

<p>MAGIC</p> <p>Network Status Report</p> <p>Doc. No. D03100</p>

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Network status report

The permanent GPS stations participating in the MAGIC project are listed in Table 1 with their principal characteristics. As of September 15, 1998:

- 32 GPS stations are operating and delivering data.
- 4 new GPS stations are planned to become operational before To+6, and 6 more before To+15.
- Meteorological packages planned for installation are described further in the specification section.

The coordinates listed and the coordinates contained in the attached log sheets are approximate, and are not of sufficient accuracy to respond to the specifications of the meteorological users (0.01 degrees latitude and longitude, 10 meters vertically). A precise list will be furnished by CNRS by January 1 1999.

The implementation of the HIRLAM 3DVAR numerical weather prediction model as defined for the MAGIC project objectives is defined on a geographic region sufficiently large to characterize typical regional Mediterranean dynamics:

-33.0 <= longitude <= 39.3 degrees,

24.0 <= latitude <= 55.5 degrees.

The network of stations was chosen for its dense coverage of the Western Mediterranean region, with the addition of upstream stations such as the Canary Islands and Morocco to the west. Additional GPS IWV data from northern European sites within the model region may possibly be available to the project from other complementary projects such as NEWBALTIC, WAVEFRONT, and CLIMAP, should more extensive validation studies be necessary.

Site		Coordinates, WGS84				Met equipment				Processed by			Net		Data archive		
Code	City, Country	Lat	Lon	Alt (m)	Receiver	Antenna	existing	to be inst. TBC	radiosonde < 50km	Operating agency	CNRS	ICC	ASI	IGS		EURREF	
1	GRAS	Caussols, FR	43.90	6.92	1320	SNR-8000	CR-NR	yes			CNES	1	1	1	x	x	IGS
2	TOUL	Toulouse, FR	43.37	1.48	210	SNR-81000	CR-NR	yes			CNES	1	1	1	x	x	IGS
3	MARS	Marseille, FR	43.28	5.35	62	T4000-SSE	CR-NR	no			IGN	1	1	1		x	CNRS
4	SJDV	Lyon, FR	45.89	4.67	432	ASH-Z12	CR-CR	yes		Lyon	CNRS	1				x	CNRS
5	GINA	Cadarache, FR	43.82	5.79	323	ASH-Z12	CR-CR	no			CNRS/IPSN	1					CNRS
6	MICH	Luberon, FR	43.92	7.72	653	ASH-Z12	CR-CR	no			CNRS/IPSN	1					CNRS
7	FCLZ	La Feclaz, FR	45.64	5.99	1374	ASH-Z12	CR-CR	no			CNRS	1					CNRS
8	MODA	Modane, FR	45.21	6.71	1260	ASH-Z12	CR-CR	no			CNRS	1					CNRS
9	CHAT	Le Chatel, FR	45.3	6.3		to be inst.	n/a	n/a			CNRS	1					n/a
10	MERC	Mercantour, FR	44.1	7.3		to be inst.	n/a	n/a			CNRS	1					n/a
11	ESTE	Maures, FR	43.5	6.9		to be inst.	n/a	n/a			CNRS	1					n/a
12	AJAC	Ajaccio, FR	42.1	8.7		to be inst.	n/a	n/a	yes	Ajaccio	not yet decided	1					n/a
13	MONT	Montpellier, FR	43.2	3.9		to be inst.	n/a	n/a	yes	Nimes	CNRS/LGT	1					n/a
14	ZIMM	Zimmerwald,CH	46.68	7.46	957	T4000-SSE	CR-BR	yes		yes		1	1	1	x	x	IGS
15	MATE	Matera, IT	40.46	16.70	536	SNR-8100	CR-NR	yes		almost	ASI	1	1	1	x	x	ASI
16	CAGL	Cagliari, IT	39.14	8.97	238	SNR-8100	CR-NR	no	yes	yes	ASI	1	1	1	x	x	ASI
17	MEDI	Medicina, IT	44.52	11.65	50	SNR-8100	CR-NR	no		yes	ASI	1	1	1	x	x	ASI
18	NOTO	Noto, IT	36.88	14.99	126	T4000-SSI	CR-NR	no			ASI	1	1	1	x	x	ASI
19	GENO	Genova, IT	44.42	8.92	156	T4000-SSE	CR-NR	no	yes		ASI	1		1		x	ASI
20	VENE	Venezia, IT	45.44	12.33	67	SNR-8100	CR-NR	no			ASI	1		1		x	ASI
21	UPAD	Padova, IT	45.41	11.88	84	T4000-SSI	CR-NR	no			Univ. Padova	1	1	1	x	x	ASI
22	TORI	Torino, IT	45.06	7.66	311	T4000-SSE	CR-NR	no			Pol. Torino	1		1		x	ASI
23	BZRG	Bolzano, IT	46.50	11.34	329	LEICA SR399	CR-NR	no			Uff. Geodetico			1			ASI
24	UNPG	Perugia, IT	43.12	12.36	351	ASH-Z12	CR-NR	no			Univ. Perugia			1			ASI
25	COSE	Cosenza, IT	39.20	16.31	663	T4000-SSI	CR-NR	no			CNR/IRPI			1			ASI

