



WEATHER CLIMATE WATER
TEMPS CLIMAT EAU

Introduction to the Global FFG System



WMO OMM

World Meteorological Organization

Organisation météorologique mondiale

Definition of the Problem



Flash Flood is:

- a flood of short duration with a relatively high peak discharge usually having less than 6 hours between the occurrence of the rainfall and the peak;
- short fuse, hard to predict events.

- Lack of flash flood warning capabilities and capacities of NHMSs;
- Lack of local expertise and regional cooperation;
- Ineffectiveness of riverine flood warning systems for flash floods;
- Flash floods cause annually an average of 5,000 deaths and inflict heavy economical losses worldwide.

Global Coverage



Flash Flood Guidance System with global coverage enhances early warning capabilities of the NMHSs, currently covers fifty two (52) countries and more than two billion people around the world saving lives and decreasing economic losses.

Objectives

The main objective of the Flash Flood Guidance System with global coverage is to:

- Enhance NMHSs capacity to issue flash flood warnings and alerts to mitigate the adverse impacts of hydrometeorological hazards, by:
 - Generating flash flood early warning products using state-of-the-art hydrometeorological forecasting models;
 - Providing extensive training to the hydrometeorological forecasters; and
 - Improving collaboration between NMHSs and Disaster Management Agencies (DMA);

Regional Components

Participating NMHSs are to:

- prepare and issue flash flood warnings and alerts to the public and national agencies including Disaster Management Agencies,
- provide historical and in-situ local data to the FFG system developer through the RC,
- participate in the Flash Flood Hydrometeorologist Training Programme (Steps 1-5), and
- conduct verification studies.



The Regional Centre is to:

- Provide FFGS forecast products and data to the participating countries,
- collaborate with WMO and its project partners to implement flash flood hydrometeorologist training programme,
- evaluate FFG products from the regional perspective and conduct verification study in collaboration with the participating NMHSs, and
- have good IT infrastructure for data exchange and internet connection.

Regional FFG Projects

The following regional Flash Flood Guidance (FFG) projects have been implemented or under implementation:

- **Central America FFG (CAFFG)** (Operational): Costa Rica (Regional Centre (RC), Belize, El Salvador, Guatemala, Honduras, Nicaragua, and Panama;
- **Southern Africa Region FFG (SARFFG)**: (Operational) Botswana, Lesotho, Malawi, Mozambique, Namibia, South Africa (RC), Swaziland, Zambia, and Zimbabwe;
- **Mekong River Commission FFG (MRCFFG)** (Operational): Cambodia (RC), Lao People's Democratic Republic, Thailand, and Viet Nam;
- **Black Sea and Middle East FFG (BSMEFFG)** (Operational): Armenia, Azerbaijan, Bulgaria, Georgia, Israel, Jordan, Lebanon, and Turkey (RC);
- **South East Europe FFG (SEEFFG)** (Operational): Albania, Bosnia-Herzegovina, Croatia, Moldova, Montenegro, Romania, Serbia, Slovenia, The Former Yugoslav Republic of Macedonia, and Turkey (RC);



Regional FFG Projects (Cont.)

- **South Asia FFG (SAsiaFFG)** (under implementation): Afghanistan, Bangladesh, Bhutan, India (RC), Nepal, Pakistan (RC), and Sri Lanka;
- **Central Asia Region FFG (CARFFG)** (under implementation): Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan;
- **South America Pilot FFG** (Completed): Zarumilla River Basin (Peru and Ecuador);
- **Haiti and Dominican Republic FFG (HDRFFG)** (being upgraded): Dominican Republic and Haiti; and
- **Southeastern Asia-Oceania FFG (SAOFFG)** (under implementation): Brunei Darussalam, Indonesia, Malaysia, Papua New Guinea, Philippines, Singapore, and Timor-Leste.

