WEATHER CLIMATE WATER
TEMPS CLIMAT EAU

First Steering Committee Meeting of the Mekong River Commission Flash Flood Guidance (MRCFFG) System

Introduction to the Global FFG System

WMO OMM

World Meteorological Organization
Organisation météorologique mondiale

Definition of the Problem

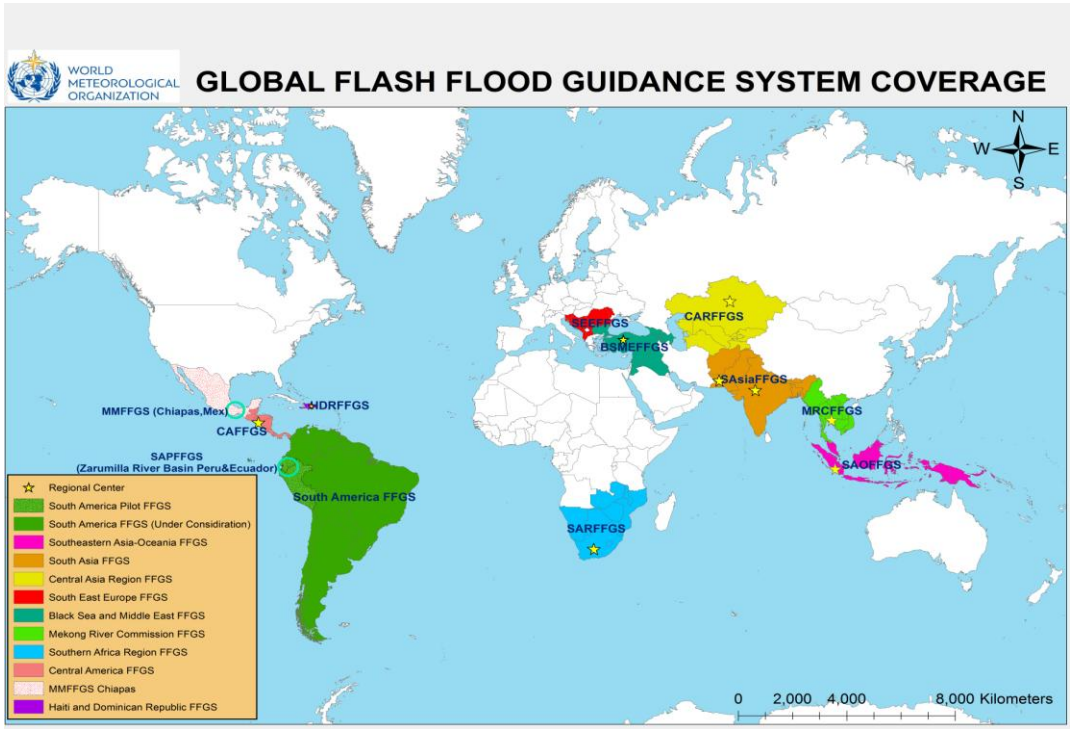
Flash Flood is:

- 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; and
- causing annually an average of 5,000 deaths and inflict heavy economical losses worldwide.

Needs are:

- lack of flash flood forecasting tools;
- lack of flash flood warning capabilities and capacities of NHMSs;
- lack of local expertise and regional cooperation; and
- ineffectiveness of riverine flood warning systems for flash floods.

Definition of the Problem



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**.**

The WMO Commission for Hydrology (CHy) jointly with the WMO Commission for Basic Systems (CBS) and in collaboration with the US National Weather Service, Hydrologic Research Center (HRC), and USAID/OFDA have developed the concept of the Flash Flood Guidance System (FFGS) with global coverage. The concept has been endorsed by the Fifteenth WMO Congress in 2007 and has been implemented through a series of regional projects with funding from USAID.

Regional FFG Projects

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

- **Central America FFG** (**CAFFG**) (Operacional): 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, 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** (under implementation): 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.

