



The Republic of Turkey

The Ministry of Forestry and Water Affairs



# SEEFFG System Operational Concept

Presented by

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Follow Up Operations Workshop on South East Europe  
Flash Flood Guidance (SEEFFG) System,  
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# Outline



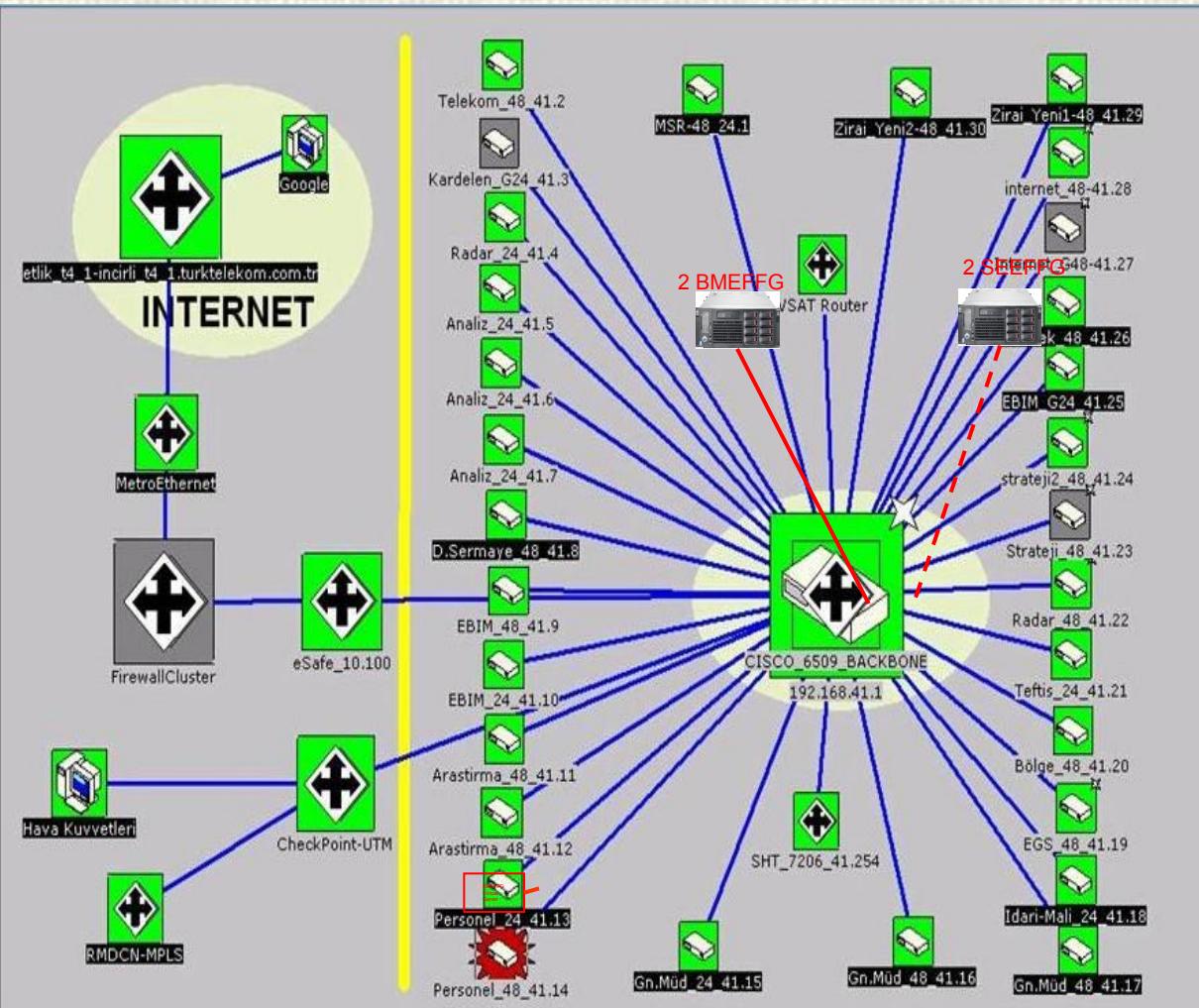
- Introduction
- Network Topology of TSMS
- BSMEFFGS & SEEFFGS Server Configuration
- Accessing to SEEFFG User Interface Console
- Accessing to SEEFFG ftp servers at TSMS
- Operational System Maintenance
- SEEFFGS Operational Concept
  - Computational Server
  - Dissemination Server of BSMEFFG General Data Flow
  - Status of RC Operations to monitor SEEFFGS

