

INM-SREPS & GLAMEPS Postprocessing & Verification



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Hirlam/Aladin ASM
Oslo, April 2007



features

■ Platforms:

- PC linux or ecgate
- Software: ksh, ECMWF metview, fortran, awk
- (If) Web: Apache, AniS, Image-Magick
- (If) BMA: R

■ General framework

- Working embedded in **hirlam** framework, not yet 100% “integrated”
- Reference system available at INM and on ecgate (pp 100%, verif 50%):
 - Few ksh configuration files & working shell-scripts
 - Few machine-dependent executables
 - Big metview library
- Hirlam user:
 - Settings on a single file \$HL_EXP/scripts/**Env_ppv** file
 - Local modifications on \$HL_EXP/hppv
 - Working directory hirlam style

PP&V files

Files	Format
Forecasts	Grib, asimof-grib, ascii
Analysis	Grib
Observations	Bufr, metview geopoints
Verification	Ascii (grib, metview geopoints)
Visualization	postscript, jpeg, png, gif

metview?

- ECMWF metview ≥ 3.8
- Visual
 - Easy & fast development
- Macro language
 - Operations: slower? BUT good
 - Modular, structured, flexible
 - Semi-skimmed Object-oriented
 - Encapsulation, polymorphism, inheritance
 - Only private data members
- Data types
 - Natural: dates, **fieldsets**, **observations...**
 - Not optimal for arrays
 - Very rich but not fast: definitions, lists

library

- PP&V library of metview macros is mainly modular, structured, flexible, and part of it object-oriented
- Postprocessing, visualization and verification methods are flexible and try to be as much general as possible, so they can be easily modified to perform similar tasks with different sets of parameters, times, levels, etc.
- Current developments
 - Deterministic PP (graphical products)
 - Ensemble PP (PDF building & products) & Verification

Env_ppv file sample

```
#!/bin/ksh
```

```
HPPVSET_AVERAGESactive=0
```

```
# $HL_EXP/$yyyy/$mm/$dd/$hour/mbrNNN/fcyyyymmdd_HH+TTTve
```

```
function PpEnsGetdata
```

```
{ set -a -xv
```

```
PpEns
```

```
HPPVSET_ACTIONS="gi"
```

```
HPPVSET_ENSEMBLEactive=0
```

```
}
```

```
function PpEnsWeb
```

```
{ set -a -xv
```

```
PpEns
```

```
HPPVSET_ACTIONS="m"
```

```
HPPVSET_PRODUCTS="\
```

```
    SpreadEmeanZ500:off:on:nil \
```

```
    SpreadEmeanPmsl:off:on:nil \
```

```
    ProbS10m:off:on:nil:10,9999,off;20,9999,on \
```

```
"
```

```
HPPVSET_ENSEMBLEactive=1
```

```
}
```

```
export HPPV_SETS_VALID="\
```

```
PpEnsGetdata \
```

```
PpEnsDiss \
```

```
PpEnsWeb \
```

```
"
```

Pre-PP

Input	Pre-PP	Output
<p>Non-homogenous forecasts of ensemble members</p> <ul style="list-style-type: none"> ▪ Different formats (asimof, grib styles) ▪ Slightly different resolutions ▪ Different areas <p>Hirlam current style or old style Aladin</p>	<p>Get data (ksh) Horint (INTP)</p>	<p>Homogenous forecasts</p> <ul style="list-style-type: none"> ▪ Grib style ▪ Same resolutions ▪ Same area <p>Hppv directories</p>

Visualization methods

Input	Visualization methods	Output
<ul style="list-style-type: none">▪ Forecasts of each member (grib)▪ [Ascii file with: BMA features of each ensemble member]	<p>Metview</p> <ul style="list-style-type: none">▪ Det PP:<ul style="list-style-type: none">▪ Maps▪ Ens PP:<ul style="list-style-type: none">▪ Build PDF▪ Maps	<p>Maps images (jpeg, ps, png, gif)</p>

Vis: Deterministic

Deterministic PP		
Visualization methods	Notes	Currently scheduled at INM (EXTENSIBLE to ANY)
Deterministic maps	Typical meteorological maps for each member	<ul style="list-style-type: none"> ▪ Z500,T500 ▪ MslP,24hAccPrec ▪ 300hPa wind ▪ 2mT ▪ 10m wind
Postage stamps charts	Combining all members Made up with thumbnails in the web server or with metview	

Vis: Deterministic

http://sur.inm.es/Ensembles/Mummub/html/Mummub-Z500T500.html - Microsoft

Archivo Edición Ver Favoritos Herramientas Ayuda

← Atrás → Búsqueda Favoritos Multimedia

Dirección http://sur.inm.es/Ensembles/Mummub/html/Mummub-Z500T500.html

Multimodel-Multiboundaries

Run: D0, 00UTC, HH+00..HH+24..HH+72

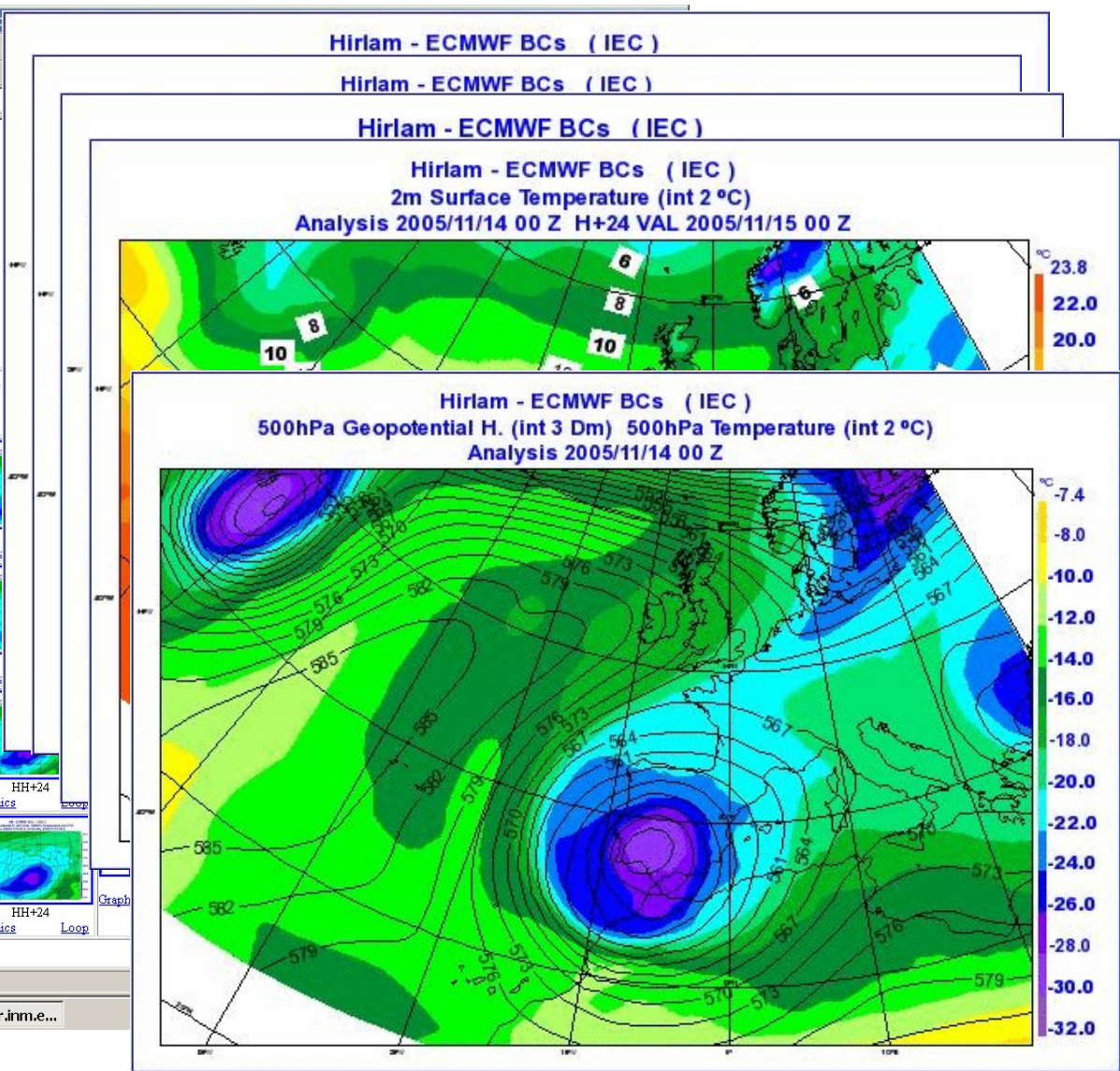
500hPa Geopotential height & Temperature

Models X Boundaries

Models / Features	AVN-BCs		ECMWF-B	
Hirlam				
	HH+24	HH+24	HH+24	HH+24
	Graphics	Loop	Graphics	Loop
HRM				
	HH+24	HH+24	HH+24	HH+24
	Graphics	Loop	Graphics	Loop
MMS				
	HH+24	HH+24	HH+24	HH+24
	Graphics	Loop	Graphics	Loop
UM				
	HH+24	HH+24	HH+24	HH+24
	Graphics	Loop	Graphics	Loop

Listo

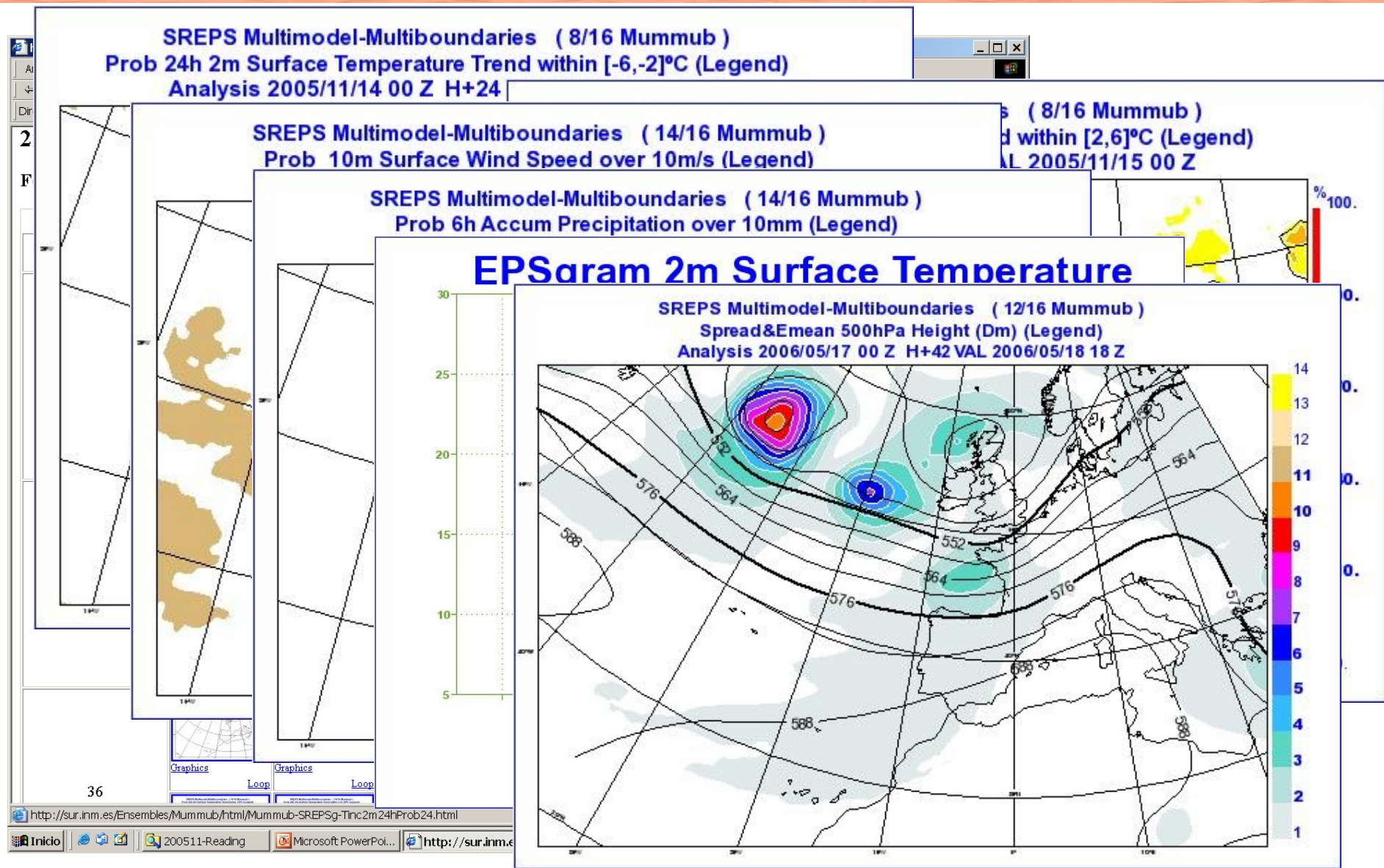
Inicio 200511-Reading Microsoft PowerPol... http://sur.inm.e...



