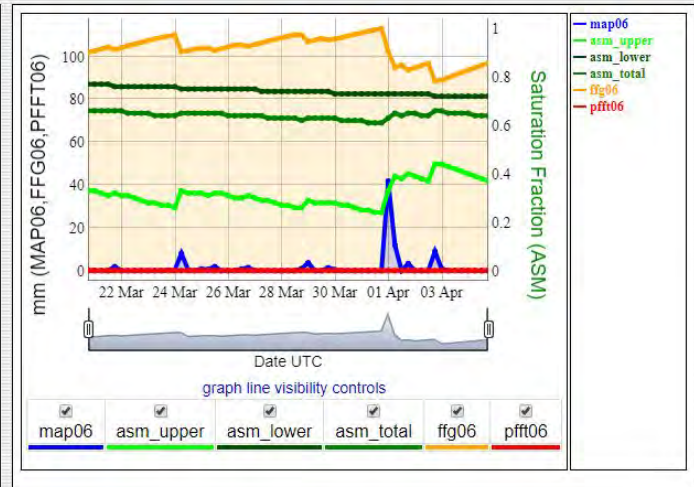
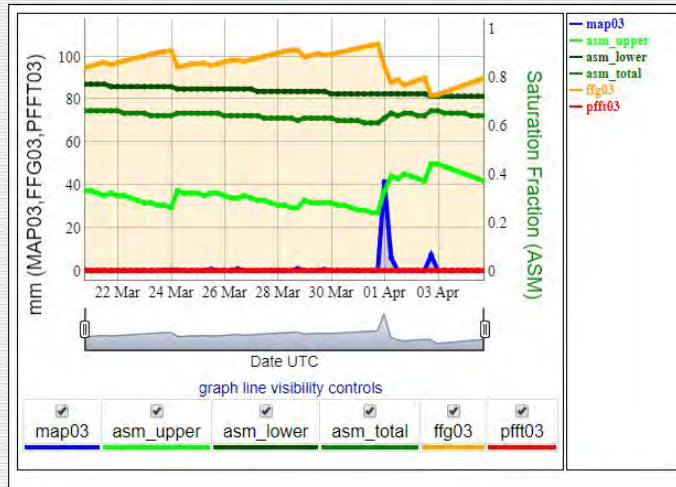
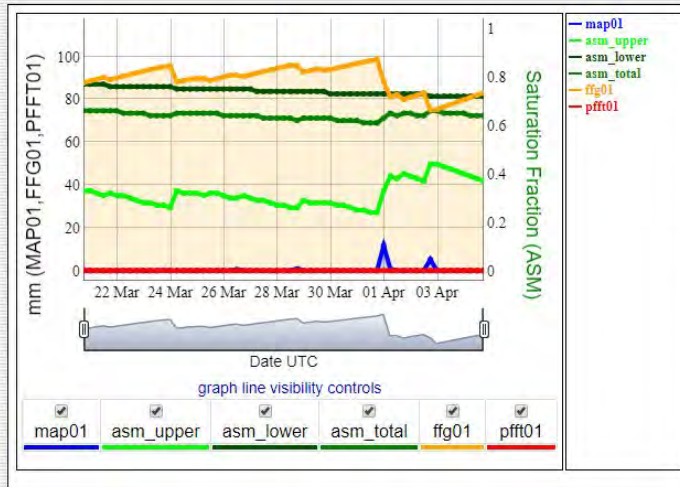
00 06 12 18