FFGS User Console

CAFFG - Central America Flash Flood Guidance System

Current Date: 2017-04-23 21:51 UTC Nav Date: 2017-04-23 21:00 UTC

Year: 2017 Month: 04 Day: 23 Hour: 21 REGION: REGIONAL OPTION: MEDIAN

Products, Date and Time Selection Toolbar

Time Interval

DT	MWGHE Precipitation	GHE Precipitation	Gauge MAP	Merged MAP	ASM	FFG	IFFI	PFPT	WRF Forecast	WRF FMAP	WRF FFPT
1-h	Image Unavailable										
3-h	Image Unavailable										
6-h	Image Unavailable										
12-h	Image Unavailable										

FFGS Products

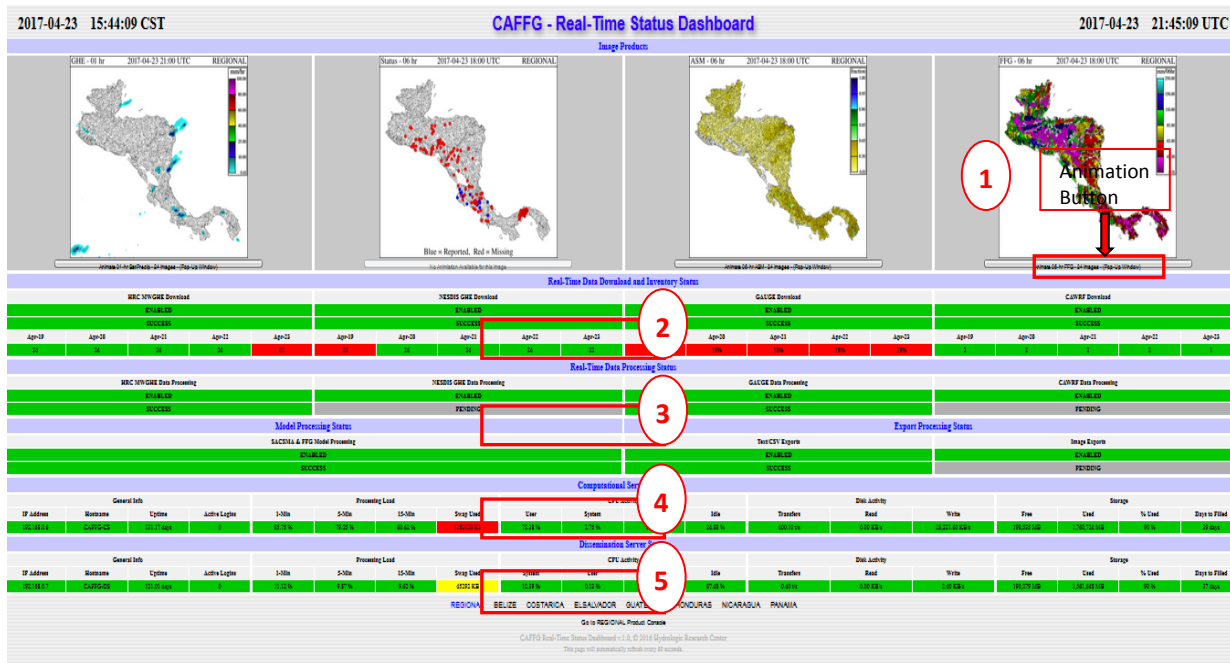
Composite Product: [CSV](#) [CSVZ](#) SFTF data transfer (requires SFTF Client): [EXPORTS REGIONAL 20170423](#)

Surfmet Gauge Observations at 2017-04-23 21:00 UTC

Station Identifier	Station Name	Altitude (meters)	Average Temperature (C)	Region	Latitude	Longitude	Elevation	Enable Precipitation Flag	Enable Temperature Flag
28971	Ugala	0.00	19.89	COSTA RICA	10.97	-82.07	00	Enabled	Disabled
28972	San Carlos La Terrena San Carlos	0.00	19.47	COSTA RICA	10.47	-84.02	330	Enabled	Disabled
29122	San Jose Pacific	0.00	19.28	COSTA RICA	10.28	-83.83	12	Enabled	Disabled
29123	Pirras	0.00	19.89	COSTA RICA	9.89	-84.83	10	Enabled	Disabled
29124	San Jose CC	0.00	19.81	COSTA RICA	10.81	-83.22	212	Enabled	Disabled

