



# VERSUS3

## Current Status of VERSUS and Future Plans

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## Task list - Phase 5

- Task 0** Help Desk, bug-fixing, VERSUS update
- Task 1** Consolidation and fine tuning of the system
- Task 2** Test Area and Test Procedure Creation
- Task 3** Implementation of Probabilistic Scores
- Task 4** Implementation of the WMO BUFR standard for observations
- TASK 4.d** 1/3 hours precip. cumulation and wind gusts



# Task 0: Help Desk, bug-fixing, VERSUS update

## Task 0.a Help Desk

through the forum web site [www.meteoam.it/forum](http://www.meteoam.it/forum)

Bugs collection is always active by reports in the forum.



## Task 0.b Document Update FTEs underestimated. 0,1 is defined

*User Manual* has been updated to VERSUS 2.7 version, VERSUS 3.0 in progress (HNMS collaboration)

*Technical Manual* update in progress

- » Php Area (available in <http://80.17.44.25/versus/html>) with DOXYGEN
- » Database structure (available in <http://80.17.44.25/versus/report/index.html>) with MySql Workbench

*Installation Document* update is complete (it refers to the new installation package VERSUS 3.0)



# Task 0: Help Desk, bug-fixing, VERSUS update

Task 0.c - 3 releases were distributed:

- **VERSUS 2.7** October 2012 - developments of the PP phase 4
- **VERSUS 3.0** January 2013 - EPS verifications and Software update
- **VERSUS 3.1** Ready from June 2013 - Test Phase (HNMS collaboration) is closed and the **Official release** is planned in October

**Total New Installation Package updated to version 3.0** **Test Phase in progress** (IMGW collaboration)

Task 0.d-COSI TEST Postponed next Year



# Task 1: Consolidation and fine tuning of the system

Task 1.a Software update (R, R packages, PHP, MySQL) and code update  
**VERSUS 3.0**

Task 1.c Generic improvements on VERSUS functionalities in order to improve friendliness and operational use of the system:

- Cronjobs automatization for machine in the Verification activities **VUS 2013**

- Automatic storage of figures with standard names
- Replication function of similar verification activities
- Inclusion of Performance diagrams in VERSUS plots

**VERSUS 3.1**

Task 1.d: On the test machine was installed the version of Doxygen 1.8.3.1 the code was adjusted

