

Hydrologic Research Center

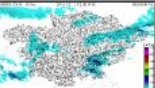
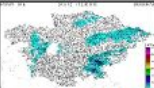




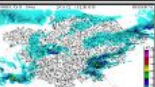
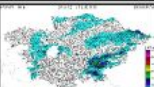

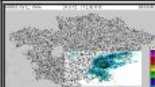




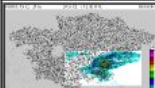
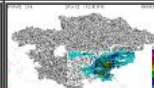
Flash Flood Guidance System Enhancements

Enhancements to be discussed

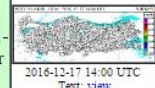

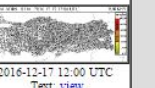
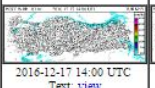
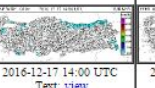
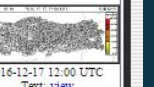



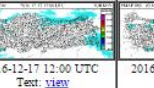
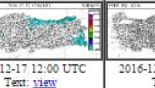
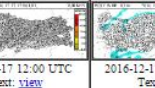
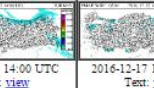
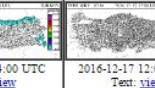





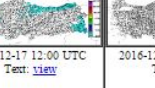
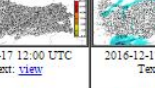
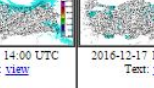
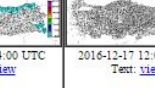


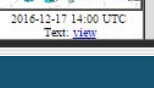
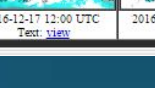

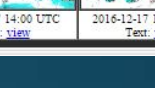
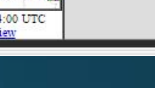
- A. Multi-model ensemble products
- B. Channel Routing for Selected River Networks
- C. Urban Flash Flood Warning
- D. Landslide Occurrence