Prev 6hr Interval Next 6hr Interval

Prev Day Next Day

Reset to Current

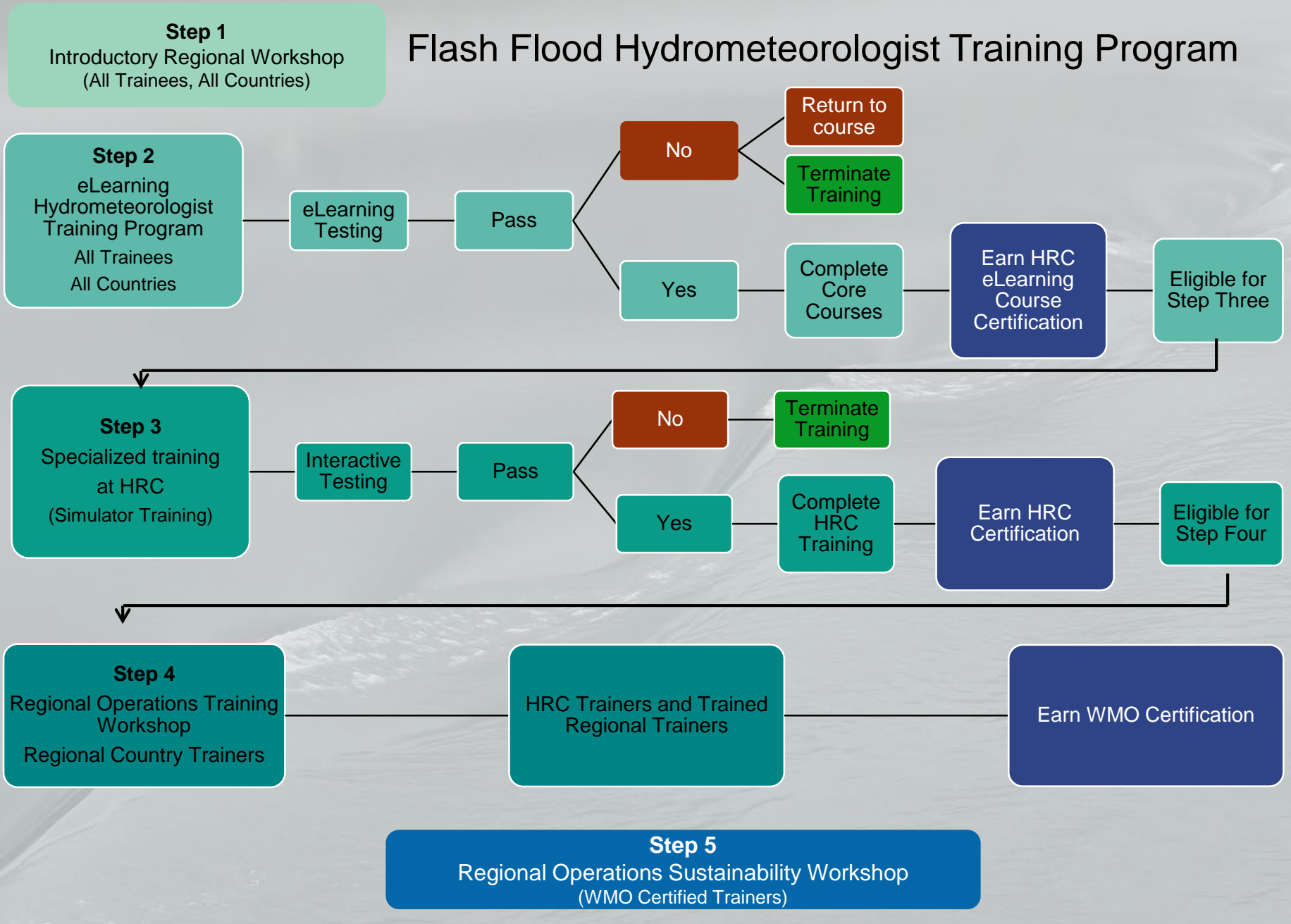
Scope: 15 days



[Product Viewer](#) | [Product Comparison](#) | [Server Monitor Plots](#)

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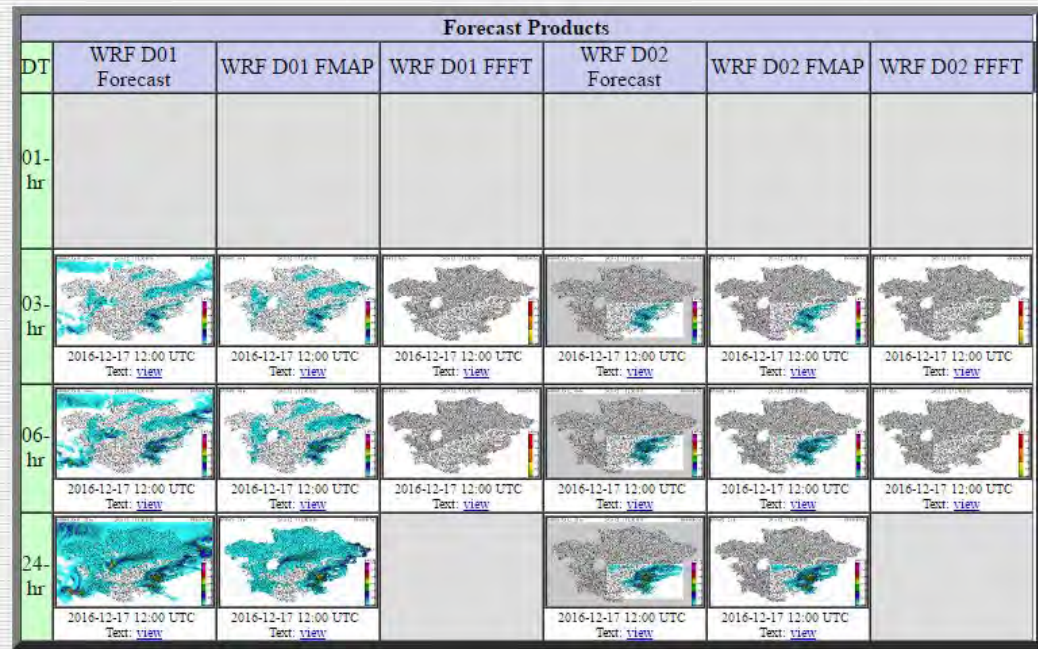
Flash Flood Hydrometeorologist Training Program



