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Ministerio de Medio Ambiente  
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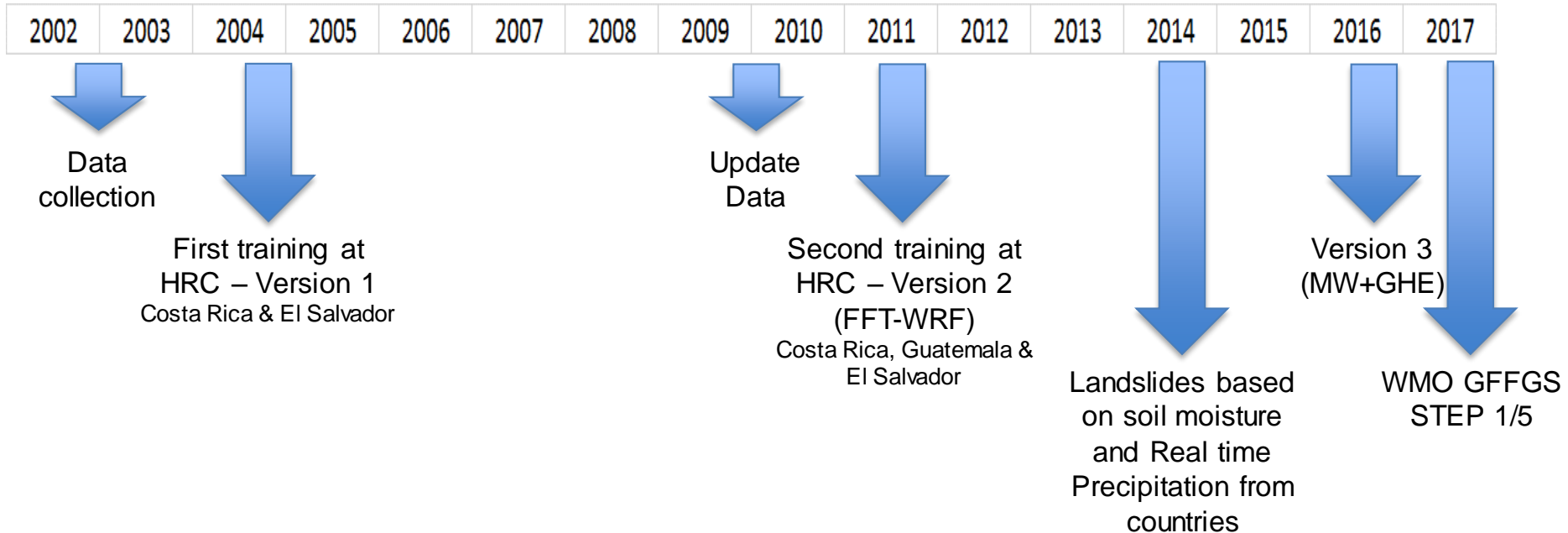


Instituto Meteorológico Nacional de Costa Rica

# Implementation of the FFGS in Central America (CAFFG)

Roberto Cerón  
December 2017

# Timeline



## Future improvements:

- Urban floods
- Radars
- NWP (WRFs)
- Rivering forecast

# CAFFG Regional Center May 2017 Agreement First Steering Committee Meeting San José, Costa Rica



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WORLD  
METEOROLOGICAL  
ORGANIZATION



Instituto Meteorológico Nacional  
Fundado en 1888



MINISTERIO DE MEDIO AMBIENTE  
Y RECURSOS NATURALES  
GOBIERNO DE  
EL SALVADOR  
UNÁMONOS PARA CRECER

***ACUERDO DE COOPERACIÓN***

***ENTRE***

***INSTITUTO METEOROLÓGICO NACIONAL DE COSTA  
RICA (IMN), OBSERVATORIO AMBIENTAL DEL  
MINISTERIO DE MEDIO AMBIENTE Y RECURSOS  
NATURALES DE EL SALVADOR (MARN)***

***Y***

***LA ORGANIZACIÓN METEOROLÓGICA MUNDIAL  
(OMM)***

# Instituto Meteorológico Nacional y Observatorio Ambiental del MARN



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# Operational Concepts of CAFFG

The objective of the CAFFG is to provide guidance products, in real time, related to small-scale flash floods in Central America.