Objectives

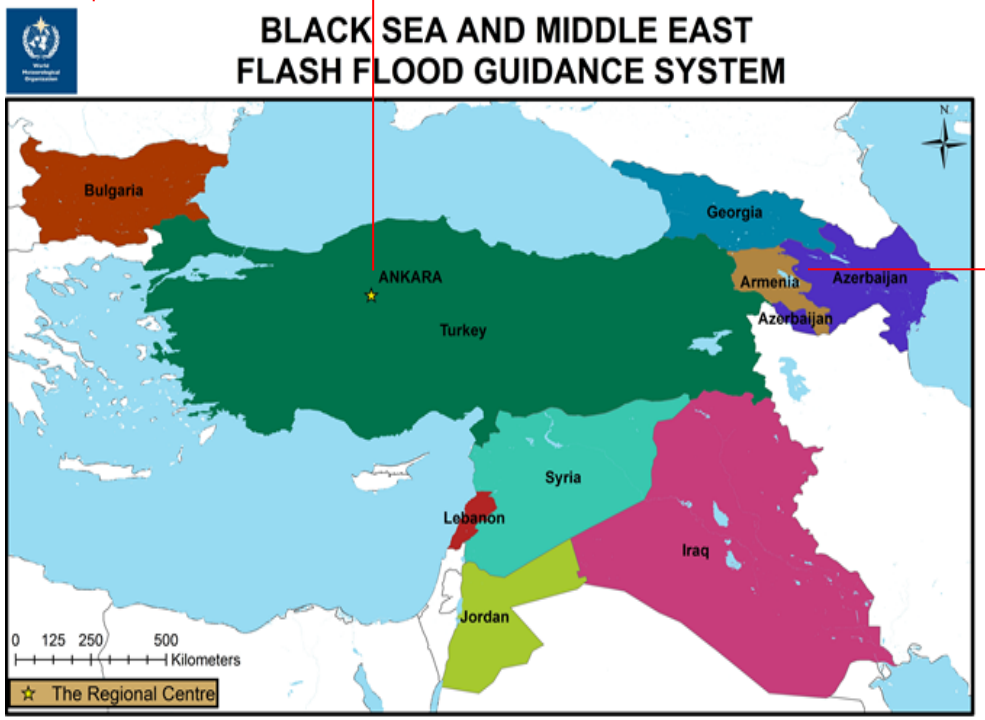
The main objective of the Flash Flood Guidance System with global coverage is to:

- enhance NMHSs capacities to issue timely and accurate flash flood warnings to mitigate the adverse impacts of hydrometeorological hazards, by:
  - generating flash flood early warning products using state-of-the-art hydrometerological forecasting models;
  - providing extensive training to the hydrometeorological forecasters; and
  - improving collaboration between NMHSs and Disaster Management Agencies (DMA);

Regional Components

The Regional Centre is to:

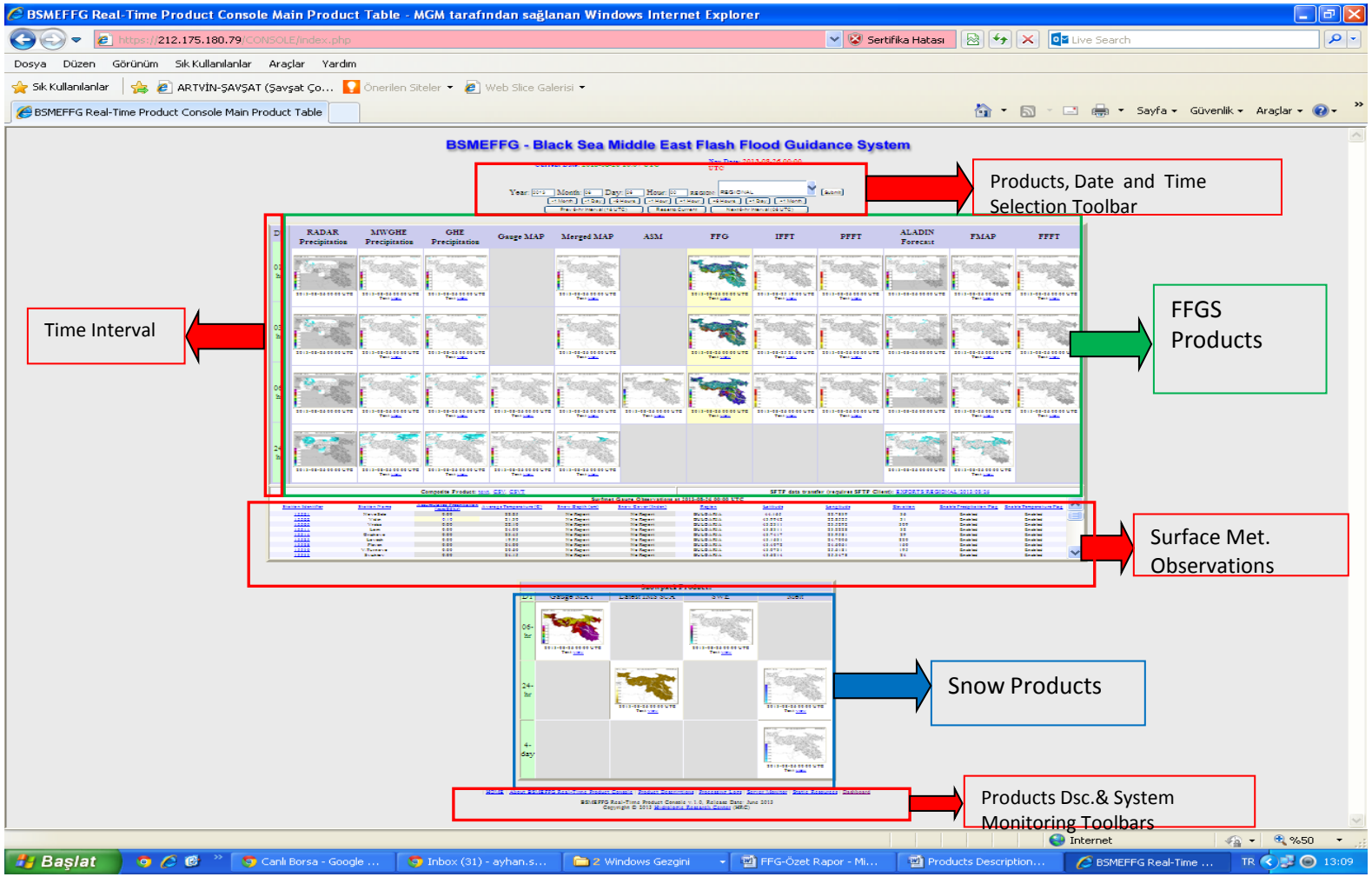
- host FFGS servers to generate FFGS products and provide them to the participating NMHSs through internet,
- collaborate with WMO and its project partners to implement flash flood hydrometeorologist training programme,
- evaluate FFG products from the regional perspective and conduct verification study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



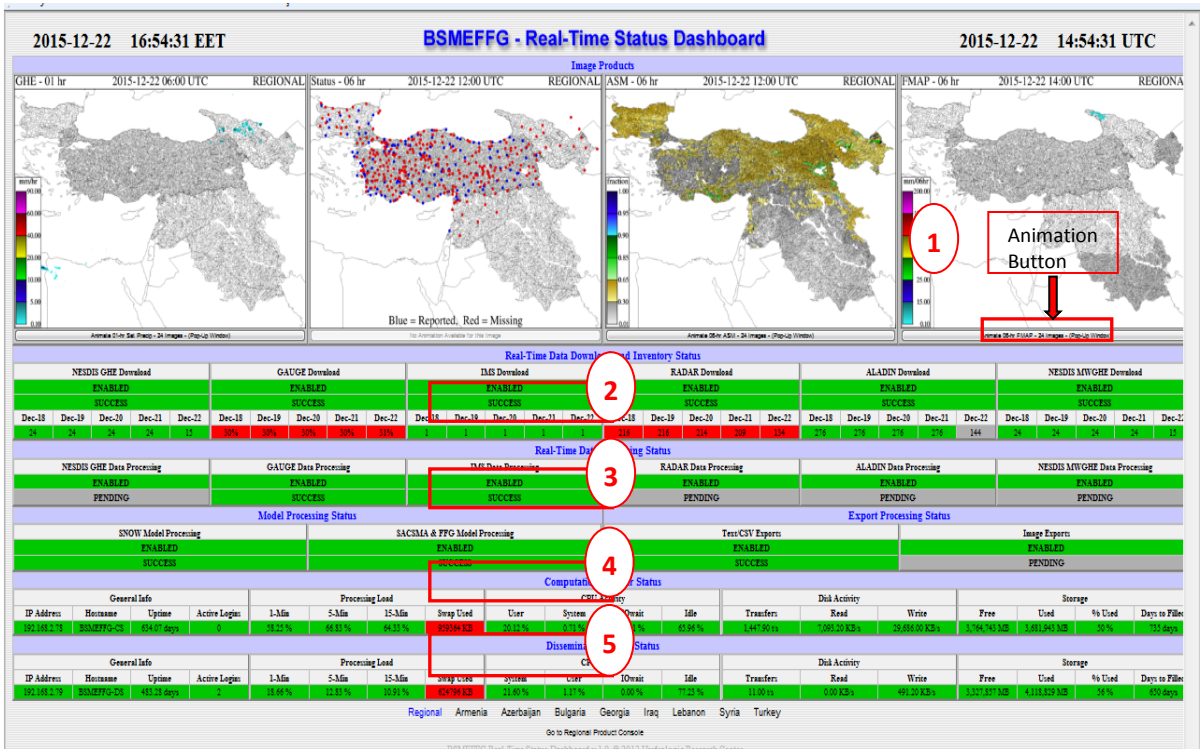
Participating NMHSs are to:

- 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.

FFGS Forecaster Console



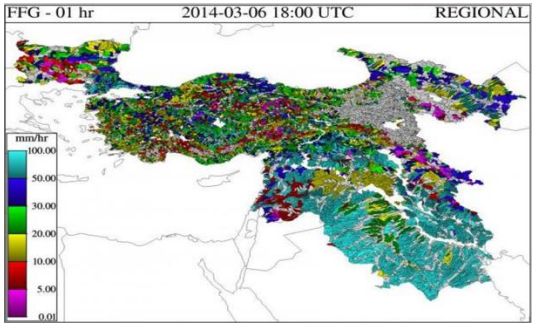
FFGS Dashboard



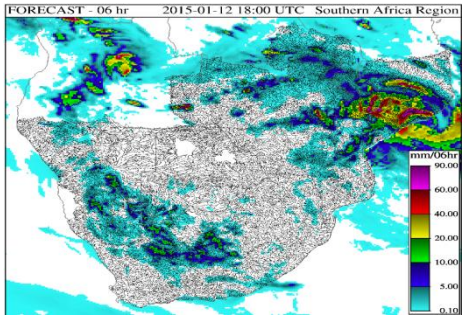
Dashboard is designed to monitor server processes:

- (**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.

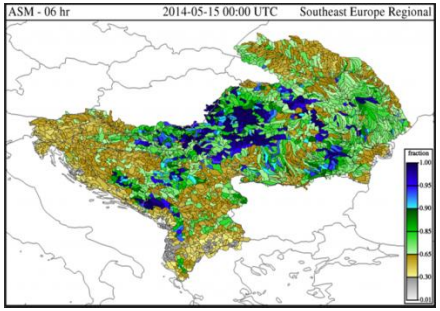
FFGS Products



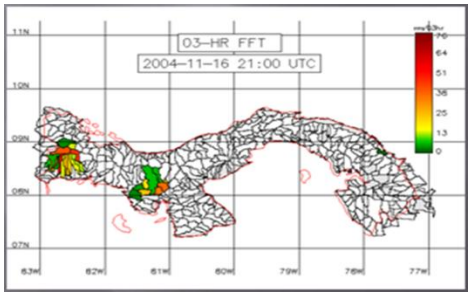
- Flash Flood Guidance for Black Sea and Middle East FFGS.



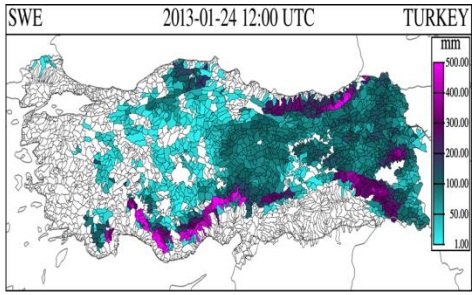
- GHE Satellite precipitation for Southern Africa Region FFGS.



