



Meteo-Climatological Observatory



1985-2007

To install and maintain meteorological instruments

Acquisition of surface (AWS) and upper air data (radiosounding)

Data validation and dissemination (Web, GTS...)

To co-operate with Operational Meteorology

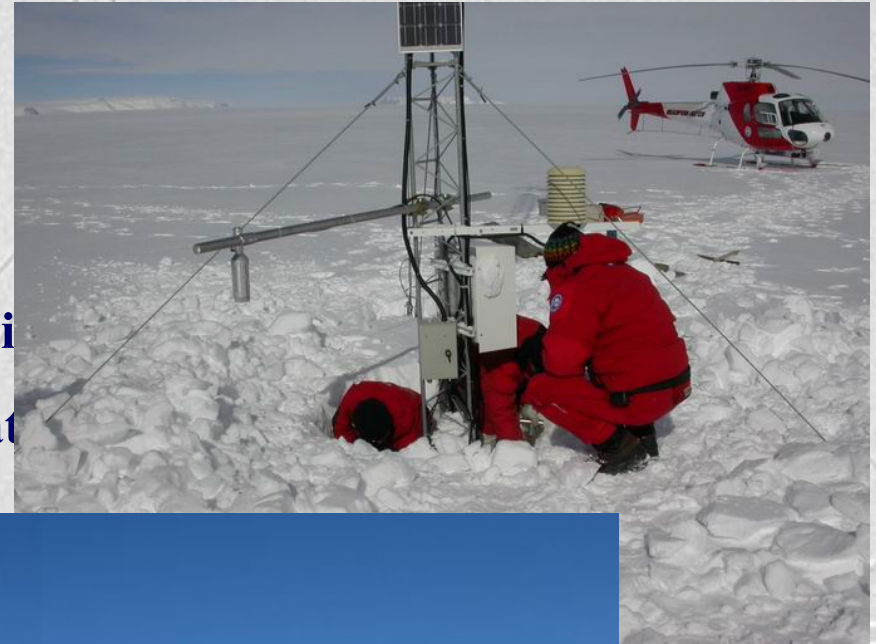
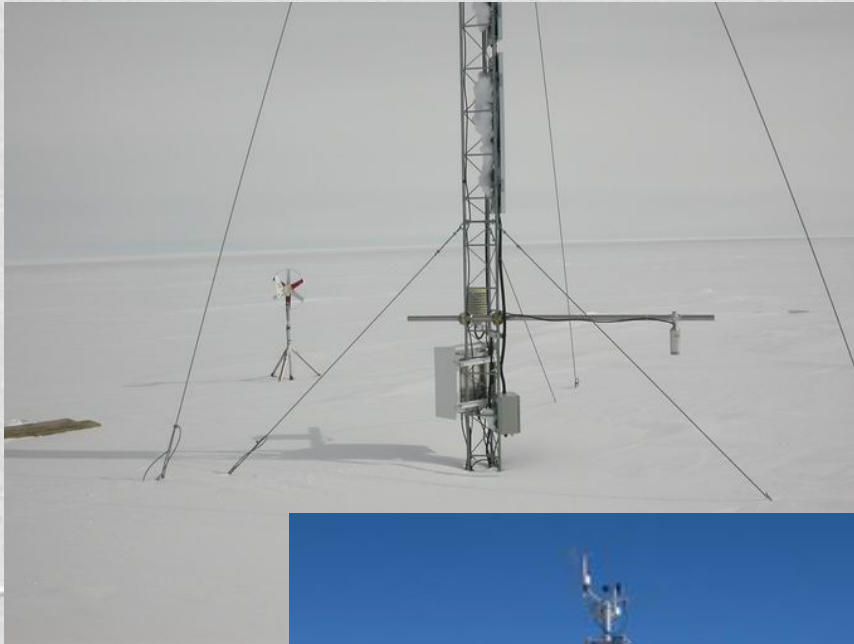
L. De Silvestri¹, S. Dolci², U. Gentili¹, P. Grigioni¹, A. Pellegrini²

¹ ENEA – CLIM (Roma, Italy)

² PNRA Scrl – (Roma, Italy)

Antarctic Meteorological Observation, Modelling, and Forecasting Workshop Roma, Italy, 26-28 June 2007

Goals



ologi
a dat
cif

-Data Experiments and Solutions in the Installation of AWS on Snow and Ice

-Co

-Tec

-Tec

Lorenzo De Silvestri



26-28 June 2007



Instrumentation



- AWS : Vaisala Milos 200, Milos 500, Milos 520, Campbell 510 WP
- Landing strip's anemometer : WT501
- Radiosounding : Marwin MW12 and Digicora III
- Nephoipsometer : Vaisala CT12K
- Snowdrifts : IAV Acoustics & Vibration Engineering

