



Concordia RMO



**Workshop on Atmospheric Science and Connection with Related
Science – ROME, CNR, 26-27 April 2006**

Routine Meteorological Observation @ Station Concordia

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A. Pellegrini¹, M. Proposito²**

1 – PNRA SCrI

2 – ENEA CLIM



Homework:

1. Which atmospheric measurements have you done up to now ?
2. Which atmospheric measurements are needed in your field ?
3. Will it be possible to create a data base including the past measurements ?
4. Is it possible to realize an atmospheric observatory for these measurements ?
5. Who should be in charge for these measurements ?
6. Who should be in charge of creating a rational database ?
7. Which should be is the dissemination strategy ?

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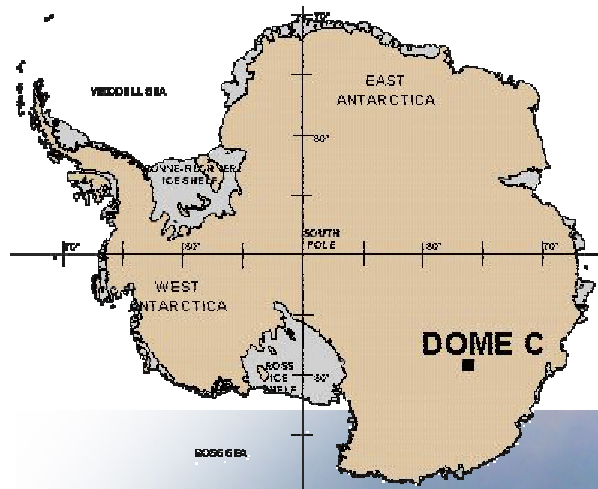
1. Which atmospheric measurements have you done up to now ?

Weather Station



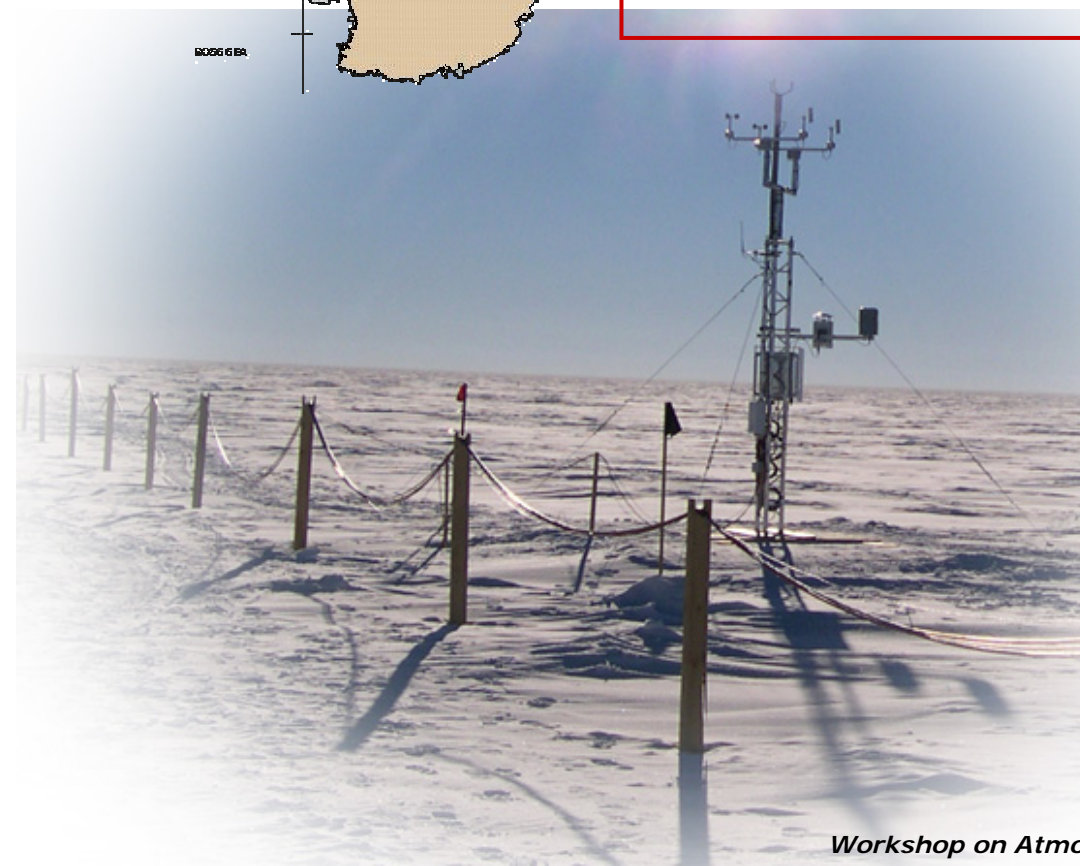
Radiosounding





Installation date:
Position:
Model:
Power:
Mast height:
Local data storage:

2005, January 30 (XX Exp.)
75° 06' S – 123° 18' E
Vaisala Milos 520
220 V
3 meters
4 MB flash memory