Surface Met. Observations

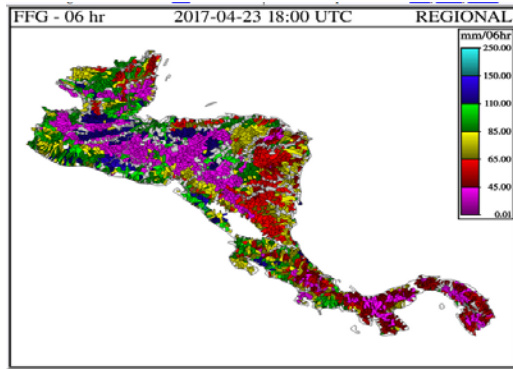
FFGS Dashboard



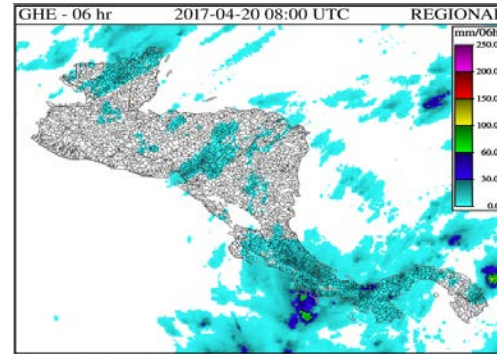
Dashboard is designed to monitor server processes:

- (1) Quick-look;
- (2) Real-Time data downloads and inventory status;
- (3) Real-Time Data processing status;
- (4) Computational server status; and
- (5) Dissemination server status.

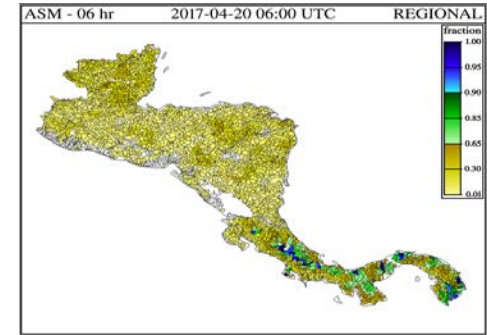
FFGS Products



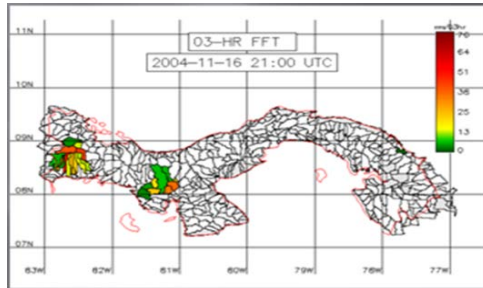
- Flash Flood Guidance for Central America FFGS.



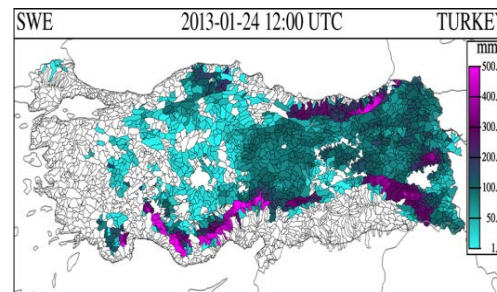
- GHE Satellite precipitation for Central America FFGS.



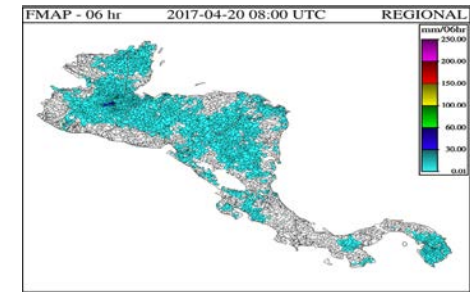
- Average Soil Moisture for Central America FFGS.