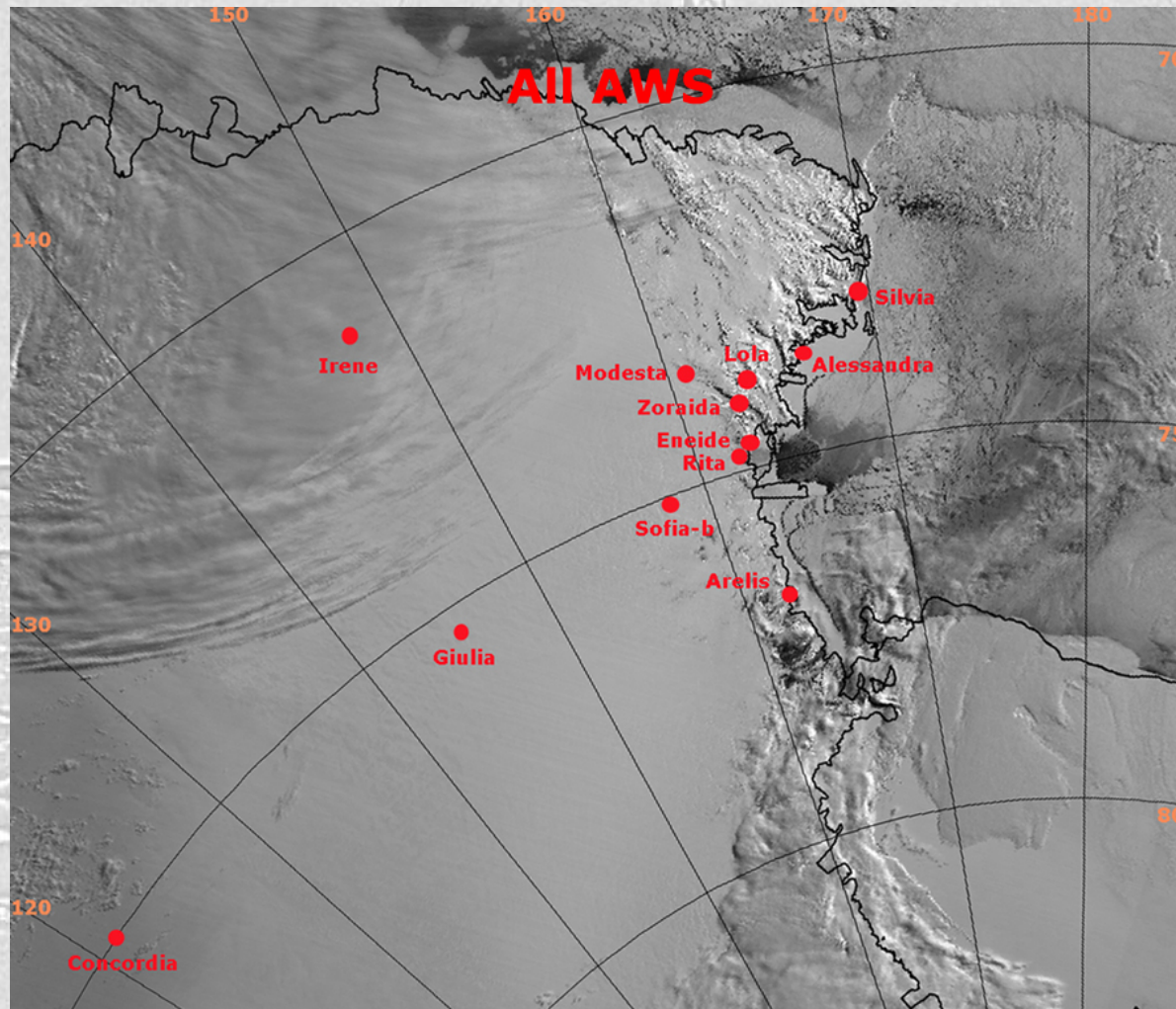
Years of activity

Station	ID	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07
Sofia	7350																					
Alessandra	7351																					
Zoraida	7352																					
Eneide	7353																					
Modesta	7355																					
Lola	7356																					
Arelis	7357																					
Silvia	7379																					
Rita	7354																					
Itase	no																					
Italica	no																					
Maria	no																					
Giulia	1627																					
Penguin	no																					
Jennica	no																					
Irene	1218																					
Sofia-B	7350																					
Paola	no																					
Concordia	1626																					
Lucia	no																					
Alfa-Bravo	no																					
Minni	no																					
Enigma	no																					