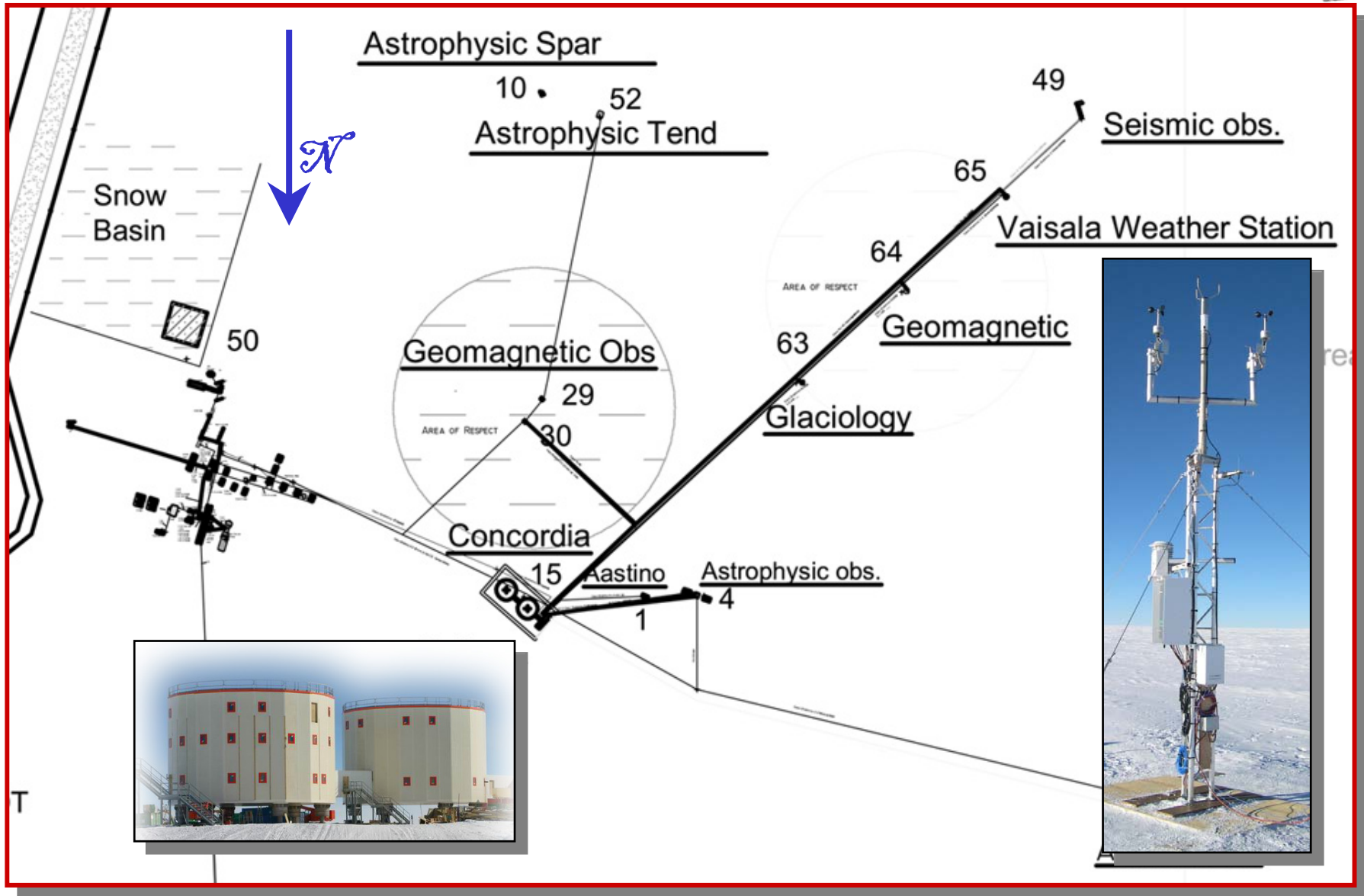
Wind speed and direction

- 2 optoelectronic not heated sensors
- 2 optoelectronic heated sensors
- 1 sonic heated sensor

Temperature and Humidity

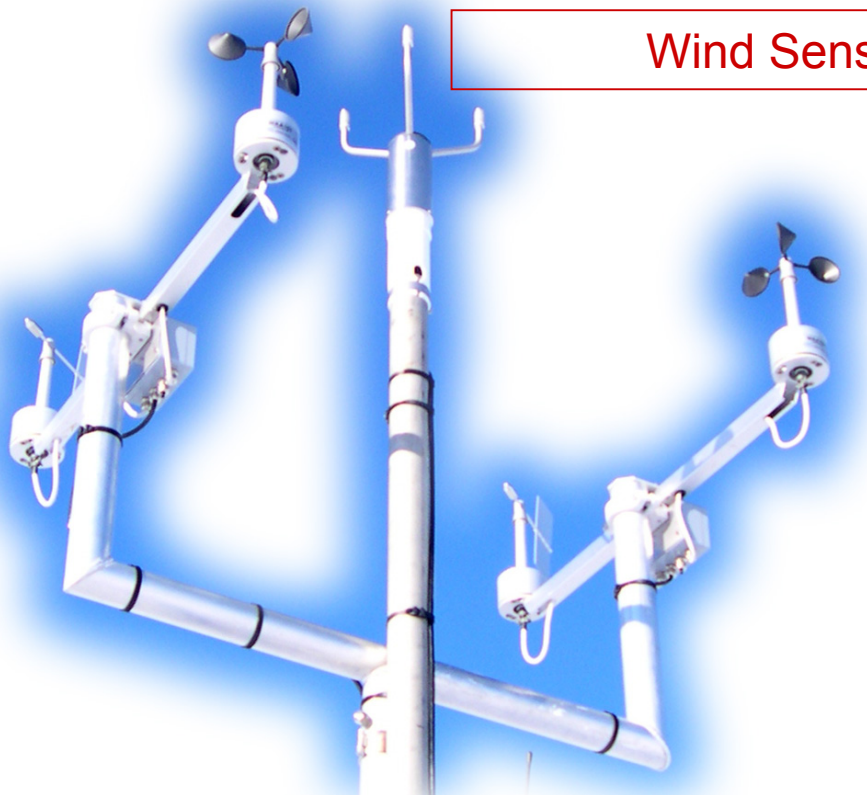
- traditional sensors
- Ventilated Thermohygrometer