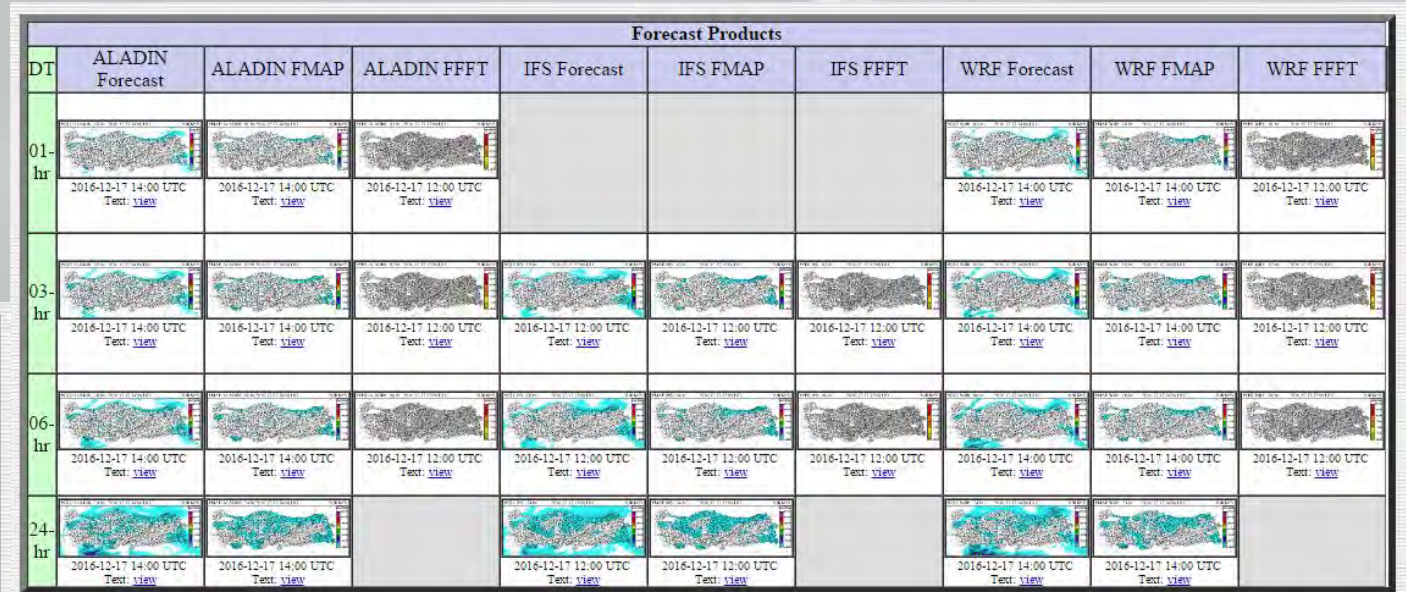
Recent FFGS Advances

Multi NWP Model Ensemble

Central Asia



Turkey



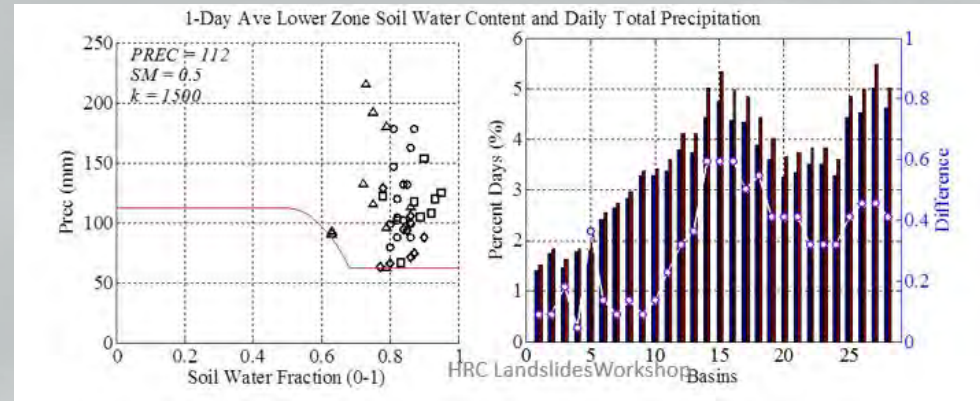
Recent FFGS Advances

Landslides

Susceptibility



Real Time



AGU and Scientific American

Database Template

Información básica	Nombre de Reportero		Como usar esta Base de Datos: Hacer una copia de esta pagina para cada							
	Afiliación									
	Fecha de Visita									
Descripción del Deslizamiento	Fecha de Evento									
	Municipalidad									
	Ruta									
	KM Marcador									
	Coordinadas del Poligono Alrededor Deslizamiento Entero									
	Coordinadas del Poligono Alrededor la Cabeza del									
	Altura del Main Scarp (metros)									
	Materiales	% Suelo	% Piedra	% Ambos						
	Textura del Suelo	% Arena	% Limo	% Arcilla						
	Profundidad Hasta La Roca Madre (metros)									
Localización en relación con la carretera (0 o 1)	Encima de Carretera	Debajo de Carretera	Ambos							