AWS tx :
Argos
Iridium
Radiomodem

Data storage :
Flash card
Eprom

Localization of AWS





Operational AWS



1:45

METdata: An Integrated Data Acquisition System for Operational Meteorological Data

Lucia Agnoletto, Lorenzo DeSilvestri, and Andrea Pellegrini



2:00

Current Status of Meteorological Observations Related to Air Operations at Mario Zucchelli Station and Concordia Station

Giuseppe DeRossi, Lorenzo DeSilvestri², Stefan Dolci and Andrea Pellegrini





Radiosounding at MZS



**Two radiosoundings/day,
@ 00.00 and 12.00 UTC**



**Summer only
(October-February)**



Radiosounding at Concordia

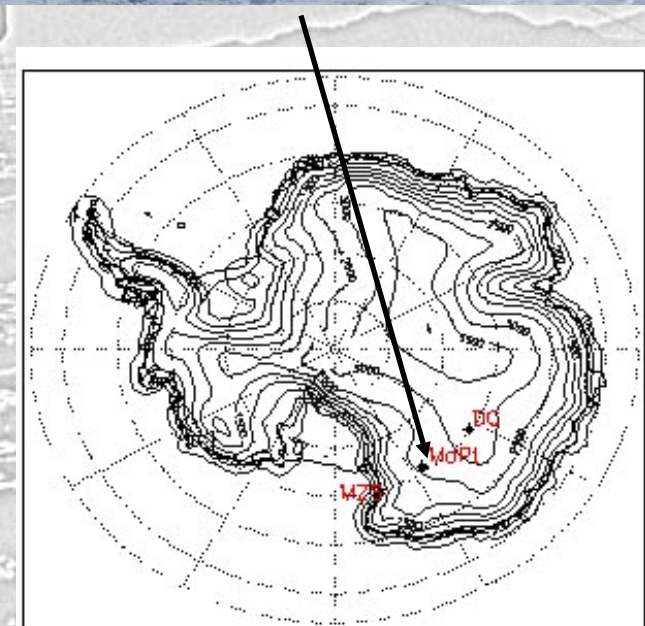
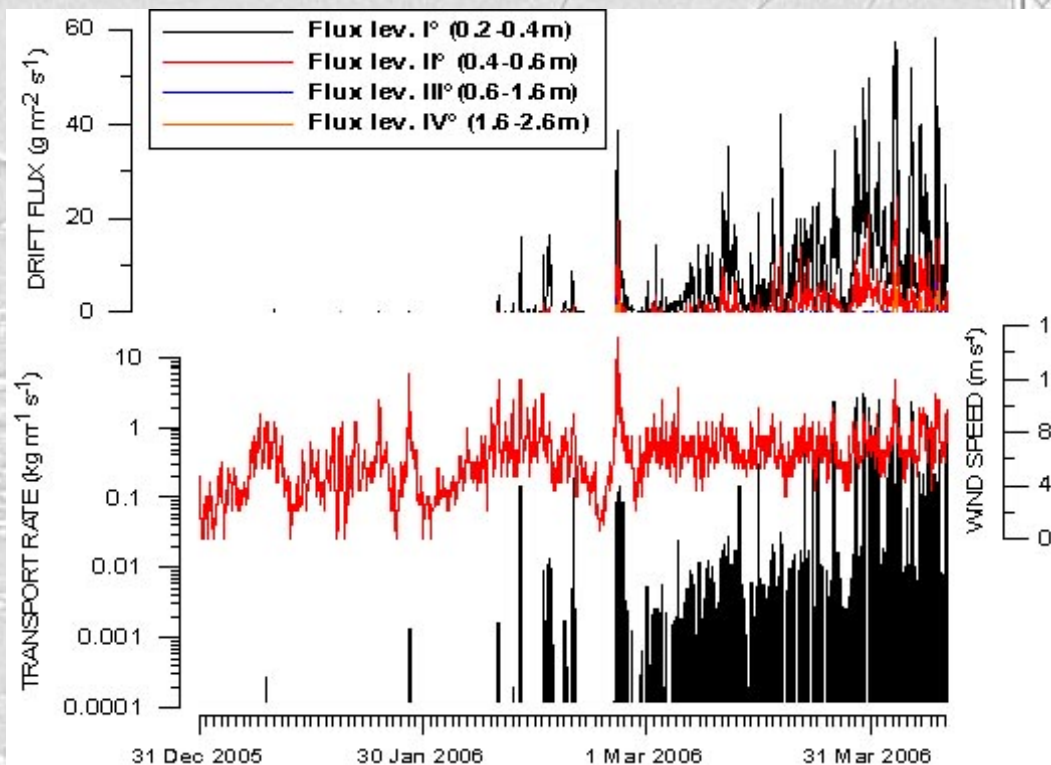
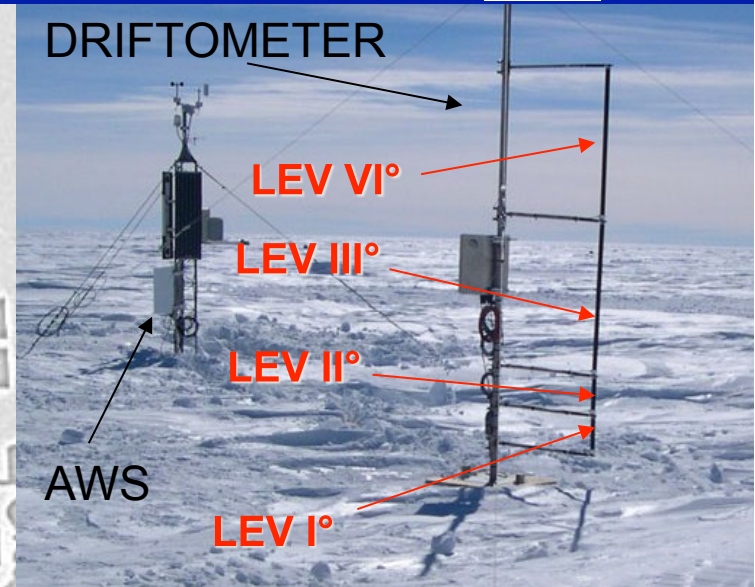