26	LAMP	Lampedusa, IT	35.52	12.56		to be inst.	n/a	n/a	yes		ASI			1			n/a
27	BASS	Bassovizza, IT	45.63	13.87		to be inst.	n/a	n/a			ASI			1			n/a
28	MARA	Maratea, IT	40.33	15.27		to be inst.	n/a	n/a			ASI			1			n/a
29	VILL	Villafranca, SP	40.44	-3.95	647	SNR-8100	CR-NR	no		yes	ESA	1	1	1	x	x	IGS
30	EBRE	Roquetes, SP	40.82	0.49	108	T4000-SSI	CR-NR	no	yes		ICC	1	1	1	x	x	ICC
31	CREU	Cap de Creus, SP	42.32	3.32	133	T4000-SSI	CR-NR	no	yes		ICC		1				ICC
32	ESCO	Escornacrabes, SP	42.69	0.98	2503	T4000-SSI	CR-NR	no			ICC		1				ICC
33	BELL	Bellmunt, SP	41.60	1.40	853	T4000-SSI	CR-NR	yes			ICC		1				ICC
34	SFER	San Fernando, SP	36.46	-6.21	86	T4000-SSE	CR-NR	yes		almost	ROA	1	1	1	x	x	ROA
35	CART	Cartagena, SP	37.59	-1.00	93	T4000-SSE	L1/L2 GP	no	yes	yes	ROA		1				ROA
36	MAHO	Mahon, SP	39.90	4.27	64	T4000-SSE	L1/L2 GP	no			ROA	1	1	1			ROA
37	MELI	Melilla, SP	35.29	-2.94	61	T4000-SSE	L1/L2 GP	no	yes		ROA	1	1				ROA
38	COLL	Collcerola, SP	41.47	2.21	352	to be inst.	n/a	n/a			ICC		1				n/a
39	GARF	Garraf, SP	41.31	1.92	544	to be inst.	n/a	n/a			ICC		1				n/a
40	CASC	Cascais, PT	38.69	-9.42	77	LEICA SR9500	CR-NR	n/a		yes	Inst. Port. Cart.	1	1	1		x	EUREF
41	MAS1	Maspalomas, PT	27.76	-15.63	197	SNR-12	CR-NR	n/a		Masp.	ESA	1	1	1	x	x	IGS
42	IAVH	Rabat, MA	33.98	-6.87	96	SNR-8000	CR-R	n/a		Rabat	JPL	1	1	1			IGS

number of sites: 30 23 25

Table 1: List of GPS stations participating in the MAGIC project (operating by Nov. 31, 1998) and their characteristics. See logsheets in annex for more details. N/A: Not available. Network columns: I for IGS, E for EUREF.