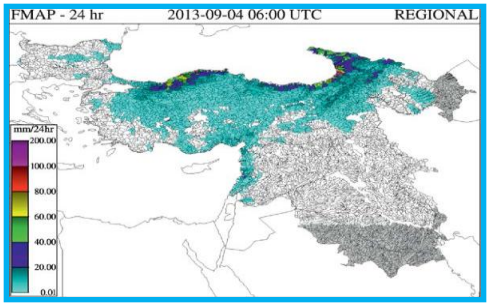
- Average Soil Moisture for South East Europe FFGS.



- Flash Flood Threat for Central America FFGS

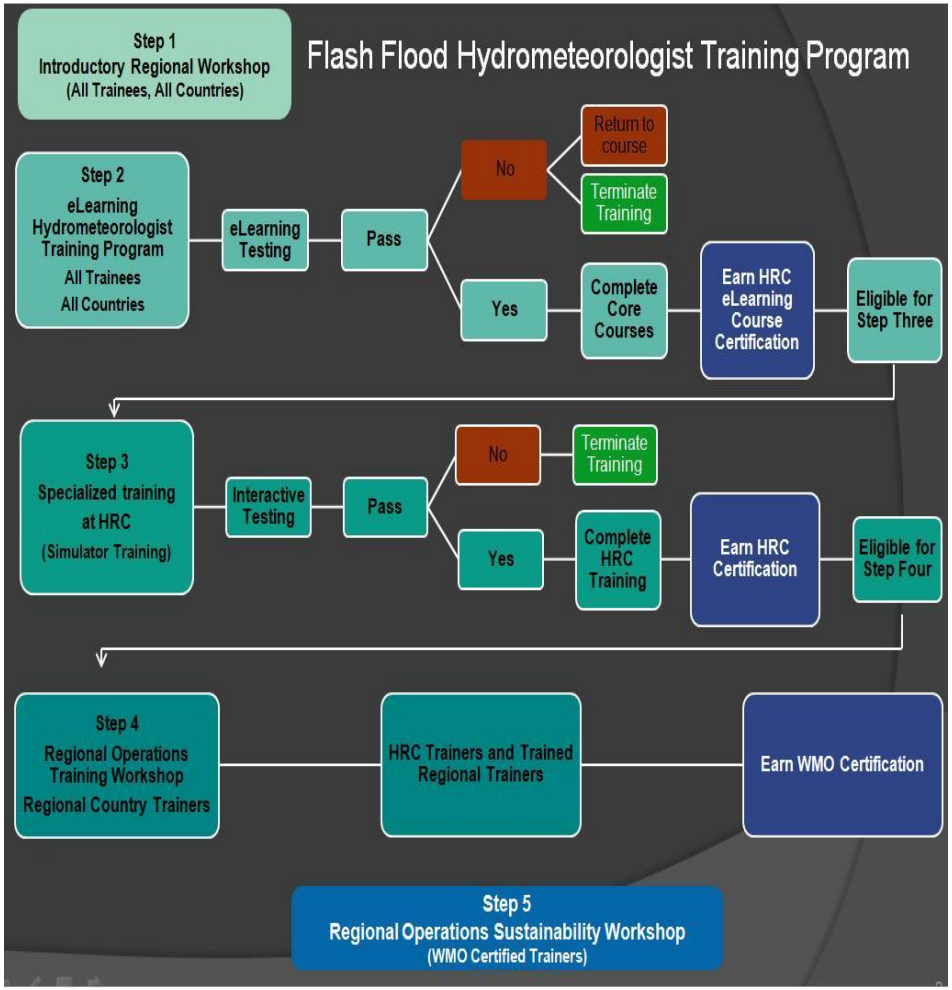


- Snow Water Equivalent (SWE) for Turkey.



- Forecast Mean Areal Precipitation for Black Sea and Middle East 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;