## Introduction

- The goal of the system computational component design is to produce estimates of impending FF threat for small basins in a region that involves several countries.
- Here, threat is defined as the positive difference between predicted rainfall and the amount of rainfall that is just enough to cause bankfull flows at the outlet of the draining streams of small basins (FFG).
- To compute FFG, it is necessary to estimate the soil water deficit for each of basins and the storage in the channel network up to the bankfull flows. When these two storages are filled for a small basin under continuing rain; then there is high potential for FF development. (Carpenter,1999)



# Network Topology of TSMS



It includes:

- CISCO Backbone,
- 31 Edge Switch,
- 20 Servers including BSMEFFGS and SEEFFGS servers

# BSMEFFGS & SEEFFGS Server Configuration

<b>Brand</b>	HP Proliant DL380
<b>CPU</b>	Intel Xenon i7 E5-2620
<b>Processor clock speed</b>	2.0 GHz
<b>CPU cores</b>	6
<b>Hard disk capacity</b>	7.5 TB
<b>RAM</b>	32 GB(2x16GB Registered DIMMs, 2133 MHz)
<b>Operating system</b>	LINUX, Centos release 6.4
<b>GPU</b>	Matrox MGS G200EH graphic card support

BSMEFFGS and SEEFFGS servers have the same configurations. Each system has 2 servers named Computation Server and Dissemination Server.



# Accessing to SEEFFG User Interface Console

<https://seeffg.hrc-lab.org/CONSOLE/?region=0>

\_HRC\_AnkaraServerBS A\_HRC\_AnkaraServerSE AAA\_Google AAA\_Google Maps AAA\_GoogleTranslate AAA\_Intranet AAA\_sozluk\_ing AAA\_Yeminli Sözlük AAA\_Zargan

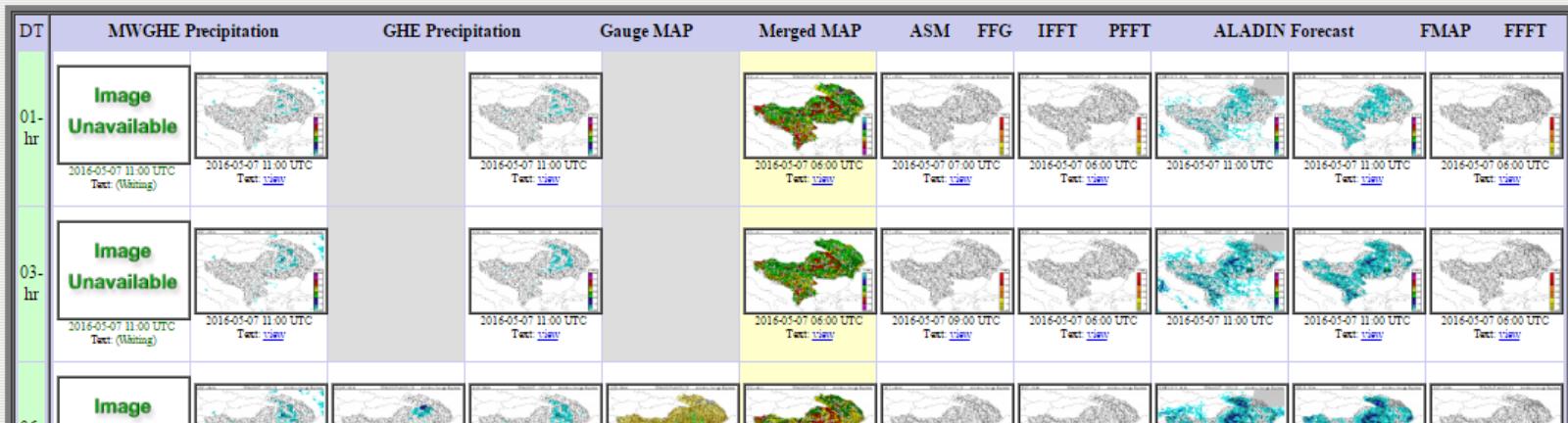
## SEEFFG - Southeast Europe Flash Flood Guidance System