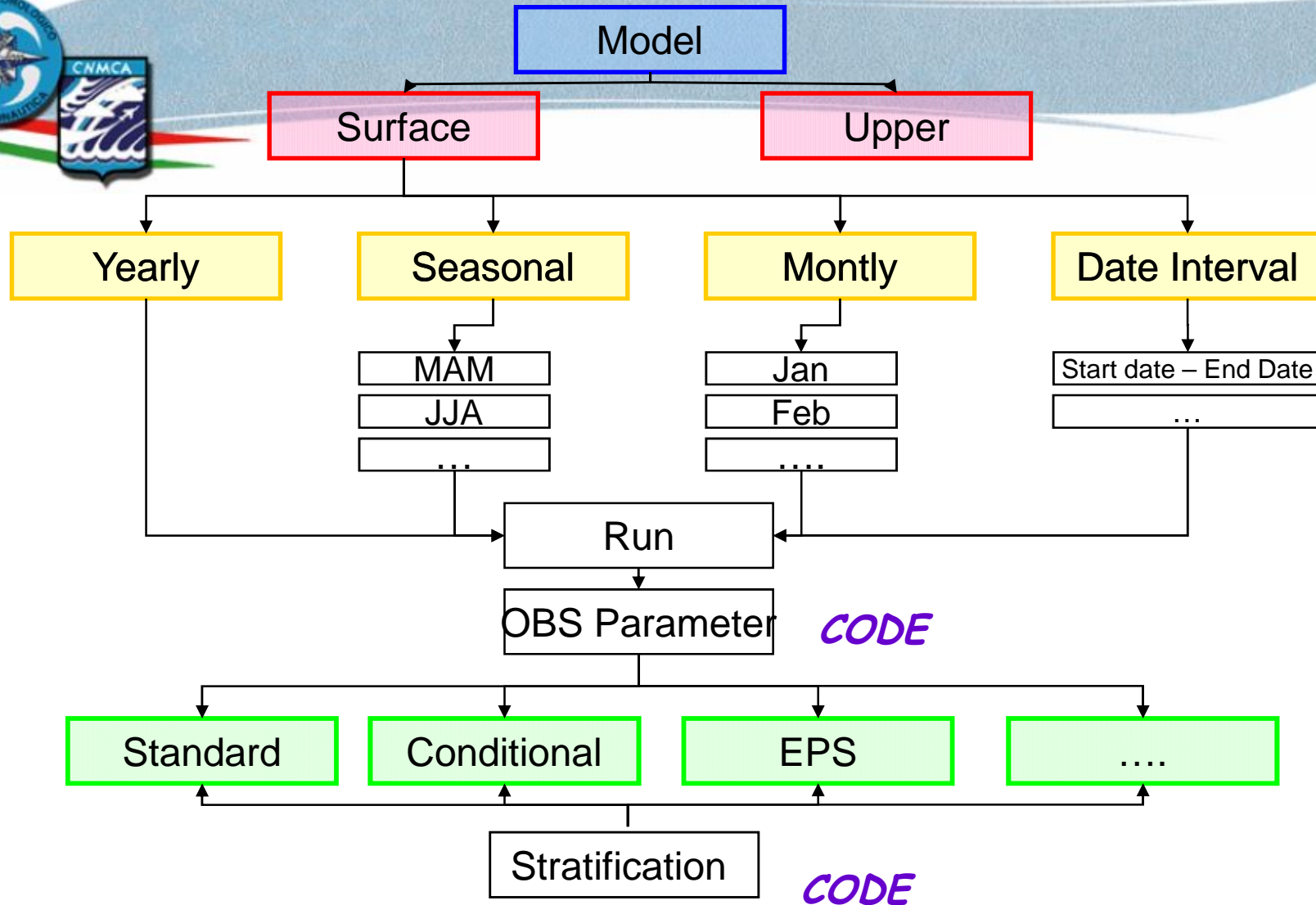
Ex . in the test machine <http://80.17.44.25/versus/html/>





## Task 1: Consolidation and fine tuning of the system

- ✓ Automatic storage of figures with standard names
- ✓ Replication function of similar verification
- ✓ Inclusion of Performance diagrams in VERSUS plots



FILE NAME \_ Verification\_ID





# Task 1: Consolidation and fine tuning of the system

- ✓ Automatic storage of figures with standard names
- ✓ Replication function of similar verification
- ✓ Inclusion of Performance diagrams in VERSUS plots





# Task 1: Consolidation and fine tuning of the system

In the Verification

Standard Verification			
Periodical Selection			
From: 2012-06-01 To: 2012-06-30			
Description	Date	Data Avail.	Susp. OBS
<a href="#">ECMWF Seasonal MSLP Run 00 - Italy</a> [PRESSURE REDUCED TO MEAN SEA LEVEL]	Summer 2012	Yes	
<a href="#">ECMWF Seasonal MSLP Run 00 - Italy corr</a> [PRESSURE REDUCED TO MEAN SEA LEVEL]	Summer 2012	Yes	

### Report Verification

#### Standard Verification Report

Id	818
Name	ECMWF Seasonal MSLP Run 00 - Italy
Criteria Type	Surface
Dichotomic	No
Run	0
Frequency	Seasonal
Period Based	Forecast
Steps	START: 0 END: 168 INTERVAL: 12
Stratification	All Italian Stations
Geographical Distribution	No

#### OBS

Parameter	PRESSURE REDUCED TO MEAN SEA LEVEL - hPa
Suspect Value	No

#### FCS

Model	ECMWF
Grid	Lat first:48; Lon first:6; Lat last:36; Lon last:19
Parameter	MSLP - hPa - 69
Scores	MAE ME RMSE
Method	02) Nearest Point height optimized Algorithm: id_order >= 1

