The Republic of Turkey
The Ministry of Forestry and Water Affairs

SEEFFG System Operational Concept

Presented by

Ertan TURGU* eturgu@mgm.gov.tr

Contributers:

Yusuf Ulupınar* yulupinar@mgm.gov.tr

Seyfullah Çelik* scelik@mgm.gov.tr

Ekrem Gülsoy* egulsoy@mgm.gov.tr

Ali İhsan Akbaş* aiakbaş@mgm.gov.tr

Serhan Köse* skose@mgm.gov.tr

Mehmet Aksoy* maksoy@mgm.gov.tr

Esin Oğuz* eoguz@mgm.gov.tr

*Turkish State Meteorological Service,
Research Department, Hydrometeorology Division.

Follow Up Operations Workshop on South East Europe
Flash Flood Guidance (SEEFFG) System,
09-13 May 2016, Zagreb, Croatia

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- BSMEFFGS & SEEFFGS Server Configuration
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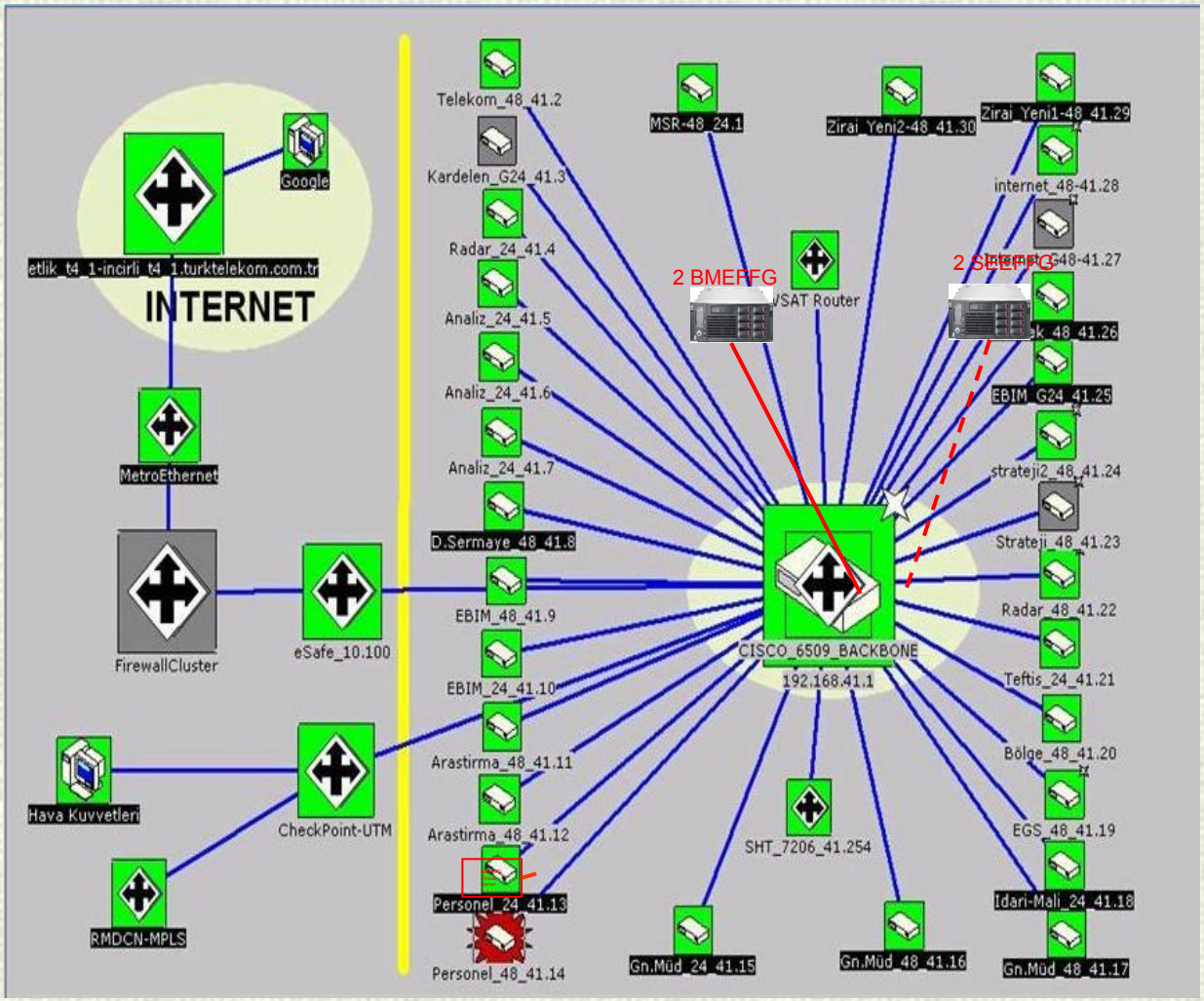
Introduction

