



# PP VERSUS2

Extension and Test phases outcome  
Maintenance plan and Future of  
VERSUS software

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## ***Versus2 PP extension: COSMO year 2015-16***

Tasks list of the VERSUS extension phase:

**Task 0** Help Desk, User Support

**Task 1** Implementation of VERSUS functionalities to ingest GRIB2

**Task 2** Refinements of functionalities in VERSUS





# Task 0: Help Desk, User Support

**Help Desk** PL TEAM and RHM collaboration

## **Documentation updates**

Technical Manual is on line

User Manual collected from the HNMS

## **New VERSUS releases**

Two official versions: December VERSUS 5.0 and July 5.1

## **Further information**

Two orders of problems were found in 5.0 and solved in 5.1

- loading multistep files

- verifications of total cloud cover



# ***Task 1: Implementation of VERSUS functionalities to ingest GRIB2***

## **Creation New FE in VERSUS**

Update VERSUS Code,  
GUI Update;  
Plots adaptation.

## **Connection with existing Tables GRIB1**

## **Code and GUI adjustment**

## **Test phase**

Test performed by DWD and NMA, completed by NMA in  
December



## **Task 2: Refinements of functionalities in VERSUS**

Main activities:

**Task 2a**

EPS accuracy of the scores

**Task 2b**

Implementation XML ingestion test phase

**Task 2c**

Report of loading performance

**Task 2d**

Test on all system functionalities (VERSUS AND VAST)



## Task 2a: Refinements of functionalities in **VERSUS**

### Accuracy of EPS scores

In collaboration of ARPA-SIMC EPS scores were tested with good results about all scores except for RPSS