Page 1

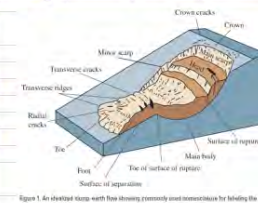


Figure 1. An elevated scarp with face showing commonly used terminations for labeling the parts of a landslide.

EOS Earth & Space Science News

NEWS TOPICS & DISCIPLINES OPINIONS BLOGS JOBS & RESOURCES

NATURAL HAZARDS Project Update

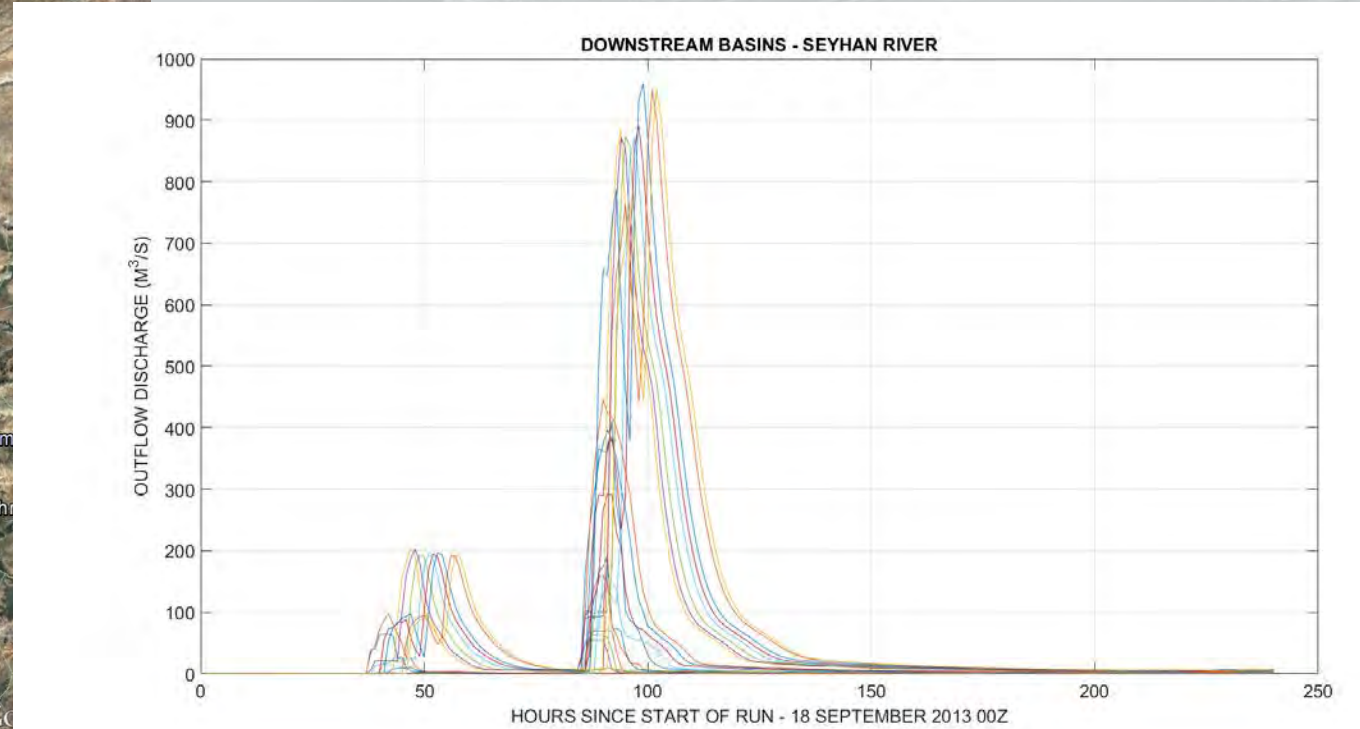
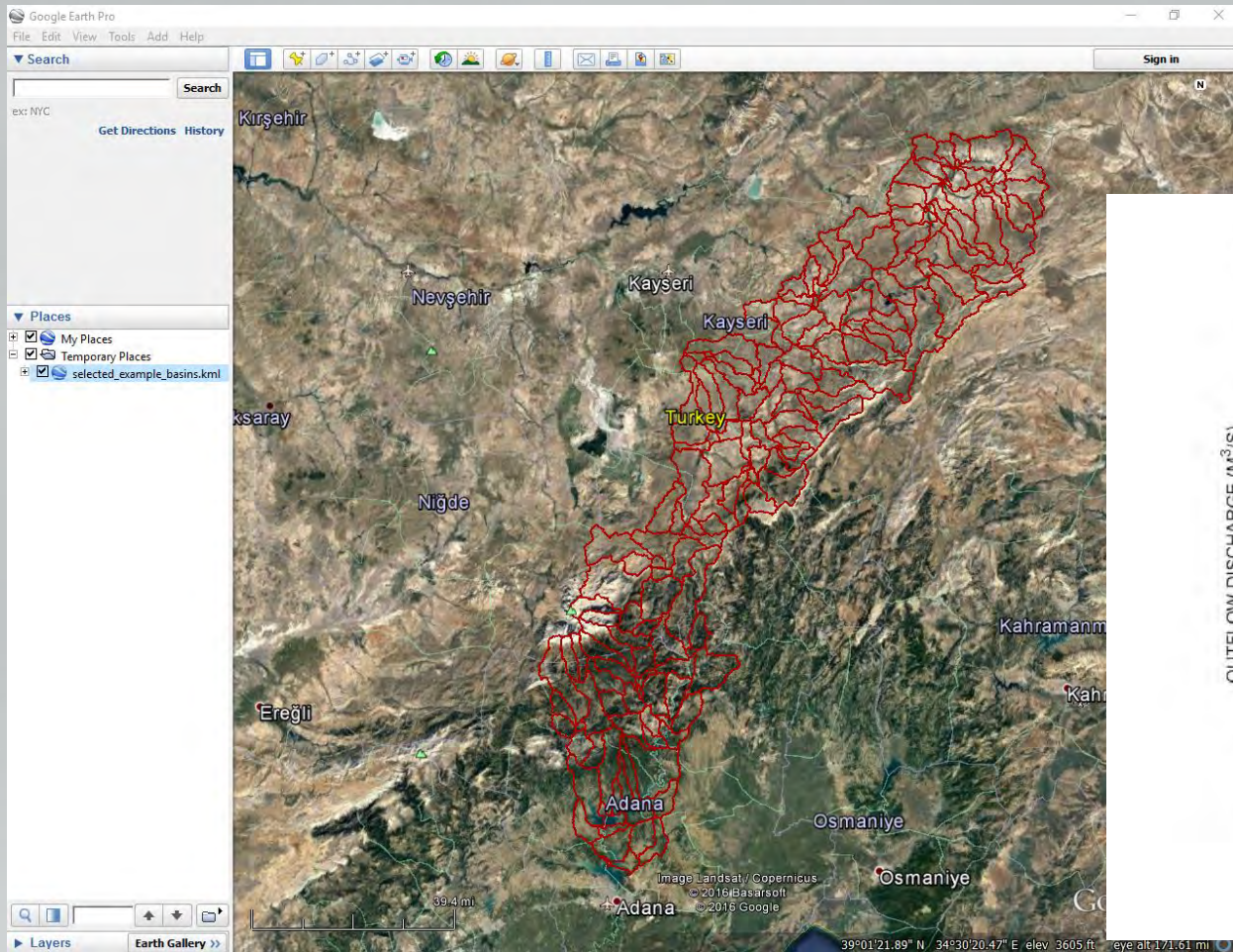
An Early Warning System for Landslide Danger