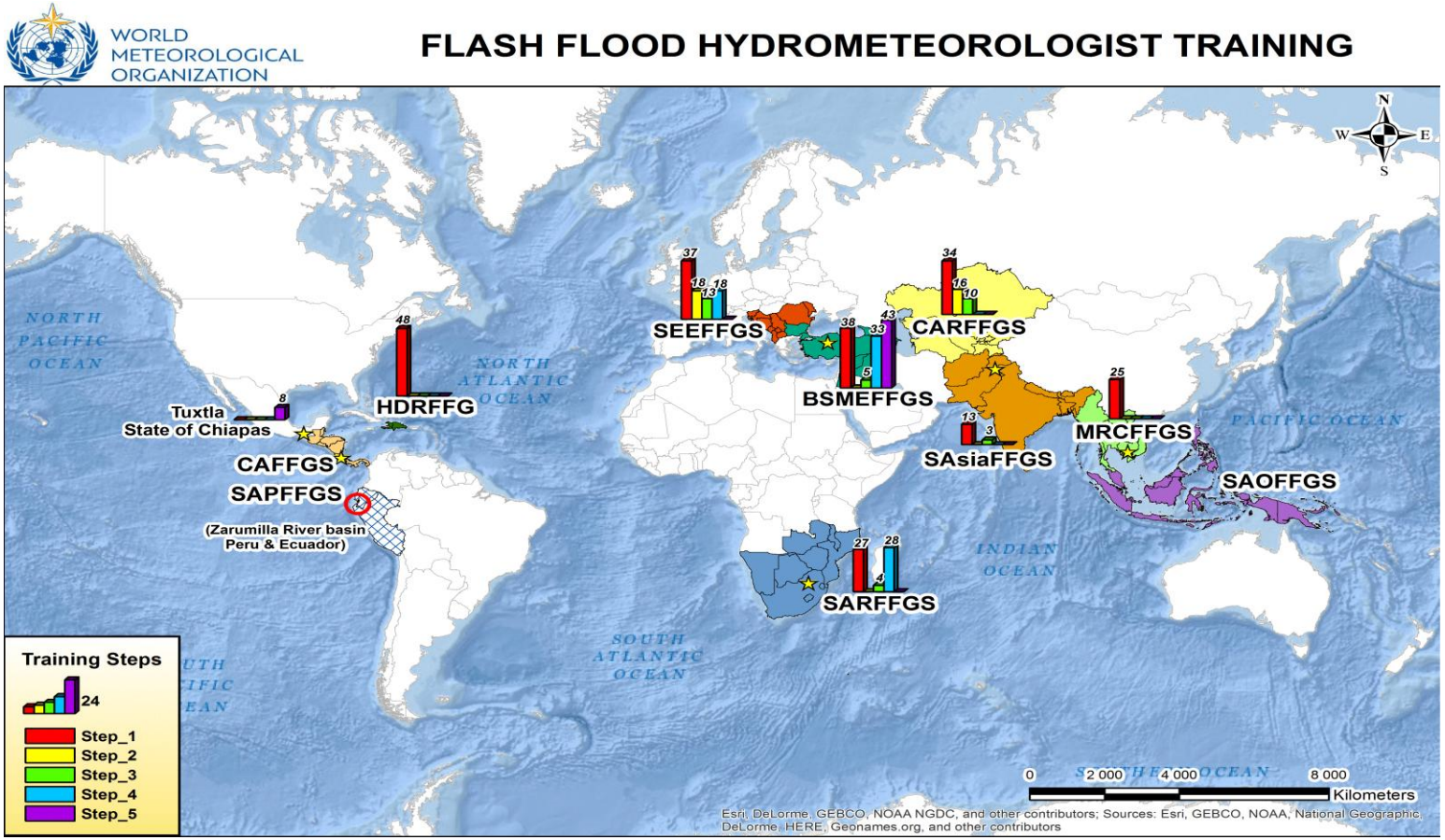
Step-2: On line eLearning comprises elements of meteorology, hydrology, flash flood guidance, GIS, and remote sensing;