To achieve this, three servers are used: two installed in the National Meteorological Institute (IMN) in Costa Rica (CPS and CDS) and a third in the Environmental Observatory of MARN in El Salvador (CAWRF).

- Processing server CAFFG (CAFFCPS)
  - Collect and process data in real time using various models to produce the FFG.
- Dissemination server of CAFFG (CAFFGCDS).
  - It provides secure access via internet to CAFFG products for all member countries.
- Dissemination server WRF (CAWRF)
  - Generates the outputs of the WRF for the region.

# Processing server CAFFG (CPS)

## Pre-processing

- Real-time data collection various sources
- Save the download files in real time and data values

## Processing

- Prepare the intake products of the model
- Run the models:
  - Adjustment of satellite precipitation
  - Interpolation of surface data (weather stations)
  - Generation of Areal Mean Precipitation (MAP) and Mean Areal Temperature (MAT) maps
  - Soil Moisture and FFG
- Save the outputs of the model (ASM, FFG y WRF)

## Pos-processing

- Generate graphical outputs of data and model outputs
- Elaboration of the products for the website
- Save and disseminate images, data and reports for the web



# Dissemination server CAFFG (CDS)

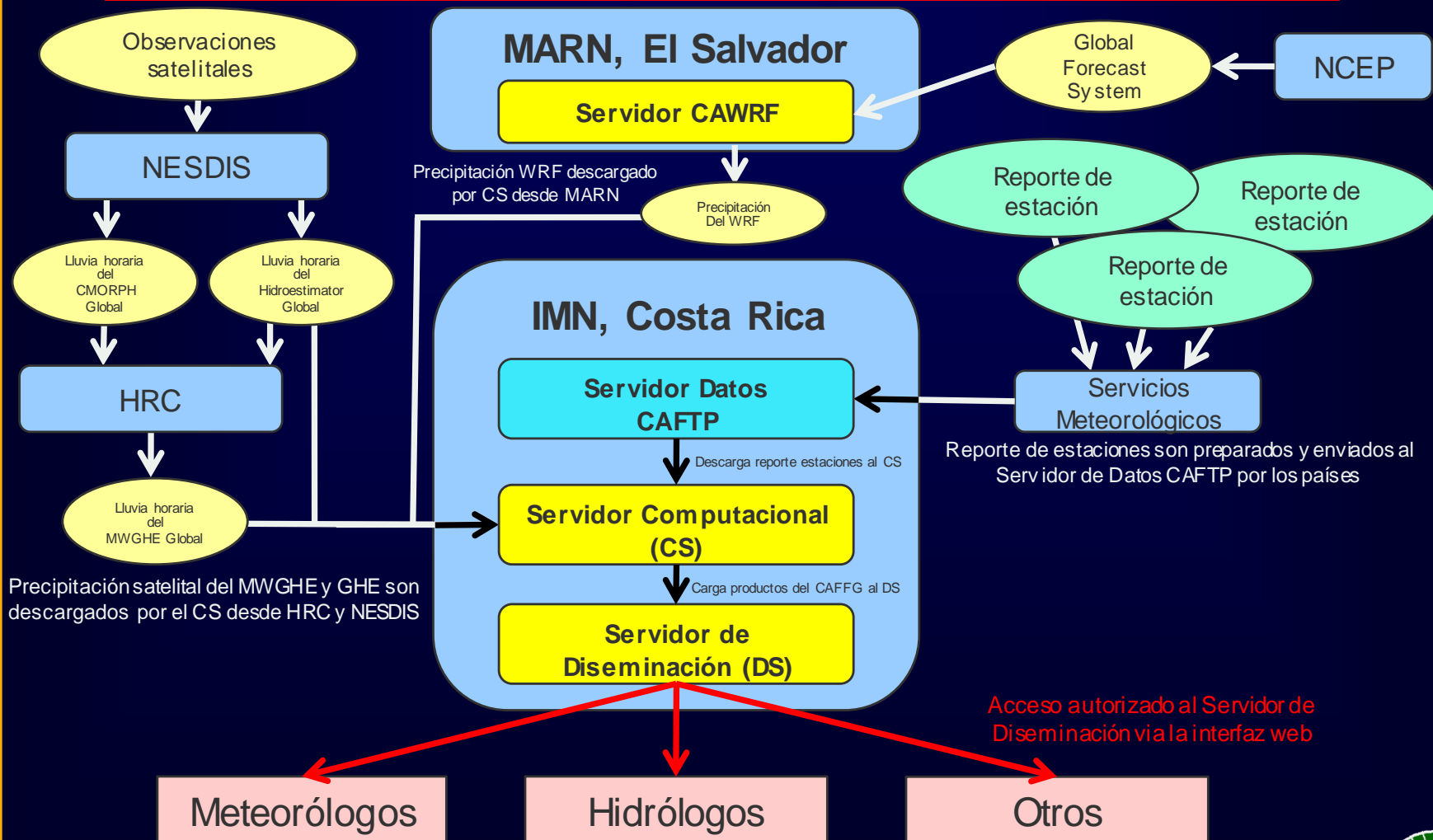
- Login to the CAFFG web interface
  - Restricted access that requires ID and password
  