Vis: Ensemble

Probabilistic		
Visualization methods	Notes	Currently INM (EXT. to ANY)
Probability maps	As usual	<ul style="list-style-type: none"> •2mT trend •10m wind speed
Postage stamps charts	Combining different probability maps	<ul style="list-style-type: none"> •6hAccPrec •6hAccSnow
Spread with Ensemble Mean	As usual	<ul style="list-style-type: none"> •Z500 •T500 •MsIP
EPSgrams box-plot	Very slow, not operational	
EPSgrams curves	Under development	<ul style="list-style-type: none"> •2mT trend •6hAccPrec •10m wind speed
Plumes, Spaghetti	Not developed	

Vis: Ensemble



Verification methods

Input	Verification methods	Output
<ul style="list-style-type: none"> ▪ Forecast files (grib) ▪ Analysis files (grib) ▪ Observation files <ul style="list-style-type: none"> ▪ SYNOP, TEMP (bufr) ▪ Rain gauge networks (ascii, miscellaneous) 	<p>Metview</p> <ul style="list-style-type: none"> ▪ Observation files (metview geopoints) ▪ Daily ascii verif files ▪ Daily grib & geopoints verif files 	<ul style="list-style-type: none"> ▪ Ascii verif files ▪ Verif graphs ▪ Grib & geopoints verif files (spatial structure) ▪ Verif maps

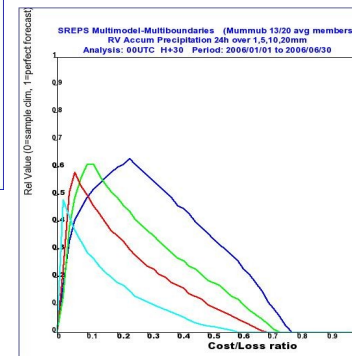
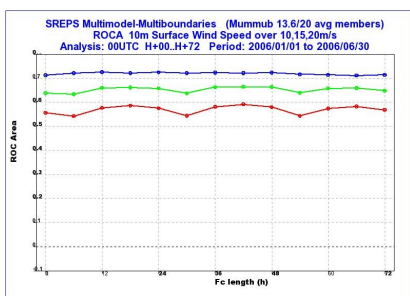
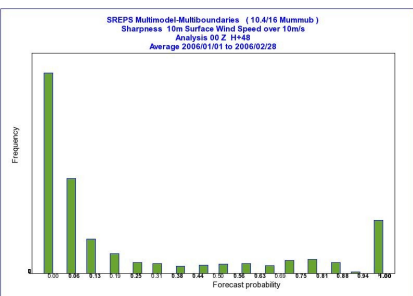
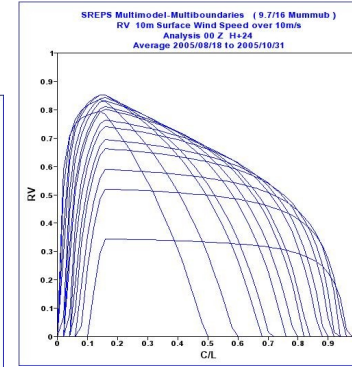
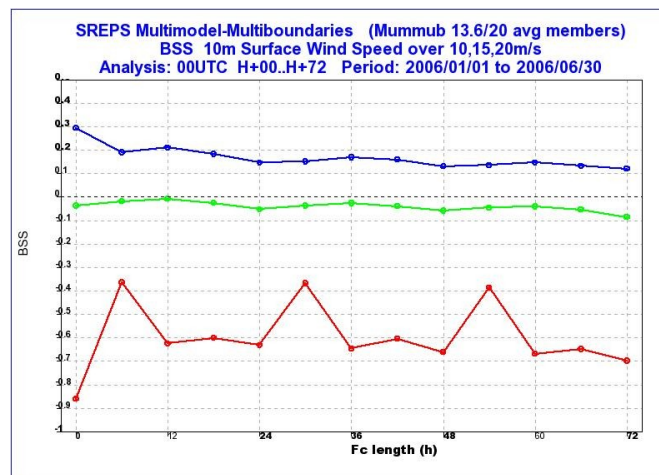
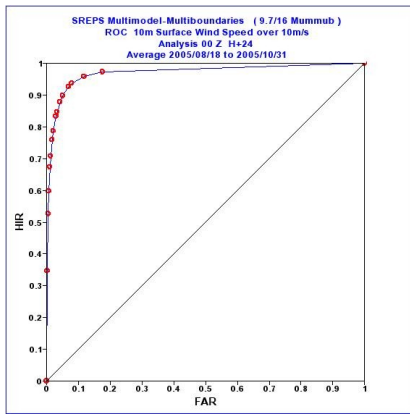
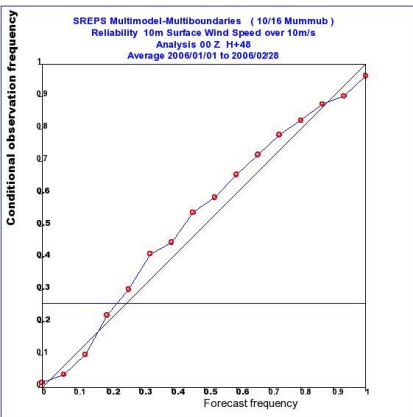
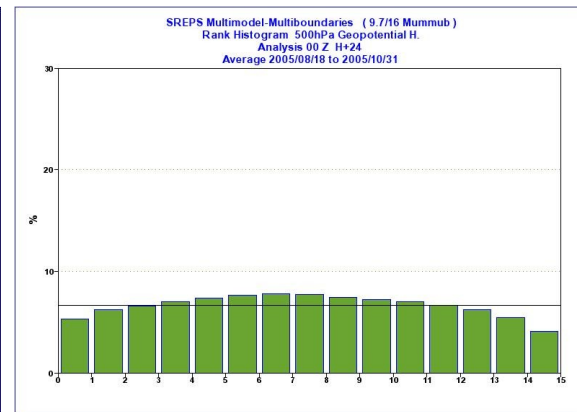
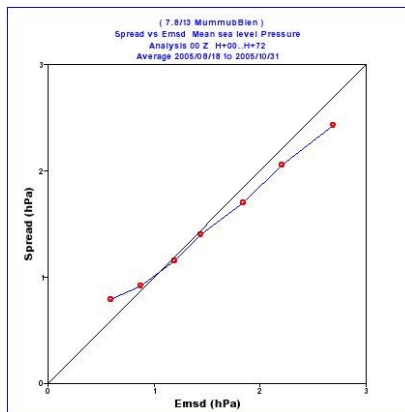
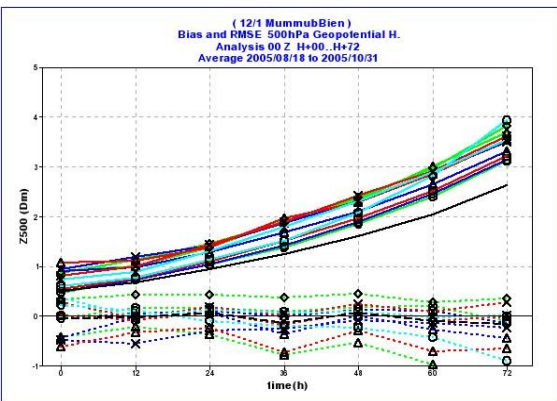
Verification scores

Context	Basic Scores	Derived scores	Currently scheduled at INM (EXT. to ANY)
Deterministic Scores <ul style="list-style-type: none"> ▪ each member ▪ ensemble mean ▪ control member (not yet) 	Bias MSE MAE Max, Min, Average, Median	RMSE	<ul style="list-style-type: none"> ▪ Z500 ▪ T500 ▪ MsIP ▪ 10m wind speed ▪ 6hAccPrec ▪ 24hAccPrec
Probabilistic Scores	Variance, IQR	Stddev, Spread	
	Rank list	Rank list Percentage outliers	
Probabilistic Performance Measures related with fixed thresholds	BS and its decomposition	BSS and its decomposition	
	Joint Distribution (Contingency Tables)	Base Rate, H, F, etc ROC, ROCArea Reliability, sharpness RV	<ul style="list-style-type: none"> ▪ 10m wind speed (10,15,20m/s) ▪ 6,24hAccPrec (1,5,10,20 mm)

Verification graphs

Verification	Visualization methods	Notes	Currently scheduled at INM (EXTENSIBLE to ANY)
Deterministic	Bias&RMSE with fc length of all members and ensemble mean	Control forecast not yet included	<ul style="list-style-type: none"> ▪Z500 ▪T500 ▪MsIP
	Bias&RMSE time series	Under development	
Probabilistic	Rank histograms, PIT histograms	-	
	Spread-skill (spread vs ens mean RMSE)	-	
	Percentage outliers time series	Under development	
Probabilistic skill scores	BSS with fc length	-	
Probabilistic performance measures	ROC curves	-	<ul style="list-style-type: none"> ▪10m wind speed (10,15,20 m/s) ▪24hAccPrec (1,5,10,20 mm)
	ROCA with fc length	-	
	Reliability diagrams	-	
	Sharpness histograms	-	
	RV curves	-	

Verification graphs





INM

Short-range Ensemble Prediction System

Home Page

(Internal web page)

Today Ensembles

	Today		D-1		D-2		D-3		D-4		D-5		D-6		D-7	
Multimodel-Multiboundaries	00	12	00	12	00	12	00	12	00	12	00	12	00	12	00	12
Multiphysics-MM5	00		00		00		00		00		00		00		00	
Lagged-ONR	00		00		00		00		00		00		00		00	
Lagged-Multimodel-Multiboundaries	00		00		00		00		00		00		00		00	
PEPS	00															

Case Studies

- [2006/02/21 1st day 16 members Mummub Ensemble](#)
- [2006/03/02 Snow storm over Germany](#)
- [2006/03/03 Snow storm over Germany](#)

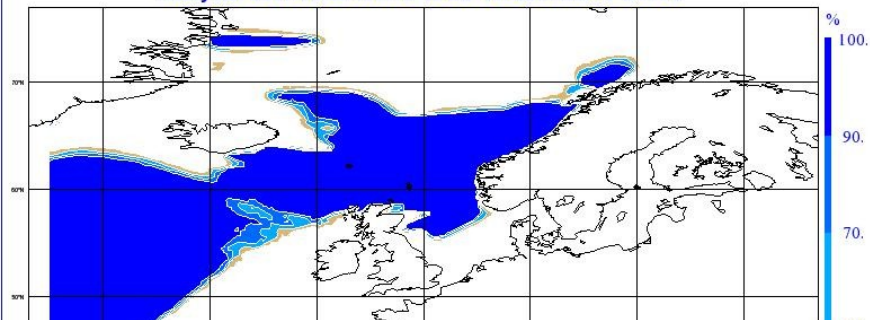
Administration

- [Grib data archive](#)
- [Verification archive](#)

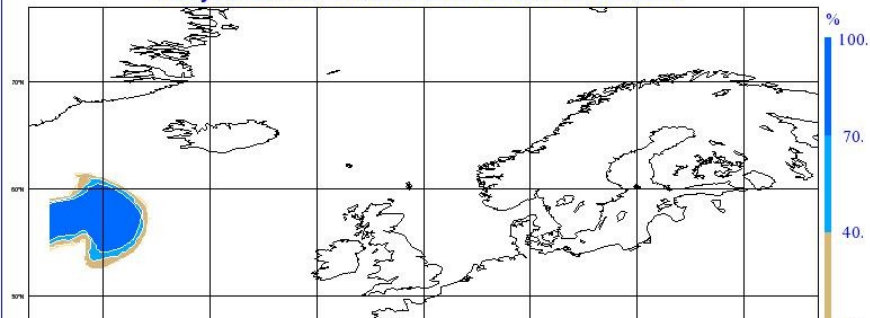
GLAMEPS

- 2006 Jun, Norkopping: 1st ww
 - 1st trial outside INM
 - Successful manually on INMSREPS and Aladin EPS
 - Improvements needed on interface
 - Proposed installation on ecgate
- 2007 Mar, Reading: 2nd ww
 - Improve installation on ecgate
 - (Half-)completed tests on Hirlam EPS:
 - Pp ~ 100%
 - Verif ~ 50%
 - Near fully available for Hirlam EPS
 - Work needed for Aladin EPS

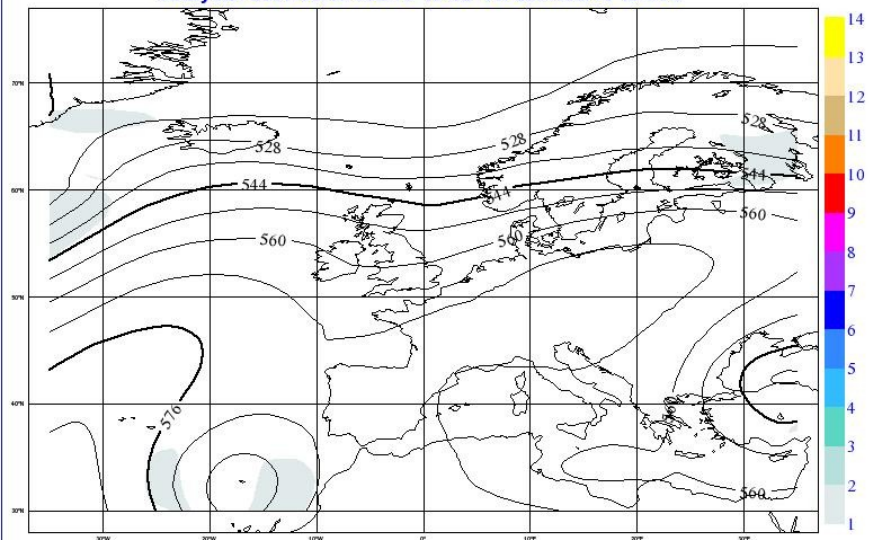
Unknown model (EPS ?/? members)
Prob 10m Surface Wind Speed over 10m/s (Legend)
Analysis: 2007/03/13 00UTC H+12 VT: 2007/03/13 12 UTC



