



METEO FRANCE
Toujours un temps d'avance



Measurements of integrated water vapour column from ground GPS stations Meteo-France's program status

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Presentation plan

1. The requirement satisfaction

2. The RGP status

3. Action continuation

4. Conclusion



1. The requirement satisfaction



Requirement recall

Type of requirements	Minimum	Realist 1 st objective	The best			Climatology	Remarks	
			AROME	CMS	PI			
Type of data	ZTD	ZTD	ZTD, (ZWD, IWV)	IWV	ZWD, IWC, IWV map	New analysis IWV	Pressure captor on the station for ZWD and temperature captor for IWV	
Decimal number of the data	ZTD : 1 mm	ZTD : 0,1 mm	ZTD, ZWD : 0,1 mm – IWV : 0,01 mm		IWV : 0,01 mm	IWV : ≤ 0,5 kg/m ² (COST 716)	ZTD : indicative value ~2 m ZWD : indicative value ~0-30 cm 1 kg/m ² of IWV ⇔ 6,5 mm of ZWD	
		ZTD : from 3,25 to 13 mm IWV : from 0,5 to 2 kg/m ² (COST 716)			0,5 to 2 kg/m ² 2 kg/m ² (COST 716)			
		E-GVAP = COST 716						E-GVAP = COST 716
Minimum horizontal resolution (network resolution)	150 km	50-70 km	20 km	?	10 km	?		
	250 km (COST 716)	From 10 km to 250 km (COST 716)			From 10 km to 100 km (COST 716)			
	E-GVAP = COST 716				E-GVAP = COST 716			
Time frequency	30' [or 60', but at H+00]	15'	5'	?	5'	15'	Data with 60 minutes resolution used only by 3DVAR ALADIN model To give precisions about AROME and PI needs	
	E-GVAP : No current demand but preference for observing data at the full hour				E-GVAP = COST 716			
Maximum delay between the observation and the reception hour for assimilation for 90% of data	3 H	1H30	From 15' to 30'		15'		Today : the arrival period of the most part of data from GTS is lower than 90 minutes (between 60 and 75 minutes).	
		From 30' to 2H (COST 716)			From. 5' to 30' (COST 716)			
		1H30			E-GVAP = COST 716			



Recall : Requirement satisfaction and present situation

Type of requirements	Realist - 1 st objective	Present situation	Remarks	
Type of data	ZTD	ZTD	Pressure captor on the station for ZWD and temperature captor for IWV	
Decimal number of the data	0,1 mm	0,1 mm	Since COST software 2 nd version	
	From 3,25 to 13 mm (COST 716 and E-GVAP)		ZTD : indicative value ~2 m	
Minimum horizontal resolution (network resolution)	50 – 70 km	100 km	162 operational station in the RGP at the beginning of September	
	From 10 km to 250 km (COST 716 and E-GVAP)		170 operational station in the RGP (complete network)	
Time frequency	15’	15’ (H+00 – H+15 – H+30 – H+45 - H+59)	Since end of January 2007	
	E-GVAP : No current demand		But preference for observing data at the full hour	
Maximum delay between the observation and the reception hour for assimilation for 90% of data	1H30	Between 0H45 and 1H30 (≅ 70% data)	Data H+15 – H+30 – H+45 – H+59	Since end of January 2007 Before up to 1H40
		Up to 1H30 (≅ 30% data)	Data H+00	
	From 30’ to 2H (COST 716)			
	E-GVAP ≤ 1H30		Possible time reduction in the future Data with a slightly longer delay accepted	



Recall : Why a delay for the « H+00 » data ?