Current Date: 2016-05-07 11:36 UTC Nav Date: 2016-05-07 11:00 UTC

Year: 2016 Month: 05 Day: 07 Hour: 11 REGION: Southeast Europe Regional

-1 Month -1 Day -6 Hours -1 Hour +1 Hour +6 Hours +1 Day +1 Month

Prev 6-hr Interval (06 UTC) Reset to Current Next 6-hr Interval (12 UTC)



SEEFFGS is now running at HRC servers. SEEFFGS system has not been transferred to RC yet. In order to access to the SEEFFG user interface console of HRC, users can run any web browser and enter the web address below.

[https://seeffg.hrc-lab.org/CONSOLE/page\\_navigate\\_product\\_table.php](https://seeffg.hrc-lab.org/CONSOLE/page_navigate_product_table.php)

# Accessing to SEEFFG ftp servers at TSMS

- LINUX ftp server was established at TSMS for communication of data between institutions of participating countries and RC.
- As an example: SEEFFG user can use any Secure File Transfer Client software to access to SEFFGS ftp server at RC. Use Hostname(ExternalIP): 212.175.180.182, username:croatia and password:xx

## Usernames:

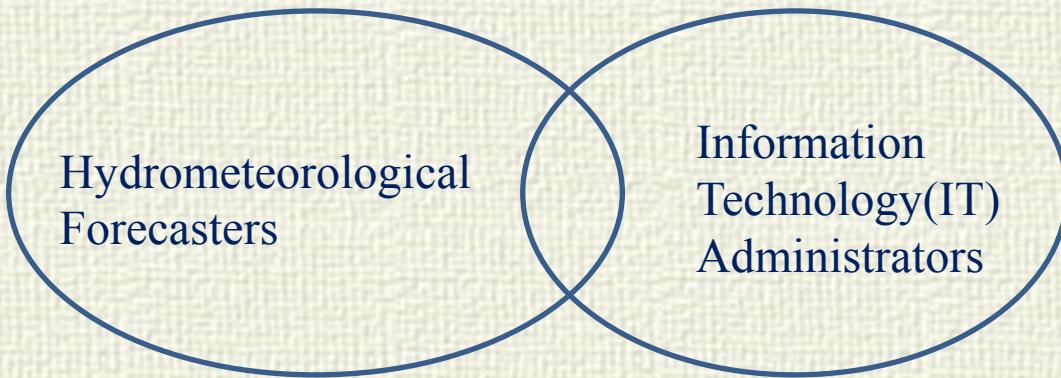
croatia  
 montenegro  
 moldova  
 serbia  
 slovenia  
 macedonia  
 bosnia\_herzegovina  
 albania  
 romania

SEEFFGS ftp servers in RC	IP address
TSMS Users (internal IP)	192.168.13.180
External Users including member states (external IP)	212.175.180.182

Remote Folders	Remote Name	Size	Type	Modified	Attributes
/home/croatia	Aster_WGS		Folder	17.07.2014 13:28:52	drwxr-xr-x
	bin		Folder	11.02.2014 12:00:21	drwxr-xr-x
	DHMZ		Folder	14.02.2014 13:02:25	drwxr-xr-x
	HISTORICAL_DATA		Folder	10.06.2014 12:24:16	drwxr-xr-x
	SOILS_Croatia		Folder	28.04.2014 10:19:55	drwxr-xr-x
	seeffg_initial_croatia_basins...	3,684	DBF Dosy...	11.02.2014 10:49:25	-rw-r--r--
	seeffg_initial_croatia_basins...	143	PRJ Dosyasi	11.02.2014 10:49:25	-rw-r--r--
	seeffg_initial_croatia_basins...	257	QPJ Dosy...	11.02.2014 10:49:25	-rw-r--r--
	seeffg_initial_croatia_basins...	1,875,596	SHP Dosy...	11.02.2014 10:49:25	-rw-r--r--
	seeffg_initial_croatia_basins...	2,732	SHX Dosy...	11.02.2014 10:49:25	-rw-r--r--
	seeffg_initial_croatia_strea...	215,764	DBF Dosy...	11.02.2014 10:49:25	-rw-r--r--
	seeffg_initial_croatia_strea...	143	PRJ Dosyasi	11.02.2014 10:49:25	-rw-r--r--
	seeffg_initial_croatia_strea...	257	QPJ Dosy...	11.02.2014 10:49:25	-rw-r--r--
	seeffg_initial_croatia_strea...	562,748	SHP Dosy...	11.02.2014 10:49:25	-rw-r--r--
	seeffg_initial_croatia_strea...	17,180	SHX Dosy...	11.02.2014 10:49:25	-rw-r--r--
	SEEuro_initial_delineation_C...	1,544,384	Adobe Ac...	11.02.2014 10:49:26	-rw-r--r--
	sql.txt	512	Metin Bel...	11.02.2014 10:49:26	-rw-r--r--