- 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:

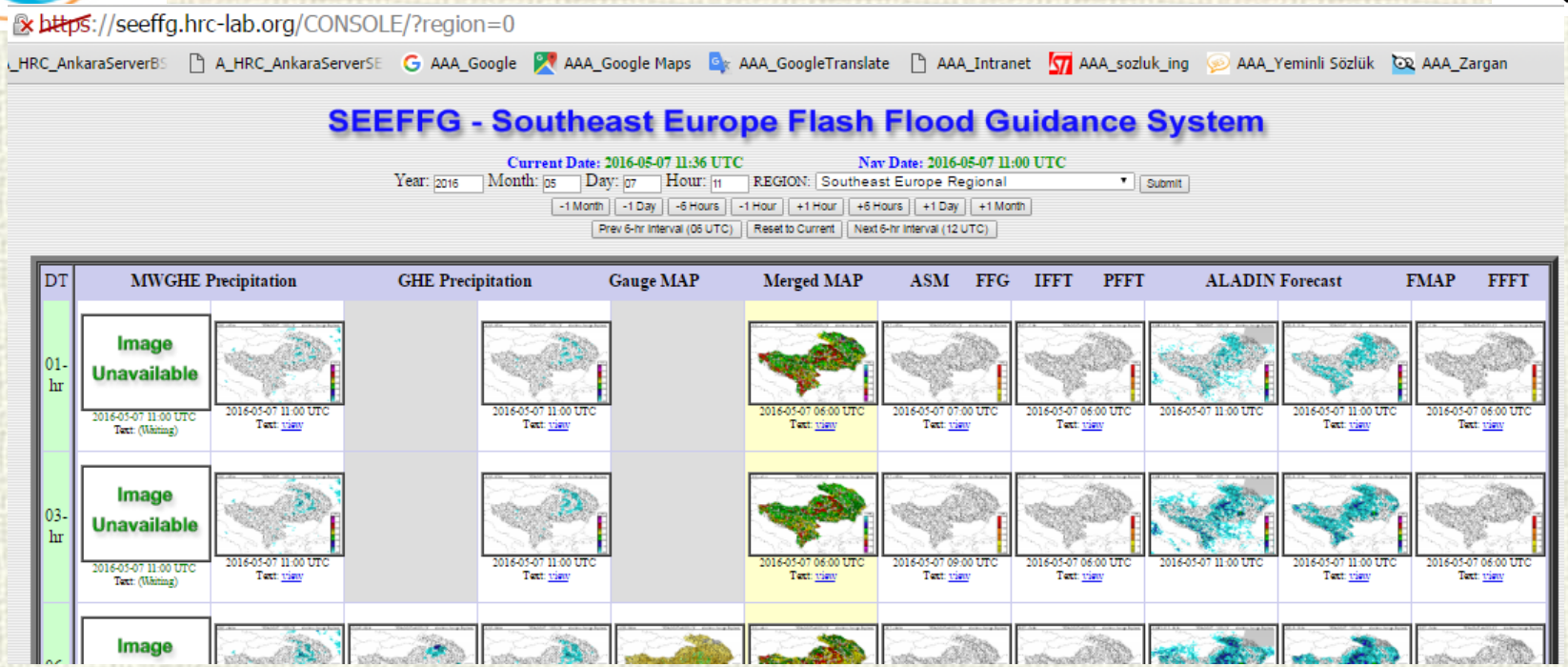
- CISCO Backbone,
- 31 Edge Switch,
- 20 Servers including BSMEFFGS and SEEFFGS servers

BSMEFFGS & SEEFFGS Server Configuration

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



SEEFFGS is now running at HRC servers. SEEFFGS system has not been transfered 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.