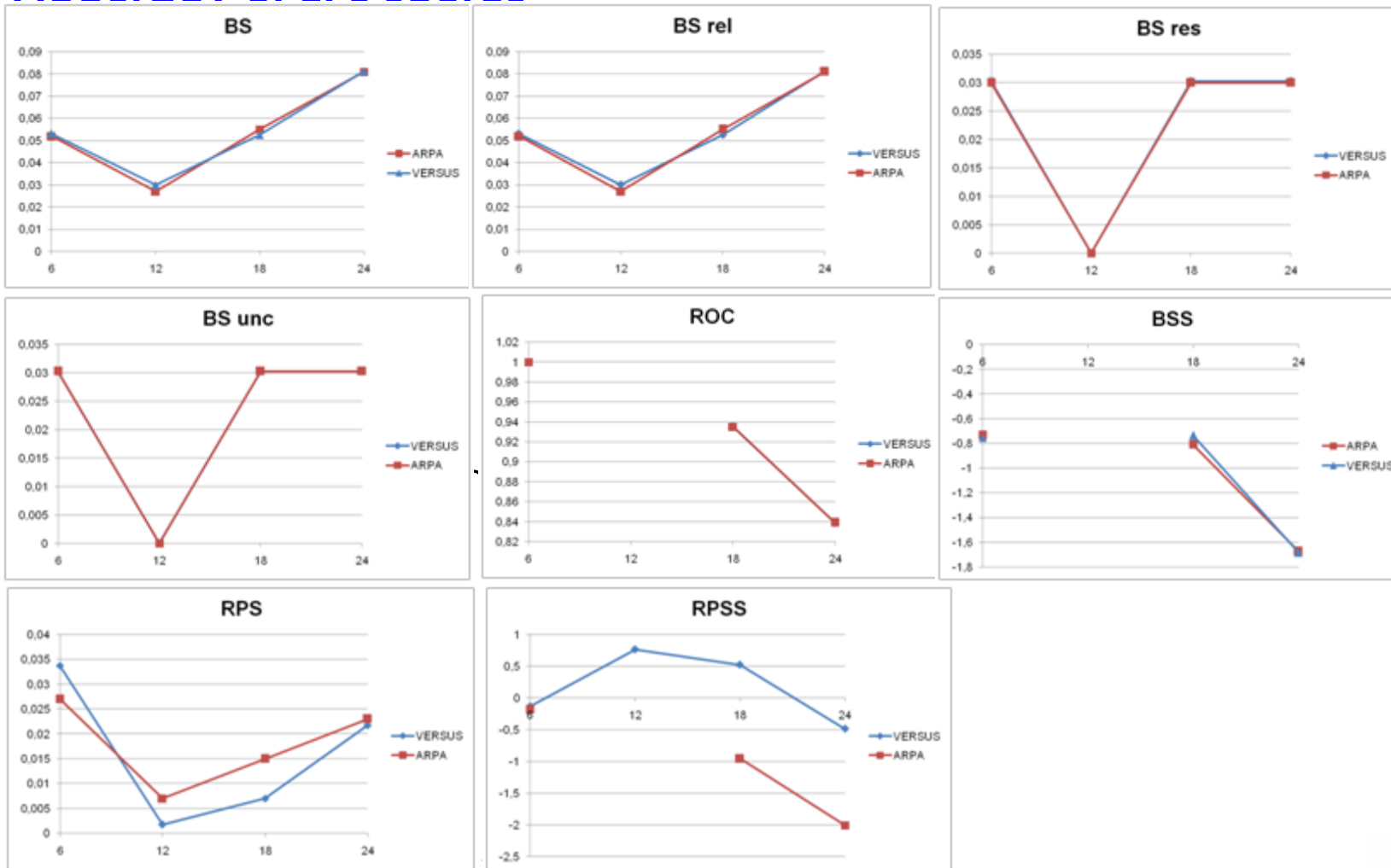
<b>Scores</b>	BRIER, BRIER-CI.high, BRIER-CI.low, BRIER.reliability, BRIER.reliability.CI.high, BRIER.reliability.CI.low, BRIER.resolution, BRIER.resolution.CI.high, BRIER.resolution.CI.low, BRIER.SKILL, BRIER.SKILL.CI.high, BRIER.SKILL.CI.low, BRIER.uncertain, BRIER.uncertain.CI.high, BRIER.uncertain.CI.low, CRPS, CRPS-CI.high, CRPS-CI.low, CRPSS, ROC area, RPS, RPS-CI.high, RPS-CI.low, RPSS, RPSS-CI.high, RPSS-CI.low, RPS.dim, RPS.dim-CI.high, RPS.dim-CI.low, ERROR, SPREAD, OUTLIERS
<b>Diagrams</b>	ROC, Reliability, Cost-Loss, Rank

Different behaviour in the R-function “brier (Obs, Prob, bins = FALSE or TRUE)”



# Task 2a: Refinements of functionalities in VERSUS

## Accuracy of EPS scores







# Task 2b: Refinements of functionalities in **VERSUS**

## XML ingestion test phase

An adjustment to load the XML file has been described in the document report

A screenshot of the Versus GUI interface. The background is a dark blue gradient. A central white panel displays a list of stations: SCUOL, BERN / BOLLWERK, CHAUMONT / BOSSET, DAVOS / SEEHORNWALD, DUEBENDORF / GIESSEN, HAERKINGEN, LAEGEREN / ZINDELEN, LAUSANNE, RIGI / SEEBODENALP, and ZUERICH. Below the list, a section titled 'Parameter: TEMPERATURE AT 2M' contains a table with three columns: 'Count', 'Data Validity', and 'BUFR CODE'. The table has three rows of data. Below the table are four buttons: 'Delete', 'Download Text', 'Download Excel', and 'Back'. At the bottom of the white panel, it says 'Time spent in second =1'. At the very bottom of the screenshot, there is a footer with the text 'Servizio meteorologico dell'Aeronautica Militare - All rights reserved' and 'Versus GUI is optimized for 1280x1024 resolution and works best with Internet Explorer 7.0 and Mozilla Firefox 3.0 and up.'