# Operational System Maintenance (1)

- How do I know if the systems are running appropriately or identify problematic incidents?
- How do I determine when intervention is necessary?



Cooperation between overlapping responsibilities of forecasters and IT staff is essential to operational sustainability.



# Operational System Maintenance (2)



- **Daily system review is very important to sustainability:**
  - Frequent, systematic and awake review of normal conditions will lead to intuitive and quick recognition of anomalies
  - Exercise proactive analysis and preemptive correction rather than incidental reaction.
- **Daily review can include:**
  - Visual reviewing of data and products using web interface
  - Review warning and error summary logs (daily summaries)
  - Confirming availability of real-time data products (inventories)
  - Confirming sufficient storage free space and verifying normal consumption
  - Confirming sustainable processing loads and hourly processing completion.



# Operational System Maintenance (3)



- **Routinely confirm available resources:**
  - **Data**: confirm successful acquisition from real-time servers
  - **Storage**: confirm available disk space for downloads and products
  - **Processing**: confirm stable processing loads.
- **Review system activity for anomalies:**
  - Warning and error message summaries (processing logs)
  - TEMP directory contents
  - Irregular data accumulation or unexpectedly absent contents

The computational core at the RC runs

- meso-scale meteorological models,
- high resolution hydrologic model for the region that produce various diagnostic indices, forecast of precipitation, soil water deficit and FF potential for small streams on the basis of global meteorological model forecasts, satellite estimates of precipitation with high resolution and short latency and real time operational rain gauge and surface weather station reports.

(HRC Tech.Note 53)