Explanations

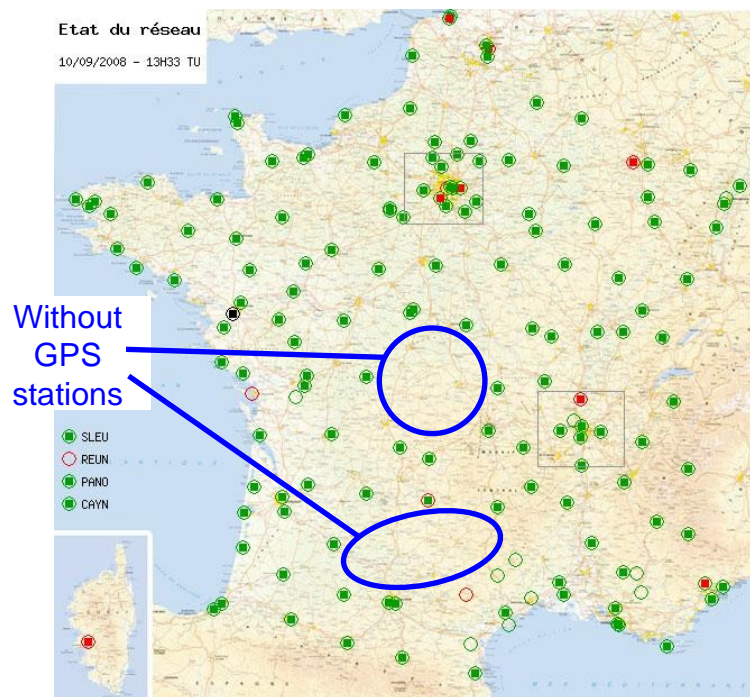
H-500	Five data hours	H+00		H+30		H+59		Total : Six data hours to calculate one ZTD data	
			H+15		H+45				
	Data H+00 ≡ Data H-100 at the real time							<u>Treatment</u> : 5 hours data before and 1 hour data after (the best) <u>H+135</u> : first ZTD data arrival	
	Data H+15 ≡ Data H-45 at the real time							<u>Treatment</u> : 5 hours and 15 min data before and 45 min data after <u>H+120</u> : first ZTD data arrival	
	Data H+30 ≡ Data H-30 at the real time							<u>Treatment</u> : 5 hours and 30 min data before and 30 min data after <u>H+105</u> : first ZTD data arrival	
	Data H+45 ≡ Data H-15 at the real time							<u>Treatment</u> : 5 hours and 45 min data before and 15 min data after <u>H+50</u> : first ZTD data arrival	
	Data H+59 ≡ Data H+00 at the real time							<u>Treatment</u> : 6 hours data before and 0 min data after (the worse) <u>H+35</u> : first ZTD data arrival	
H-600	Real time	H-100		H-45		H-15		H+00	H+00 is the present time H+25 : beginning of the treatment H+35 : first ZTD data arrival



2. The RGP status



The RGP and the TERIA networks



The RGP network at the 10th Sept. 2008 :