One radiosounding/day

@ 12:00 UTC

All year

SNOWDRIFT AT Mid Point (MdPt) 75° 31' S -- 145° 51' E (courtesy: C.Scarchilli, ENEA)







Web interface to database



www.climantartide.it


 

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

Meteo-climatological Observatory

ENEA ACS-Clim-Oss
PNRA S.C.r.l.

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Graphics products




• Radiosounding charts and data

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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 WE Components \(contour #2days & vertical plot\)](#)




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Introduction

First of all, select the station desired from the field 'Automatic Weather Stations', and click on the name of the station. Stations are indicated by name, Argos number, and geographic site. Only stations working all year long are included: data surveyed by Itase, Itasca and Penguin are not present because fragmentary and scarcely indicative.

Secondly, select the chart of the variable desired and the period, giving year, month, and starting and ending hour, and from 'Generate AWS Plot' the chart can be obtained in a new Browser window.

N.B.: the processing of an on-line chart takes from 20 seconds to 2-3 minutes, according to the type of chart and time interval requested. If a slow modem is used, the display time may lengthen.

Charts

Automatic Weather Stations
Alessandra (7351) Cape King

Graphic
Temperature (Linear Plot)

Start Date
Year 1987 Month 01 Day 01 Hour 00


End Date
Year 2006 Month 11 Day 02 Hour 04



[Wind rose](#)



[Wind and wind-chill](#)



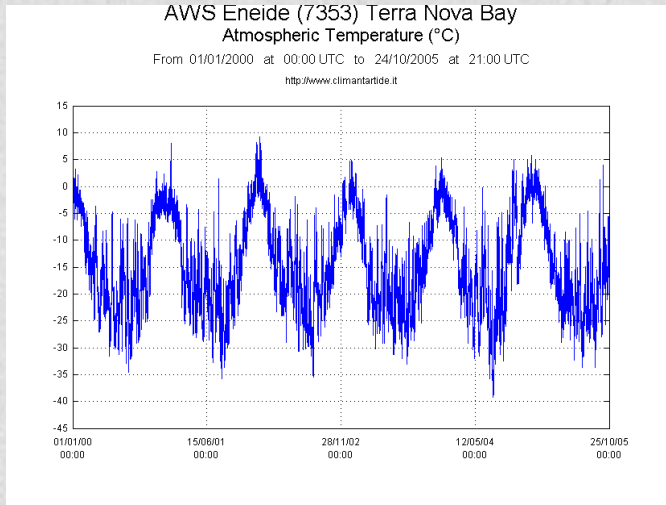
[Beaufort scale](#)

Charts available in
real time
(10 to 30 seconds)