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

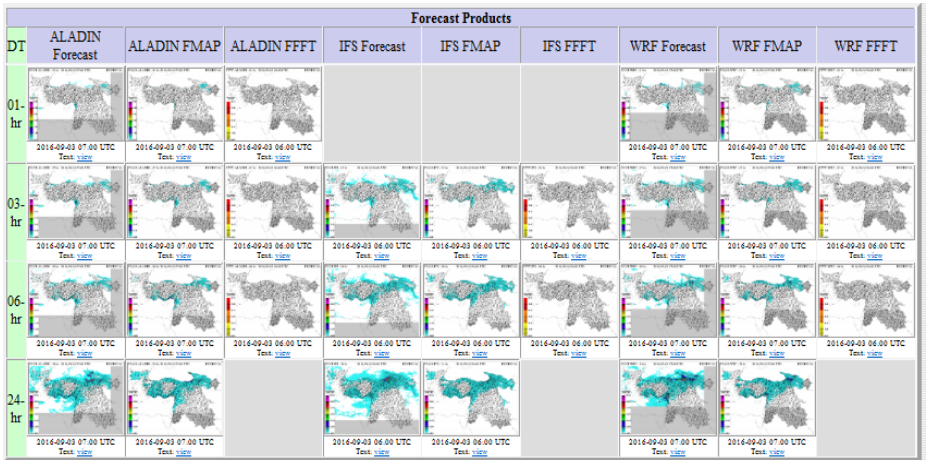
Step-4: Regional operations training workshop toward qualification of WMO flash flood trainer certificate; and

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

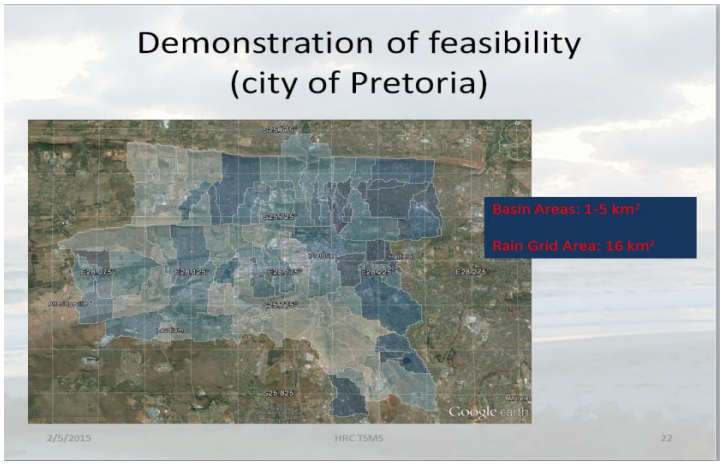
Flash Flood Hydrometeorologist Training Programme-Training Statistics