- Access the files with the data via SCP
  
- Server adress
  - <https://cds.imn.ac.cr>
  - <sftp://cds.imn.ac.cr>



# Goals of the CAFFG processing operations

- Providing data acquisition automatically, input, processing, export modeling and product dissemination
- Establish strategic data acquisition programs to optimize the data available during CAFFG modeling
- Establish strategic processing programs to issue the availability of the FFG results using sustainable processes.

# Diagrama de flujo de ingreso de datos al CAFFG



# CAFFG - Central America Flash Flood Guidance System

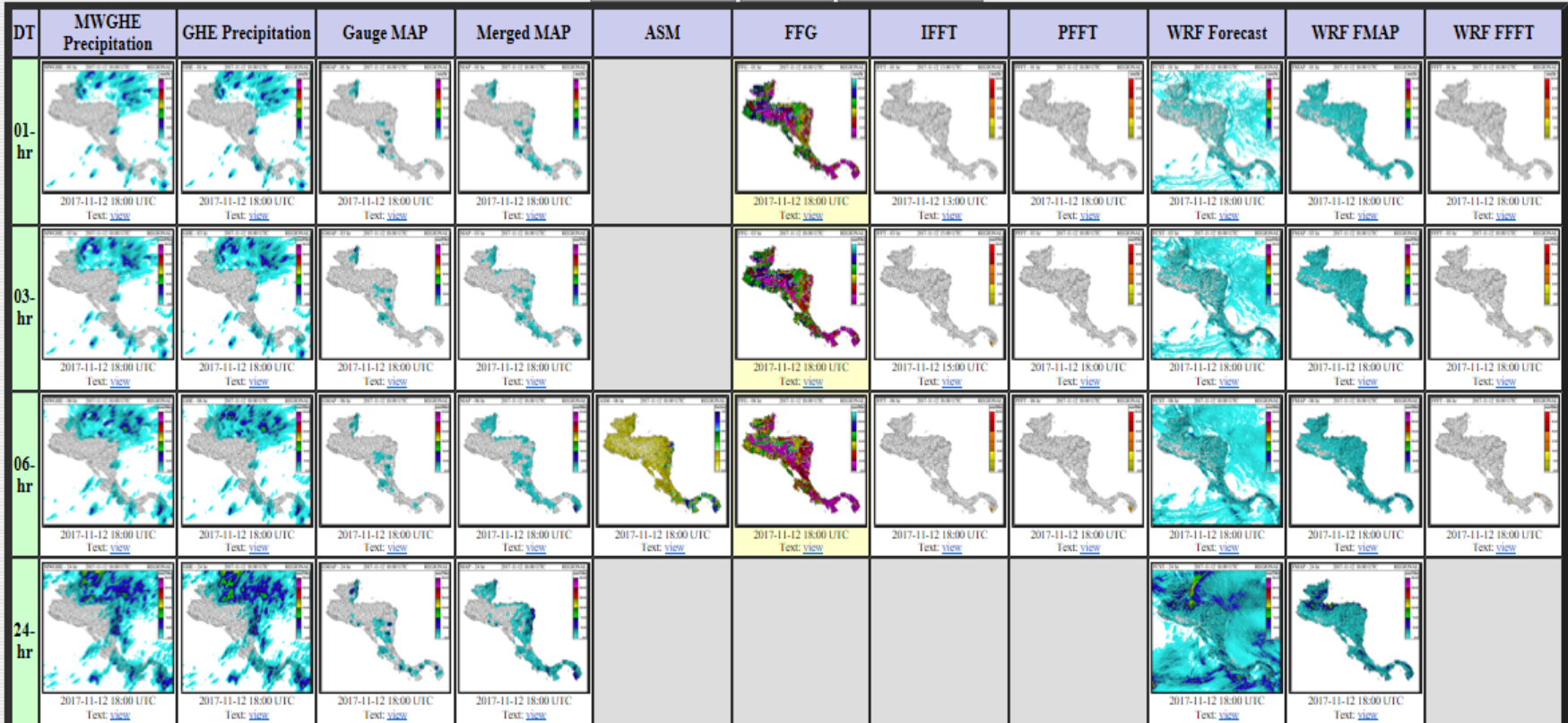
Current Date: 2017-11-13 01:46 UTC

Nav Date: 2017-11-12 18:00 UTC

Year: 2017 Month: 11 Day: 12 Hour: 18 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 (12 UTC) Reset to Current Next 6-hr Interval (00 UTC)



Composite Product: [text](#), [CSV](#), [CSV2](#)

SFTP data transfer (requires SFTP Client): [EXPORTS\\_REGIONAL/2017/11/12](#)

### Surfnet Gauge Observations at 2017-11-12 18:00 UTC

Station Identifier	Station Name	Accumulated Precipitation (mm/1hr)	Average Temperature (C)	Region	Latitude	Longitude	Elevation	Enable Precipitation Flag	Enable Temperature Flag
10	S Marcos Lempa	0.00	No Report	ELSALVADOR	13.4255	-88.6969	8	Enabled	Disabled
102007	CAISAN CENTRO	0.00	No Report	PANAMA	8.7631	-82.7933	940	Enabled	Disabled
102040	CERRO PUNTA	0.00	No Report	PANAMA	8.8375	-82.5881	999.99	Enabled	Disabled



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# Operational management of the system

- Keep network connectivity and data availability
- Monitors operational processes