Advances in satellite imaging, mapping, and rainfall estimations have made it possible to implement a regional real-time assessment of landslide hazard threats across Central America.

AGU Online Marketplace

Recent FFGS Advances

Riverine Routing for Selected Rivers

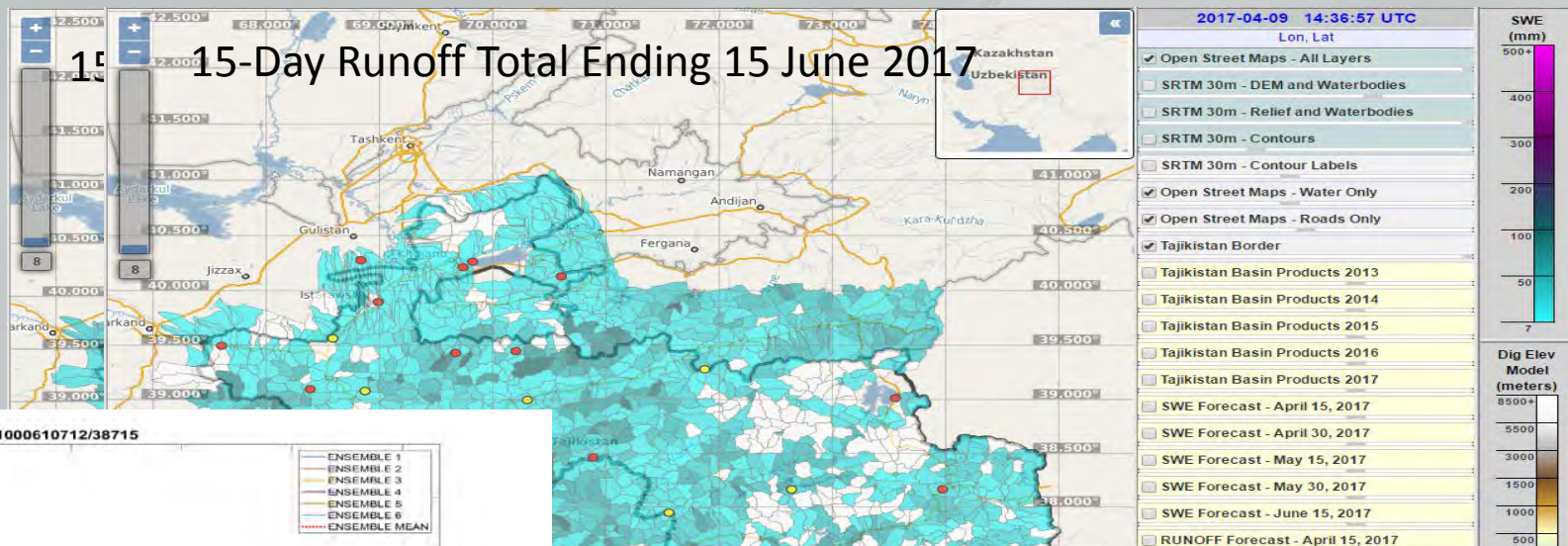
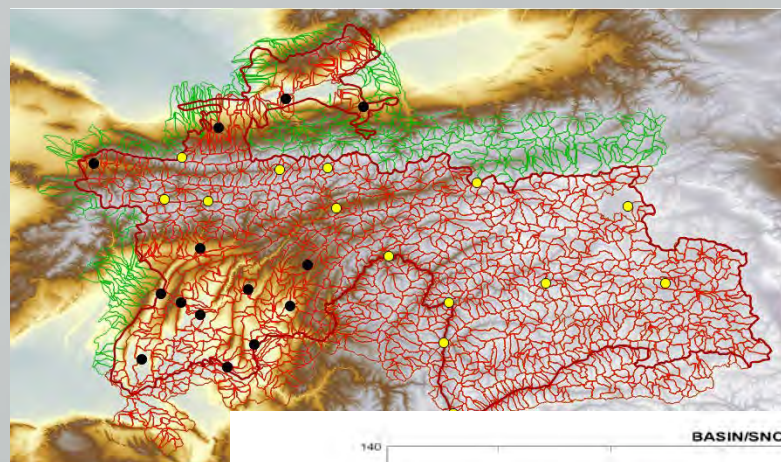


Recent FFGS Advances

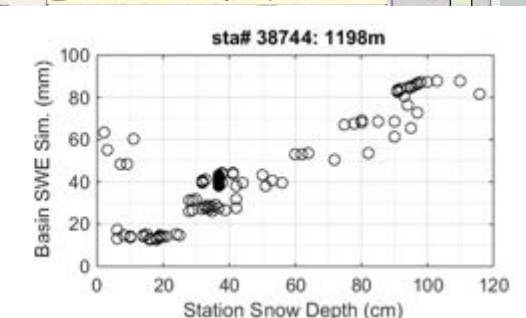
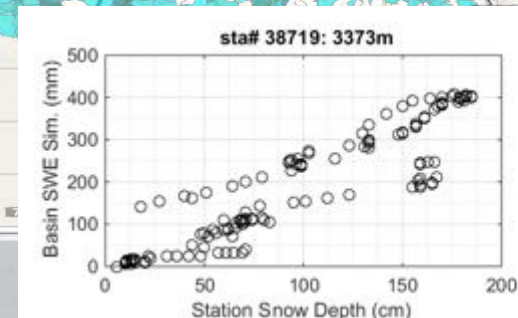
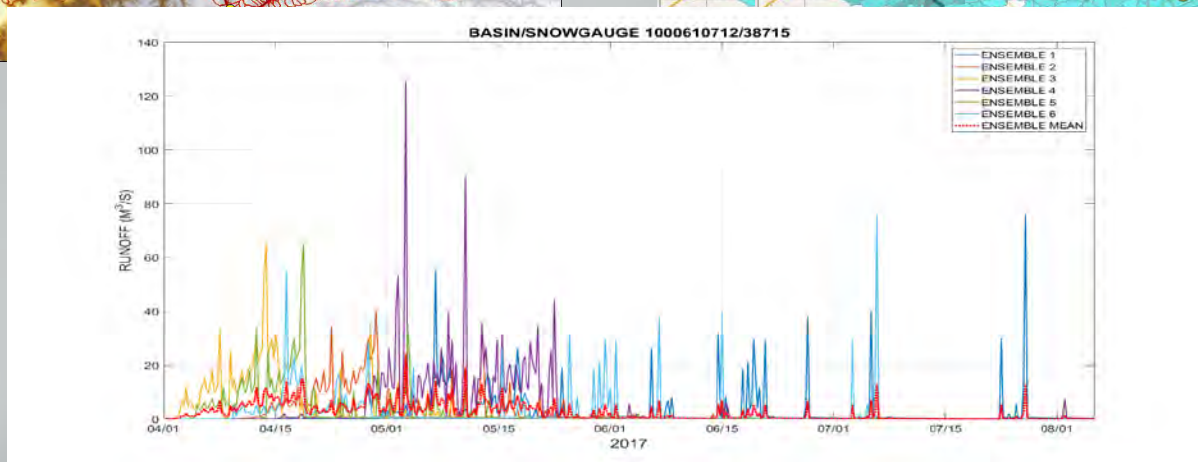
Seasonal Forecasting of Snowmelt and Rain Runoff