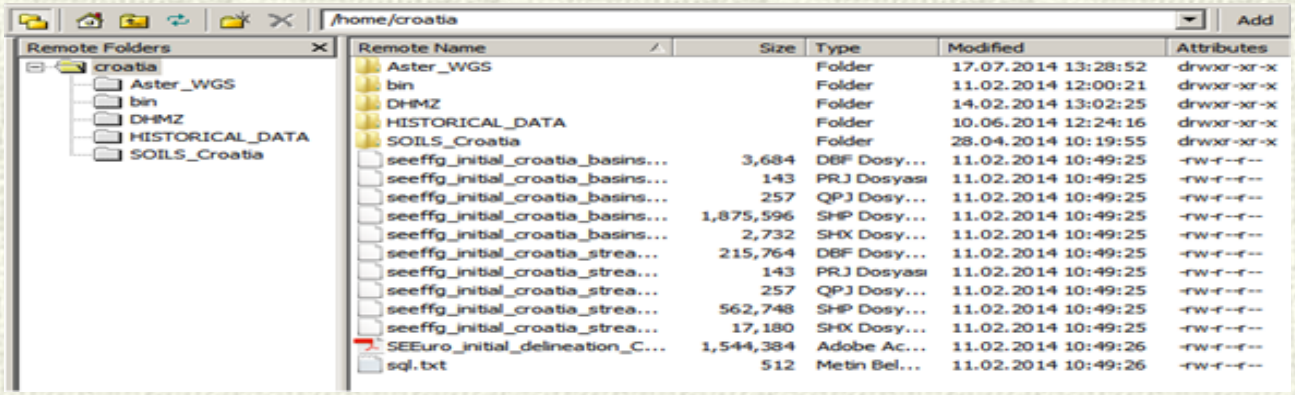
https://seeffg.hrc-lab.org/CONSOLE/page_navigate_product_table.php

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

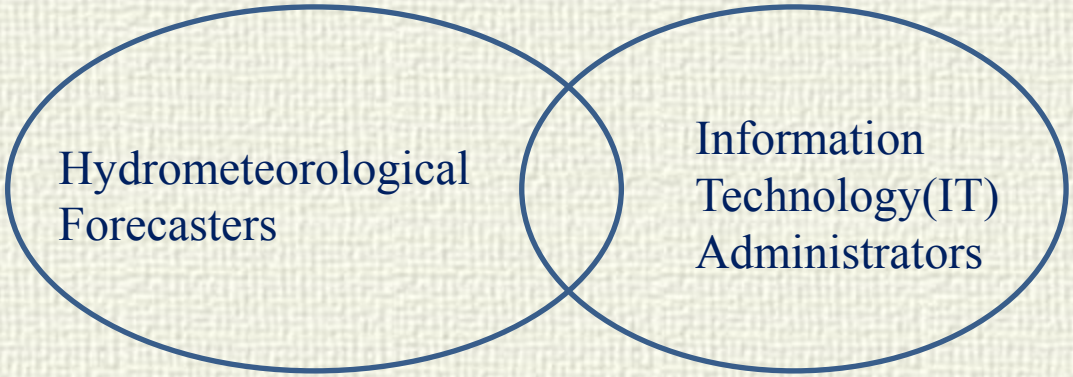
Usernames:
croatia
montenegro
moldova
serbia
slovenia
macedonia
bosnia_herzegovina
albania
romania

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



Operational System Maintenance (1)

- How do I know if the systems are running appropriately or identify problematic insidents?
- 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 confim available resources:**
  - **Data**: confirm successful acquision 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

SEEFFGS Operational Concept
Computational Server (1)

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)