Atmospheric Pressure





Wind Sensors

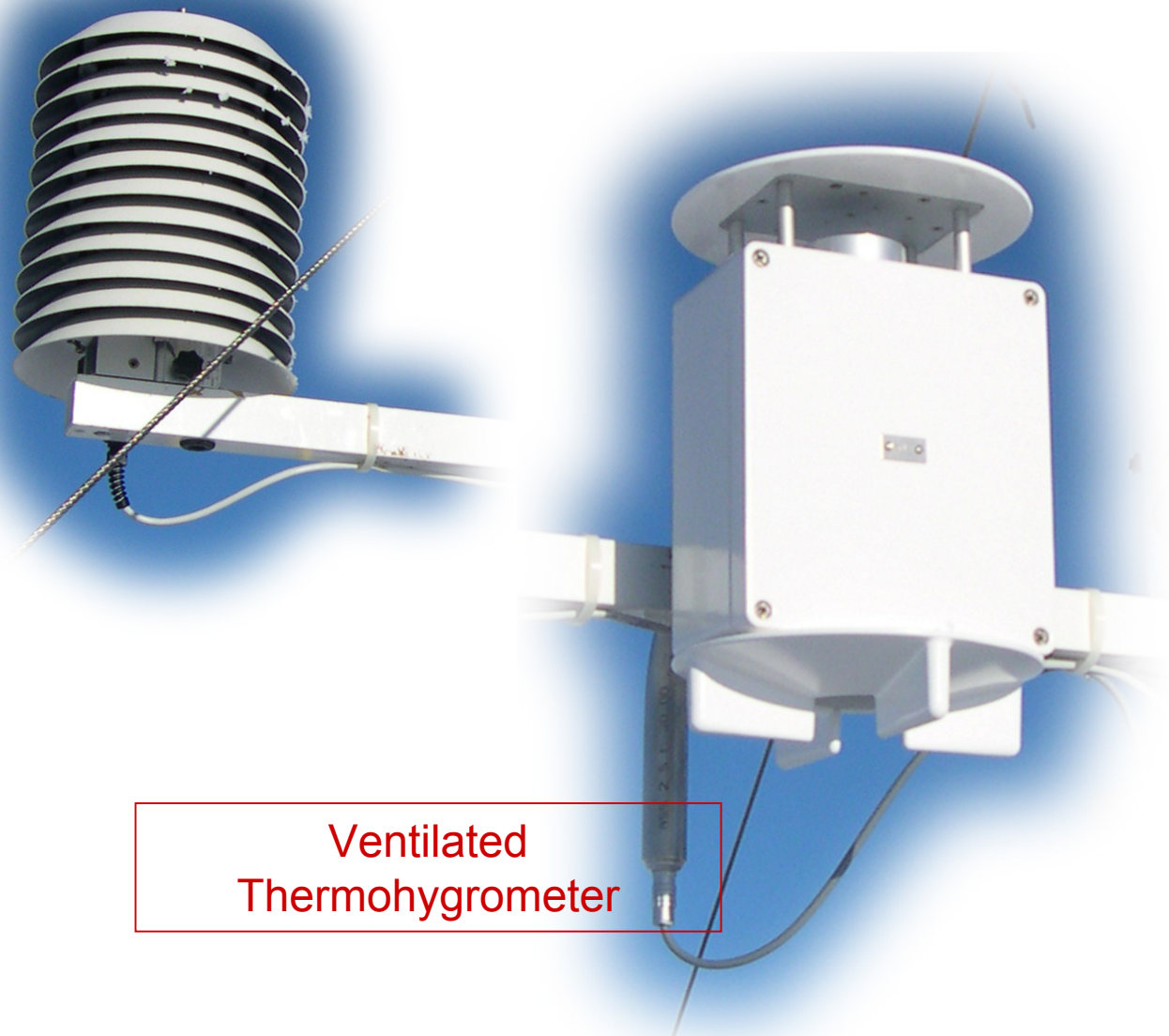


Sonic Wind Sensor





Temperature and Humidity Sensor



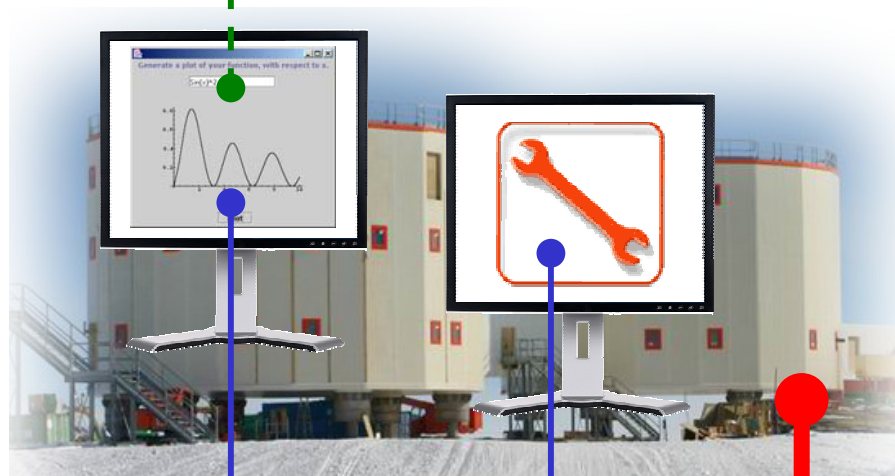
Ventilated Thermohygrometer



AWS Concordia



Radiomodem



RS 485

RS 485

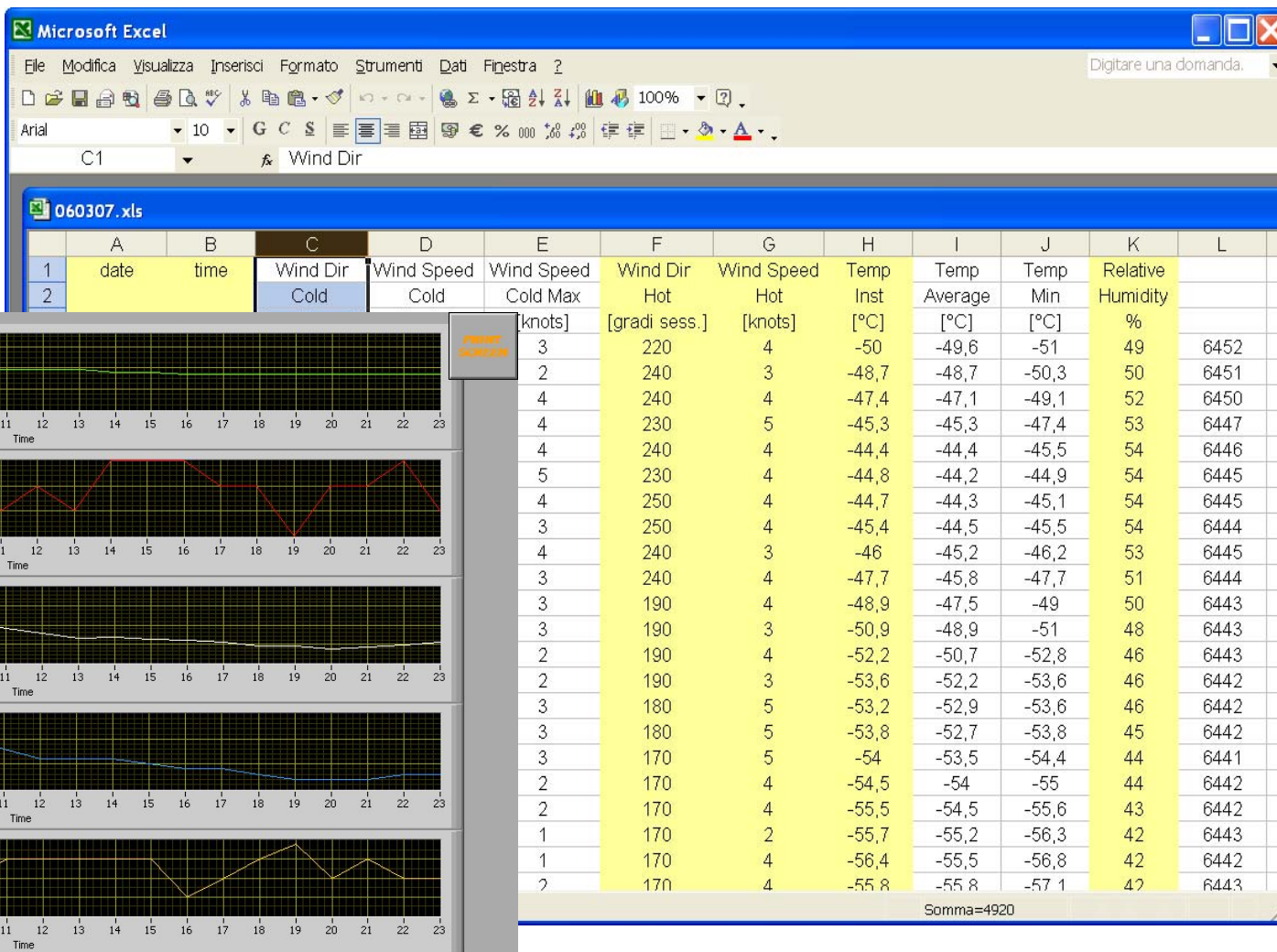
220 V AC



AWS Concordia



Local Data Dissemination



One radiosounding/day at 12:00 UTC



2005 (since 23/03): 194 launches

2006 (updated to 24/03): 110 launches



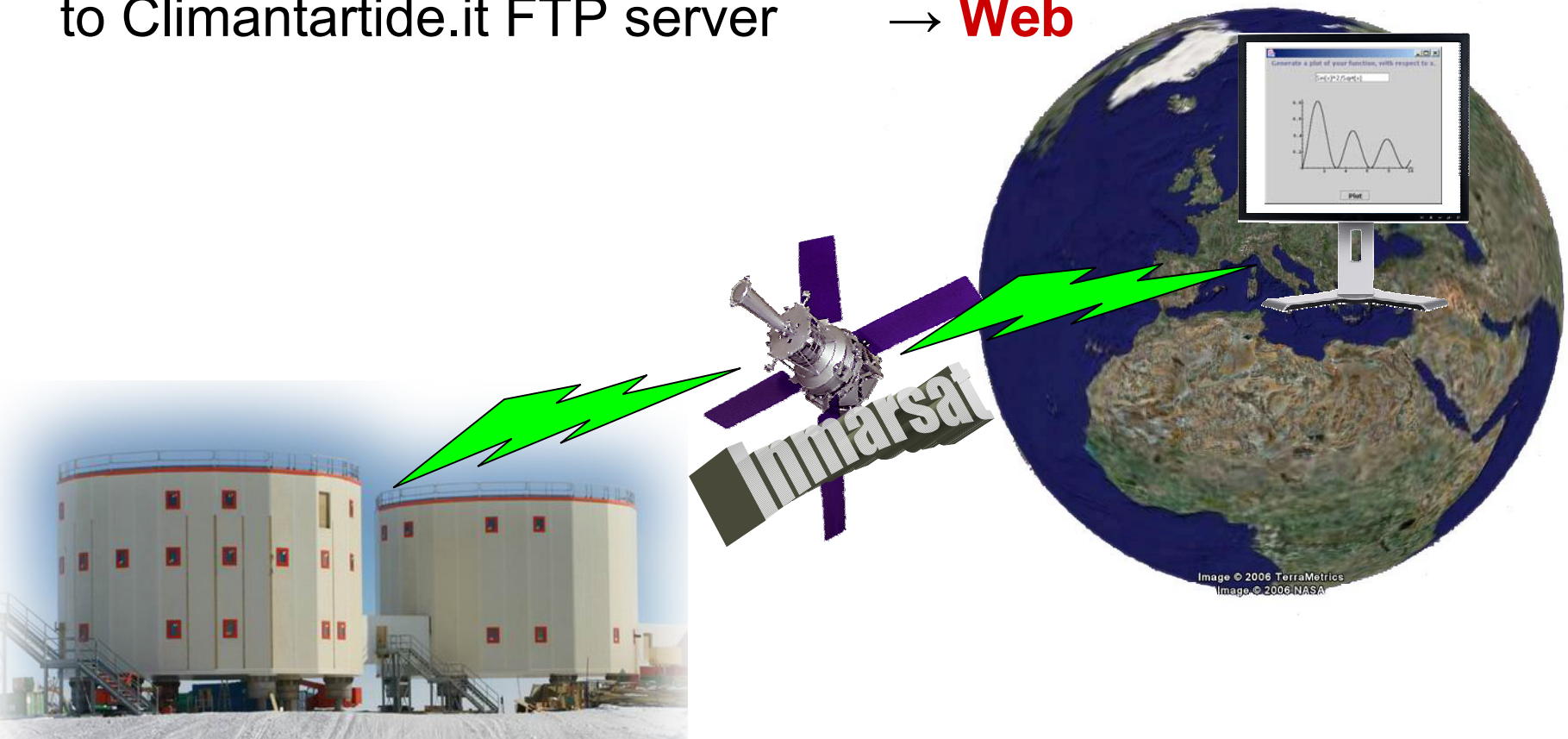
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Data transmission to Europe:

to Meteoam.it FTP server → **GTS**

to Climantartide.it FTP server → **Web**