## **Task 2c: Refinements of functionalities in VERSUS**

### **PERFORMANCE - LOADING TEST**

NUMBER OF GRIB FILES: 1472

INTERPOLATION METHOD: NEAREST POINT DISTANCE (number 5 in Versus)

CONTENT OF 1 GRIB FILE : 22 Grib messages (6 hours precipitation from 6h to 132h step 6 hrs)

#### **Report of loading phase ARPA ER**

AVERAGE TIME FOR 1 GRIB 1.57 minutes

TOTAL TIME FOR 1472 GRIB FILES: 49.11 hours

#### **Report of loading phase C.O.MET**

AVERAGE TIME FOR 1 GRIB 20 seconds

TOTAL TIME FOR 1472 GRIB FILES: 07.30hours



# Task 2c: Refinements of functionalities in VERSUS

		<b>EPS Diagrams</b>	ROC, Reliability, Cost-Loss, Rank
<b>Criteria Type</b>	Surface	<b>Scores</b>	BRIER BRIER-reliability BRIER-resolution BRIER-SKILL BRIER-uncer CRPS CRPSS ERROR Outliers ROC area RPS RPS.dim RPSS SPREAD
<b>Dichotomic</b>	No		
<b>Run</b>	12		
<b>Frequency</b>	Seasonal		
<b>Period Based</b>	Forecast		
<b>Steps</b>	START: 6 END: 132 INTERVAL: 6		
<b>Stratification</b>	EPS_35_-10_58_30		
<b>Geographical Distribution</b>	No		
<b>OBS</b>		<b>Thresholds</b>	[1 , 9999] [10 , 9999] [20 , 9999] [25 . 9999]
<b>Parameter</b>	TOTAL PRECIPITATION - KG/M*	<b>Members</b>	
<b>Suspect Value</b>	..		
<b>FCS</b>			
<b>Model</b>			
<b>Grid</b>			
<b>Method</b>			
		01) Nearest point 3D optimized Algorithm: id_order=1	



## Task 2c: Refinements of functionalities in **VERSUS**

### PERFORMANCE – TIME EXECUTION TEST

#### Report of execution phase ARPA ER

- Problem with myconnect limit
- Problem with memory size exhausted

The Test was performed with version 4.2 and 5.0 increasing the memory\_limit 2GB to 4GB of RAM with success for monthly verification but **no success for seasonal verification**

Log and configuration missing



## Task 2c: Refinements of functionalities in **VERSUS**

### COMET physical machine:

	memory	processor	
<b>VERSUS-BLADE</b>	262144mb	4 amd opteron™ 6234 (12 cores)	Size Mounted on 133G / 127G /dev 127G /dev/shm 296G /var/lib/mysql 493G /versus

### MACHINE FEATURES:

**RAM** 256 G - **48 processors** with cpu MHz: 2400

**OS:** opensuse openSUSE 11, Kernel: x86\_64 Linux 3.0.76-0.11-default

The results of verification executed was provided in the log file  
homelog\_eps\_score.txt\_2016-15-Mar\_159\_20140301-20140531



## Task 2c: Refinements of functionalities in **VERSUS**

### **PERFORMANCE – TIME EXECUTION TEST**

#### **Report of execution phase C.O.MET**

Test 1

Memory\_limit =3G

Innodb\_buffer\_pool\_size=32G

48 core 100 R processes in parallel

Time of execution: 420 seconds

Test 2

Memory\_limit =2G

Innodb\_buffer\_pool\_size=2G

48 core 100 R processes in parallel

Time of execution: 430 seconds

Test 3

Memory\_limit =2G

Innodb\_buffer\_pool\_size=2G

48 core 4 R processes in parallel (...escapeshellarg(4))