# SEEFFGS Operational Concept

## Computational Server (2)

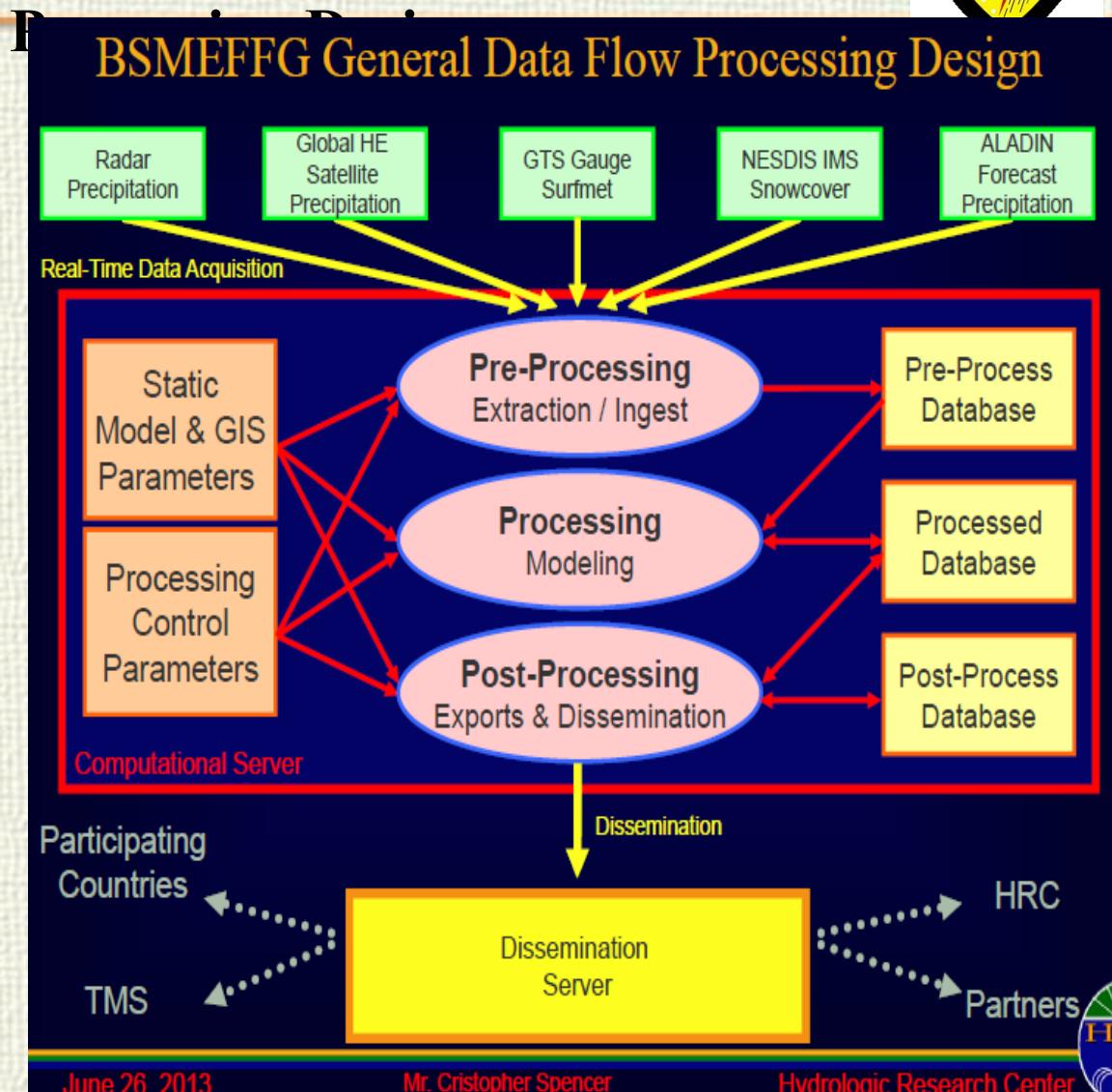


- To compute the FFG, it is necessary to estimate the soil water deficit for each of small basins and the storage in the channel network up to the bankfull flows.
- When these two storages are filled for a small basin under continuing rain, then there is high potential for FF development.(HRC Tech.Note 53)

# SEEFFGS Operational Concept

## Dissemination Server of BSMEFFG General Data Flow

- The FFGS is primarily responsible for all data acquisition, pre-processing, model processing. After the FFGS has completed these processes, the resulting products are disseminated.
- SEEFFG dissemination server allows additional post-processing to authorized users for not only real-time, but also previous historical products through a secure web interface.
- All authorized users can log in to dissemination server to access the SEEFFG products.



(Christopher Spencer, 2013)



# SEEFFGS Operational Concept

## Status of RC Operations to Monitor SEEFFGS (1)



- SEEFFG Real-Time Status Dashboard interface is used for IT staff and forecasters to examine system activities and system status.
- Dashboard interface (or console) acts as a summary status page. At the top of the console, four products such as GHE-01hr, Status-06hr, ASM-06 and FFG-06hr were displayed. A user can animate these products except station data status by clicking on the animation bar showing the time series of the products.
- Below the image products, There are four items as follows:  
1)Real-Time Data Download and Inventory Status 2)Real-Time Data Processing Status 3)Computational Server Status  
4)Dissemination Server Status