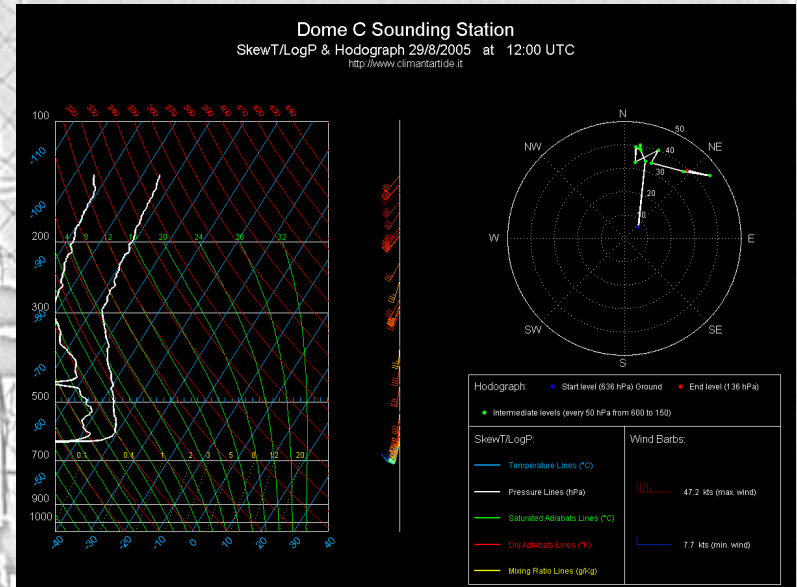
- SkewT & Hodograph
- T,RH,Wind (vertical plot)
- Temperature , Humidity, etc



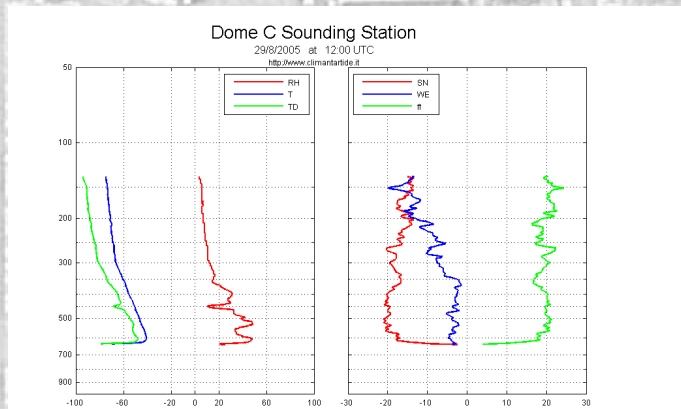
Charts examples



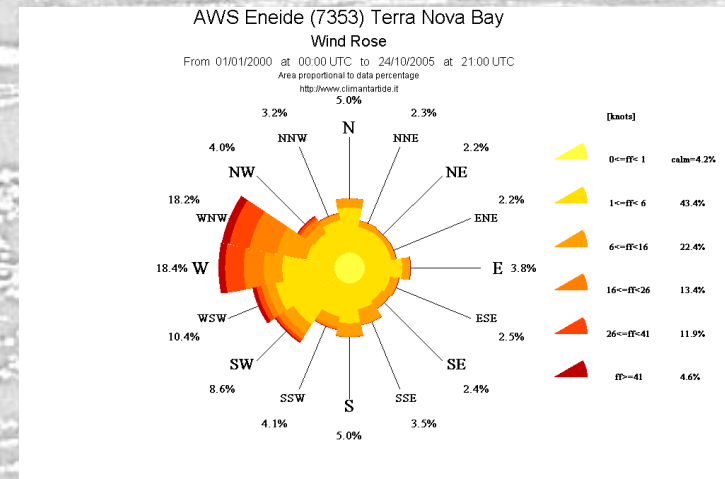
Temperature



SkewT and Hodograph



Wind rose



T, RH, TD, Wind speed and Components



Radiosounding data listing



• 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 which 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: Year 2005 | Month: January | Refresh

Gennaio 2005						
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

Radiosounding of 2006-01-30 at 12

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

Download Data

• 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

01 June 2007 | Daily data June

May 2007 | Monthly data

2006 | Yearly data

Note:
dimension of 2005 yearly data file is 29 Mb;
dimension of 2006 yearly data file is 105 Mb.



AWS data listing



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• 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	Year Start	Year End
Alessandra (7351) Cape King	1987	2006

<input type="checkbox"/> dir : Wind direction
<input type="checkbox"/> vel : Wind speed
<input type="checkbox"/> tist : Temperature
<input type="checkbox"/> rh : Relative humidity
<input type="checkbox"/> pres : Atmospheric pressure
<input type="checkbox"/> rmed : Solar radiation

View Data

- Table

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

Download Data

- Mysql database

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Access to data

Data description

Stored data are incomplete and not homogeneous for all expeditions both because not all of them were collected starting from the first expeditions, and because they were collected and stored in different ways due to frequent changes of needs and personnel, and only during recent years we tried to standardize all data.