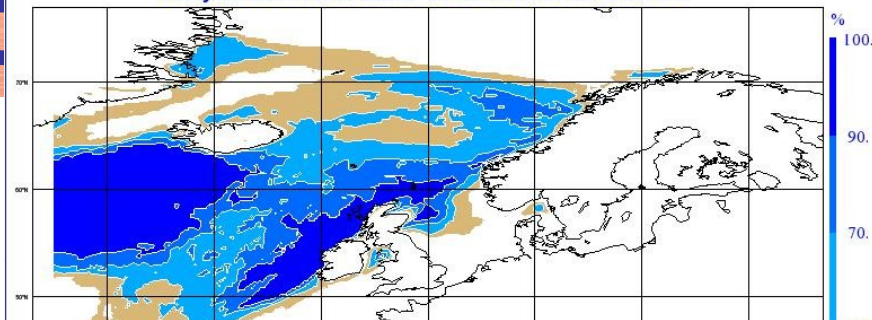
Unknown model (EPS ?/? members)
Prob 10m Surface Wind Speed over 20m/s (Legend)
Analysis: 2007/03/13 00UTC H+12 VT: 2007/03/13 12 UTC



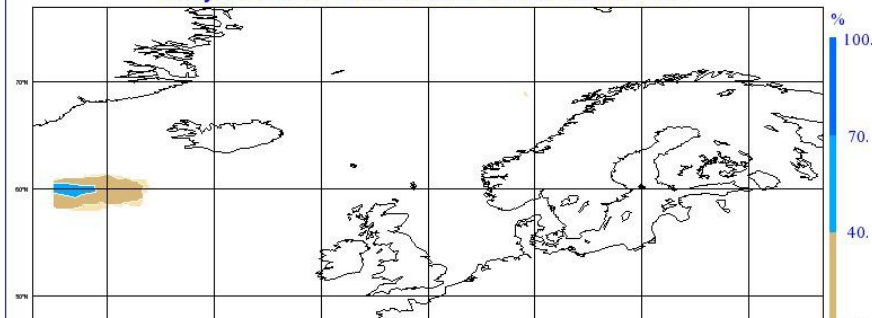
Unknown model (EPS ?/? members)
Spread&Emean 500hPa Height (Dm) (Legend)
Analysis: 2007/03/13 00UTC H+12 VT: 2007/03/13 12 UTC



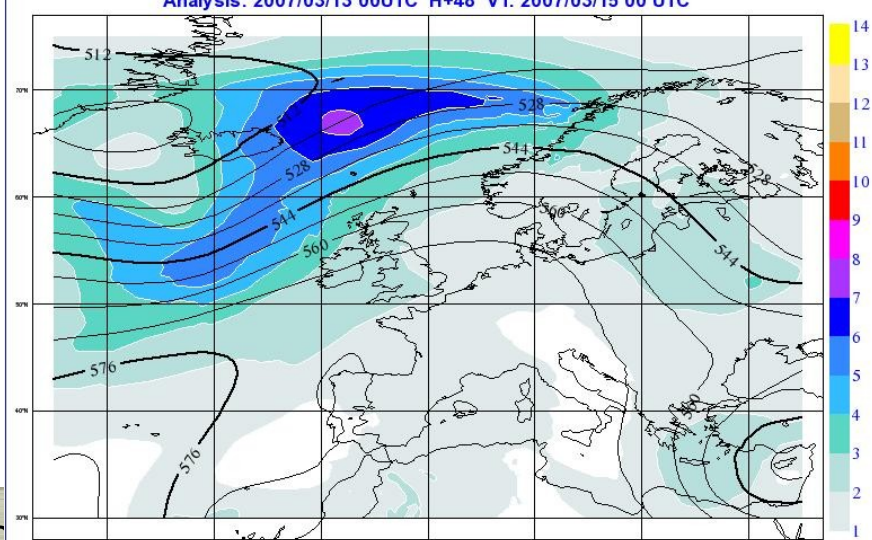
Unknown model (STP ?/? members)
Prob 10m Surface Wind Speed over 10m/s (Legend)
Analysis: 2007/03/13 00UTC H+48 VT: 2007/03/15 00 UTC



Unknown model (STP ?/? members)
Prob 10m Surface Wind Speed over 20m/s (Legend)
Analysis: 2007/03/13 00UTC H+48 VT: 2007/03/15 00 UTC



Unknown model (STP ?/? members)
Spread&Emean 500hPa Height (Dm) (Legend)
Analysis: 2007/03/13 00UTC H+48 VT: 2007/03/15 00 UTC



bl
CS

M Oslo

Benchmarks

- Always relative
- Not yet fully tested outside INM. The first tests on ecgate show good results, still not dropped on to a table, but soon.
- At INM it takes: PP ~ 1.5 hour/day, V ~ 1.5 hour/day
 - Several 20/40 member ensembles
 - 380x164 grid points
 - 3.5GHz 2GB linux machine

Under development

The improved user interface installed on ecgate is expected to satisfy hirlam/aladin users, in the sense to be friendly enough and hirlam/aladin-frameworking	First trial
Poor documentation, half in Spanish, half in English. The “inner” documentation is actually better	under development
Forkable from mSMS Embeddable within HARMONIE?	to be done
No control member considered in graphs	to be done

Thank you



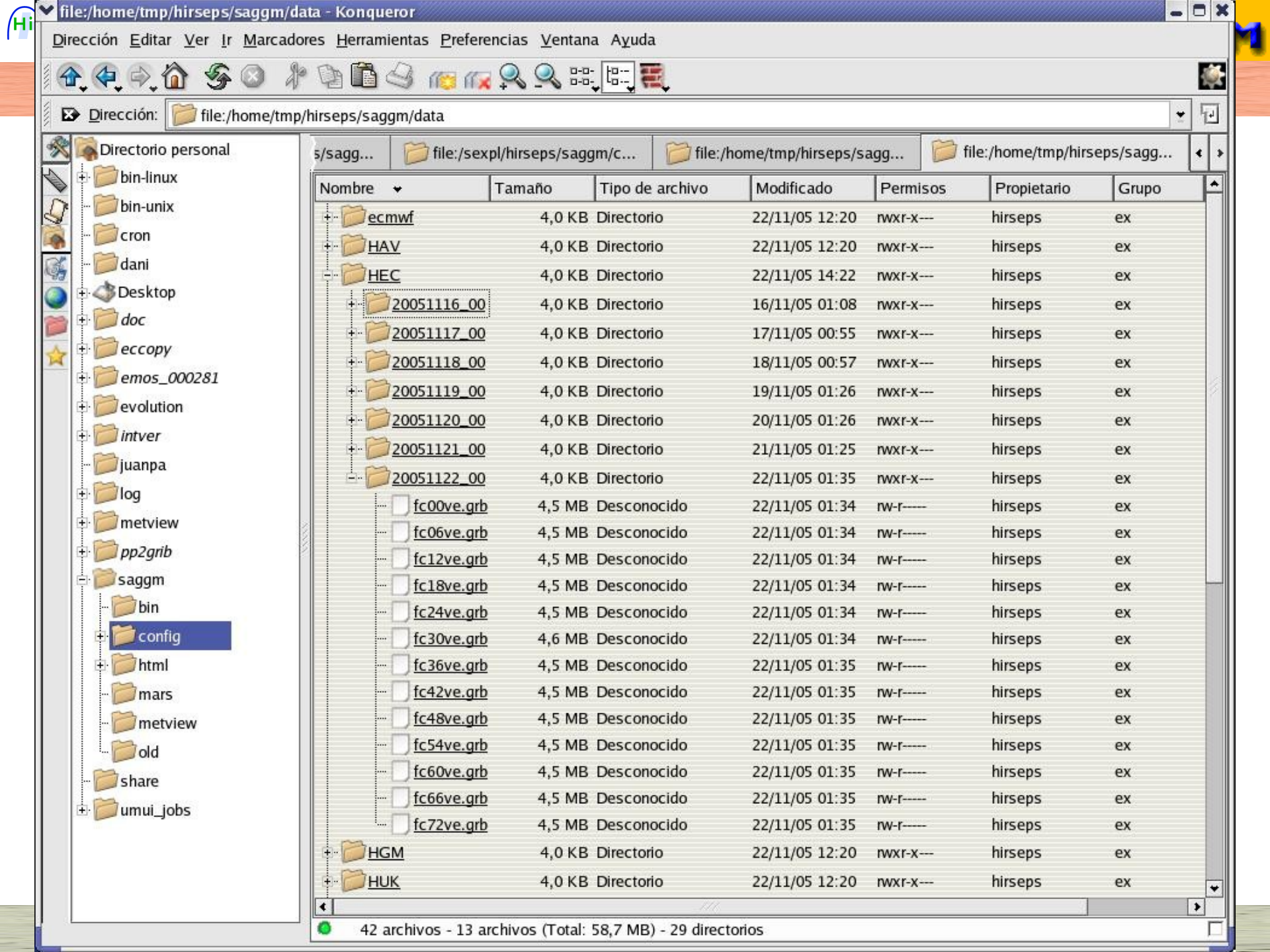
Hirlam csantos@inm.es
Aladin hagel.e@met.hu

Grib Data Archive

- Directory structure and file names
 - Following Hirlam if possible
 - `~/EXP/yyyymmdd_HH/fcNNve.grb` (obsolete soon)
 - To be improved: self-defined names, etc
- Format
 - Grib, hirlam style
- Fields
 - Z500, T500, T850
 - Pmsl
 - (U,V) 300, 500, 700, 850
 - AccP, 2mT, 10mU, 10mV
- Storage
 - 7 days all fields
 - Forever a subset
- Inventory

Parámetros seleccionados en Postproceso

- Isobáricos ($p=200,300,500,700,850,1000$):
 - Z (6,100, p)
 - T (11,100, p)
 - u (33,100, p)
 - v (34,100, p)
 - RH (52,100, p)
- Superficie:
 - T (11,105, 2)
 - u (33,105,10)
 - v (34,105,10)
 - PcpSt (62,105, 0)
 - PcpCo (63,105, 0)
 - NieCo (78,105, 0)
 - NieSt (79,105, 0)
 - (para hacerlo más confuso, en la tabla la lluvia va en orden St y Co, la nieve al revés)
- Nivel del mar:
 - P (1,103, 0)



Dirección: file:/home/tmp/hirseps/saggm/data

- Directorio personal
 - bin-linux
 - bin-unix
 - cron
 - dani
 - Desktop
 - doc
 - eccopy
 - emos_000281
 - evolution
 - intver
 - juanpa
 - log
 - metview
 - pp2grib
 - saggm
 - bin
 - config
 - html
 - mars
 - metview
 - old
 - share
 - umui_jobs

s/saggm... file:/sexpl/hirseps/saggm/c... file:/home/tmp/hirseps/saggm... file:/home/tmp/hirseps/saggm...

Nombre	Tamaño	Tipo de archivo	Modificado	Permisos	Propietario	Grupo
ecmwf	4,0 KB	Directorio	22/11/05 12:20	rw-r-x---	hirseps	ex
HAV	4,0 KB	Directorio	22/11/05 12:20	rw-r-x---	hirseps	ex
HEC	4,0 KB	Directorio	22/11/05 14:22	rw-r-x---	hirseps	ex
20051116_00	4,0 KB	Directorio	16/11/05 01:08	rw-r-x---	hirseps	ex
20051117_00	4,0 KB	Directorio	17/11/05 00:55	rw-r-x---	hirseps	ex
20051118_00	4,0 KB	Directorio	18/11/05 00:57	rw-r-x---	hirseps	ex
20051119_00	4,0 KB	Directorio	19/11/05 01:26	rw-r-x---	hirseps	ex
20051120_00	4,0 KB	Directorio	20/11/05 01:26	rw-r-x---	hirseps	ex
20051121_00	4,0 KB	Directorio	21/11/05 01:25	rw-r-x---	hirseps	ex
20051122_00	4,0 KB	Directorio	22/11/05 01:35	rw-r-x---	hirseps	ex
fc00ve.grb	4,5 MB	Desconocido	22/11/05 01:34	rw-r----	hirseps	ex
fc06ve.grb	4,5 MB	Desconocido	22/11/05 01:34	rw-r----	hirseps	ex
fc12ve.grb	4,5 MB	Desconocido	22/11/05 01:34	rw-r----	hirseps	ex
fc18ve.grb	4,5 MB	Desconocido	22/11/05 01:34	rw-r----	hirseps	ex
fc24ve.grb	4,5 MB	Desconocido	22/11/05 01:34	rw-r----	hirseps	ex
fc30ve.grb	4,6 MB	Desconocido	22/11/05 01:34	rw-r----	hirseps	ex
fc36ve.grb	4,5 MB	Desconocido	22/11/05 01:35	rw-r----	hirseps	ex
fc42ve.grb	4,5 MB	Desconocido	22/11/05 01:35	rw-r----	hirseps	ex
fc48ve.grb	4,5 MB	Desconocido	22/11/05 01:35	rw-r----	hirseps	ex
fc54ve.grb	4,5 MB	Desconocido	22/11/05 01:35	rw-r----	hirseps	ex
fc60ve.grb	4,5 MB	Desconocido	22/11/05 01:35	rw-r----	hirseps	ex
fc66ve.grb	4,5 MB	Desconocido	22/11/05 01:35	rw-r----	hirseps	ex
fc72ve.grb	4,5 MB	Desconocido	22/11/05 01:35	rw-r----	hirseps	ex
HGM	4,0 KB	Directorio	22/11/05 12:20	rw-r-x---	hirseps	ex
HUK	4,0 KB	Directorio	22/11/05 12:20	rw-r-x---	hirseps	ex