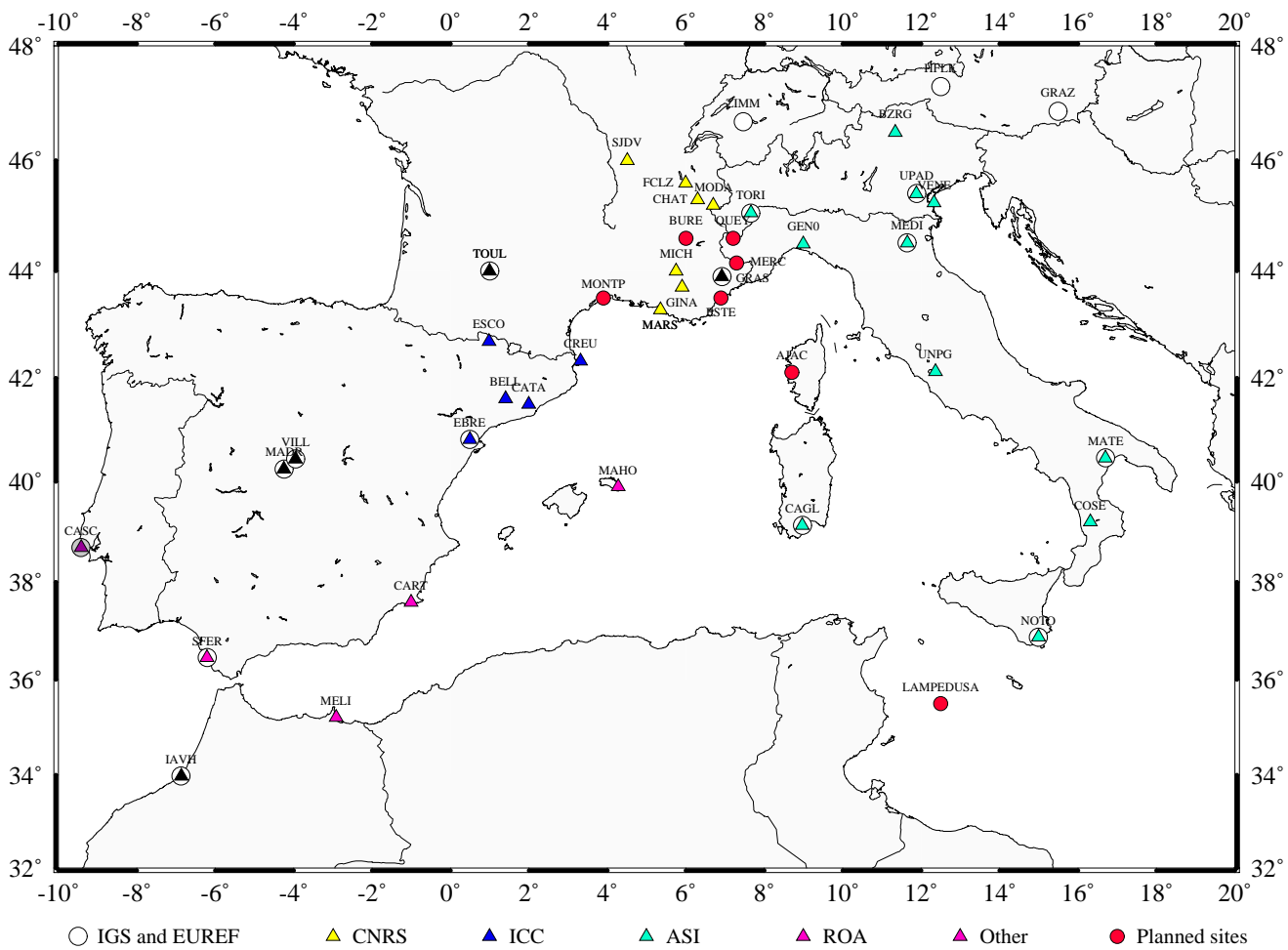


Figure 1. Approximate locations of stations participating in MAGIC.

Equipment specifications

Sites included in the MAGIC project must conform to the following specifications.

