Introduction to the Global FFG System
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.
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.

First Steering Committee Meeting of the CAFFG System 3-5 May 2017, San Jose, Costa Rica
FFGS User Console

First Steering Committee Meeting of the CAFFG System  3-5 May 2017, San Jose, Costa Rica
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.
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

Training Steps

- Step_1
- Step_2
- Step_3
- Step_4
- Step_5
- Step_6

First Steering Committee Meeting of the CAFFG System 3-5 May 2017, San Jose, Costa Rica
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

First Steering Committee Meeting of the CAFFG System 3-5 May 2017, San Jose, Costa Rica
Thank you

Paul Pilon
ppilon@wmo.int

Claudio Caponi
ccaponi@wmo.int

Ayhan Sayin
asayin@wmo.int