- Flash Flood Threat for Central America FFGS

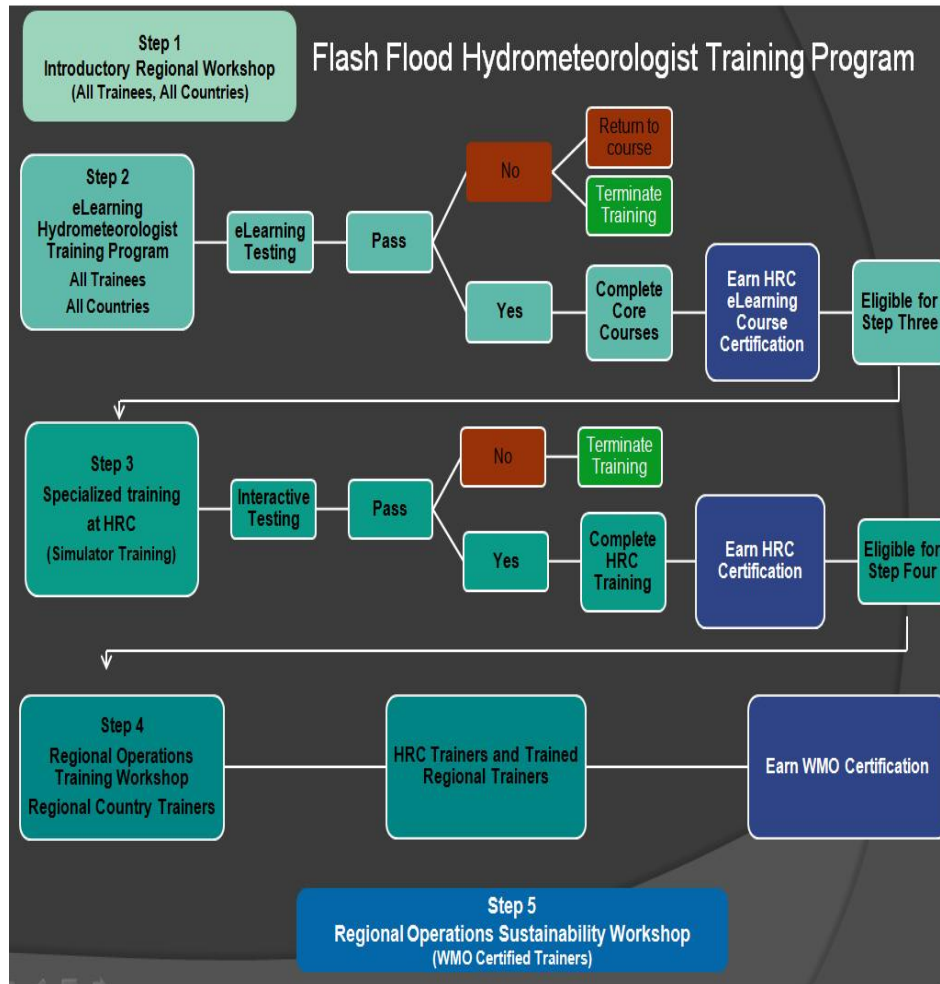


- Snow Water Equivalent (SWE) for Turkey.



- Forecast Mean Areal Precipitation for Central America FFGS.

Flash Flood Hydrometeorologist Training Programme



Training is an integral part of regional FFG Systems and consists of five steps:

Step-1: Introductory in-country workshops and meetings such as Steering Committee Meetings;

Step-2: On line eLearning comprises elements of meteorology, hydrology, flash flood guidance, GIS, and remote sensing;

Step-3: Advanced operations and interactive simulator training at the Hydrologic Research Center (HRC), USA;