A. Multi-model Ensemble Products

Central Asia

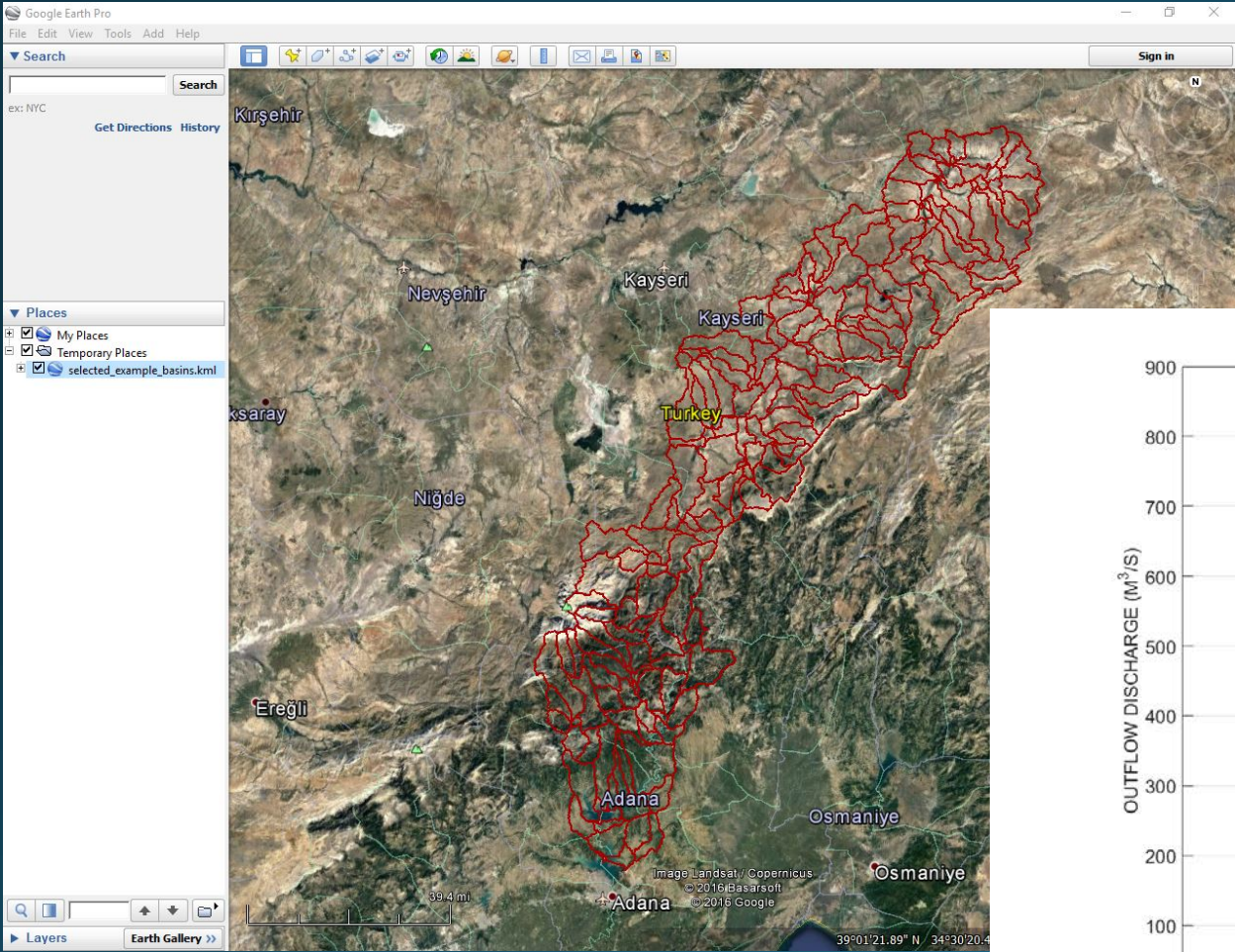
Forecast Products						
DT	WRF D01 Forecast	WRF D01 FMAP	WRF D01 FFFT	WRF D02 Forecast	WRF D02 FMAP	WRF D02 FFFT
01-hr						
03-hr	 2016-12-17 12:00 UTC Text: view	 2016-12-17 12:00 UTC Text: view	 2016-12-17 12:00 UTC Text: view	 2016-12-17 12:00 UTC Text: view	 2016-12-17 12:00 UTC Text: view	 2016-12-17 12:00 UTC Text: view
06-hr	 2016-12-17 12:00 UTC Text: view	 2016-12-17 12:00 UTC Text: view	 2016-12-17 12:00 UTC Text: view	 2016-12-17 12:00 UTC Text: view	 2016-12-17 12:00 UTC Text: view	 2016-12-17 12:00 UTC Text: view
24-hr	 2016-12-17 12:00 UTC Text: view	 2016-12-17 12:00 UTC Text: view		 2016-12-17 12:00 UTC Text: view	 2016-12-17 12:00 UTC Text: view	