- 90 TERIA stations
- 22 IGN stations
- 50 other stations

The complete RGP network

- 100 TERIA stations
- 22 IGN stations
- 50 other stations



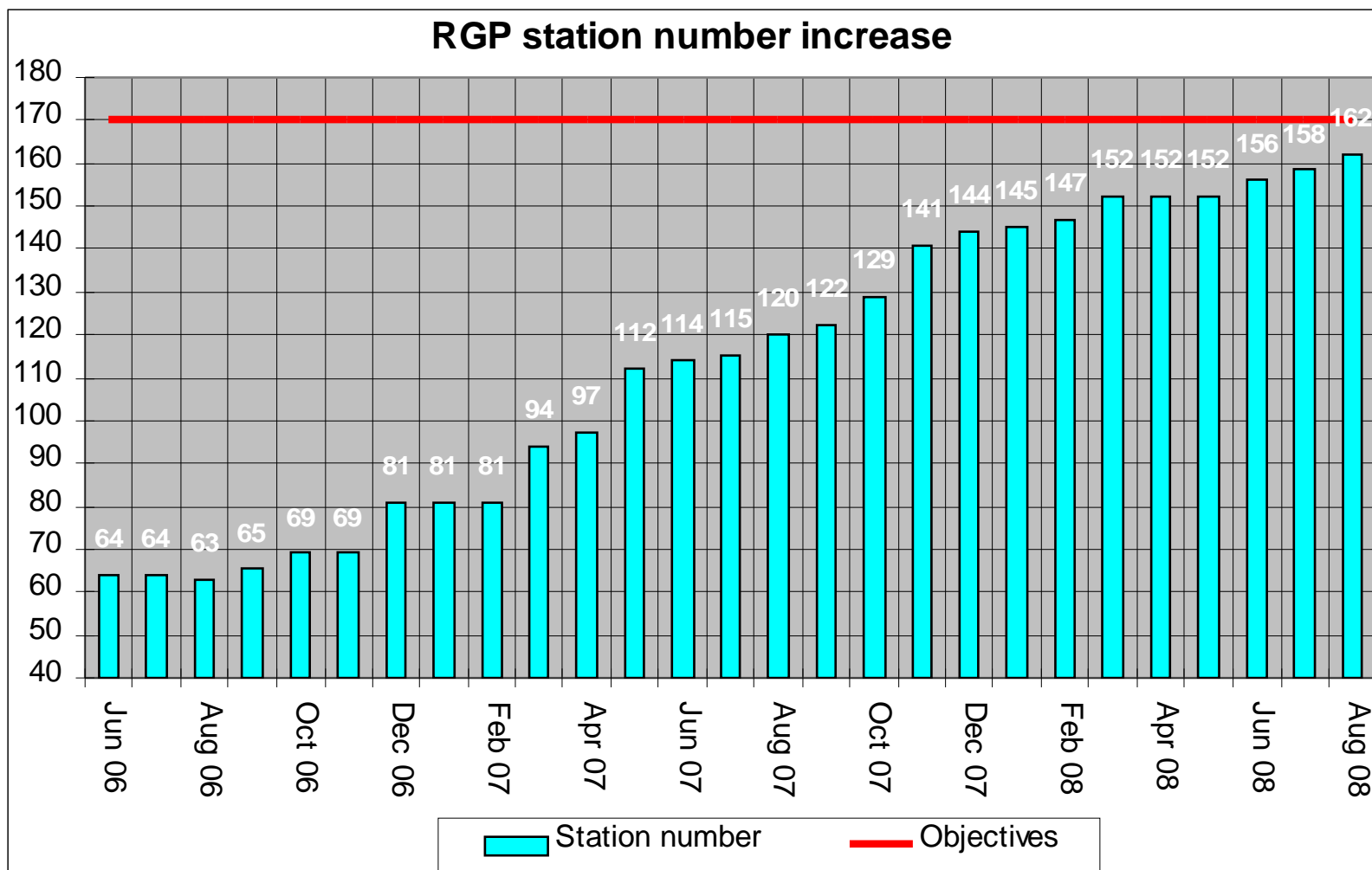
The complete TERIA network at the 10th Sept. 2008 :

- Today : 90 stations
- complete network : 100 stations



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Evolution of the RGP since June 2006



3. Action continuation



Action continuation since the last E-GVAP plenary meeting (I)

Regular increase of the RGP station number (complete network : 170 stations in the metropolitan territory) and to try to complete zones without stations ;

To continue the implementation of a national data quality and availability control (meeting about that in December 2007) with a project to include this control in our quality indicators ;

Data assimilation in the ARPEGE model : since the 6th February 2008 ;

To achieve the first phase of this action (to satisfy the need of the 1st objective : to define and deploy a first target network for ZTD measurements) ;

To begin the 2nd phase of this action in October 2008 (to satisfy the now-casting need and high resolution numeric forecasting) included in a general service project on the implementation of the Meteo France's upper air network evolution ;

To work on the calculation of IWV and the production of IWV map (in cooperation with E-GVAP community and IGN) ;

To work on the encoding ZTD data in the BUFR format and on a breakdown chain.



Action continuation since the last E-GVAP plenary meeting (II)

Many contacts with partner organism IGN

2 meetings since January 2008 (3rd May and 4th September 2008) ;

Meteo France provides temperature/pressure measurements near the GPS stations ;

Updating of the general MoU between IGN and Meteo France ;

To implement a chain of information exchanges about data quality and availability (problems, decreases of performances, a.s.o.) between IGN and Upper air observation service ;

To search for other possible partners to extend our network but in cooperation with IGN.



4. Conclusion



Situation in September 2008 :

September 2008 : 162 stations in the French GPS station network ;

Complete network : 170 stations ;

Numeric forecasting requirements satisfied (now) but perfectible ;

Continuation of the cooperation with IGN ;

Assimilation in the APEGE since February 2008 (with data quality and availability control) ;

End of the first phase of this action at end of 2008 ;

Continuation of this action in a second phase :

Included in a general service project on the implementation of the evolution of the Meteo France's upper air network (other needs like the now-casting need, high resolution numeric forecasting, BUFR encoding and breakdown treatment chain, a.s.o.) ;

To extend cooperation with other organism but in cooperation with IGN