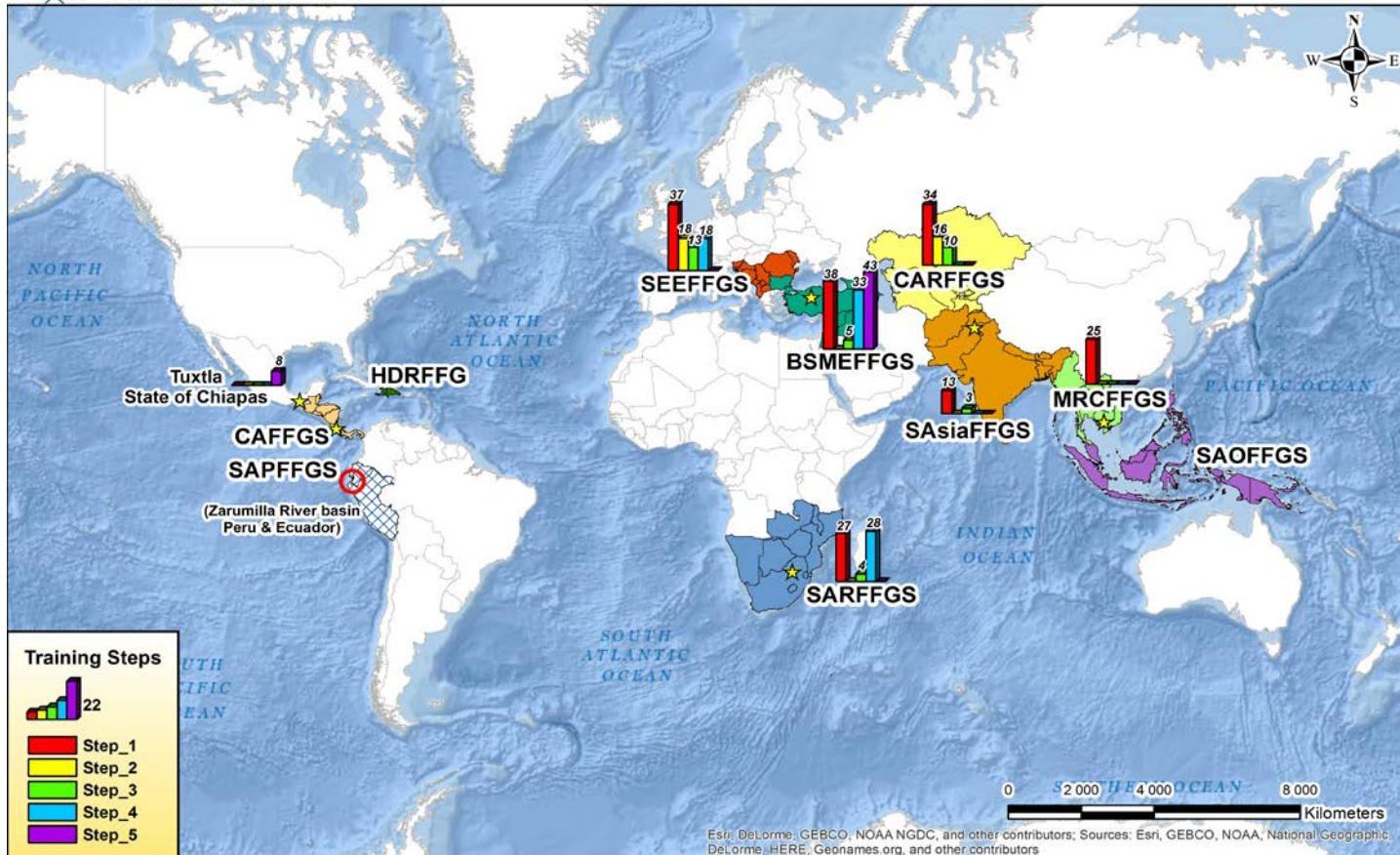
Step-4: Regional operations training workshop toward qualification of WMO flash flood trainer certificate; and

Step-5: Regional operation sustainability workshop provided by the WMO certified trainer.