20051103_00 - /home/tmp/hirseps/saggm/verif/Det/IAV/2005/11/

File Edit Search Preferences Shell Macro Windows Help

fecha	pasada	alcance	validez	s_param	acum	threshold_down	threshold_up	ensemble	exp	score	value	check	realizations		
20051103		0	0	20051103_00		Z500	NOTDEF	NOTDEF	NOTDEF	NONE	IAV	Bias	-0.294828	1,1	62320
20051103		0	0	20051103_00		Z500	NOTDEF	NOTDEF	NOTDEF	NONE	IAV	MSE	0.710466	1,1	62320

- Directory structure and file names
 - ~/Det/EXP/yyyy/mm/yyyyymmdd_HH
 - ~/Ens/ENSEMBLE/yyyy/mm/yyyyymmdd_HH
- Format
 - ascii
 - Space-delimited
 - With header
- Fields
 - Fecha, pasada, alcance, validez..
 - s_param, acum, threshold_down, threshold_up..
 - Ensemble, exp..
 - Score, value, check, realizations
- Storage
 - \$TEMP daily, **\$SAN daily**
- **Inventario**

file:/home/tmp/hirseps/saggm/verif/ - Konqueror

Dirección Editar Ver Ir Marcadores Herramientas Preferencias Ventana Ayuda

Dirección: file:/home/tmp/hirseps/saggm/verif/

Directorio personal

- bin-linux
- bin-unix
- cron
- dani
- Desktop
- doc
- eccopy
- emos_000281
- evolution
- intver
- juanpa
- log
- metview
- pp2grib
- saggm
 - bin
 - config
 - html
 - mars
 - metview

Nombre	Tamaño	Tipo de archivo	Modificado	Permisos
Det	4,0 KB	Directorio	08/11/05 11:37	rw-r-x---
HAV	4,0 KB	Directorio	08/11/05 10:45	rw-r-x---
HEC	4,0 KB	Directorio	08/11/05 10:45	rw-r-x---
HGM	4,0 KB	Directorio	08/11/05 10:45	rw-r-x---
HUK	4,0 KB	Directorio	08/11/05 10:45	rw-r-x---
IAV	4,0 KB	Directorio	08/11/05 10:45	rw-r-x---
2005	4,0 KB	Directorio	14/11/05 06:40	rw-r-x---
08	4,0 KB	Directorio	08/11/05 11:31	rw-r-x---
09	4,0 KB	Directorio	14/11/05 06:40	rw-r-x---
10	4,0 KB	Directorio	14/11/05 06:40	rw-r-x---
11	4,0 KB	Directorio	22/11/05 12:30	rw-r-x---
20051103_00	11,0 KB	Texto sin formato	14/11/05 06:40	rw-r----
20051105_00	11,3 KB	Texto sin formato	14/11/05 06:40	rw-r----
20051106_00	11,3 KB	Texto sin formato	10/11/05 12:45	rw-r----
20051108_00	9,7 KB	Texto sin formato	12/11/05 12:46	rw-r----
20051109_00	9,7 KB	Texto sin formato	13/11/05 12:47	rw-r----
20051112_00	11,3 KB	Texto sin formato	16/11/05 12:47	rw-r----
20051113_00	10,0 KB	Texto sin formato	17/11/05 12:46	rw-r----
20051114_00	9,6 KB	Texto sin formato	18/11/05 12:45	rw-r----

20051114_00 (9,6 KB) Texto sin formato



Det Ver ascii file



20051103_00 - /home/tmp/hirseps/saggm/verif/Det/IAV/2005/11/

File Edit Search Preferences Shell Macro Windows

fecha	pasada	alcance	validez	s_param	acum	threshold_down	threshold_up	e
20051103		0	0	20051103_00		2500	NOTDEF	NOTDEF
20051103		0	0	20051103_00		2500	NOTDEF	NOTDEF
20051103		0	0	20051103_00		2500	NOTDEF	NOTDEF
20051103		0	0	20051103_00		2500	NOTDEF	NOTDEF
20051103		0	0	20051103_00		T500	NOTDEF	NOTDEF

Help

threshold_up	ensemble	exp	score	value	check	realizations
NOTDEF	NOTDEF	NONE	IAV	Bias	-0.294828	1,1 62320
NOTDEF	NOTDEF	NONE	IAV	MSE	0.710466	1,1 62320
NOTDEF	NOTDEF	NONE	IAV	RMSE	0.842892	1,1 62320
NOTDEF	NOTDEF	NONE	IAV	Plumes	561.728	1,1 62320
NOTDEF	NOTDEF	NONE	IAV	Bias	0.028006	1,1 62320
NOTDEF	NOTDEF	NONE	IAV	MSE	0.490365	1,1 62320
NOTDEF	NOTDEF	NONE	IAV	RMSE	0.700261	1,1 62320
NOTDEF	NOTDEF	NONE	IAV	Plumes	-17.7111	1,1 62320
NOTDEF	NOTDEF	NONE	IAV	Bias	-0.284572	1,1 62320
NOTDEF	NOTDEF	NONE	IAV	MSE	1.40574	1,1 62320
NOTDEF	NOTDEF	NONE	IAV	RMSE	1.18564	1,1 62320
NOTDEF	NOTDEF	NONE	IAV	Plumes	561.368	1,1 62320

file:/home/tmp/hirseps/saggm/verif/ - Konqueror

Dirección Editar Ver Ir Marcadores Herramientas Preferencias Ventana Ayuda

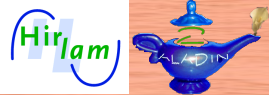
Dirección: file:/home/tmp/hirseps/saggm/verif/

Directorio personal

- bin-linux
- bin-unix
- cron
- dani
- Desktop
- doc
- eccopy
- emos_000281
- evolution
- intver
- juanpa
- log
- metview
- pp2grib
- saggm
 - bin
 - config
 - html
 - mars
 - metview

Nombre	Tamaño	Tipo de archivo	Modificado	Permisos
Det	4,0 KB	Directorio	08/11/05 11:37	rxr-x--
Ens	4,0 KB	Directorio	21/11/05 10:39	rxr-x--
LagONR	4,0 KB	Directorio	07/11/05 12:40	rxr-x--
Mummub	4,0 KB	Directorio	07/11/05 12:40	rxr-x--
2005	4,0 KB	Directorio	14/11/05 06:50	rxr-x--
08	4,0 KB	Directorio	14/11/05 06:50	rxr-x--
09	4,0 KB	Directorio	11/11/05 17:44	rxr-x--
10	4,0 KB	Directorio	12/11/05 16:09	rxr-x--
11	4,0 KB	Directorio	22/11/05 12:50	rxr-x--
20051103_00	260,7 KB	Texto sin formato	08/11/05 11:27	rw-r----
20051104_00	265,4 KB	Texto sin formato	08/11/05 13:00	rw-r----
20051105_00	277,6 KB	Texto sin formato	09/11/05 13:43	rw-r----
20051106_00	263,5 KB	Texto sin formato	10/11/05 13:04	rw-r----
20051107_00	157,3 KB	Texto sin formato	11/11/05 12:52	rw-r----
20051108_00	164,8 KB	Texto sin formato	12/11/05 13:07	rw-r----
20051109_00	165,1 KB	Texto sin formato	13/11/05 13:07	rw-r----
20051110_00	154,5 KB	Texto sin formato	14/11/05 12:56	rw-r----
20051111_00	185,6 KB	Texto sin formato	15/11/05 13:01	rw-r----
20051112_00	191,7 KB	Texto sin formato	16/11/05 13:10	rw-r----

20051112_00 (191,7 KB) Texto sin formato



Prob Ver ascii file



20051103_00 - /home/tmp/hirseps/saggm/verif/Ens/Mummub/2005/11/

File	Edit	Search	Preferences	Shell	Macro	Windows				
20051103		0	48	20051105_00	Rasc	24	NOTDEF	NOTDEF	Mummub	HAV, HEC
20051103		0	48	20051105_00	Rasc	24	NOTDEF	NOTDEF	Mummub	HAV, HEC
20051103		0	48	20051105_00	Rasc	24	NOTDEF	NOTDEF	Mummub	HAV, HEC
20051103		0	48	20051105_00	Rasc	24	NOTDEF	NOTDEF	Mummub	HAV, HEC

HEC, HGM, HUK, IAV, IEC, IGM, IUK, MAV, MEC, MGM, MUK, UEC	Var	28.4064	13,16	62320
HEC, HGM, HUK, IAV, IEC, IGM, IUK, MAV, MEC, MGM, MUK, UEC	EmBias	0.194936		13,16 6
HEC, HGM, HUK, IAV, IEC, IGM, IUK, MAV, MEC, MGM, MUK, UEC	EmMSE	8.12133	13,16	62320
HEC, HGM, HUK, IAV, IEC, IGM, IUK, MAV, MEC, MGM, MUK, UEC	EmPlumes		3.76806	13,16 6
HEC, HGM, HUK, IAV, IEC, IGM, IUK, MAV, MEC, MGM, MUK, UEC	Spread	5.32976	13,16	62320
HEC, HGM, HUK, IAV, IEC, IGM, IUK, MAV, MEC, MGM, MUK, UEC	Emsd	2.84979	13,16	62320
HEC, HGM, HUK, IAV, IEC, IGM, IUK, MAV, MEC, MGM, MUK, UEC	Talagrand		1660, 2829, 8484, 36	
HEC, HGM, HUK, IAV, IEC, IGM, IUK, MAV, MEC, MGM, MUK, UEC	Contingency		31929, 30391, 0, 0, 3	
HEC, HGM, HUK, IAV, IEC, IGM, IUK, MAV, MEC, MGM, MUK, UEC	ContingencyDensity		232, 14808	
HEC, HGM, HUK, IAV, IEC, IGM, IUK, MAV, MEC, MGM, MUK, UEC	Reliability		0, 0.0154255, 0.062	
HEC, HGM, HUK, IAV, IEC, IGM, IUK, MAV, MEC, MGM, MUK, UEC	Sharpness		0, 15040, 0.0625, 58	
HEC, HGM, HUK, IAV, IEC, IGM, IUK, MAV, MEC, MGM, MUK, UEC	BaseRate		0.51234, 0.51234, 0	
HEC, HGM, HUK, IAV, IEC, IGM, IUK, MAV, MEC, MGM, MUK, UEC	HitRate		1, 0.992734, 0.980519, 0.961	
HEC, HGM, HUK, IAV, IEC, IGM, IUK, MAV, MEC, MGM, MUK, UEC	FalseAlarmRate		1, 0.51275, 0.33335	
HEC, HGM, HUK, IAV, IEC, IGM, IUK, MAV, MEC, MGM, MUK, UEC	FalseAlarmRatio		0.48766, 0.32959, 0	
HEC, HGM, HUK, IAV, IEC, IGM, IUK, MAV, MEC, MGM, MUK, UEC	ProportionCorrect		0.51234, 0	
HEC, HGM, HUK, IAV, IEC, IGM, IUK, MAV, MEC, MGM, MUK, UEC	ROC		1, 1, 0.51275, 0.992734, 0.33	
HEC, HGM, HUK, IAV, IEC, IGM, IUK, MAV, MEC, MGM, MUK, UEC	ROCA		0.798301	13,16 6
HEC, HGM, HUK, IAV, IEC, IGM, IUK, MAV, MEC, MGM, MUK, UEC	RV		0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0	
HEC, HGM, HUK, IAV, IEC, IGM, IUK, MAV, MEC, MGM, MUK, UEC	Contingency		16121, 46199, 0, 0, 1	

```
cron.file - /sexpl/hirseps/cron/
File Edit Search Preferences Shell Macro Windows Help
#
# Saggm
# Cambio de hora para esperar a todos los MM5 20050817
#
30 21 * * * /sexpl/hirseps/saggm/bin/updatelogs
45 21 * * * /sexpl/hirseps/saggm/bin/saggm1 -b -p sched_LimpiezaGraficos
0 22 * * * /sexpl/hirseps/saggm/bin/saggm1 -b -p sched_DetONR061218
10 0 * * * /sexpl/hirseps/cron/lanza_saggm
0 1 * * * /sexpl/hirseps/saggm/bin/saggm1 -b -p sched_DetECMWF
0 4 * * * /sexpl/hirseps/saggm/bin/saggm1 -b -p sched_EnsLagONR
# 0 7 * * * /sexpl/hirseps/saggm/bin/saggm1 -b -p sched_DetHIRLAM
#30 10 * * * /sexpl/hirseps/saggm/bin/saggm1 -b -p sched_EnsGeneric
0 12 * * * /sexpl/hirseps/saggm/bin/saggm1 -b -p sched_GuardaDatos
20 12 * * * /sexpl/hirseps/saggm/bin/saggm1 -b -p sched_LimpiezaDatos
30 12 * * * /sexpl/hirseps/saggm/bin/saggm1 -b -p sched_Verif
#
```