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2. Which atmospheric measurements are needed in your field ?

ANY!!!



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www.climantartide.it



Programma Nazionale di Ricerche in Antartide (Italian Antarctic Research Programme)

Meteo-climatological
Observatory

ENEA Clim-Oss
Antar



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Database and Archive



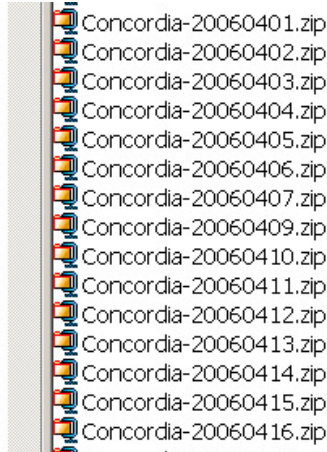
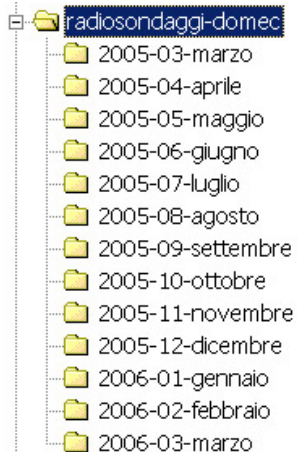
Microsoft Access - [anno2006 : Tabella]

File Modifica Visualizza Inserisci Formato Record Strumenti Finestra ?

anno	mese	giorno	ora	time1	slp	tist	rh	nsw	eww	he
6	1	1	12	6010112	26525	-21	56	1,2	-3,9	
6	1	1	12	6010112	26522	-21,3	61	0,9	-3,4	
6	1	1	12	6010112	26518	-21,4	64	1	-3,7	