Turkey

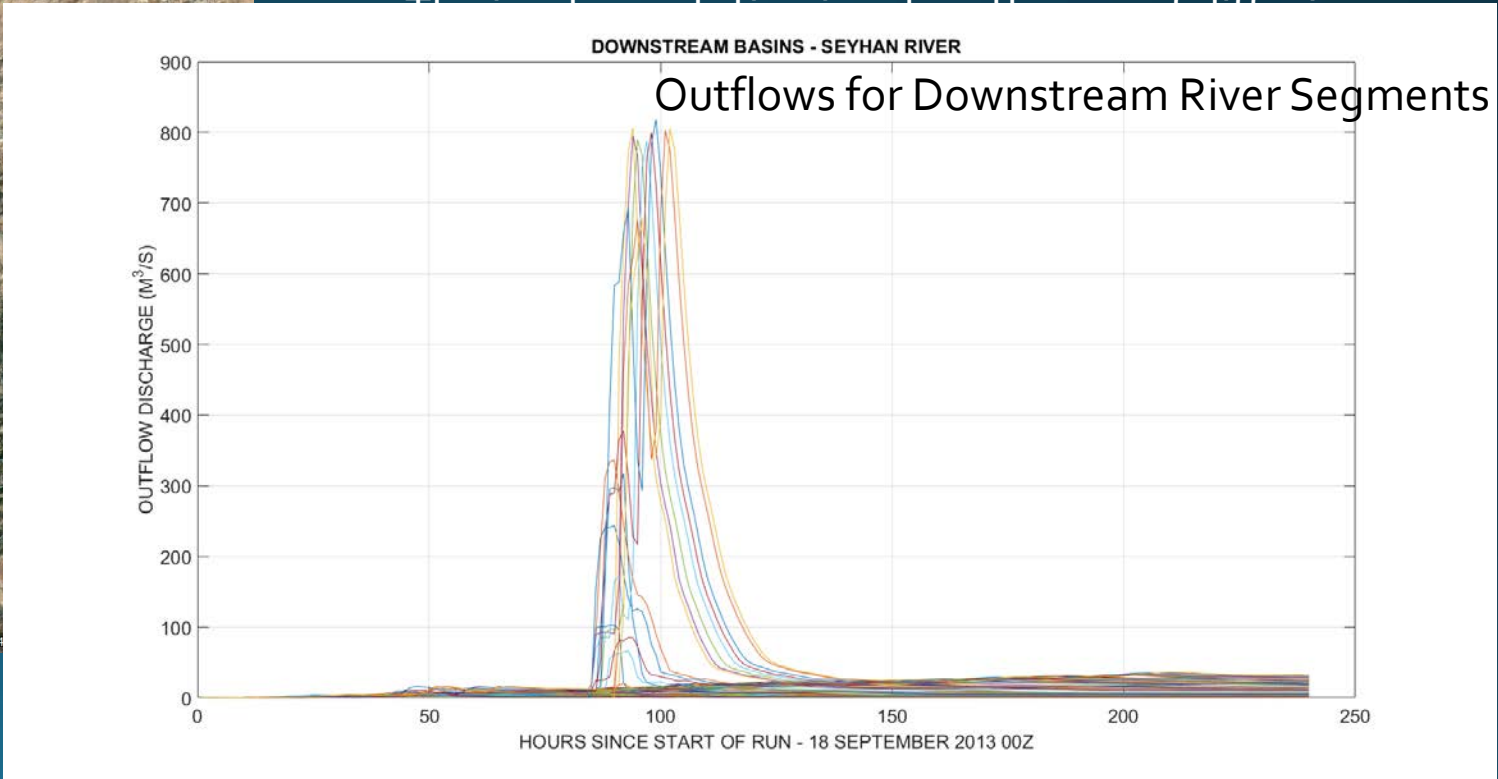
Forecast Products									
DT	ALADIN Forecast	ALADIN FMAP	ALADIN FFFT	IFS Forecast	IFS FMAP	IFS FFFT	WRF Forecast	WRF FMAP	WRF FFFT
01-hr	 2016-12-17 14:00 UTC Text: view	 2016-12-17 14:00 UTC Text: view	 2016-12-17 13:00 UTC Text: view				 2016-12-17 14:00 UTC Text: view	 2016-12-17 14:00 UTC Text: view	 2016-12-17 12:00 UTC Text: view
03-hr	 2016-12-17 14:00 UTC Text: view	 2016-12-17 14:00 UTC Text: view	 2016-12-17 12:00 UTC Text: view	 2016-12-17 12:00 UTC Text: view	 2016-12-17 12:00 UTC Text: view	 2016-12-17 12:00 UTC Text: view	 2016-12-17 14:00 UTC Text: view	 2016-12-17 14:00 UTC Text: view	 2016-12-17 12:00 UTC Text: view
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24-hr	 2016-12-17 14:00 UTC Text: view	 2016-12-17 14:00 UTC Text: view		 2016-12-17 12:00 UTC Text: view	 2016-12-17 12:00 UTC Text: view		 2016-12-17 14:00 UTC Text: view	 2016-12-17 14:00 UTC Text: view	

B. Channel Routing for Seyhan River Basin in Southern Turkey

BSMEFFG Delineations



Implementation of riverine routing components in regional flash flood guidance systems (FFGSs).