Configuration

file:/home/tmp/hirseps/saggm/log - Konqueror

Dirección Editar Ver Ir Marcadores Herramientas Preferencias Ventana Ayuda

Dirección: file:/home/tmp/hirseps/saggm/log

Nombre	Tamaño	Tipo de archivo	Modificado	Permisos
ayer	4,0 KB	Directorio	25/05/05 08:00	rwxr-xr-x
DetECMWFayer	4,0 KB	Directorio	29/08/05 09:45	rwxr-xr-x
DetHAV	4,0 KB	Directorio	06/10/05 22:10	rwxr-x--
DetHEC	4,0 KB	Directorio	06/10/05 22:10	rwxr-x--
DetHGM	4,0 KB	Directorio	06/10/05 22:10	rwxr-x--
DetHUK	4,0 KB	Directorio	06/10/05 22:10	rwxr-x--
DetIAV	4,0 KB	Directorio	06/10/05 22:10	rwxr-x--
DetIEC	4,0 KB	Directorio	06/10/05 22:10	rwxr-x--
DetIGM	4,0 KB	Directorio	06/10/05 22:10	rwxr-x--
DetIUK	4,0 KB	Directorio	06/10/05 22:10	rwxr-x--
DetMAV	4,0 KB	Directorio	05/10/05 12:50	rwxr-x--
DetMEC	4,0 KB	Directorio	06/10/05 22:10	rwxr-x--
DetMGM	4,0 KB	Directorio	06/10/05 22:10	rwxr-x--
DetMP1	4,0 KB	Directorio	22/10/05 21:30	rwxr-x--
DetMP2	4,0 KB	Directorio	22/10/05 21:30	rwxr-x--
DetMP3	4,0 KB	Directorio	22/10/05 21:30	rwxr-x--
DetMP4	4,0 KB	Directorio	22/10/05 21:30	rwxr-x--
DetMUK	4,0 KB	Directorio	06/10/05 22:10	rwxr-x--

DetMUK/ Directorio

file:/sexpl/hirseps/saggm/config - Konqueror

Dirección Editar Ver Ir Marcadores Herramientas Preferencias Ventana Ayuda

Dirección: file:/sexpl/hirseps/saggm/config

file:/home/tmp/hirseps/saggm... file:/sexpl/hirseps/saggm/c... file:/home/tmp/hirseps/saggm...

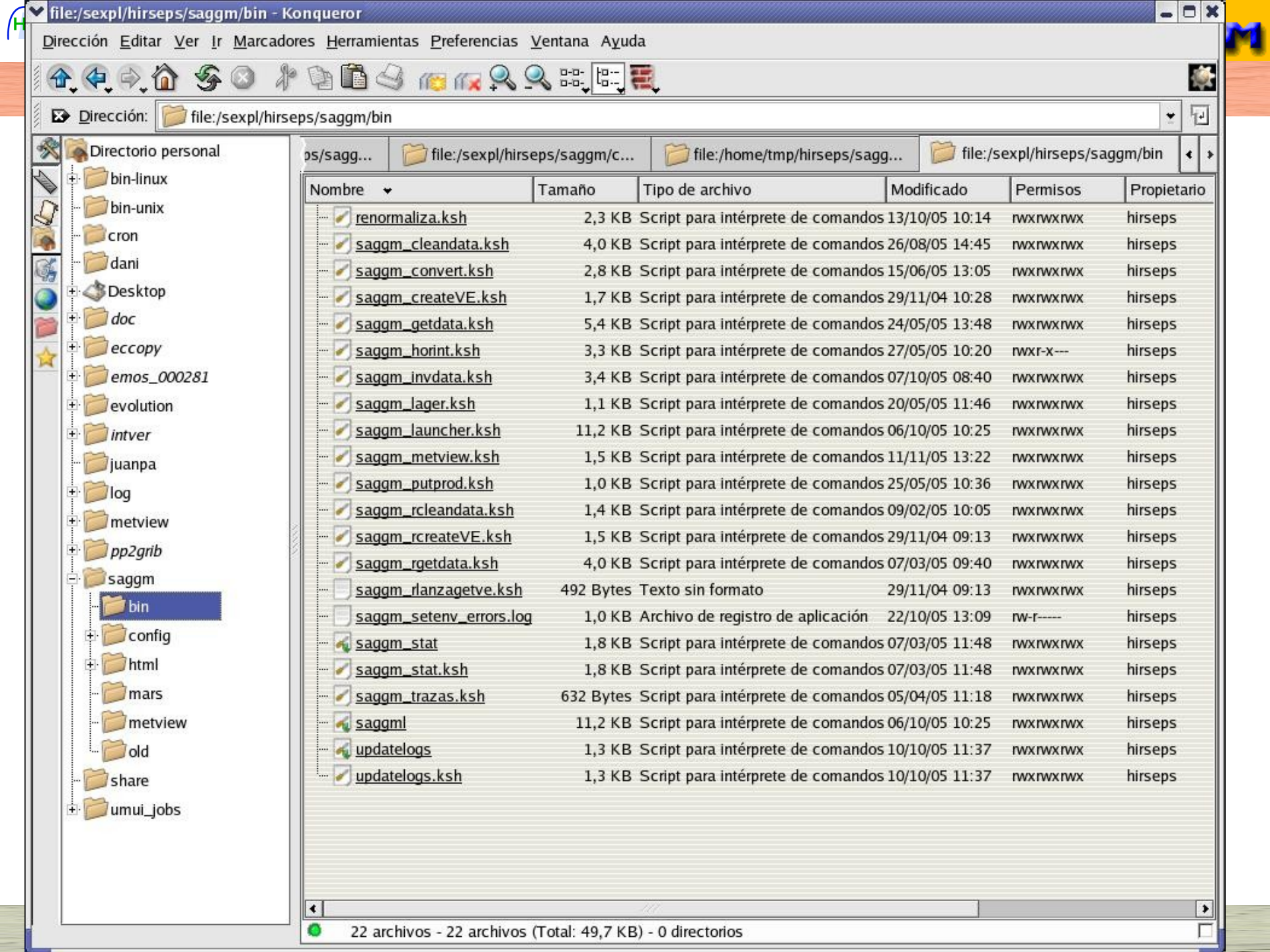
Nombre	Tamaño	Tipo de archivo	Modificado	Permisos
templates	512 Bytes	Directorio	03/10/05 09:40	rw-r-xr-x
abotepronto	794 Bytes	Script para intérprete de comandos	30/08/05 14:24	rw-r-xr-x
saggm_sched	10,9 KB	Script para intérprete de comandos	07/10/05 08:04	rw-r-xr-x
saggm_setenv	3,8 KB	Script para intérprete de comandos	11/11/05 11:39	rw-r-xr-x
sched_DetECMWF	870 Bytes	Script para intérprete de comandos	05/09/05 13:37	rw-r-xr-x
sched_DetGeneric	2,7 KB	Script para intérprete de comandos	20/10/05 06:23	rw-r-xr-x
sched_DetHIRLAM	6,0 KB	Script para intérprete de comandos	07/10/05 08:08	rw-r-xr-x
sched_DetONR061218	819 Bytes	Script para intérprete de comandos	13/10/05 08:04	rw-r-xr-x
sched_EnsGeneric	2,7 KB	Script para intérprete de comandos	14/10/05 12:31	rw-r-xr-x
sched_EnsLagONR	1,7 KB	Script para intérprete de comandos	13/10/05 08:04	rw-r-xr-x
sched_GuardaDatos	893 Bytes	Script para intérprete de comandos	11/11/05 13:16	rw-r-xr-x
sched_LimpiezaDatos	911 Bytes	Script para intérprete de comandos	13/10/05 10:18	rw-r-xr-x
sched_LimpiezaGraficos	1,6 KB	Script para intérprete de comandos	10/10/05 11:48	rw-r-xr-x
sched_RecogeDatosEmergencia	945 Bytes	Script para intérprete de comandos	11/11/05 13:16	rw-r-xr-x
sched_Sreps	6,1 KB	Script para intérprete de comandos	06/10/05 06:03	rw-r-xr-x
sched_Verif	3,6 KB	Script para intérprete de comandos	22/11/05 14:00	rw-r-xr-x

16 archivos - 15 archivos (Total: 44,2 KB) - 1 directorio

```
sched_Verif - /sexpl/hirseps/saggm/config/ <2>
File Edit Search Preferences Shell Macro Windows Help

function VerifStoreProb
{
set -a -xv
SAGGM_SET_ACTIVO="si"
SAGGM_SET_ACCIONES="m"
SAGGM_SET_MVSETS="SetSrepsVerifStore"
SAGGM_SET_EXPERIMENTOS="Mummub MupMM5 LagONR MummubBien"
SAGGM_SET_FECHA_INIFINPASO=$SAGGM_FECHA_VERIF
SAGGM_SET_PASADAS="00"
SAGGM_SET_ALCANCE_INIFINPASO="00:72:12"
SAGGM_SET_INC=12
SAGGM_SET_PERIODO=24
SAGGM_SET_HOST_ORIGEN=SAN
SAGGM_SET_DIR_ORIGEN=$SAGGM_RDIR_SDATA
SAGGM_SET_PATRONES=VE\${FECHA}_\${PASADA}.tar
SAGGM_SET_DIR_DESTINO=$SAGGM_DIR_DESTINO/Verif
}

function VerifGraphsLimpieza
{
set -a -xv
SAGGM_SET_ACTIVO="si"
SAGGM_SET_ACCIONES="e"
SAGGM_SET_EXPERIMENTOS="Mummub MupMM5 LagONR"
```



Dirección Editar Ver Ir Marcadores Herramientas Preferencias Ventana Ayuda



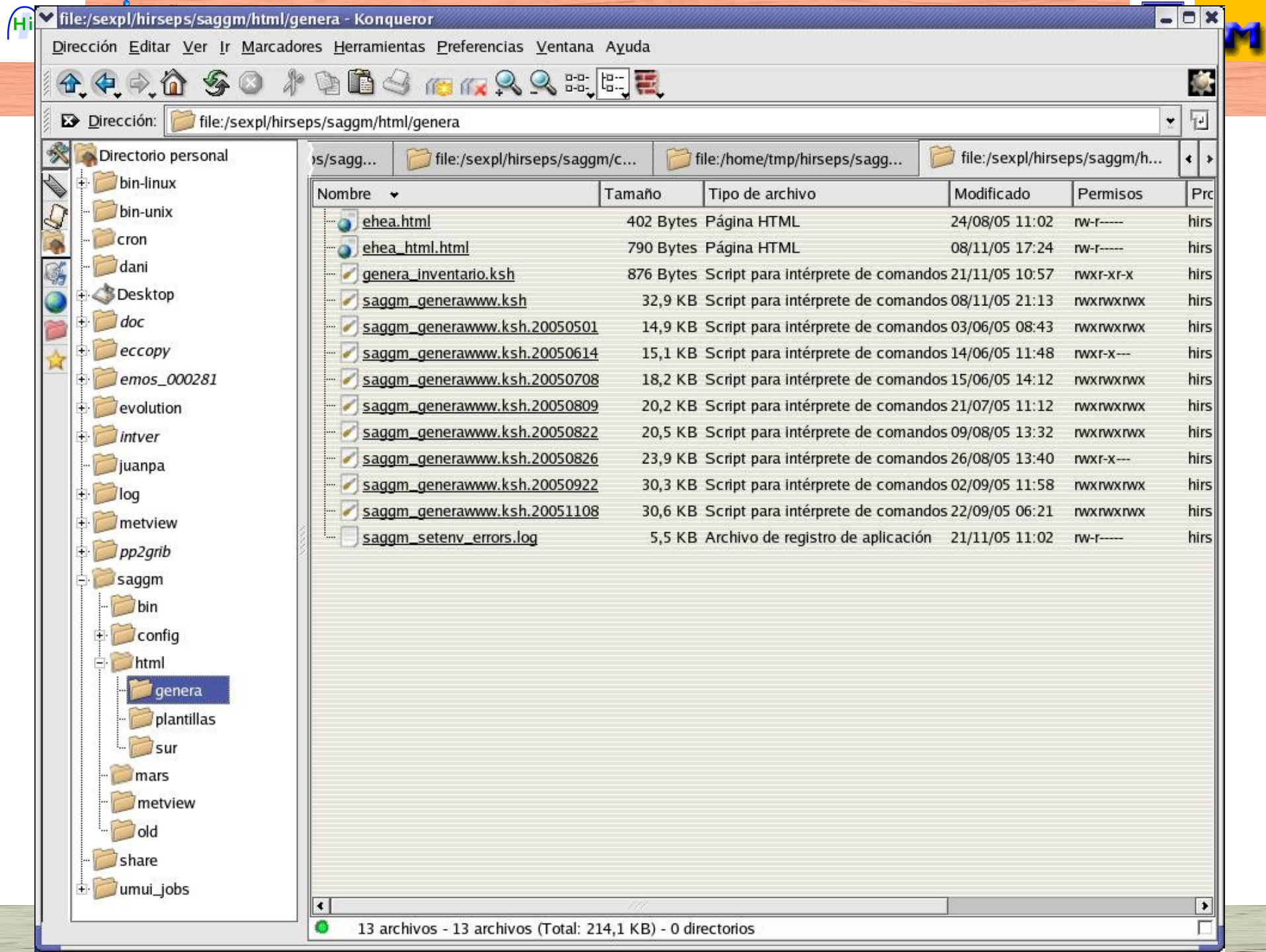
Dirección: file:/sexpl/hirseps/saggm/bin