6	1	1	12	6010112	26512	-21,5	67	1,1	-4,1	
6	1	1	12	6010112	26506	-21,6	70	1,2	-4,5	
6	1	1	12	6010112	26500	-21,7	72	1,3	-4,9	
6	1	1	12	6010112	26494	-21,8	73	1,5	-5,2	
6	1	1	12	6010112	26488	-21,9	74	1,6	-5,6	
6	1	1	12	6010112	26481	-22	75	1,8	-5,9	
6	1	1	12	6010112	26474	-22,1	76	2	-6,1	
6	1	1	12	6010112	26467	-22,2	77	2,2	-6,4	
6	1	1	12	6010112	26461	-22,3	78	2,3	-6,6	
6	1	1	12	6010112	26455	-22,4	78	2,5	-6,7	
6	1	1	12	6010112	26448	-22,5	79	2,7	-6,8	
6	1	1	12	6010112	26443	-22,5	80	2,9	-6,9	
6	1	1	12	6010112	26439	-22,6	80	3	-7	
6	1	1	12	6010112	26435	-22,6	79	3,1	-7	
6	1	1	12	6010112	26429	-22,6	79	3,2	-7,1	
6	1	1	12	6010112	26423	-22,7	79	3,3	-7,1	
6	1	1	12	6010112	26416	-22,7	80	3,3	-7,1	