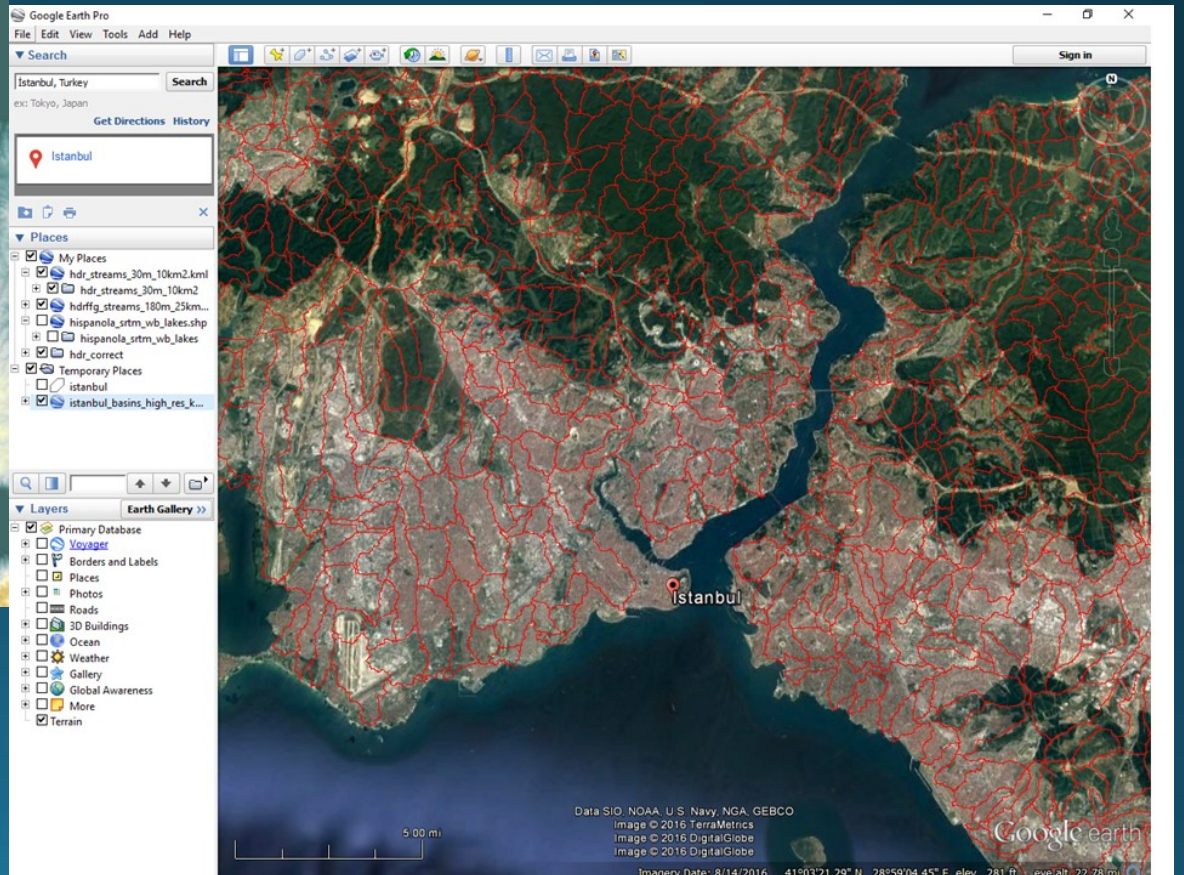
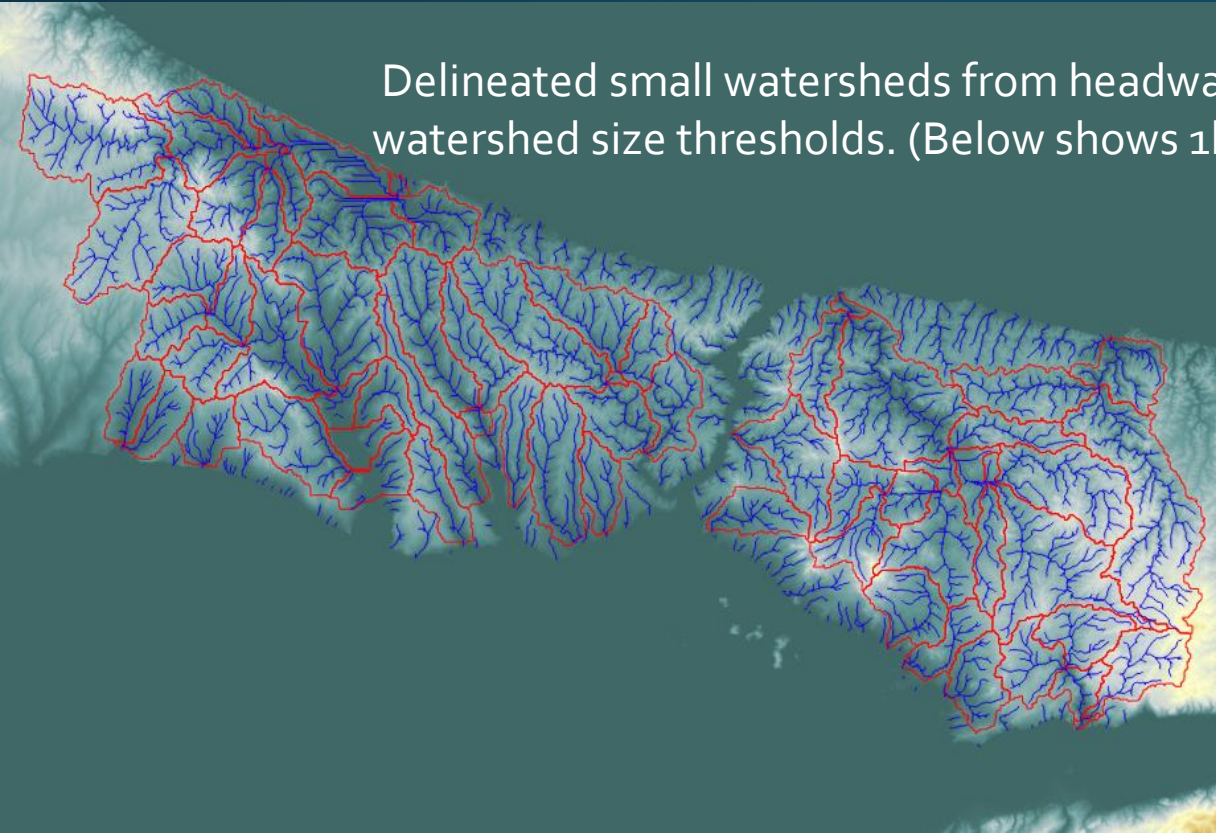