- Quality control of data and products :
  - Data entry and availability
  - Confirmation and review of the model processes
  - Quality of the output data and a relative degree of certainty
- HRC support and update. Administration (CR+ES)



# Equipment and configurations

CAFFG



2004

CAWRP



2016



2011

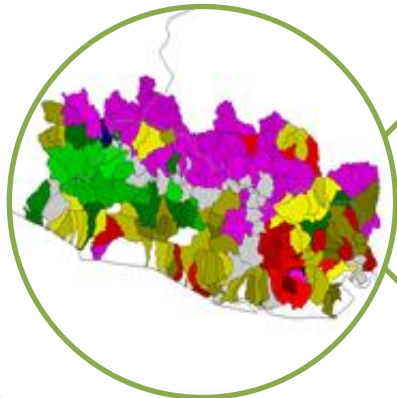
# Estudio de caso de inundación repentina con resultados y análisis cualitativos obtenidos de las evaluaciones diarias del CAFFG.

- Se realizó una comparación entre:



Registros Históricos de inundaciones del DOA

- Sitio de desbordamientos



Valores de FFG (Guía de crecidas repentinas)

- Cuencas del sistema (CAFFG)



# 11 de octubre de 2011

Para este día el sistema acertó las cuencas en las que se registró crecidas, los valores de FFG fueron menores a los registros de lluvia de las estaciones en la zona de banca llena.

CUENCA	SITIO	ESTACION	MAP	FFG 03	EVALUACION
2008201813	Las Delicias	91.6912	157.28	69.98	<b>ACIERTO</b>
2008201807	El Chino	113.75	253.65	33.32	<b>ACIERTO</b>
2008201843	Masahuat	37.9504	25.23	47.36	<b>ACIERTO</b>
2008201855	El Marillo	113.92	10.6	38.63	<b>ACIERTO</b>

a = Hits  
 b = False alarms  
 c = Misses  
 d = Correct negatives

		EVENT OBSERVED		Total
		Yes	No	
EVENT FORECASTED	Yes	a	b	a + b
	No	c	d	c + d
Total		a + c	b + d	a + b + c + d = n

Next Step verification:  
Contingency tables









Córdoba  
El Salvador

  
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El Salvador

  
**Paola Orellana**  
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**Juan**



  
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**Gracias**  
**Thank you**  
**Merci**