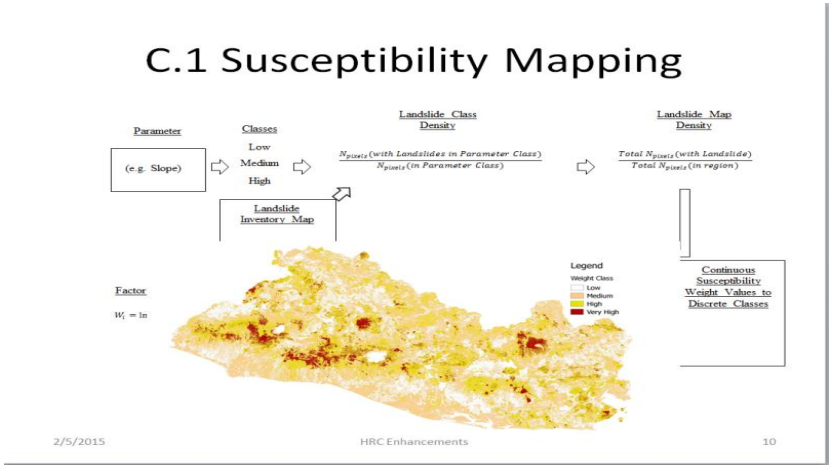
Advances



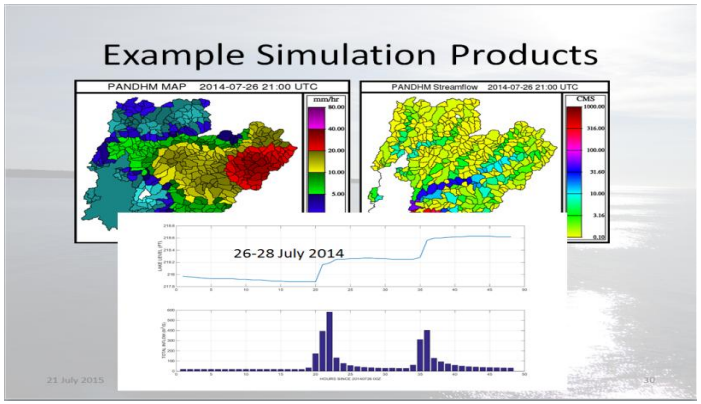
Multi-NWP Model ingestion



Urban Flash Flood Early Warning System

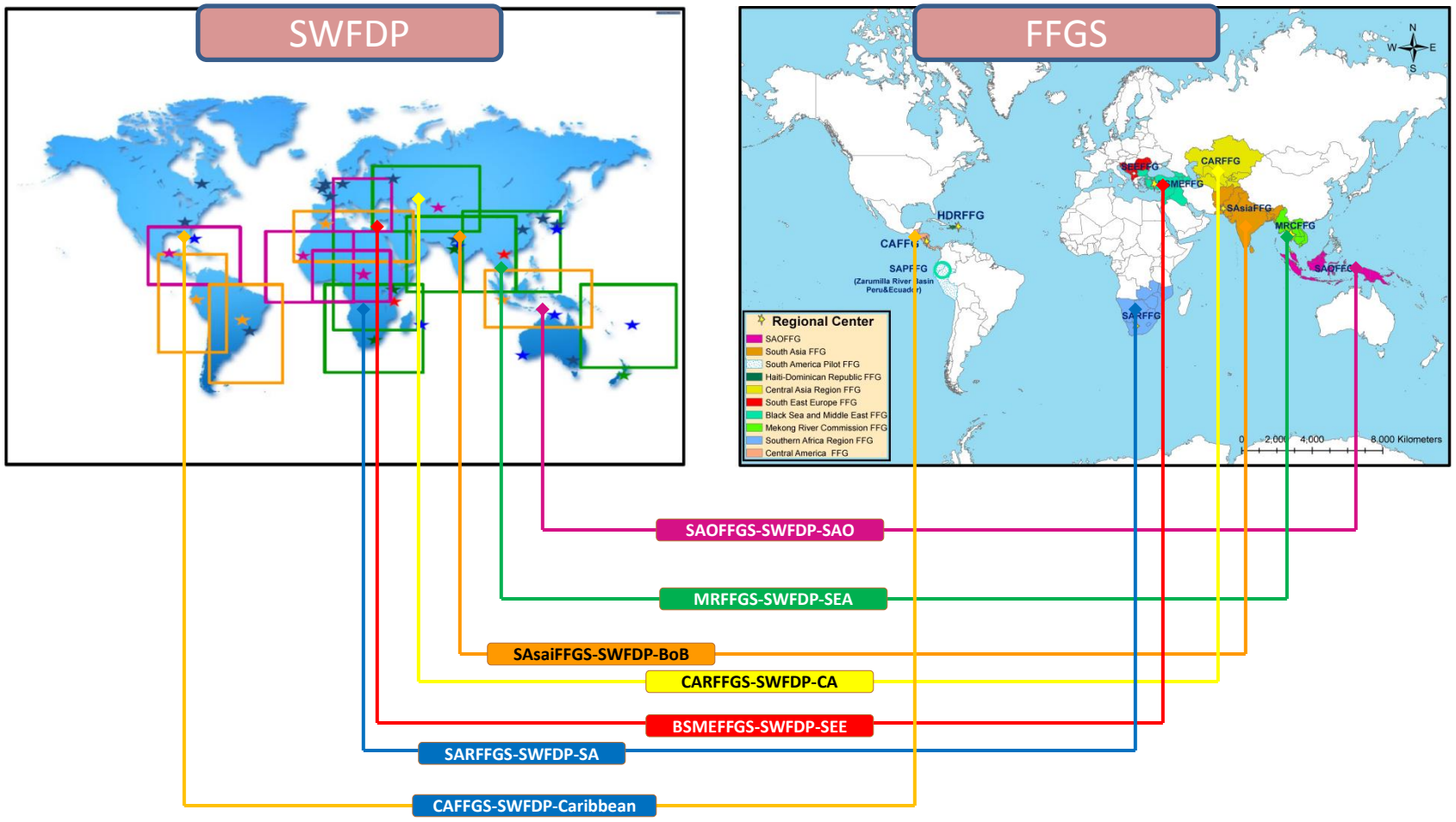


Landslide Susceptibility Mapping



Expandable and Scalable Riverine Routing

Linkages between SWFDP and regional FFG Systems



Thank you

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