Time of execution: 1200 seconds





# Task 2c: Refinements of functionalities in VERSUS

**Criteria: Test\_MAM-Seasonal\_132h**

**Index: BRIER (ID: 29)**

**Frequency: Seasonal - From: 2014-03-01 To: 2014-05-31**

Step	Index Value	Number Value	Start Threshold	End Threshold
<b>From: 2014-03-01 To: 2014-05-31</b>				
6	0.063703	4073	1	9999
6	0.0120654	4073	10	9999
6	0.00530874	4073	20	9999
6	0.00370795	4073	25	9999
12	0.0519351	3328	1	9999
12	0.00974159	3328	10	9999
12	0.0039363	3328	20	9999
12	0.00314303	3328	25	9999
18	0.0505506	3242	1	9999
18	0.00964991	3242	10	9999
18	0.00436305	3242	20	9999
18	0.00423967	3242	25	9999
24	0.0594713	4213	1	9999
24	0.00752255	4213	10	9999
24	0.00397638	4213	20	9999
24	0.00333076	4213	25	9999
30	0.0589814	4013	1	9999
30	0.0123679	4013	10	9999
30	0.00540556	4013	20	9999
30	0.00385061	4013	25	9999
36	0.0586499	3309	1	9999
36	0.0102486	3309	10	9999
36	0.00393246	3309	20	9999
36	0.00325552	3309	25	9999
42	0.0504839	3224	1	9999
42	0.0101737	3224	10	9999
42	0.00435484	3224	20	9999

126	0.0244925	3772	[-9999, 1] [1, 10] [10, 20] [20, 25] [25, 9999]
132	0.0209502	3128	[-9999, 1] [1, 10] [10, 20] [20, 25] [25, 9999]
<b>Index: RPSS (ID: 35)</b>			
<b>Frequency: Seasonal - From: 2014-03-01 To: 2014-05-31</b>			
Step	Index Value	Number Value	List Thresholds
<b>From: 2014-03-01 To: 2014-05-31</b>			
6	0.1818	4073	[-9999, 1] [1, 10] [10, 20] [20, 25] [25, 9999]
12	0.143356	3328	[-9999, 1] [1, 10] [10, 20] [20, 25] [25, 9999]
18	0.150887	3242	[-9999, 1] [1, 10] [10, 20] [20, 25] [25, 9999]
24	0.124123	4213	[-9999, 1] [1, 10] [10, 20] [20, 25] [25, 9999]
30	0.215756	4013	[-9999, 1] [1, 10] [10, 20] [20, 25] [25, 9999]
36	0.0323442	3309	[-9999, 1] [1, 10] [10, 20] [20, 25] [25, 9999]