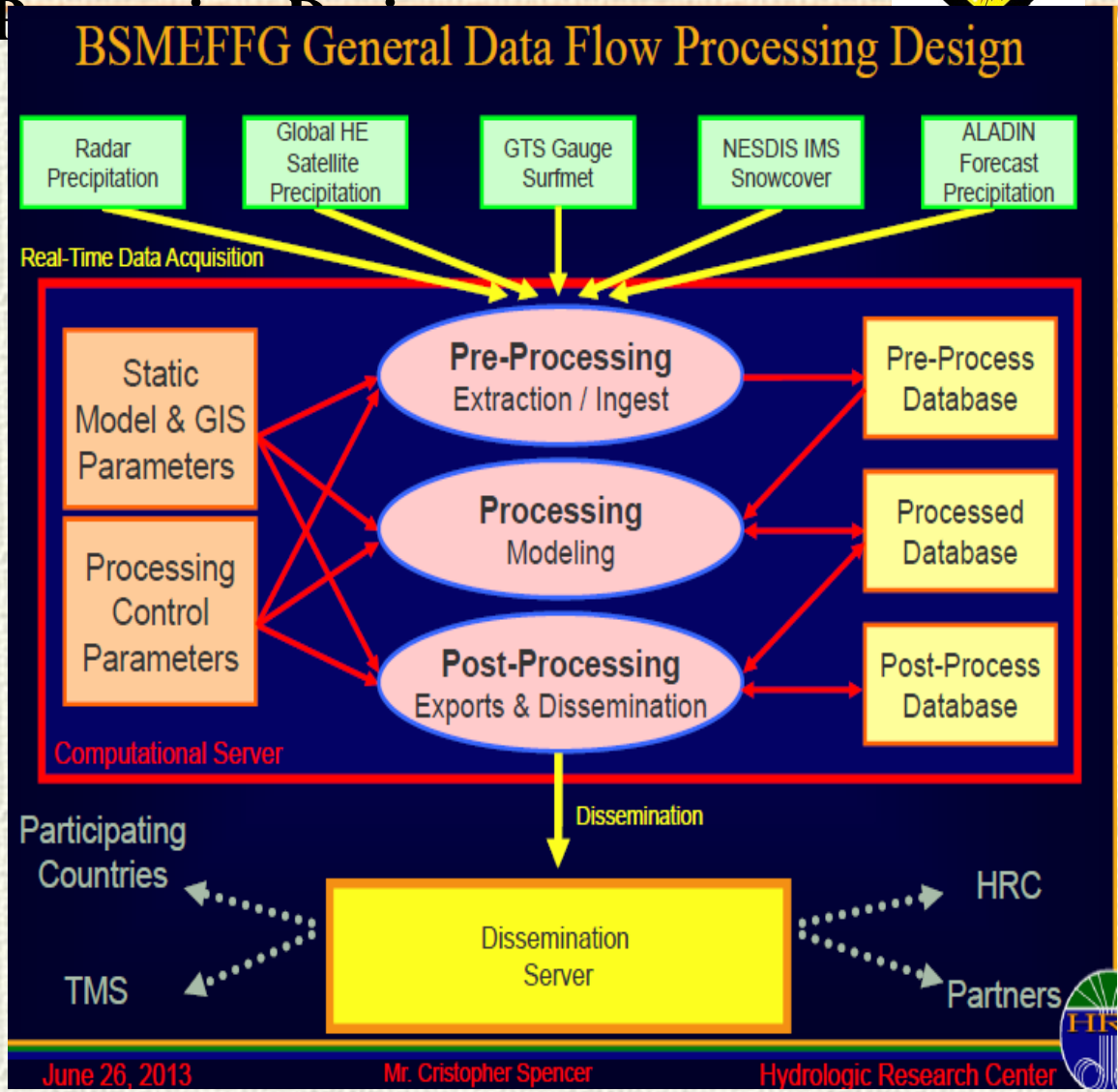
SEEFFGS Operational Concept
Computational Server (2)

- 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 autorized users for not only real-time, but also previous historical products through a secure web interface.
- All autorized users can log in to dissemination server to access the SEEFFG products.



(Christopher Spencer,2013)