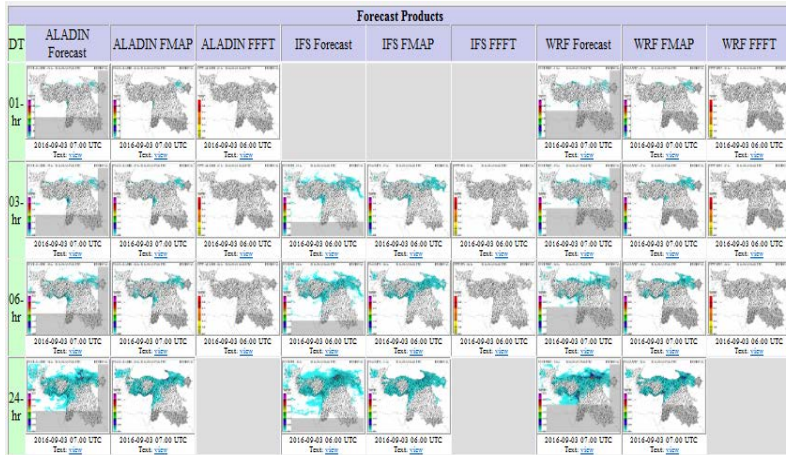
Flash Flood Hydrometeorologist Training Programme-Training Statistics