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### Standard Verification

#### Registration

Criteria type: Surface

Description: ECMWF Seasonal MSLP Run 00 - Italy

Stratification: All Italian Stations

Date: Seasonal  
Frequency:  Forecast

Period based:  Observation  Forecast

Step: Start 0 End 168 Interval 12

Observation: Parameter PRESSURE REDUCED TO MEAN SEA LEVEL

Forecast: Model ECMWF-203-98-1 Run 0

Grid: Lat1: 48; Lon1: 6; Lat2: 36; Lon2: 19

Parameter: MSLP - hPa - 69

Method: 02) Nearest Point height optimized

Index:  dichotomic  continuous  
ME--1  
MAE--2  
RMSE--4

Suspect Observation:  Not Active  Active

Geographical Score Calculation:  Not Active  Active

Save

For all type of verification!!!





# Task 1: Consolidation and fine tuning of the system

- ✓ Automatic storage of figures with standard names
- ✓ Replication function of similar verification
- ✓ Inclusion of Performance diagrams in VERSUS plots



# VERSUS 3.1 - Performance Diagrams

The Performance Diagrams are self performed in any Dichotomic Standard Verification

Standard Report				
Periodical Seasonal-Surface				
From: 2012-04-01 To: 2012-08-31				
Run: 0				
Description	Date	Data Avail.	Susp. OBS	Numeric Results
ECMWF Seasonal Prec 12H Run 00- Italy South [PRECIPITATION]	Spring 2012	No		
	Summer 2012	Yes		
ECMWF Seasonal Prec 24H Run 00 - Italy South [PRECIPITATION]	Spring 2012	No		
	Summer 2012	Yes		

Results: 2

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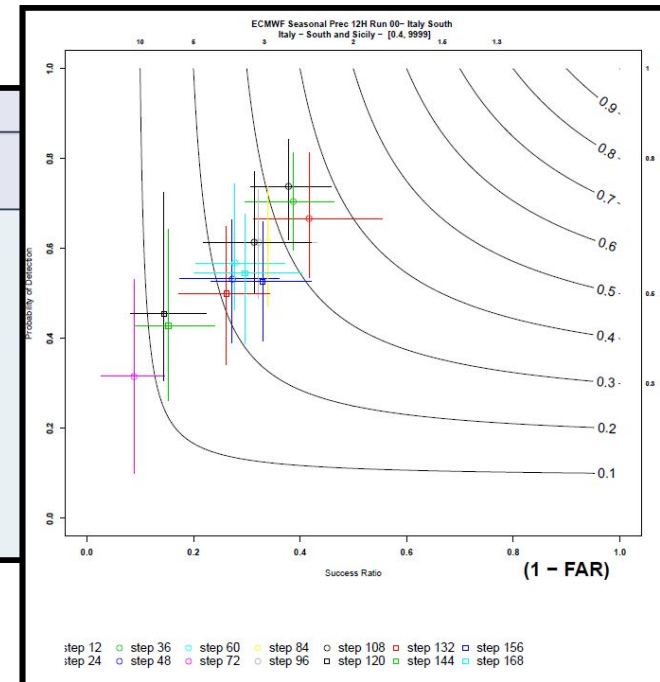
**Graphic Viewer**

Criteria:  
From :2012-06-01 To: 2012-08-31

[Click here to download the PDF](#)  
**PD\_845\_0.pdf**  
 Click on image to enlarge

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**PD\_845\_0.2.pdf**  
 Click on image to enlarge

[Click here to download the PDF](#)  
**PD\_845\_0.4.pdf**  
 Click on image to enlarge





## Task 2 Test Area and Test Procedure

**Task 2.a** The machine is available through internet from November 2012 and now it is updated at Version 3.1.

<http://80.17.44.25/versus>

**Task 2.c** Definition of the test procedure

The Document is available in the forum topic:

<http://www.meteoam.it/forum/viewtopic.php?f=8&t=106>





## Task 3 Implementation of Probabilistic Scores

Requirements defined with the collaboration of the WG7 coordinator!!  
The main development is available in  
**VERSUS 3.0**

In version 3.1, there are few improvements defined during the **VUS 2013**



The task 3.c (WEB page Creation for CROSS model) was not considered crucial for the project so it was deleted with the WG assent.