The table which follows reports all existing data divided by type. 'x' indicates that data exist for subject expedition.

NOTE: During XX° expedition radiosounding was not done, due to Marwin failure. Are not included radiosounding data, Temp data and Synop data.

TAF

Weather reports

Radiosounding

AWS

Eneide's minute data

Expeditions

Synop

Temp

Sat images

Metar

Grib

I		x								
II		x	x							
III			x	x						
IV			x	x						
V			x	x						
VI			x	x						
VII			x	x						
VIII			x	x						
IX			x	x			x	x		
X			x	x			x	x	x	
XI			x	x	x		x	x		
XII			x	x			x	x		
XIII			x	x	x		x	x	x	
XIV			x	x	x		x	x	x	
XV		x	x	x	x		x	x	x	x
XVI		x	x	x	x		x	x	x	x
XVII		x	x	x	x	x	x	x	x	x
XVIII		x	x	x	x	x	x	x	x	x
XIX		x	x	x	x	x	x	x	x	x
XX		x	x		x	x			x	x
XXI		x	x	x	x	x	x	x	x	x
XXII		x	x	x	x	x	x	x	x	x

[Temperature graph](#)

[AWS data storage](#)

[Radiosounding data](#)

View and download Data

- Grib
- Synop
- Temp
- Taf
- Metar
- Weather reports
- Satellitar images



Reserved data



Reserved data

You are entered as user: umby User class: 4

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- [Argos data](#)
- [Radiosounding Dome C \(.zip format\)](#)
- [Full radiosounding data BTN \(table format\)](#)
- [Full radiosounding data Dome C \(table format\)](#)

[Crevasses](#)

[Works at AWS](#)

[Mid Point](#)

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View and download Data (User ID and PWD)

- full radiosounding data
- full AWS data
- raw data from ECMWF

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• Realtime data from AWS

Introduction

Data acquired by AWS are transmitted by Argos satellite each hour and received in Italy. Temperature, pressure, humidity, solar radiation and speed are here shown in table and graphics form.

AWS Eneide (WMO number 89662) transmit Synop, Temp and Taf too.

AWS Arelis (WMO number 89665), Giulia (WMO number 89648), Irene (WMO number 89646), Modesta (WMO number 89659), Silvia (WMO number 89661) transmit Synop.