Application targeted to River managers and will include reservoir and reservoir management capabilities

C. Urban Flash Flood Warning

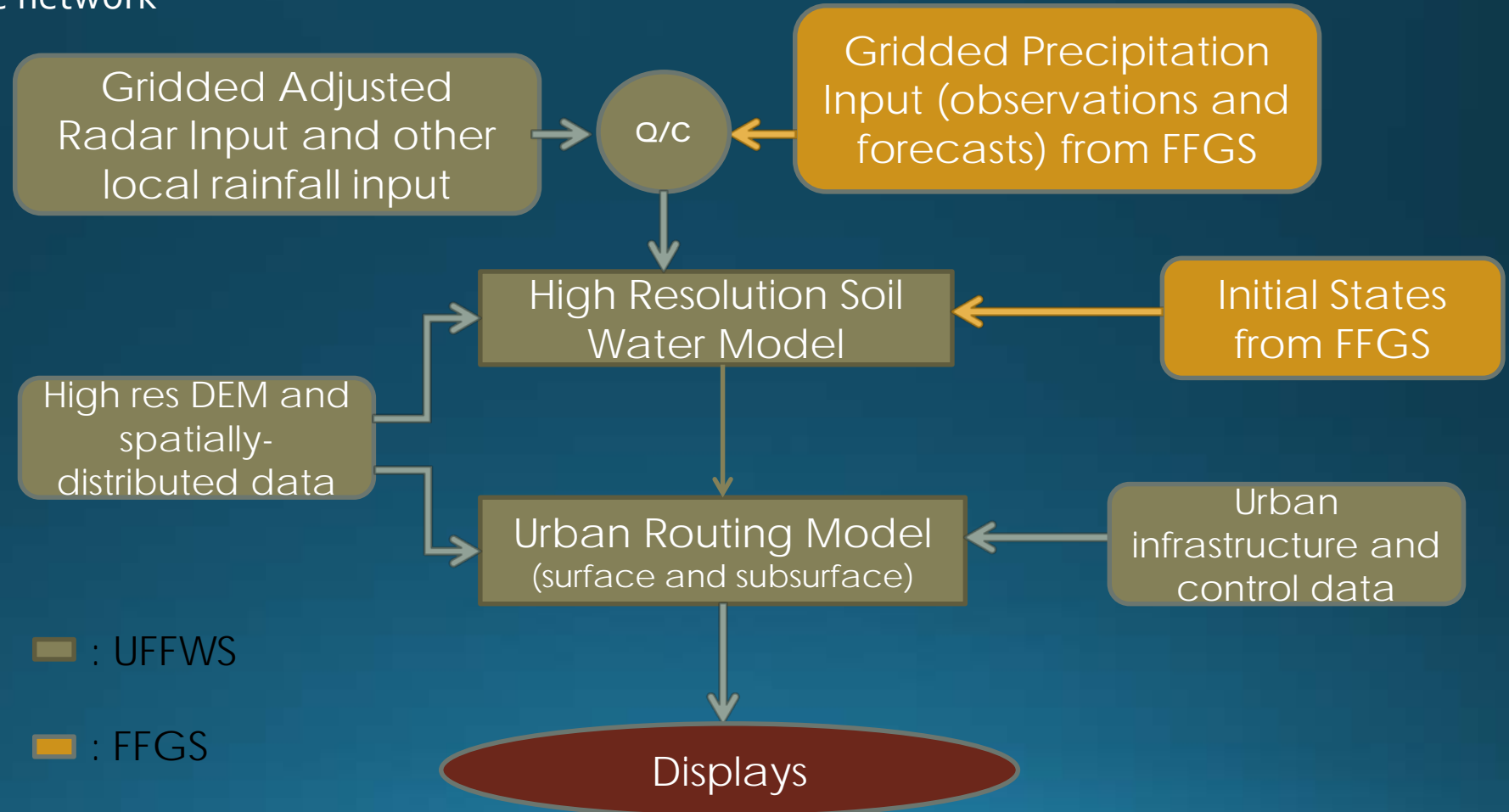
Currently efforts are underway to develop operational urban flash flood warning systems in Istanbul, Turkey and Jakarta, Indonesia in conjunction with the regional FFGs implemented.