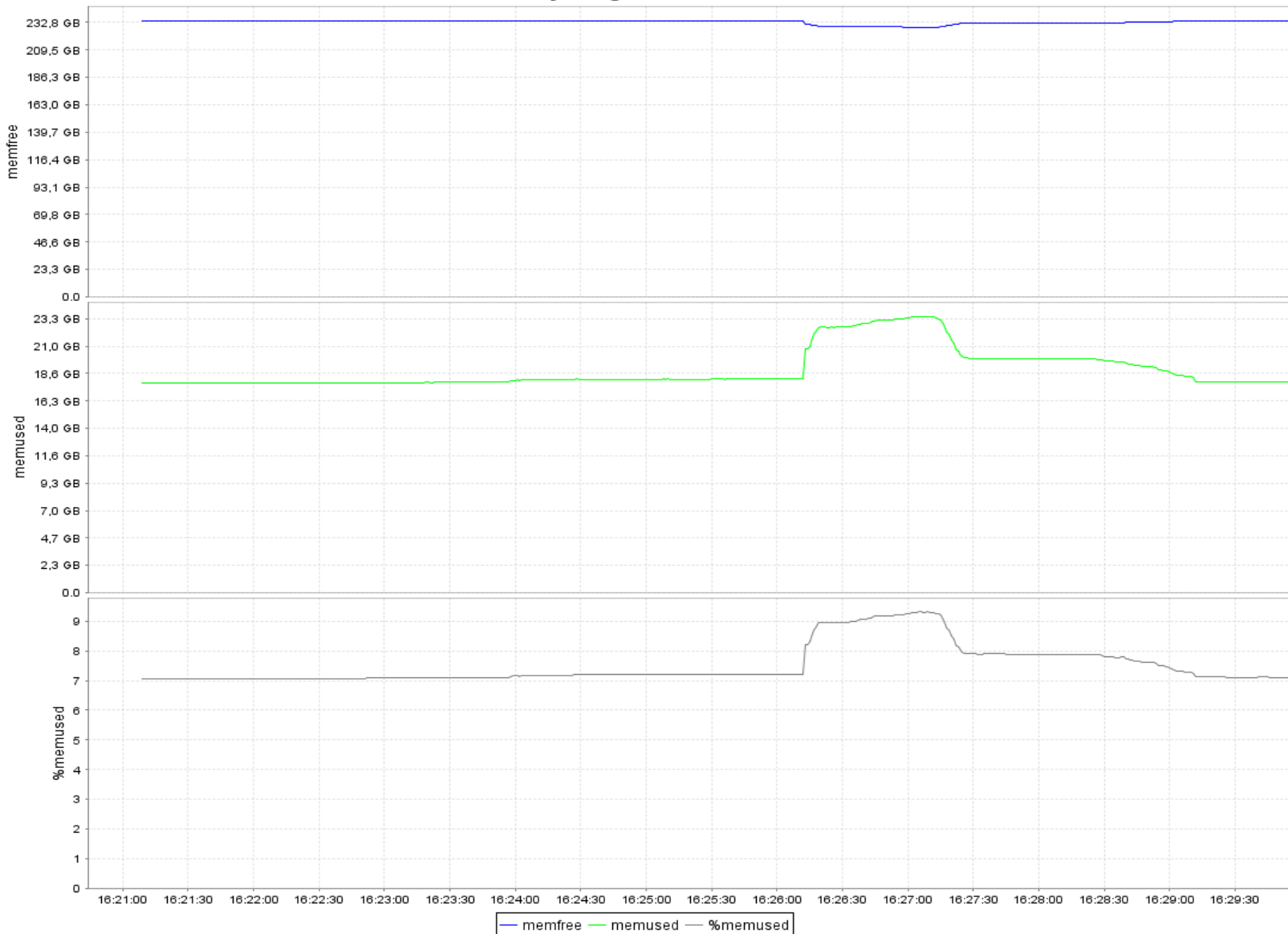






# Task 2c: Refinements of functionalities in VERSUS

Memory Usage for versus-blade





## Task 2d: Refinements of functionalities in **VERSUS**

### Report on feedback for **VERSUS** and **VAST**

Test on major system functionalities

In this test participated RHM, HNMS, NMA, IMGW

Most of important bugs have been fixed

Minor bugs will be faced during the long term maintenance

**Bach execution of cross correlations have been solved in August!**

An updated version of VERSUS 5.1 is on ftp server



## *Long term maintenance in VERSUS*

The Long-Term Maintenance services are planned to be assured by C.O.Met (the new Operational Meteorological Center Of the Italian Air Force) for 2016/2017 COSMO year , conditionally to the available resources.

The Source Code Administrator for VERSUS is appointed from C.O.Met staff as a focal point (Antonio Vocino).

The SCA reserves the right to define the time/modus operandi of the support activity.



## Long term maintenance in *VERSUS*

For the concept of "Maintenance Service" it is to be intended:

1. bug fixing and related patch release (*communication of bugs will be reported to a specific e-mail to be defined*);
2. minor adjustments of the software with prioritization under SCA responsibility;
3. any further maintenance activity according to SCA role.



## *User support activity in VERSUS*

1. User support as a WG5 activity outside the project to be discussed (mailing list, other,...);
2. web forum support will not be guaranteed but available for consultation.



**Thank you for your attention**