- Directorio personal
 - bin-linux
 - bin-unix
 - cron
 - dani
 - Desktop
 - doc
 - eccopy
 - emos_000281
 - evolution
 - intver
 - juanpa
 - log
 - metview
 - pp2grib
 - saggm
 - bin
 - config
 - html
 - mars
 - metview
 - old
 - share
 - umui_jobs

ps/saggm... file:/sexpl/hirseps/saggm/c... file:/home/tmp/hirseps/saggm... file:/sexpl/hirseps/saggm/bin

Nombre	Tamaño	Tipo de archivo	Modificado	Permisos	Propietario
renormaliza.ksh	2,3 KB	Script para intérprete de comandos	13/10/05 10:14	rw-rwxrwx	hirseps
saggm_cleandata.ksh	4,0 KB	Script para intérprete de comandos	26/08/05 14:45	rw-rwxrwx	hirseps
saggm_convert.ksh	2,8 KB	Script para intérprete de comandos	15/06/05 13:05	rw-rwxrwx	hirseps
saggm_createVE.ksh	1,7 KB	Script para intérprete de comandos	29/11/04 10:28	rw-rwxrwx	hirseps
saggm_getdata.ksh	5,4 KB	Script para intérprete de comandos	24/05/05 13:48	rw-rwxrwx	hirseps
saggm_horint.ksh	3,3 KB	Script para intérprete de comandos	27/05/05 10:20	rw-r-x---	hirseps
saggm_invdata.ksh	3,4 KB	Script para intérprete de comandos	07/10/05 08:40	rw-rwxrwx	hirseps
saggm_lager.ksh	1,1 KB	Script para intérprete de comandos	20/05/05 11:46	rw-rwxrwx	hirseps
saggm_launcher.ksh	11,2 KB	Script para intérprete de comandos	06/10/05 10:25	rw-rwxrwx	hirseps
saggm_metview.ksh	1,5 KB	Script para intérprete de comandos	11/11/05 13:22	rw-rwxrwx	hirseps
saggm_putprod.ksh	1,0 KB	Script para intérprete de comandos	25/05/05 10:36	rw-rwxrwx	hirseps
saggm_rcleandata.ksh	1,4 KB	Script para intérprete de comandos	09/02/05 10:05	rw-rwxrwx	hirseps
saggm_rcreateVE.ksh	1,5 KB	Script para intérprete de comandos	29/11/04 09:13	rw-rwxrwx	hirseps
saggm_rgetdata.ksh	4,0 KB	Script para intérprete de comandos	07/03/05 09:40	rw-rwxrwx	hirseps
saggm_rlanzagetve.ksh	492 Bytes	Texto sin formato	29/11/04 09:13	rw-rwxrwx	hirseps
saggm_setenv_errors.log	1,0 KB	Archivo de registro de aplicación	22/10/05 13:09	rw-r-----	hirseps
saggm_stat	1,8 KB	Script para intérprete de comandos	07/03/05 11:48	rw-rwxrwx	hirseps
saggm_stat.ksh	1,8 KB	Script para intérprete de comandos	07/03/05 11:48	rw-rwxrwx	hirseps
saggm_trazas.ksh	632 Bytes	Script para intérprete de comandos	05/04/05 11:18	rw-rwxrwx	hirseps
saggmI	11,2 KB	Script para intérprete de comandos	06/10/05 10:25	rw-rwxrwx	hirseps
updatelogs	1,3 KB	Script para intérprete de comandos	10/10/05 11:37	rw-rwxrwx	hirseps
updatelogs.ksh	1,3 KB	Script para intérprete de comandos	10/10/05 11:37	rw-rwxrwx	hirseps

22 archivos - 22 archivos (Total: 49,7 KB) - 0 directorios





- Directory structure and file names
 - ~/task/subtask.log
 - ~/task/subtask.ayer
 - ~/task/subtask.old

Dirección Editar Ver Ir Marcadores Herramientas Preferencias Ventana Ayuda

Dirección: file:/home/tmp/hirseps/saggm/log

Directorio personal

- bin-linux
- bin-unix
- cron
- dani
- Desktop
- doc
- eccopy
- emos_000281
- evolution
- intver
- juanpa
- log
- metview
- pp2grib
- saggm
- share
- umui_jobs

Nombre	Tamaño	Tipo de archivo	Modificado	Permisos	Propietario	Grupo	Enlace
aver	4,0 KB	Directorio	25/05/05 08:00	rw-r-xr-x	hirseps	ex	
DetECMWFayer	4,0 KB	Directorio	29/08/05 09:45	rw-r-xr-x	hirseps	ex	
DetHAV	4,0 KB	Directorio	06/10/05 22:10	rw-r-x---	hirseps	ex	
DetHEC	4,0 KB	Directorio	06/10/05 22:10	rw-r-x---	hirseps	ex	
DetHGM	4,0 KB	Directorio	06/10/05 22:10	rw-r-x---	hirseps	ex	
DetHUK	4,0 KB	Directorio	06/10/05 22:10	rw-r-x---	hirseps	ex	
DetIAV	4,0 KB	Directorio	06/10/05 22:10	rw-r-x---	hirseps	ex	
DetIEC	4,0 KB	Directorio	06/10/05 22:10	rw-r-x---	hirseps	ex	
DetIGM	4,0 KB	Directorio	06/10/05 22:10	rw-r-x---	hirseps	ex	
DetIUK	4,0 KB	Directorio	06/10/05 22:10	rw-r-x---	hirseps	ex	
DetMAV	4,0 KB	Directorio	05/10/05 12:50	rw-r-x---	hirseps	ex	
DetMEC	4,0 KB	Directorio	06/10/05 22:10	rw-r-x---	hirseps	ex	
DetMGM	4,0 KB	Directorio	06/10/05 22:10	rw-r-x---	hirseps	ex	
DetMP1	4,0 KB	Directorio	22/10/05 21:30	rw-r-x---	hirseps	ex	
DetMP2	4,0 KB	Directorio	22/10/05 21:30	rw-r-x---	hirseps	ex	
DetMP3	4,0 KB	Directorio	22/10/05 21:30	rw-r-x---	hirseps	ex	
DetMP4	4,0 KB	Directorio	22/10/05 21:30	rw-r-x---	hirseps	ex	
DetMUK	4,0 KB	Directorio	06/10/05 22:10	rw-r-x---	hirseps	ex	
DetMupMM5	4,0 KB	Directorio	09/11/05 10:18	rw-r-x---	hirseps	ex	
DetONR061218	4,0 KB	Directorio	14/10/05 21:30	rw-r-xr-x	hirseps	ex	
DetONRhoy	4,0 KB	Directorio	29/08/05 09:45	rw-r-xr-x	hirseps	ex	
DetUEC	4,0 KB	Directorio	21/10/05 21:30	rw-r-x---	hirseps	ex	
DetUM	4,0 KB	Directorio	29/08/05 09:45	rw-r-xr-x	hirseps	ex	
DetUUK	4,0 KB	Directorio	06/10/05 22:10	rw-r-x---	hirseps	ex	
EnsLagONRProb	4,0 KB	Directorio	29/08/05 09:45	rw-r-xr-x	hirseps	ex	
EnsLagONRSspread	4,0 KB	Directorio	29/08/05 09:45	rw-r-xr-x	hirseps	ex	
EnsMummubProb	4,0 KB	Directorio	21/09/05 09:19	rw-r-xr-x	hirseps	ex	
EnsMummubSpread	4,0 KB	Directorio	29/08/05 09:45	rw-r-xr-x	hirseps	ex	
EnsMupMM5Prob	4,0 KB	Directorio	29/08/05 09:45	rw-r-xr-x	hirseps	ex	
EnsMupMM5Spread	4,0 KB	Directorio	29/08/05 09:45	rw-r-xr-x	hirseps	ex	
GuardaDatos	4,0 KB	Directorio	29/08/05 09:45	rw-r-x---	hirseps	ex	
LimpiezaDatos	4,0 KB	Directorio	28/08/05 00:30	rw-r-xr-x	hirseps	ex	
saggm.log (18,2 KB)		Archivo de registro de aplicación					

01/05/07

file:/home/tmp/hirseps/saggm/log - Konqueror

Generic Hierarchical User Interface

Terminal [3]

Capturador de pantalla

umui application. Navigation

XconV Version 1.90 (11-May)

GHUI server administration (s)

VI. Reunion.ppt - OpenOffice

Toplevel [5]

14:11

```
saggm_metview.log - /home/tmp/hirseps/saggm/log/DetIEC/
File Edit Search Preferences Shell Macro Windows Help

[SaggmPreparaPloteo] (campo:#, contour:#, leyenda:#, titulo:500hPa Temperature (le
[GeneraProductos.ProductoSpool] IEC2005-11-22 00:00:0000(nombre_kit:srepsgrande
[SaggmArreglaRotulo] No es necesario arreglar rotulo
[SaggmPreparaTitulo] args: nil english IEC2005-11-22 00:00:0000 500hPa Geopoten
[SaggmPreparaTitulo] texto: PTEXT(TEXT_AUTOMATIC:NO,TEXT_USER:YES,TEXT_LINE 1:H
[GeneraProductos] Salida: /home/tmp/hirseps/saggm/spool/DetIEC/IEC.SREPSg.Z500T
[DwXViewNFrames] argumentos: l_numero_pages,m,n = nil,nil,nil, opcion_conectada
[DwXViewNFrames.ImpresoraVirtual] ps_a4
[SetOutputDevices] argumentos: device: File , fichero: /home/tmp/hirseps/saggm/
[SetOutputDevices] funcionando: device: File , fichero: /home/tmp/hirseps/saggm
[DwXViewNFrames] funcionando: l_numero_pages,m,n = 1,1,1, numero_frames,numero_
[DwXViewNFrames] dimensiones página: 29.7 , 21
[GeneraProductos] Ploteando /home/tmp/hirseps/saggm/spool/DetIEC/IEC.SREPSg.Z50
[GeneraProductos] Ploteando ( display_window , lista_ploteo ):
[PloteaLista] DROP(DROP_ID:2)[<1 field>,PCONT(CONTOUR_MIN_LEVEL:500,CONTOUR_MAX
[MapviewHirlam] argumentos: IECg nil nil nil
[MapviewHirlam] WARNING: mapa Predefined no reconocido IECg devolviendo nil
[GeneraProductos] Procesando producto (nombre_kit:srepsgrande,nombre:Z500T500,1
[GeneraProductos] Procesando var Z500(tipo:contour,contour:#,gcod:#) ...
[GeneraProductos.BufferDataGet] Usando buffer_data ... [<1 field>,<1 field>]
[GeneraProductos.BufferDataGet] <1 field> [(STREAM:DA,PARAM:6.1,DATE:20051122,T
[SaggmPreparaPloteo.Contour] PCONT(CONTOUR_MIN_LEVEL:500,CONTOUR_MAX_LEVEL:600,
[SaggmPreparaPloteo] (campo:#, contour:#, titulo:500hPa Geopotential H. (int 3 Dm
[GeneraProductos] Procesando var T500(tipo:contour,contour:#,gcod:#,leyenda:#)
```




Web Monitoring in real time

- Intranet web server
- Deterministic outputs
 - Postage stamps charts
 - Maps for each member
- Ensemble probabilistic outputs
 - Postage stamps charts (Time [X Thresholds])
 - **Probability maps**: 6h accumulated precipitation, 10m wind speed, 24h 2m temperature trend
 - **Ensemble mean & Spread maps**
 - **EPSgrams** (not fully-operational)
- Verification



INM

Short-range Ensemble Prediction System

Home Page

(Internal web page)

Today Ensembles

	Today		D-1		D-2		D-3		D-4		D-5		D-6		D-7	
Multimodel-Multiboundaries	00	12	00	12	00	12	00	12	00	12	00	12	00	12	00	12
Multiphysics-MM5	00		00		00		00		00		00		00		00	
Lagged-ONR	00		00		00		00		00		00		00		00	
Lagged-Multimodel-Multiboundaries	00		00		00		00		00		00		00		00	
PEPS	00															

Case Studies

- [2006/02/21 1st day 16 members Mummub Ensemble](#)
- [2006/03/02 Snow storm over Germany](#)
- [2006/03/03 Snow storm over Germany](#)

Administration

- [Grib data archive](#)
- [Verification archive](#)



Multimodel-Multiboundaries, Today, 00UTC

Deterministic outputs

- [Z500/T500 Models / Features](#)
- [Pmsl/Pacum6h Models / Features](#)
- [V300/S300 Models / Features](#)
- [T2m Models / Features](#)
- [V10m/S10m Models / Features](#)
- [Pacum6h Models / Features](#)

Probabilistic outputs

Probability maps

- [2m Temperature 24h trend](#)
- [10m Wind speed](#)
- [6h Accumulated precipitation](#)
- [6h Accumulated Snow precipitation](#)

Spread & Emean maps

- [Z500](#)
- [Msl Pressure](#)

EPSgrams

- [EPS-grams](#)

Probabilistic Verification (D-4)

Spread-Skill Curves

- [Z500](#)
- [T500](#)
- [Msl Pressure](#)

Rank Histograms

- [Z500](#)
- [T500](#)
- [Msl Pressure](#)

ROC Curves

- [10m Wind speed](#)
- [24h Accumulated precipitation](#)