Delineated small watersheds from headwaters through city at both 2km² and 1km² watershed size thresholds. (Below shows 1km² basins in red with identified streams in blue).



What is needed is High resolution delineations of surface drainage basins (down to 1 km²) and storm sewer surface and subsurface networks provided by the urban agencies provide the basis for the development of parametric databases that support the prediction of flows at various locations in the urban network.

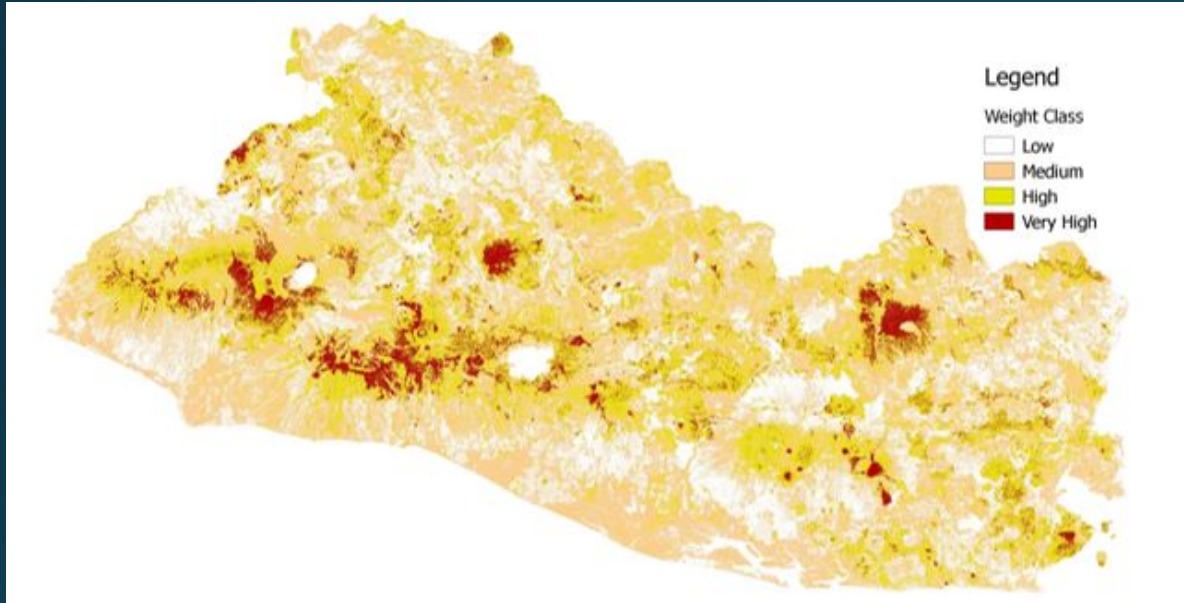
Forcing from high resolution radar data is used to generate surface and subsurface flows through the urban drainage network