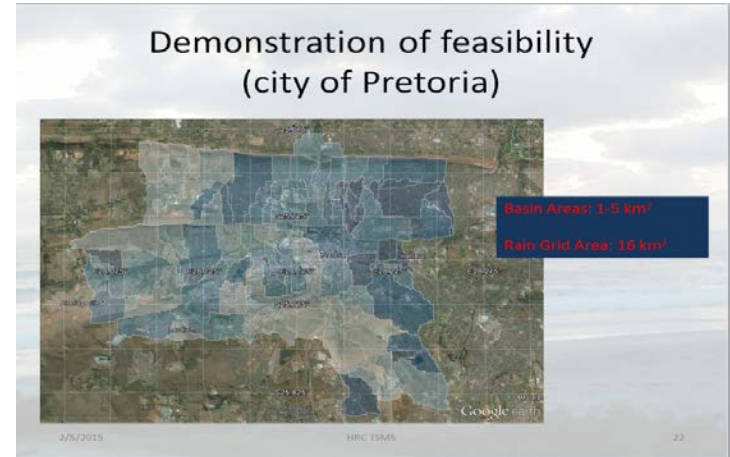
FLASH FLOOD HYDROMETEOROLOGIST TRAINING



Advances

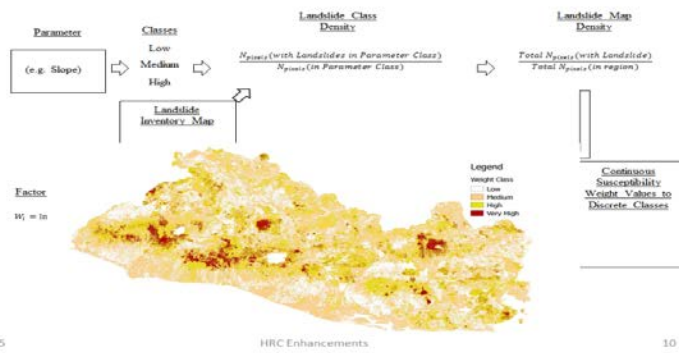


Multi-NWP Model ingestion

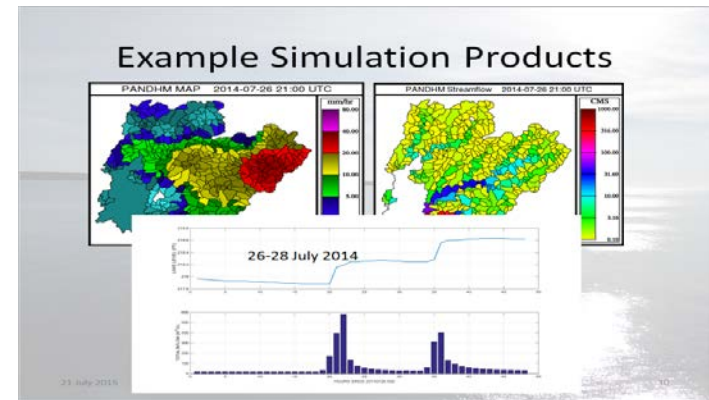


Urban Flash Flood Early Warning System

C.1 Susceptibility Mapping

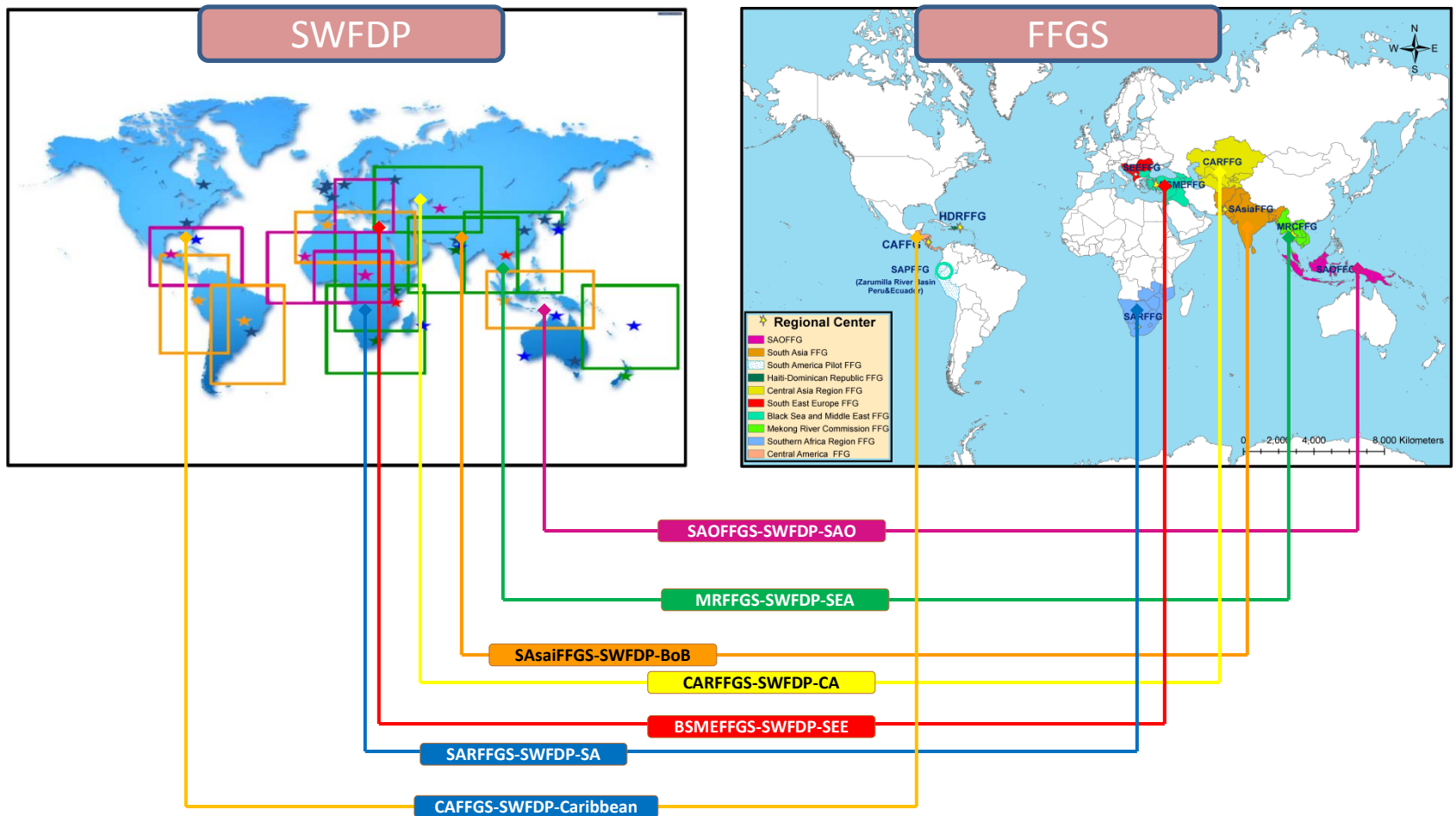


Landslide Susceptibility Mapping



Expandable and Scalable Riverine Routing

Linkages between SWFDP and regional FFG Systems



Thank you

Paul Pilon

ppilon@wmo.int

Claudio Caponi

ccaponi@wmo.int

Ayhan Sayin

asayin@wmo.int



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