Reliability Diagrams

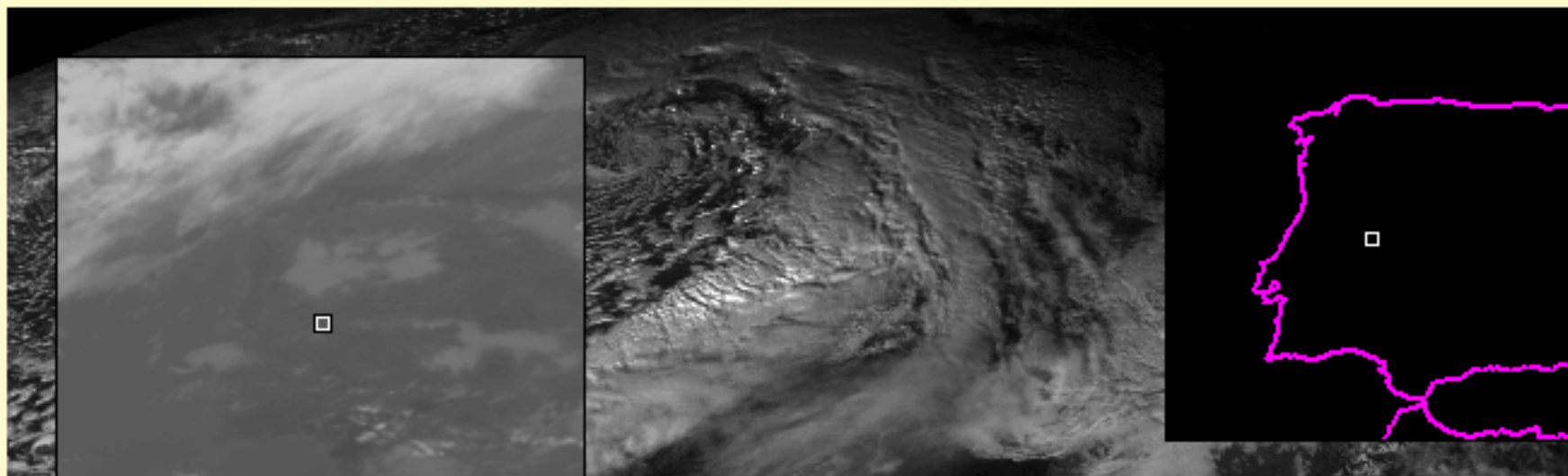
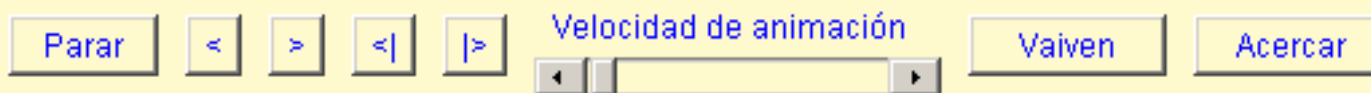
- [10m Wind speed](#)
- [24h Accumulated precipitation](#)

Deterministic Verification (D-4)

Deterministic Scores

visi Anis web animations

- AniS
 - Loops web manager





- ImageMagik
 - General graph tool
- Thumbnails
 - convert -scale 20%X20%
 - For web postage charts
 - Old loops

Web to improve

- Complete redesign
- CGI / php
- Frames, tabs, combos
- English / Spanish
- Possibility of user-defined output & output combinations in pannels

History on GLAMEPS

- Post processing and verification:
 - Presentations about the existing post processing and verification packages at HMS and INM
 - INM package seemed to be more complex + it is used on a daily basis \Rightarrow the PP&V package to be used in GLAMEPS could be based on this
 - During the working week INM PP&V package was tested and further developed

package

- Does the INM PP&V package work with ALADIN files?
- Before testing, the following steps had to be made:
 - Convert ALADIN FA files to standard (WMO) GRIB format (using **PROGRID**)
 - Convert standard GRIB to HIRLAM GRIB (using **Metview**)
 - Download ECMWF operational analysis (interpolated to the ALADIN domain and resolution) for verification (using **MARS**)
- Running the PP&V package itself:

package

- Not really tested outside INM
- No control member considered -> to be done
- Difficult to benchmark
 - At INM, with our ensembles: PP ~ 1.5 hour/day, V ~ 1.5 hour/day
 - With a 20 members EPS it's ok, BUT with 200?, with 30 EPSs?
- No possible box-plot EPSgrams -> xmgrace

- Forkable from mSMS?

package

- The experience showed that the present user interface is not friendly enough (AT ALL) \Rightarrow work started to build a friendlier/friendly one
- First version in **Metview macro language**, but it could be written in **unix-shell**, in order to fit the HIRLAM configuration-by-script style better



week...

- The package has improved under different INM requirements and tests
- Currently on the way to build a friendly interface, to the expense of some flexibility and capability
 - Migration of scheduling (not exactly configuration) files from **Metview macro language**, to **unix-shell**, in order to fit the HIRLAM configuration-by-script style better, **step by step successful**



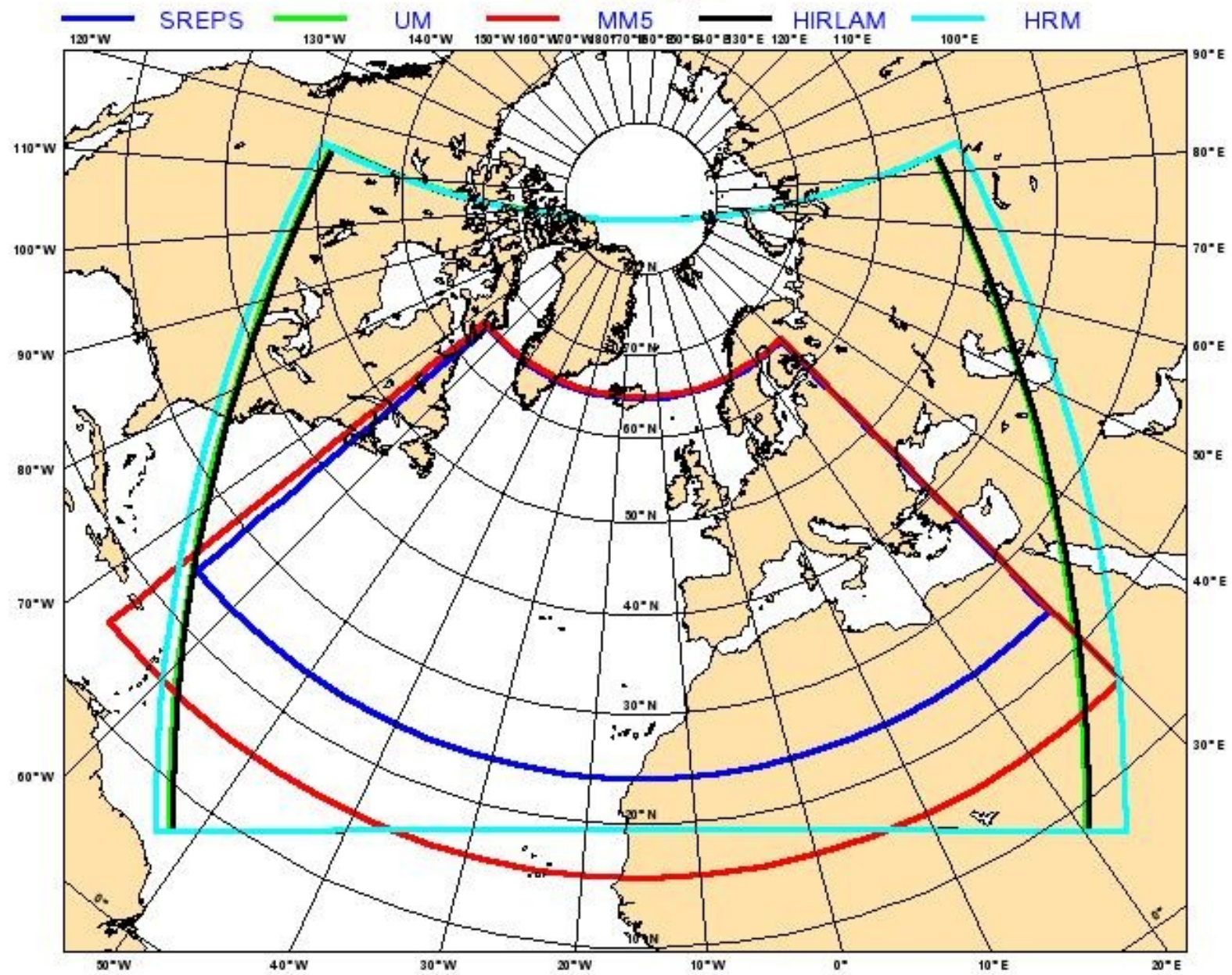
Pre-PP at INM

- 24 h alive script
 - Watching model ending
 - Launches det PP for each model
- Get data
 - Get old VE*.tar file
 - Untar it
 - Put the fc's in their locations
- Interpolation to a common area
 - ~ North Atlantic + North Africa + Europe
 - **Grid 380x184, 0.25°**