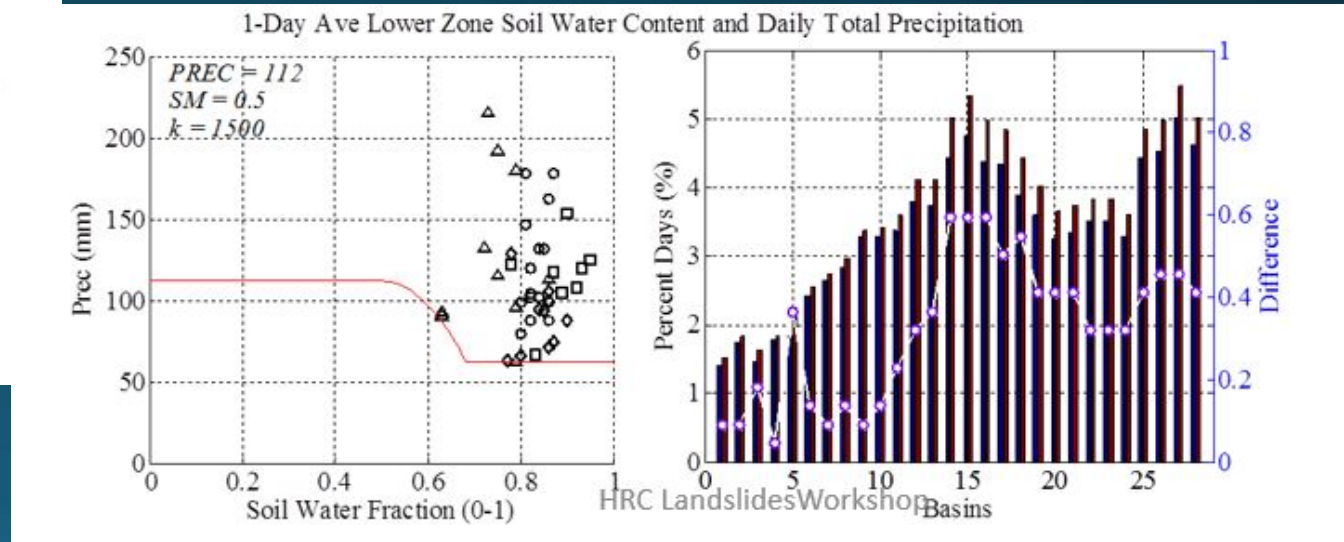
D. Landslide Occurrence Product

The first step that uses historical data of landslide occurrence (location and time) to determine susceptibility maps describing the likelihood of land slide occurrence with high resolution. In addition, thresholds of precipitation and soil water are determined below which there has not been historical flash flood occurrence.

Susceptibility



Real Time



A second step uses the FFG real-time precipitation and soil water estimates to identify the basins for which these values are greater than the thresholds specified in the first step. For these basins the susceptibility maps are then used to further identify the specific regions within these basins that have the highest climatological likelihood for landslide occurrence.

D. Landslide Occurrence Product

In collaboration with National Meteorological and Hydrological Services and Disaster Management Agencies in Central America, the Hydrologic Research Center is in the process of enhancing the Central America Flash Flood Guidance (CAFFG) system to incorporate capability for assessing the potential for landslide occurrence in operations.

Database Template

Información Básica	Nombre de Reportero									
	Afiliación									
	Fecha de Visita									
	Fecha de Evento									
	Municipalidad									
	Ruta									
	KM Marcador									
Descripción del Deslizamiento	Coordenadas del Polígono Alrededor Deslizamiento Entero									
	Coordenadas del Polígono 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									
	N/A									

Como usar esto Base de Datos:
Hacer una copia de esta pagina para cada

Page 1

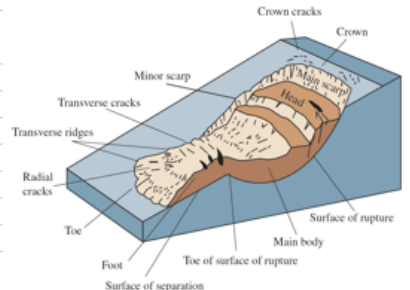


Figure 1. An idealized slump-earth flow showing commonly used nomenclature for labeling the parts of a landslide.

The landslide enhancement of the CAFFG is designed to allow adjustments by operational forecasters for more reliable real-time warnings. It is implemented in a generic form to allow implementation to other FFGs

AGU and Scientific American