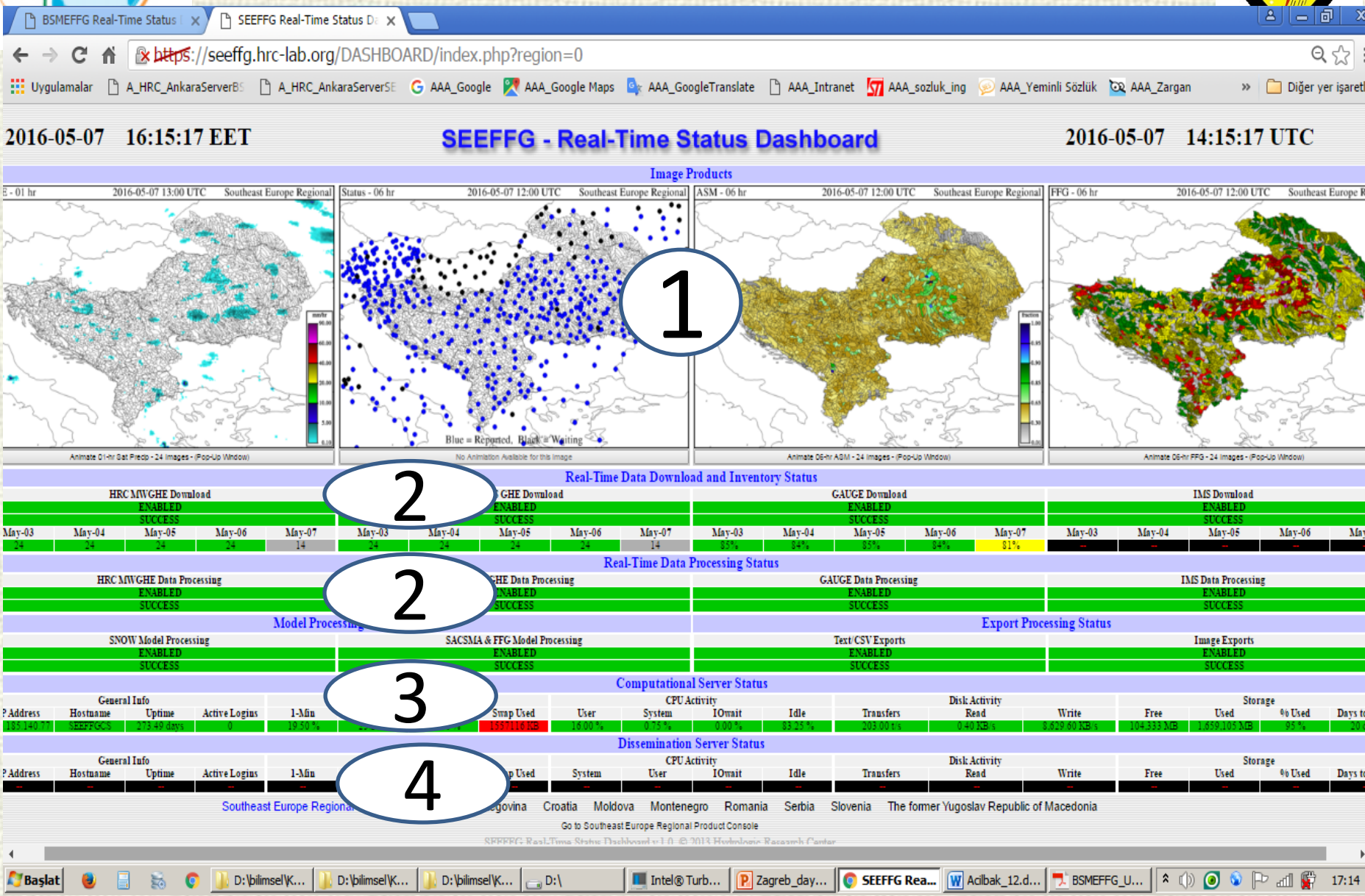
SEEFFGS Operational Concept

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

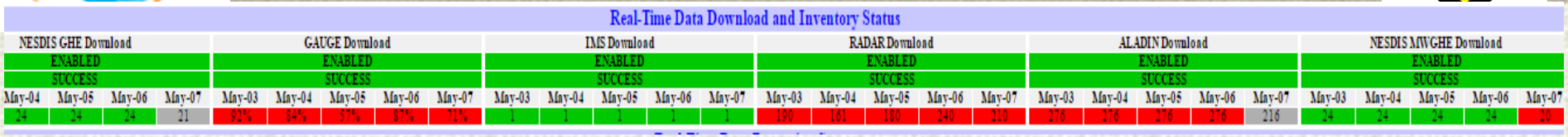
SEEFFGS Operational Concept

Status of RC Operations Monitoring SEEFFGS (2)



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				ENABLED					ENABLED					ENABLED					ENABLED					ENABLED				
SUCCESS				SUCCESS					SUCCESS					SUCCESS					SUCCESS					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	May-03	May-04	May-05	May-06	May-07
24	24	24	21	92%	84%	57%	87%	71%	1	1	1	1	1	190	161	180	240	210	276	276	276	276	216	24	24	24	24	20

- **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, balack: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 in 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 procesing 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
184.185.140.77	SEEFFGCS	273.73 days	0	43.16 %	26.75 %	21.83 %	1557360 KB	39.25 %	1.67 %	0.42 %	58.67 %	107.80 t/s	2.40 KB/s	5,338.80 KB/s	103,826 MB	1,659,613 MB	95 %	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
192.168.2.78	BSMEFFG-CS	771.29 days	0	49.16 %	44.04 %	44.12 %	734796 KB	22.80 %	1.29 %	9.14 %	66.76 %	547.40 t/s	9,809.60 KB/s	15,851.20 KB/s	3,550,197 MB	3,896,489 MB	53 %	693 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
192.168.2.79	BSMEFFG-DS	620.50 days	2	20.95 %	18.43 %	14.70 %	602404 KB	20.44 %	0.50 %	0.00 %	79.06 %	4.00 t/s	0.00 KB/s	80.00 KB/s	2,441,185 MB	5,005,501 MB	68 %	477 days

T.C.
Orman ve Su İşleri
Bakanlığı

METEOROLOJİ

THANK YOU FOR YOUR ATTENTION