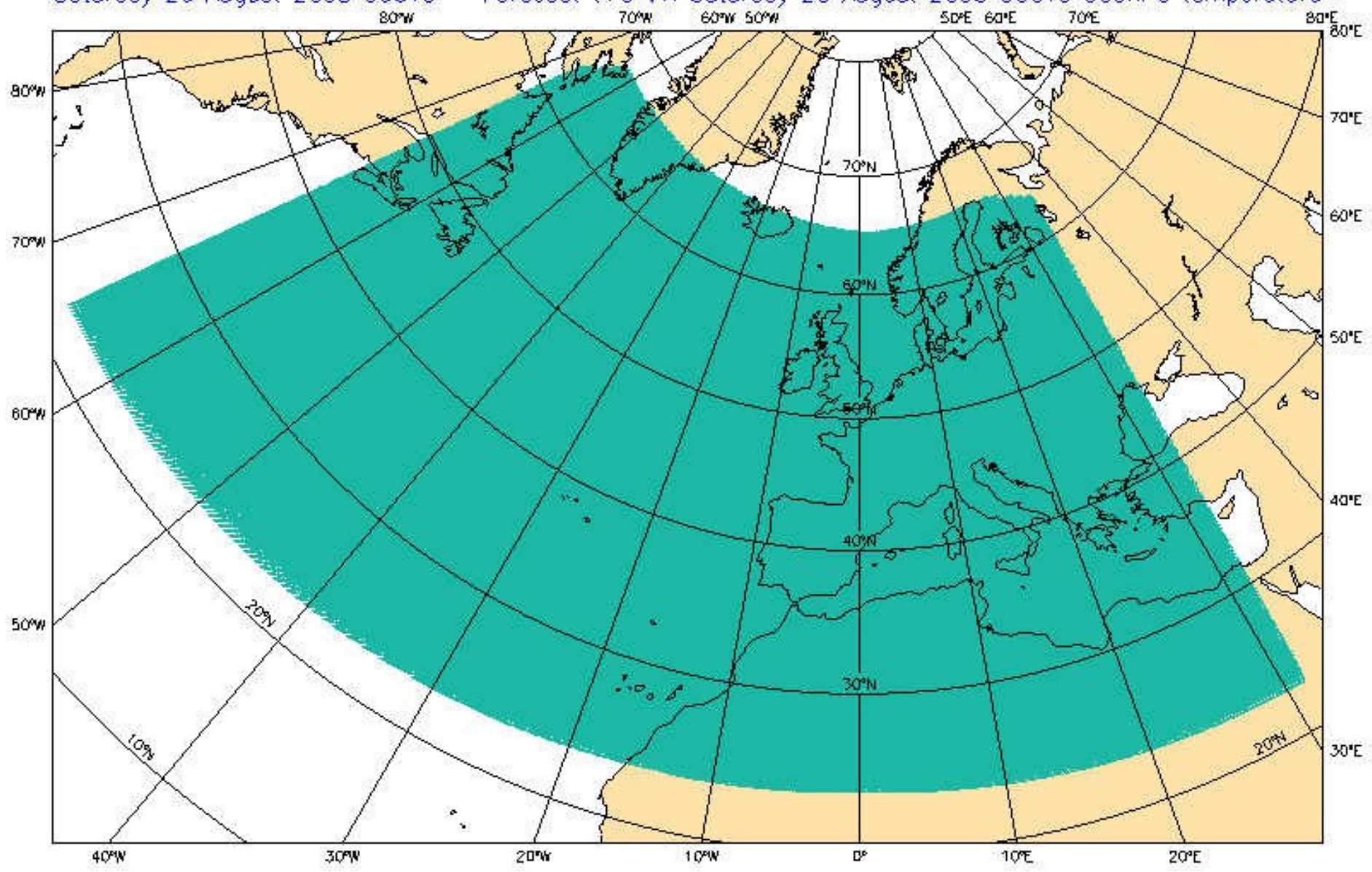
Parameters selected for postprocessing

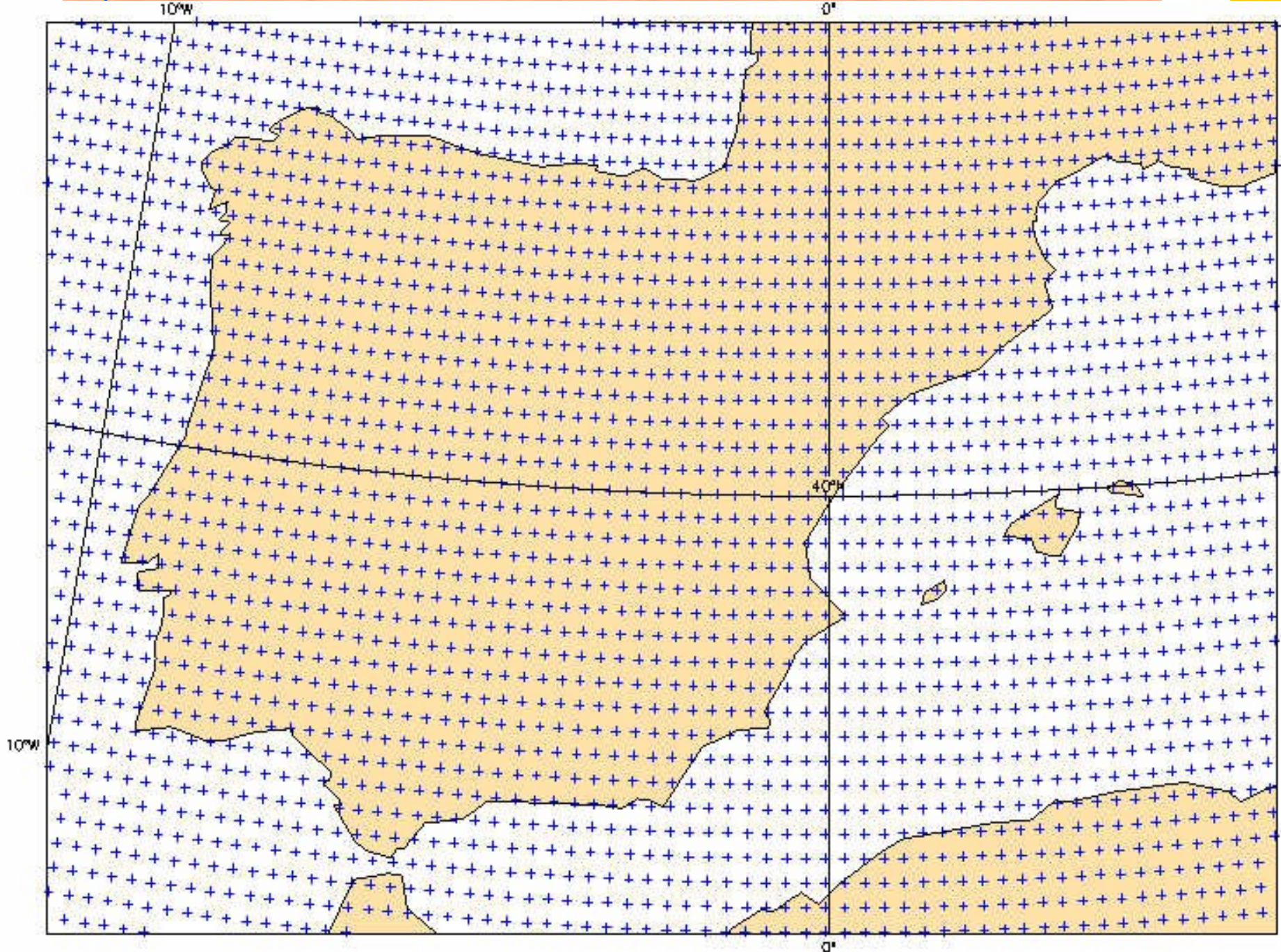
- Isobaric ($p=200,300,500,700,850,1000$):
 - Z (6,100, p)
 - T (11,100, p)
 - u (33,100, p)
 - v (34,100, p)
 - RH (52,100, p)
- Surface:
 - T (11,105, 2)
 - u (33,105,10)
 - v (34,105,10)
 - StAccPcp (62,105, 0)
 - CoAccPcp (63,105, 0)
 - CoAccSnow (78,105, 0)
 - StAccSnow (79,105, 0)
 - (to make it more confusing, pcp is St- Co, snow the opposite)
- Mean sea level:
 - P (1,103, 0)

Coverage



Post processing





■ metview		
■ Models	■ 20 Mummub + 4 Muph + 1 ONR	25
■ Parameter combinations	■ Z500/T500, Pmsl/24hAccP, 300Wind, T2m, 10mWind, 24hAccP	6
■ Maps	■ Synoptic, Spain	2
■ Runs	■ 00,12 UTC	2
■ Fc lengths	■ HH+00..HH+72	13
	TOTAL	25x6x2x2x13 = 7800

Probabilistic PP

- Cron launches probabilistic PP
 - Fixed hours
 - Script launches prob PP batching R & metview
- PP
 - BMA calibration
 - PDF
 - Probabilistic outputs

- BMA
 - Bias correction for each model
 - Ensemble Calibration -> weights
- R package
 - OOP
 - Slower but good

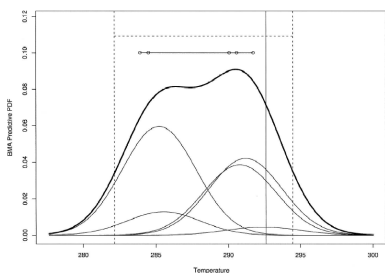
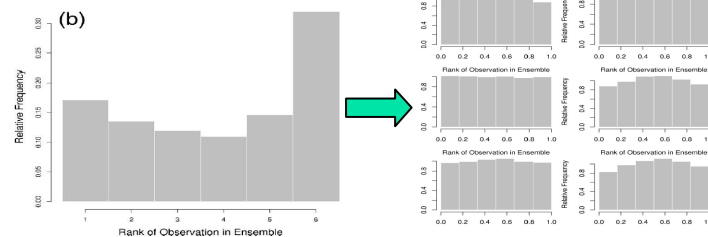


FIG. 3. BMA predictive PDF (thick curve) and its five components (thin curves) for the 48-h surface temperature forecast at Packwood, WA, initialized at 0000 UTC on 12 Jun 2000. Also shown are the ensemble member forecasts and range (solid horizontal line and bullet), the BMA 90% prediction interval (dotted lines), and the verifying observation (solid vertical line).



Building PDF

- Build ensemble data
 - Fc data retrieval
 - Weights retrieval
- metview
 - Indexing ensemble via definitions & lists
 - Powerful handling fieldsets
- Store ensemble data
 - PEPS grib style
 - **Not yet**

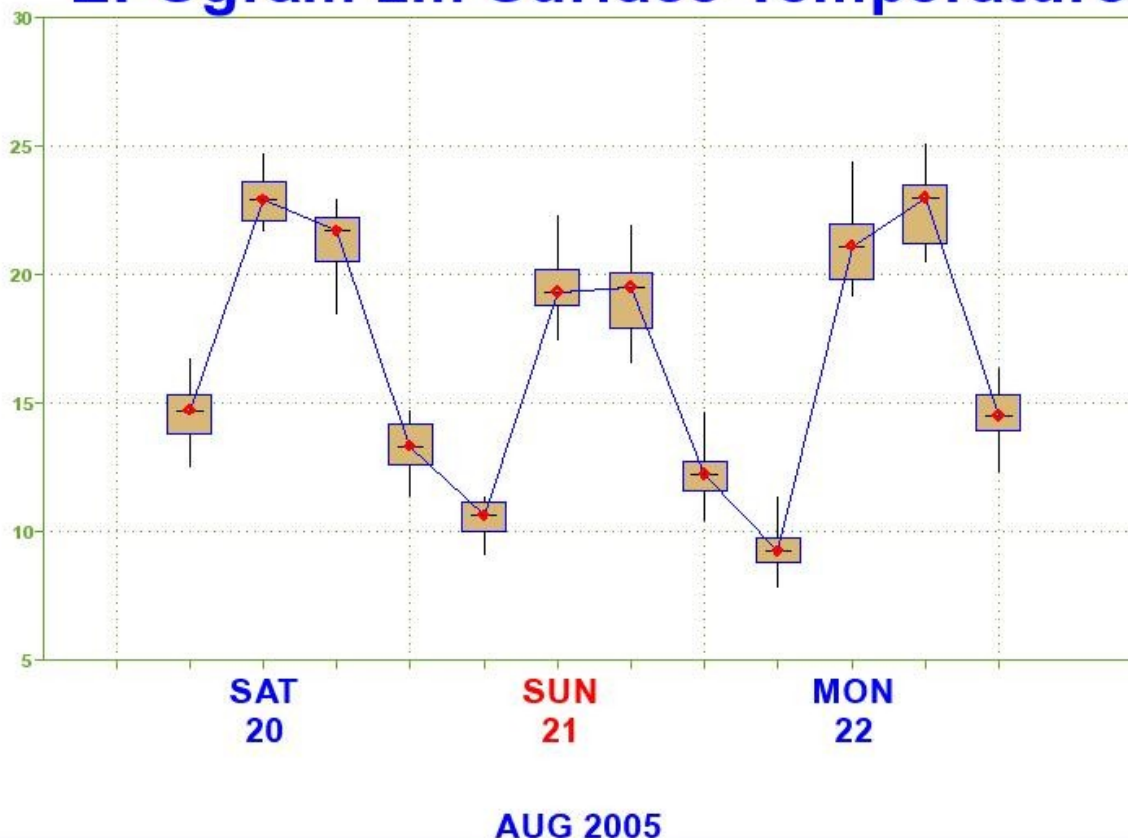
Probability maps

<ul style="list-style-type: none"> ■ Ensembles 	<ul style="list-style-type: none"> ■ Mummub ■ Muph ■ Lagged ONR 	3
<ul style="list-style-type: none"> ■ Parameter combinations 	<ul style="list-style-type: none"> ■ 24h Trend T2m ■ 10mWind ■ 24hAccP 	3
<ul style="list-style-type: none"> ■ Meteorological thresholds 	<ul style="list-style-type: none"> ■ [-12,-6]..[0,2]..[6,12] ■ 10,15,20 ■ 1,5,10,20 	8 3 4
<ul style="list-style-type: none"> ■ Maps 	<ul style="list-style-type: none"> ■ Synoptic, Spain 	2
<ul style="list-style-type: none"> ■ Run times 	<ul style="list-style-type: none"> ■ 00,12 UTC 	2
<ul style="list-style-type: none"> ■ Fc lenghts 	<ul style="list-style-type: none"> ■ HH+00..H+72 	13
	TOTAL	$3 \times 3 \times 15 \times 2 \times 2 \times 13 = 7020$

Probabilistic Outputs Spread & EMean Maps

<ul style="list-style-type: none"> ▪ Ensembles 	<ul style="list-style-type: none"> ▪ Mummub ▪ Muph ▪ Lagged ONR 	3
<ul style="list-style-type: none"> ▪ Parameter combinations 	<ul style="list-style-type: none"> ▪ Z500 ▪ MsIP 	2
<ul style="list-style-type: none"> ▪ Maps 	<ul style="list-style-type: none"> ▪ Synoptic, Spain 	2
<ul style="list-style-type: none"> ▪ Run times 	<ul style="list-style-type: none"> ▪ 00,12 UTC 	2
<ul style="list-style-type: none"> ▪ Fc lengths 	<ul style="list-style-type: none"> ▪ HH+00..H+72 	13
	TOTAL	$3 \times 2 \times 2 \times 2 \times 13 = 312$

EPSgram 2m Surface Temperature



- EPSgrams
 - Not fully operational
 - Curves instead of box-plot?
 - Predefined + online petitions

■ EPSgrams

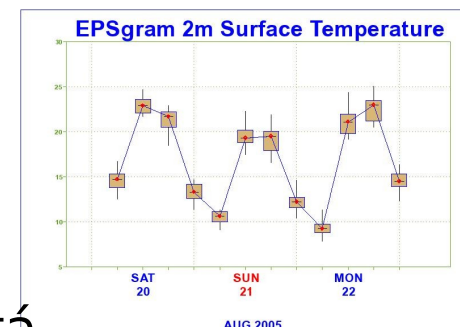
- Problema: cada boxplot son 4 gráficas
- Cada meteograma de un parámetro está compuesto por $4 \times 11 + \text{CurvaEMean} = 44$ gráficas
- Metview tarda ~ minutos para un meteograma, el cuádruple para un EPSgrama
- -> difícil de implantar en operación

■ Alternativa:

- 5 gráficas de evolución (~plumes) para P100, P75, P50, P25, P0
- Aún sin probar

■ Futuro:

- EPSgrams predefinidos
- + a petición



Verification references

WWRP/WGNE Joint Working Group on Verification

Forecast Verification - Issues, Methods and FAQ

- http://www.bom.gov.au/bmrc/wefor/staff/eee/verif/verif_web_page.html

International Verification Methods Workshop

Organized by the WGNE/WWRP Joint Working Group on Verification, and sponsored by the World Meteorological Organization/World Climate Research Programme (WMO WCRP) and the Meteorological Service of Canada (MSC).

Dates: Wednesday 15 September to Friday 17 September, 2004

Location: The McGill Faculty Club, 3450 MacTavish St, Montreal, Quebec, Canada

Topics: All aspects of forecast and NWP model verification, and forecast value and impact. Of particular interest:

- Spatial and object oriented verification
- Scale separation in verification measures
- Verification of probability distributions
- Assessment of forecast value
- Estimation of uncertainty in verification measures
- Verification of extreme events

- <http://www.bom.gov.au/bmrc/wefor/staff/eee/verif/Workshop2004/home.html>

VERIFICATION SYSTEMS FOR LONG-RANGE FORECASTS NEW

Standard Verification System (SVS) for Long-range Forecasts (LRF) NEW

- http://www.wmo.ch/web/www/DPS/verification_systems.html

ECMWF EPS Verification

- <http://www.ecmwf.int/products/forecasts/d/charts/medium/verification/>