AWS data

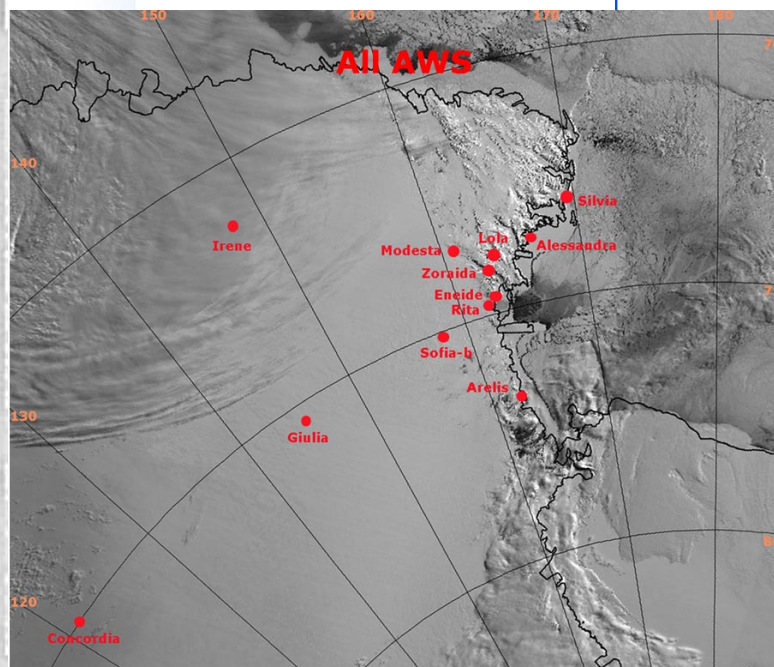
AWS Synop

Cracking pack

Mid Point AWS

Emperor penguins

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View Data

- AWS data
- Synop

ID Argos	Name	date/time	Wind			Temperature (°C)			Humidity (%)	Pressure (hPa)	Solar Radiation (W/m2)	Batteries (V)
			Dir (deg)	Speed Inst (kt)	Speed Max (kt)	Inst	Max	Min				
01218	Irene	--	--	--	--	--	--	--	--	--	--	
01627	Giulia	2006-01-02 15:00	200	16	22	-42.5	-42.5	-42.7	56	754.0	--	16.2
07350	Sofia-B	2006-06-01 09:00	0	0	0	-26.9	-26.8	-27.5	74	805.8	--	13.0
07351	Alessandra	2006-06-01 09:00	240	4	5	-21.0	-20.8	-21.0	76	974.2	0	12.5
07352	Zoraida	2006-06-01 09:00	0	0	0	-25.6	-25.3	-25.7	48	912.8	--	13.5
07353	Eneide	2006-06-01 09:00	240	11	22	-20.7	-20.4	-20.8	78	983.5	0	13.0
07354	Rita	2006-06-01 09:00	240	18	22	-21.5	-21.5	-21.8	56	960.5	--	13.0
07355	Modesta	2006-05-21 09:00	310	17	22	-57.4	-57.0	-57.7	40	750.8	--	12.8
07356	Lola	--	--	--	--	--	--	--	--	--	--	--
07357	Arelis	2006-06-01 09:00	130	7	16	-16.7	-16.7	-19.3	81	973.7	--	12.9
07379	Silvia	2006-06-01 06:00	240	27	39	-21.8	-21.6	-22.1	70	919.4	--	13.2

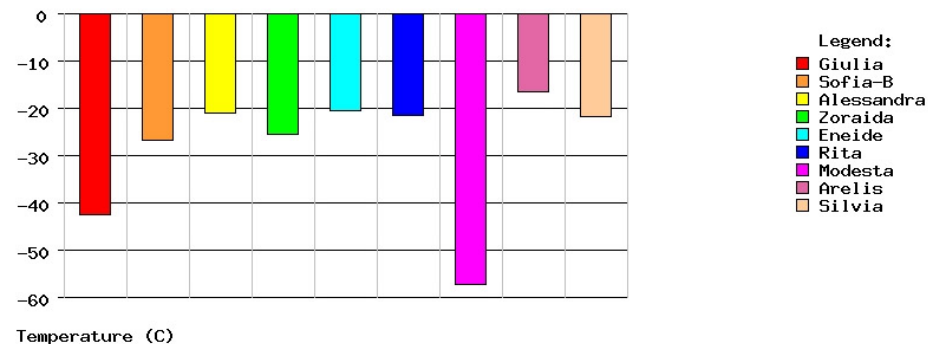
Lola does not transmit more from 10 February

Irene and Giulia does not transmit from 14 April

Modesta does not transmit more from 21 May

Giulia transmits again from June the first, but she has lost the date that has been reset to January the first

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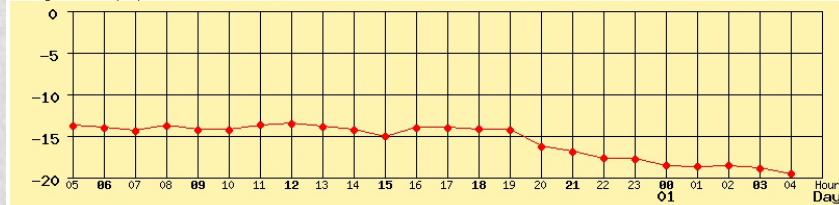
Real time data



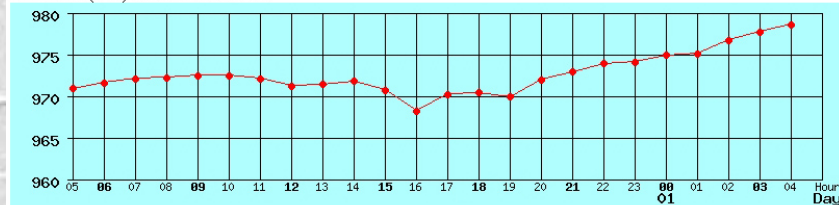
data/ora	Vento		Temperatura (°C)			Umidità (%)	Pressione (hPa)	Radiazione Solare (W/m2)	Batterie (V)	
	Dir (deg)	Vel Inst (kt)	Vel Max (kt)	Inst	Max					Min
	2006-06-01 04:00:00	240	18	23	-19.6					-18.8
2006-06-01 03:00:00	270	8	17	-18.9	-18.5	-19.0	82	977.7	0	13.0
2006-06-01 02:00:00	220	13	28	-18.6	-18.3	-18.7	83	976.7	0	13.0
2006-06-01 01:00:00	210	22	28	-18.7	-18.5	-18.8	83	975.1	0	13.0

[Indietro alla lista](#) [Indietro alla mappa](#) [Indietro al menù](#)