# Task 4 - WMO BUFR standard

## VERSUS 3.1

The basic choice is to keep the ECMWF rules even if BUFR data are coded according the WMO rules

### BUFR Mapping Table - Configuration Area

BUFR Mapping		
Report		
ECMWF CODE	13021	Configuration
ECMWF Description	TOTAL PRECIPITATION PAST 6 HOURS	Weather Type
WMO Code	13011	Stratification
Height Sensor	2	Station
Displacement	-6	Index
Type	cumulation field surface	Run
Unit input	KG/M**2	BUFR Mapping
Conversion Formula [PHP code]		Modify
Mesurement	KG/M**2	Registration
		Delete
		Parameter
		Cast Method
		Recast Model
		Observation
		ographic Map

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## TASK 4.c (old): Implementation of Exp version

The task 4.c (old) was **SUBSTITUTED**: this activity is already possible in VERSUS, indirectly.

Documentation on how to upload experimental versions of COSMO models in VERSUS is available in the forum area

(Topic <http://www.meteoam.it/forum/viewtopic.php?f=8&t=101> ) including examples of scripts.

**Substituted**

with

Task 4.d Implementation of 1h/3h cumulated precipitation and wind gusts



## TASK 4.c 1/3h for precip. cumulation

We are extending the verification creation on 1/3 hours cumulated precipitation using the hourly accumulation.

Concerning the 6/12/24 hours cumulated we've adopted the WMO Standard Synop Regulations:

❖ 00 UTC	6 hour precip sum
❖ 06 UTC	12 hour precip sum
❖ 12 UTC	6 hour precip sum
❖ 18 UTC	12 hour precip sum



## Task 4.c Parameter TRI=2 (ex Wind Gust)

The parameters with Time Range Indicator = 2 are the following:

Par	Tab	Name	Levtyp	Field
15	2	TMAX_2M	105	2m maximum temperature
16	2	TMIN_2M	105	2m minimum temperature
187	201	VMAX_10M	105	maximum 10m wind speed
216	201	VABSMX_10M	105	maximum 10m wind speed without gust
218	201	VGUST_DYN	105	maximum 10m dynamical gust
219	201	VGUST_CON	105	maximum 10m convective gust



The Observations for this kind of parameters follow National Rules



# In conclusion

Tasks	Contributing scientists	FTE year	Deliverables	Start	Date of delivery	STATUS
Task 0 a b c d Sub Task	PL team - Italy PL team - HNMS PL team - Italy TBD DWD	0,5 0,02 0,03 0,2 0,05	Help Desk, bugs fixing Documentation Update New patches release Test of New VERSUS release Subtask COSI Test	Sept 2012	Sept 2013	DONE IN PART DONE DONE POSTPONED
Task 1 a b c d	PL team - Italy TBD PL team - Italy PL team - Italy	0,15 0,05 0,15 0,15	Software upload Test Creation of a scheduled task Doxigen Inst. and code adjustment	Sept 2012	Sept 2013	DONE DONE DONE DONE
Task 2 a b c	PL team - Italy PL team - Italy HNMS	0,03 0,03 0,02	Installation Test Machine Enviroment Document to describe test procedure	Sept 2012 Oct 2012 Oct 2012	Oct 2012 Oct2012 Nov 2012	DONE DONE DONE
Task3 a b c d	PL team- Italy PL team- Italy PL team- Italy PL team - WG7	0,2 0,05 0,05 0,06	Implementation of Probabilistic Scores Creation of WEB pages for GUI WEB page Creation for CROSS model Test phase	Ongoing Dec2012	Dec 2012 Feb 2013	DONE DONE DELETED DONE
Task 4 a b c (old) c new	PL team - Italy PL team - HNMS PL team - Italy PL team - Italy	0,1 0,02 0,1 0,1	Implementation of template for BUFR Test Phase Implementation of Exp version (Substituted) Implementation of precipitation cumulation period (1 and 3 hours)	Jan 2013 Apr 2013 Apri2013	Mar 2012 Jun 2013 Jul 2013	DONE DONE SUBSTITUTED DONE



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# VERSUS 3

## PP Phase 6 2013/2014

The goal is to complete the last developments, ensure the stability of the system in order to replace the existing verification systems in COSMO community.