GPS receivers:

- Dual frequency, L1, L2, C/A (P1, P2)
- HF interference resistant
- Meteorological interface
- Recording interval 30 seconds (or sub-multiple)
- Recording cut-off angle 10 degrees

GPS antennas

- Choke ring if possible
- No radome if possible, otherwise hemispherical radome (follow results of Swedish group)
- Cut-off angle tests will be done at each site by the end of the site upgrade workpackage (T0+6) (TBC)

Communications equipment

- Communications equipment at remote sites will be upgraded as necessary to allow automated downloading of the GPS data at least once per day. All sites indicated as operational in Table 1 already have this communication capability. (TBC)
- Real-time data transfer should be implemented where possible, acknowledging the ultimate real-time demands of the meteorological community. However, within the objectives of the MAGIC project, real-time data transfer will only be required at the ICC sites participating in the real-time test. These sites are ESCO, EBRE, CREU (TBC)

Meteorological equipment

- Pressure sensor: accuracy 0.3 mb, calibrated every 6 months
- Temperature sensor: accuracy 1 K
- Humidity sensor: accuracy 3 %
- Sampling interval 10 mn

A calibration report must be furnished with every semi-annual report from partners providing data (ICC, CNRS, ROA, ASI).

The stations already equipped with meteorological equipment are indicated in Table 1, though at some of these sites the automated datalogging for use by MAGIC partners must be implemented (TOUL, GRAS, SFER). The MAGIC partner from the corresponding country will be responsible for this task. Each of the data provider partners of the MAGIC project is assumed to have a budget allocated for installation of at least two new meteorological packages. They will be deployed in priority at the following sites:

ICC	EBRE, CREU
ROA	CART, MELI
CNRS	SJDV, MONT, AJAC(in cooperation with IGN)
ASI	LAMP, GENO, CAGL

The priorities are based on the following considerations:

1. Barometers should be placed at sites considered important in terms of being upstream or source regions for storm systems. This gives priority to sites in the Atlantic and the western side of the

MAGIC modeling region. Lampedusa and Genoa are important source regions for storm systems incident in Italy. For the local Catalonian model this would give priority to the coastal stations.

2. Barometers placed at sites within 50 km of radiosondes allow more precise validation of integrated water vapor values, not only by providing independent measures of the integrated humidity profile, but also because the radiosondes will provide good estimates of the average temperature needed for the GPS IWV extraction process.
3. Barometers placed at sites that do not have strong short wavelength topographic effects will be more valuable in the HIRLAM validation, since this type of site cannot be modeled at the resolution of the HIRLAM model anyway. (Note this is in conflict with priorities for local Catalonian models mentioned in point 1)
4. Barometers in regions with poor data coverage, ie no radiosonde data available, will provide data which will be more valuable and have more impact in the HIRLAM model assimilation tests (Note this is in conflict with priorities mentioned in point 2)

Sites within 50 km of a radiosonde site are the following: SJDV, AJAC, MONT, MATE, CAGL, MEDI, CART.

The other sites within 50 km of a radiosonde are not owned by MAGIC partners (ZIMM Switzerland, MADR/VILL Spain, MASP Portugal, CASC Portugal, IAVH Morocco).

Appendix: Log Sheets for Existing Stations

Log sheets are provided in a concatenated list in the separate file logsheets.txt for the following stations (also accessible individually at <http://www.acri.fr/magic>):

bell9811.txt
bzrg.txt
cagl.txt
cart9806.txt
casc.txt
cose.txt
creu9811.txt
ebre9704.txt
fclz9806.txt
geno.txt
gina9802.txt
gras.txt
iavh9807.txt
maho9809.txt
mars.txt
mas19705.txt
mate.txt
medi.txt
meli9809.txt
mich9807.txt
moda9810.txt
noto.txt
sfer9806.txt
sjdv9710.txt
tori.txt
toul9706.txt
unpg.txt
upad.txt
vene.txt
vill9705.txt
zimm9801.txt