Storing Data

- Access database
- Mysql database
- Zip archive



Server: localhost Database: met Tabella domec2005

Struttura Mostra SQL Cerca Inserisci Esporta Operazioni Svuota Elimina

Visualizzazione record 0 - 29 (377686 Totali, La query ha impiegato 0.0318 sec)

query SQL:
SELECT * FROM domec2005 LIMIT 0, 30

[Modifica] [Spiega SQL] [Crea il codice PHP] [Aggiorna]

Mostra: 30 righe a partire da 30

in modalità orizzontale e righe per gli headers dopo 100 celle Numero pagina 1

	anno	mese	giorno	ora	time1	slp	tist	rh	nsw	eww	height	pres	td	mix	dir	wet	azimuth	radius	lon	lat	hsk	time?			
?	5	9	14	12	5091412	26572	-60	32	-4	-1	3260	656	0	-69	0	0	197	4	0	123	-75	0	2005091412		
?	5	9	14	12	5091412	26570	-60	32	-5	-1	3262	656	0	-68	0	0	190	6	0	13	0	123	-75	0	2005091412
?	5	9	14	12	5091412	26569	-59	32	-7	0	3265	656	0	-68	0	0	184	7	0	10	0	123	-75	0	2005091412
?	5	9	14	12	5091412	26566	-59	33	-8	0	3268	655	0	-67	0	0	179	0	0	7	0	123	-75	0	2005091412
?	5	9	14	12	5091412	26562	-58	35	-8	0	3275	655	0	-67	0	0	174	9	0	3	0	123	-75	0	2005091412
?	5	9	14	12	5091412	26556	-58	37	-9	1	3284	654	0	-66	0	0	170	9	0	0	100	123	-75	0	2005091412
?	5	9	14	12	5091412	26549	-57	39	-10	2	3294	653	0	-64	0	0	168	10	0	368	100	123	-75	0	2005091412
?	5	9	14	12	5091412	26542	-54	41	-10	2	3305	652	0	-61	0	0	167	11	0	366	100	123	-75	0	2005091412
?	5	9	14	12	5091412	26535	-50	44	-11	2	3316	650	0	-57	0	0	167	11	0	354	100	123	-75	0	2005091412
?	5	9	14	12	5091412	26528	-46	46	-11	2	3327	649	0	-53	0	0	167	12	0	363	200	123	-75	0	2005091412
?	5	9	14	12	5091412	26523	-44	48	-12	2	3336	648	0	-50	0	0	167	12	0	363	200	123	-75	0	2005091412
?	5	9	14	12	5091412	26518	-41	50	-12	2	3344	648	0	-48	0	0	167	12	0	352	200	123	-75	0	2005091412
?	5	9	14	12	5091412	26513	-40	51	-12	3	3352	647	0	-46	0	0	167	12	0	351	200	123	-75	0	2005091412
?	5	9	14	12	5091412	26509	-39	52	-12	3	3359	646	0	-45	0	0	166	13	0	351	300	123	-75	0	2005091412
?	5	9	14	12	5091412	26505	-38	53	-12	3	3366	646	0	-44	0	0	166	13	0	350	300	123	-75	0	2005091412
?	5	9	14	12	5091412	26500	-38	53	-12	3	3374	645	0	-44	0	0	165	13	0	350	300	123	-75	0	2005091412
?	5	9	14	12	5091412	26495	-37	54	-12	3	3383	644	0	-43	0	0	164	13	0	350	300	123	-75	0	2005091412
?	5	9	14	12	5091412	26490	-37	55	-12	3	3391	643	0	-43	0	0	164	13	0	349	400	123	-75	0	2005091412
?	5	9	14	12	5091412	26485	-37	55	-12	3	3399	643	0	-43	0	0	163	13	0	349	400	123	-75	0	2005091412
?	5	9	14	12	5091412	26481	-37	55	-12	4	3405	642	0	-43	0	0	162	13	0	348	400	123	-75	0	2005091412

• Radiosounding charts and data

Introduction
Radiosoundings are executed from 1987 during the summer expedition in Terra Nova Bay from the Campometeo locality, and, from 2005, during all the year, in Dome C from the Concordia Station.
From the following menu it is possible have charts in real time of the radiosounding or to view data in table format.
The examples gives a panoramic of the obtainable charts with the relative explanations.

Charts Terra Nova Bay **Charts Dome C**

Data Terra Nova Bay **Data Dome C**

Examples

- SkewT & Hodograph
- T, RH, TD, Wind Speed & Components (vertical plot)
- Rel. Hum. (contour ±2days & vertical plot)
- Temperature (contour ±2days & vertical plot)
- Dew Point (contour ±2days & vertical plot)
- Mixing Ratio (contour ±2days & vertical plot)
- Wind Speed (contour ±2days & vertical plot)
- Wind Direction (contour ±2days & vertical plot)
- Wind SN Components (contour ±2days & vertical plot)
- Wind WF Components (contour ±2days & vertical plot)

Versione Italiana

• Radiosounding Charts Dome C

Introduction
In order to obtain a radiosounding chart, select the year and the month: choose the type of chart and click on the gray small rectangle in the selected day.
N.B.: the processing of an on-line chart takes from 20 seconds to 2-3 minutes, according to the type of chart. If a slow modem is used, the display time may lengthen.