The following task list is the result of the WG5 requirements collected during the last **VERSUS** User Seminar (VUS) in May 2013







# Task list - Overview

- Task 0:** Help Desk, Refinements VERSUS code
- Task 1:** Refinement of functionalities
- Task 2:** Final Implementation of Feedback Files
- Task 3:** Introduction of additional statistical techniques
- Task 4:** EPS Refinements
- Task 5:** Imp. of functionality to ingest/manage GRIB2
- Task 6:** Extension of the ASCII import capabilities

Modular tasks not dependent on each other

Do not perform or delete a task doesn't have an impact with the others.





# Crucial Issues

Plan is ambitious and challenging  
Unfortunately, unplanned events have occurred later  
and have made difficult to carry out each task.

The main reasons are:

- The forced absence of the PL for 6 months (the Team will lose a resource)
- Unforeseen delay in the signing of the contract with the external consultant



# Proposals

1. Definition of a **realistic assessment of priorities** as well as of necessary resources.

Not only from the WG but also from the STC

2. Reduce **the commitments** of the PL Team in some activities

WG5 Members Collaboration

3. Additional **resources** have to be searched intensively for smaller developments in different way (COSMO funds, university students)

WG5 Members Collaboration

4. A **periodic report** (every 2/3 months) is proposed to track the developments.



## Task 0: Help Desk, CODE Refinements

This task includes all activities required for the user to support and functional improvement of the system.

The most challenging are: Help Desk, Documentation update, New VERSUS releases, Bugs Fixing and Test Phases.

This year new tasks have been added :

- VERSUS *Course for Developers* in May 2/3 days
- Code adjustment for *Partitioning TABLES*



# Task1: Refinement of functionalities

The goal is improve the functionalities already present in VERSUS

## Main activities:

➤ Conditional Verification: condition in both fcs and obs Data

➤ Precipitation analysis from composite sources

It's crucial to define a **POSTPONED** code for the precipitation parameter (SCA- TAG)

➤ Confidence Interval **POSTPONED**



## Task 2: Implementation of FF

The use of Feedback Files (FF) is important to improve upper air verification and Conditional Verification

In the 2010 a feasibility study was made. Now the great increase of VERSUS functionalities lead to the need to re-analyze the solution.

### Main activities:

- Re-analysis and DB creation
- Implementation of Loader module for FF
- Creation of new Web GUI





## Task 3: Additional stat. techniques

This task involves the adoption of some external package in order to perform Verification with neighborhood methods and spatial verification (upscaling methods)

### Main activities:

- Use of Fieldextra or LIBSIM as an external tool for BOX, (regridding of fcs/obs, calculations of SuperObs and Fcs mean in boxes or alert areas)

**SCA or TAG Decision**

- Integration in VERSUS
- Integration Fuzzy Verification
- Integration SAL **POSTPONED**





## Task 4: EPS Refinements

Task defined with the WG7 collaboration

Implementation of CRPS/CRPSS and Plots of spread/skill relation

To ensure proper functionality of the system a pre-operational phase has been defined. After this period (4 months), a list of feedback will be drawn to define new developments.

The purpose of this task is to be sure that what has been developed is consistent with the needs of each meteorological services



# Task 5: Ingest/manage GRIB2

VERSUS needs to be adapted in order to accept GRIB2 as input for fcs. The system is already adapted for GRIB2 as it uses Grib\_API as library for loading, but Tables containing FCS data need to be updated accordingly.

## Main activities:

- Creation of new tables for GRIB2
- Comparison with existing Tables GRIB1
- Parameter Adjustment
- Loader Module implementation

**POSTPONED**



## Task 6: Extension of the ASCII import capabilities

The growing need for a flexible data import, suggested an extension of ASCII import capabilities of VERSUS.

The system is able to read SYNOP observations in ASCII format but the possibility to import both model and observational data would add a great deal of flexibility to the software.

### Main activities:

- Feasibility study and documentation to use the ATAB file
- Implementation of final template for ingesting ASCII files in VERSUS



Thanks  
for your Attention!