# SEEFFGS Operational Concept

## Status of RC Operations Monitoring SEEFFGS (2)

**SEEFFG Real-Time Status** **SEEFFG Real-Time Status Da** <https://seeffg.hrc-lab.org/DASHBOARD/index.php?region=0>

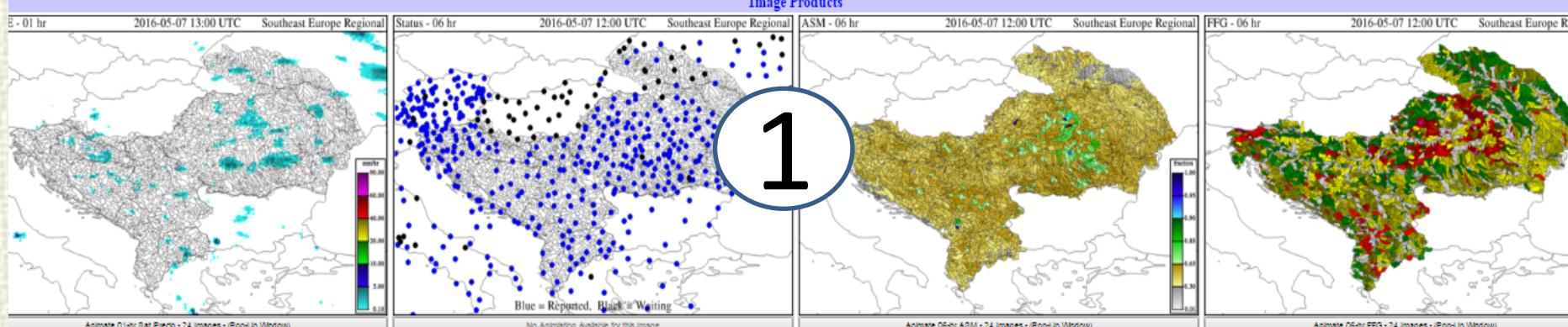
Uygulamalar A\_HRC\_AnkaraServerBS A\_HRC\_AnkaraServerSE AAA\_Google AAA\_Google Maps AAA\_GoogleTranslate AAA\_Intranet AAA\_sozluk\_ing AAA\_Yemini Sözlük AAA\_Zargan Diğer yer işaretleri

2016-05-07 16:15:17 EET 2016-05-07 14:15:17 UTC

### SEEFFG - Real-Time Status Dashboard

**Image Products**

2016-01 hr 2016-05-07 13:00 UTC Southeast Europe Regional Status - 06 hr 2016-05-07 12:00 UTC Southeast Europe Regional ASM - 06 hr 2016-05-07 12:00 UTC Southeast Europe Regional FFG - 06 hr 2016-05-07 12:00 UTC Southeast Europe Regional



Animate 01hr Sat Prod - 24 Images - (Pop-Up Window)  
No Animation Available for this Image  
Animate 06hr AGM - 24 Images - (Pop-Up Window)  
Animate 06hr FFG - 24 Images - (Pop-Up Window)

**Real-Time Data Download and Inventory Status**

HRC MWGHE Download					GHE Download					GAUGE Download					IMS Download				
ENABLED					ENABLED					ENABLED					ENABLED				
SUCCESS					SUCCESS					SUCCESS					SUCCESS				
May-03	May-04	May-05	May-06	May-07	May-03	May-04	May-05	May-06	May-07	May-03	May-04	May-05	May-06	May-07	May-03	May-04	May-05	May-06	May-07
24	24	24	24	14	24	24	24	24	14	85%	84%	85%	84%	81%	-	-	-	-	-

**Real-Time Data Processing Status**

HRC MWGHE Data Processing					GHE Data Processing					GAUGE Data Processing					IMS Data Processing				
ENABLED					ENABLED					ENABLED					ENABLED				
SUCCESS					SUCCESS					SUCCESS					SUCCESS				
Model Processing					SNOW Model Processing					SACCSMA & FFG Model Processing					Text/CSV Exports				
ENABLED					ENABLED					ENABLED					ENABLED				
SUCCESS					SUCCESS					SUCCESS					SUCCESS				

**Export Processing Status**

Image Exports				
ENABLED				
SUCCESS				
IMS Data Processing				
ENABLED				
SUCCESS				

**Computational Server Status**

General Info					CPU Activity					Disk Activity					Storage				
P Address	Hostname	Uptime	Active Logins	1-Min	Swap Used	User	System	IOWait	Idle	Transfers	Read	Write	Free	Used	% Used	Days to...			
125.40.77.1	SEEFFG-01	271 days	3	19.20 %	1557116 KB	1400 %	0.75 %	0.00 %	81.25 %	203.00/s	0.00 KB/s	859.80 KB/s	104.93 MB	1459.19 MB	95 %	20.0			

**Dissemination Server Status**

General Info					CPU Activity					Disk Activity					Storage				
P Address	Hostname	Uptime	Active Logins	1-Min	Swap Used	User	System	IOWait	Idle	Transfers	Read	Write	Free	Used	% Used	Days to...			
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			