Charts

Year: Month:

Charts:

Febbraio 2006						
DOM	LUN	MAR	MER	GIO	VEN	SAB
			1 12:00	2 12:00	3 12:00	4 12:00
5 12:00	6 12:00	7 12:00	8 12:00	9 12:00	10 12:00	11 12:00
12 12:00	13 12:00	14 12:00	15 12:00	16 12:00	17 12:00	18 12:00
19 12:00	20 12:00	21 12:00	22 12:00	23 12:00	24 12:00	25 12:00
26 12:00	27 12:00	28 12:00				

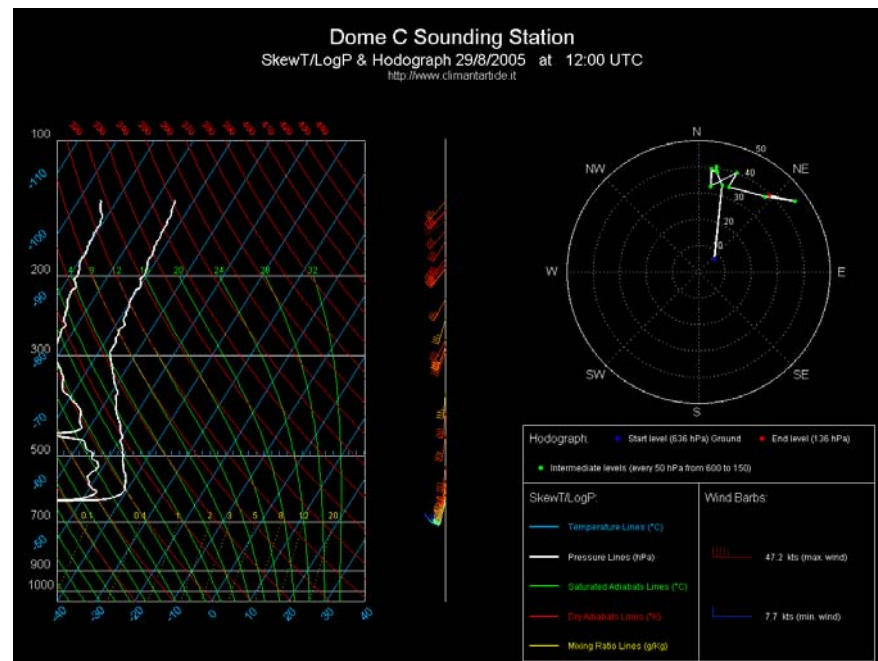
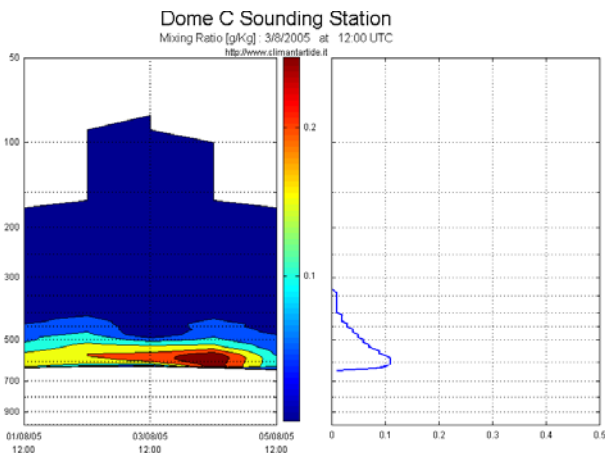
Versione Italiana

Charts available
in real time
(10 to 30 seconds)

- SkewT & Hodograph
- T, RH, Wind (vertical plot)
- Contour ± 2 days & vertical plot of:

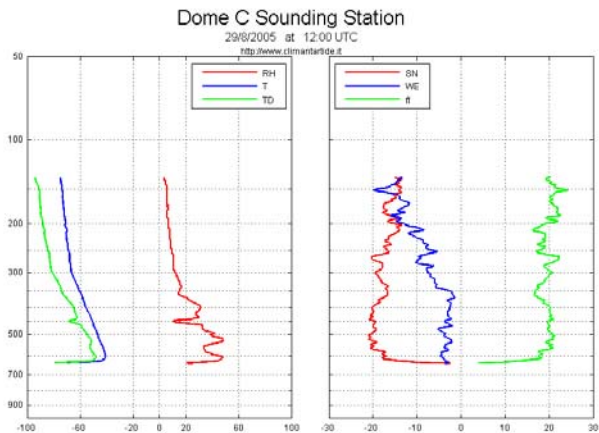
RH, T, Dew Point, Mixing Ratio, W. Speed, W. Direction; Wind Components.

Mixing Ratio



SkewT and Hodograph

T, RH, TD, Wind speed and Components





View and Dowload Data



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• Radiosounding standard data Dome C

Introduction

Data collected by radiosounding are presented for standard levels in table format. (hPa "ground pressure": 925, 850,700, 500, 400, 300, 250, 200, 150, 100, 70, 50, 30, 20, 10)

Choose the radiosounding clicking on the rectangle with the hour of launch.