Assessment Date 1 April 2017

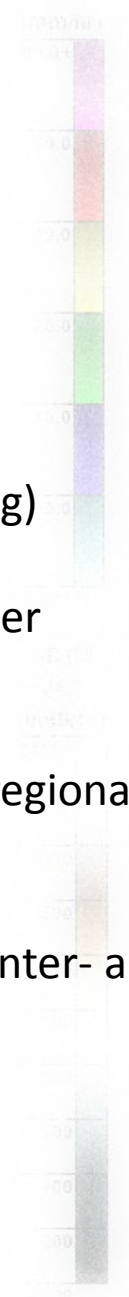
Tajikistan 2017 Assessments



15-Day Runoff Total Ending 15 June 2017

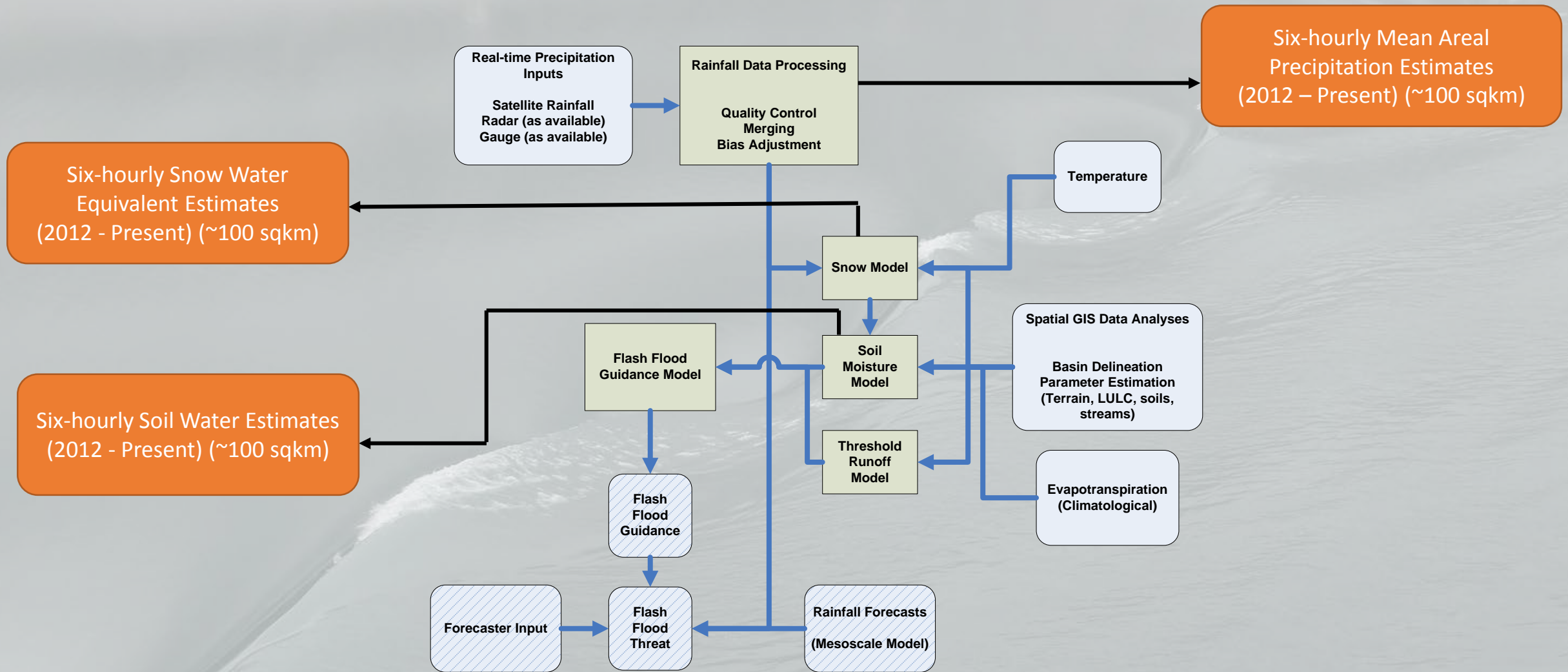


Challenges (Data and Information Focus)

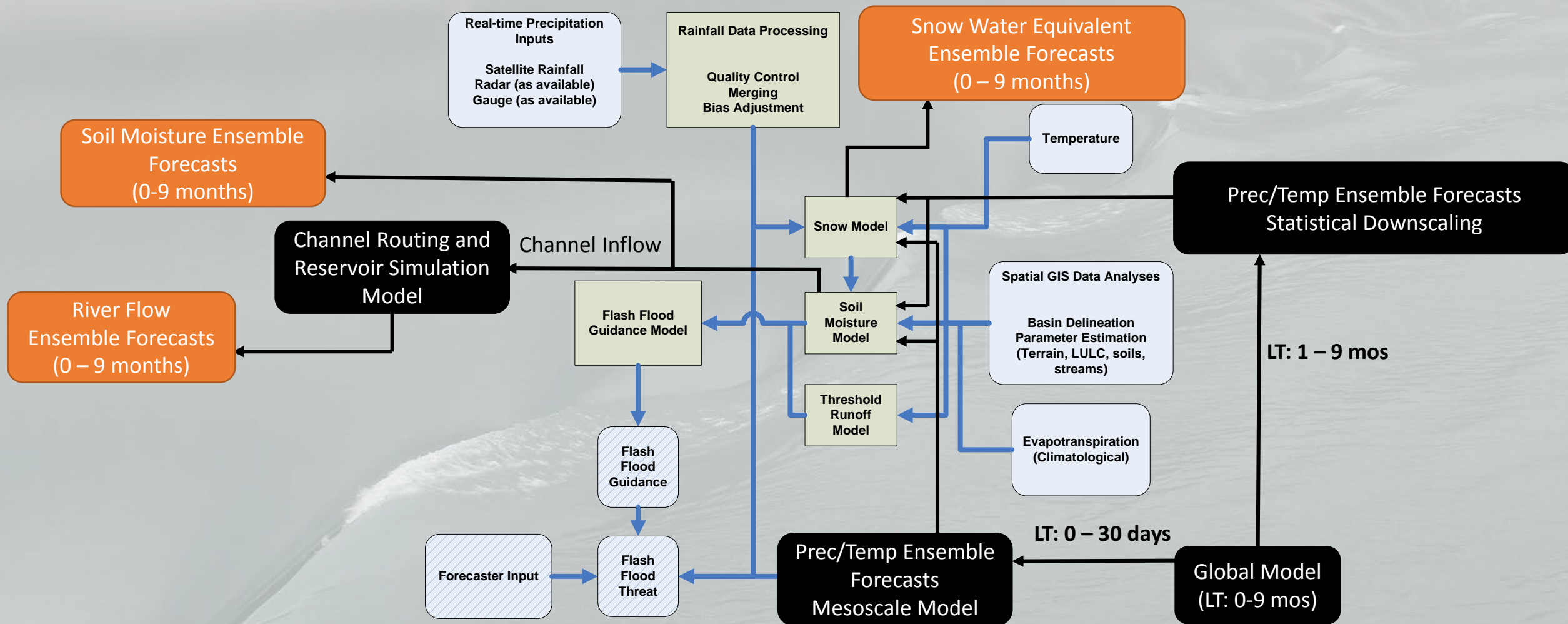


1. **Data Ingest** (format type variety, public versus private, asynchronous, space-time resolution)
2. **Measurement /Forecast Uncertainty** (climatological vs time varying, short records for reliability fine-tuning)
3. **Timely Product/Warning Generation** (computer and comm. requirements and constraints, timely forecaster adjustment and response)
4. **Products Easily Accessible and Searchable by NMHSs** (interface and database requirements, local versus regional data storage, requirement to use free and open source software for developing countries)
5. **Education and Training in Product Interpretation and Communication with DMAs** (diverse backgrounds, inter- and multi-disciplinary focus, cultural diversity in the perceived value of and response to warnings)

Products of FFGS Potentially Useful for Global Modeling



FFGS Enhanced for Sub-seasonal to Seasonal Prediction



Thank You

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