Southeast Europe Regional

Go to Southeast Europe Regional Product Console

SEEFFG Real-Time Status Dashboard v1.0 - © 2013 Hydrologic Research Center

# SEEFFGS Operational Concept

## Status of RC Operations to Monitor SEEFFGS (3)

Real-Time Data Download and Inventory Status																										
NESDIS GHE Download				GAUGE Download				IMS Download				RADAR Download				ALADIN Download				NESDIS MWGHE Download						
ENABLED		SUCCESS		ENABLED		SUCCESS		ENABLED		SUCCESS		ENABLED		SUCCESS		ENABLED		SUCCESS		ENABLED		SUCCESS				
May-04	May-05	May-06	May-07	May-03	May-04	May-05	May-06	May-07	May-03	May-04	May-05	May-06	May-07	May-03	May-04	May-05	May-06	May-07	May-03	May-04	May-05	May-06	May-07			
24	24	24	21	92%	94%	57%	67%	71%	1	1	1	1	1	196	181	159	246	216	276	276	276	216	24	24	24	24

- **Real-Time Data Download and Inventory Status** shows the status of HRC MWGHE Download, NESDIS GHE Download, GAUGE Download and IMS Download.
- In case of gauge data, how many of the stations have reported data. Blue: reported, black:waiting:
- Various example of inventory status are shown : gray ,to indicate inventory totals that are not yet complete with respect to the current hour but are still within a ‘wait’ state where the expected latency of the pending acquisition has not yet expired; green, to indicate a complete inventory of expected files; and red to indicate a confirmed absence of expected data.

# SEEFFGS Operational Concept

Status of RC Operations to Monitor SEEFFGS and BSMEFFGS (4)



Computational Server Status and Dissemination Server status give information on processing load, CPU activity, disk activity and storage availability.

a) Computational Server Status and Dissemination Server status for SEEFFGS

Computational Server Status																				
General Info				Processing Load					CPU Activity				Disk Activity				Storage			
IP Address	Hostname	Uptime	Active Logins	1-Min	5-Min	15-Min	Swap Used	User	System	IOWait	Idle	Transfers	Read	Write	Free	Used	% Used	Days to Filled		
192.168.1.77	SEEFFGS	771.73 days	0	43.18 %	26.75 %	21.33 %	1557260 KB	39.25 %	13.87 %	0.42 %	58.87 %	10730ts	140 KB/s	533310 KB/s	103.125 MB	1,859.411 MB	93 %	20 days		

Dissemination Server Status																				
General Info				Processing Load					CPU Activity				Disk Activity				Storage			
IP Address	Hostname	Uptime	Active Logins	1-Min	5-Min	15-Min	Swap Used	System	User	IOWait	Idle	Transfers	Read	Write	Free	Used	% Used	Days to Filled		
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		

b) Computational Server Status and Dissemination Server status for BSMEFGS

Computational Server Status																				
General Info				Processing Load					CPU Activity				Disk Activity				Storage			
IP Address	Hostname	Uptime	Active Logins	1-Min	5-Min	15-Min	Swap Used	User	System	IOWait	Idle	Transfers	Read	Write	Free	Used	% Used	Days to Filled		
192.168.1.78	BSMEFFG-08	771.29 days	0	49.18 %	44.04 %	44.12 %	724796 KB	22.88 %	12.9 %	0.14 %	68.74 %	54740 ts	9329.60 KB/s	1531120 KB/s	110.197 MB	1,894.419 MB	93 %	209 days		

Dissemination Server Status																				
General Info				Processing Load					CPU Activity				Disk Activity				Storage			
IP Address	Hostname	Uptime	Active Logins	1-Min	5-Min	15-Min	Swap Used	System	User	IOWait	Idle	Transfers	Read	Write	Free	Used	% Used	Days to Filled		
192.168.1.79	BSMEFFG-09	820.50 days	1	20.95 %	18.41 %	14.70 %	602404 KB	20.44 %	0.50 %	0.00 %	79.06 %	400 ts	0.00 KB/s	60.00 KB/s	1441.187 MB	1,003.501 MB	93 %	477 days		



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YOUR ATTENTION**