The table show the fields:
 atmospheric pressure at standard levels (hPa)
 ASL height (m)
 Wind direction (degree)
 Wind speed (m/s)
 Temperature (°C)
 Relative humidity (%)

View daily data

Expedition: _____ Month:

Year:

Gennaio 2006						
DOM	LUN	MAR	MER	GIO	VEN	SAB
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

View Data

Atmospheric pressure at standard levels (hPa)	ASL height (m)	Wind direction (degree)	Wind speed (m/s)	Temperature (°C)	Relative humidity (%)
500.0	5058	190	3.00	-35.00	30
400.0	6573	187	6.00	-44.00	57
300.0	8458	180	13.00	-55.00	49
250.0	9621	194	4.00	-50.00	3
200.0	11100	203	4.00	-46.00	1
150.0	13001	288	1.00	-42.00	1
100.0	15727	275	2.00	-42.00	1
70.0	18117	199	3.00	-39.00	1
50.0	20472	318	1.00	-39.00	1
30.0	23798	111	3.00	-38.00	1
20.0	-999	-999	-999	-999	-999
10.0	-999	-999	-999	-999	-999



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• Radiosounding Dome C

Introduction

Radiosoundings done in Dome C are daily downloadable for the current month, and monthly for the other months, and are in zip format.

Data

Note: dimension of yearly data file is 29 Mb

Download Data



Aws data



Storing Data

- Access database
- Mysql database

• AWS data

Introduction

Automatic weather station data can be view by year. Choose "Automatic Weather Stations" and "Year" and click on the interesting variables. Then click on "View data" and obtain a data table that can be saved in .zip format. Data are three-hourly till 1991, and hourly from 1992. Next table presents file's format, and, for each misured variable, unit and the value indicating missing data:

Variables	Units	Value for missing datum
Wind direction	degree	-10
Wind speed	kts	-10
Temperature	°C	99,9
Relative humidity	%	-10
Atmospheric pressure	hPa	-10

Data

Automatic Weather Stations

Concordia (////) Dome C

Year Start: 2005 Year End: 2005

dir : Wind direction

vel : Wind speed

tist : Temperature

rh : Relative humidity

pres : Atmospheric pressure

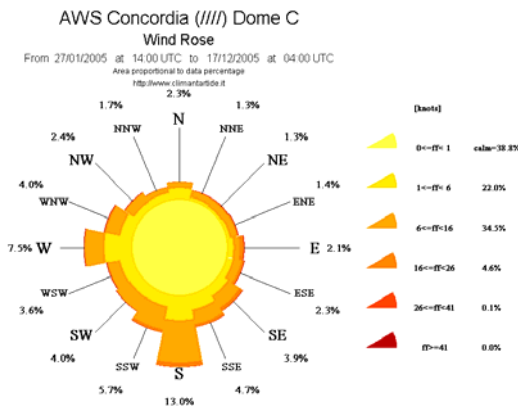
rmed : Solar radiation

Download

year	Month	Day	Hour	dir	vel	tist	rh	pres
2005	1	27	14	260	4	-39,7	17,0	648,3
2005	1	27	15	260	5	-41,6	17,0	648,2
2005	1	27	16	250	6	-42,0	16,0	648,0
2005	1	27	17	260	6	-44,0	16,0	648,0
2005	1	27	18	260	5	-44,5	16,0	648,1
2005	1	27	19	260	4	-44,9	16,0	648,2
2005	1	27	20	260	4	-44,5	16,0	648,2
2005	1	27	21	270	5	-43,3	16,0	648,2
2005	1	27	22	270	4	-41,5	16,0	648,4
2005	1	27	23	260	5	-39,1	17,0	648,6
2005	1	28	0	-10	-10	99,9	-10,0	-10,0
2005	1	28	1	-10	-10	99,9	-10,0	-10,0
2005	1	28	2	-10	-10	99,9	-10,0	-10,0
2005	1	28	3	-10	-10	99,9	-10,0	-10,0
2005	1	28	4	-10	-10	99,9	-10,0	-10,0
2005	1	28	5	-10	-10	99,9	-10,0	-10,0
2005	1	28	6	-10	-10	99,9	-10,0	-10,0
2005	1	28	7	-10	-10	99,9	-10,0	-10,0
2005	1	28	8	-10	-10	99,9	-10,0	-10,0
2005	1	28	9	-10	-10	99,9	-10,0	-10,0
2005	1	28	10	-10	-10	99,9	-10,0	-10,0
2005	1	28	11	280	5	-34,2	24,0	650,7
2005	1	28	12	270	5	-36,3	22,0	650,8
2005	1	28	13	260	5	-38,3	23,0	650,8
2005	1	28	14	250	5	-40,0	17,0	650,9
2005	1	28	15	260	6	-41,3	17,0	651,0
2005	1	28	16	260	6	-43,1	17,0	651,0
2005	1	28	17	250	5	-43,8	16,0	651,2
2005	1	28	18	260	5	-44,8	16,0	651,1
2005	1	28	19	240	5	-44,8	16,0	651,3
2005	1	28	20	260	5	-44,9	16,0	651,3
2005	1	28	21	250	3	-43,3	16,0	651,2
2005	1	28	22	270	2	-42,4	16,0	651,0
2005	1	28	23	270	3	-40,0	17,0	651,2
2005	1	29	0	-10	-10	99,9	-10,0	-10,0
2005	1	29	1	-10	-10	99,9	-10,0	-10,0
2005	1	29	2	-10	-10	99,9	-10,0	-10,0
2005	1	29	3	-10	-10	99,9	-10,0	-10,0

View Data

- Charts in real time
- View AWS data





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4. Is it possible to realize an atmospheric observatory for these measurements ?
5. Who should be in charge for these measurements ?
6. Who should be in charge of creating a rational database ?
7. Which should be is the dissemination strategy ?



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Thank you