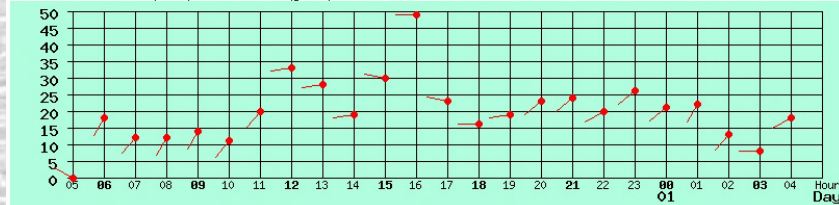
Temperatura (°C) nelle ultime 24 ore



Pressione (hPa) nelle ultime 24 ore



Velocità del vento (nodi) e direzione (gradi)



Radiazione Solare (W/m2)



View Data

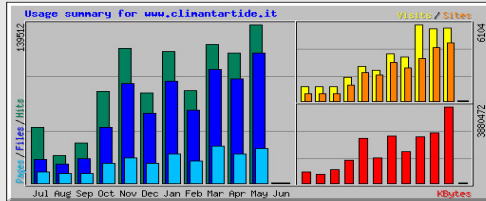
- AWS data
- Synop

Index of /dati/cnmca/aws-synop

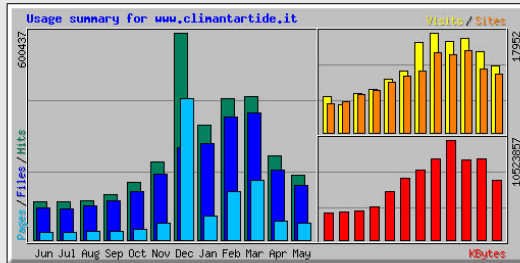
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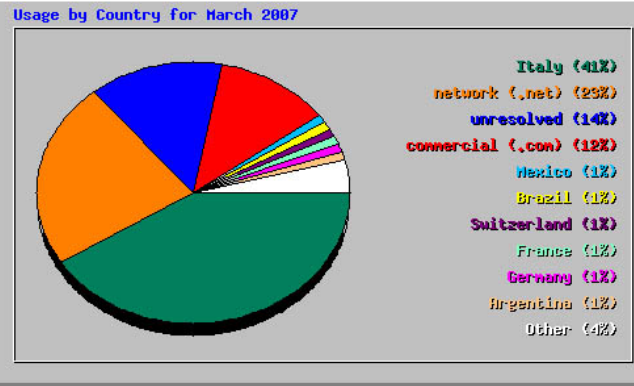
Statistics



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	Hits	Files	Pages	Visits	Sites	KBytes	Visits	Pages	Files	Hits
Jun 2006	102	81	49	40	44	6214	40	49	81	102
May 2006	4500	3700	977	187	4658	3880472	5816	30317	114709	139512
Apr 2006	3810	3060	851	191	4248	2544917	5751	25536	91809	114319
Mar 2006	3943	3219	1055	196	3367	2358275	6104	32712	99811	122257
Feb 2006	2902	2304	704	126	2659	1586031	3541	19713	64515	81261
Jan 2006	3734	2904	824	121	3087	2406772	3754	25574	90025	115773
Dec 2005	2567	1980	561	79	2112	1287304	2464	17396	61390	79582
Nov 2005	3951	2921	745	92	2272	2263098	2785	22373	87637	118553
Oct 2005	2601	1594	573	62	1289	1153734	1928	17767	49426	80654
Sep 2005	1187	717	284	37	585	701636	1138	8522	21515	35620
Aug 2005	779	548	270	37	567	461374	1176	8382	16991	24154
Jul 2005	1587	674	327	36	602	575643	1137	10157	20905	49201
Totals						19225470	35634	218498	718814	960988



Month	Daily Avg					Monthly Totals				
	Hits	Files	Pages	Visits	Sites	KBytes	Visits	Pages	Files	Hits
May 2007	7791	6602	2070	497	10595	6249679	11930	49684	158468	187007
Apr 2007	8164	6715	1811	485	11526	8573389	14552	54357	201466	244920
Mar 2007	13417	11854	5537	545	14824	8452533	16898	171655	367502	415930
Feb 2007	14589	12741	5061	587	14055	10523857	16453	141708	356764	408304
Jan 2007	10711	8983	2195	579	14454	8542747	17952	68046	278499	332064
Dec 2006	19368	8660	13242	520	11101	7374950	16122	410530	268475	600437
Nov 2006	8693	7370	1927	425	10136	6446745	11051	50115	191630	226030
Oct 2006	5358	4537	996	313	9071	5047642	9706	30897	140667	166113
Sep 2006	4358	3805	870	258	7566	3438070	7749	26122	114151	130763
Aug 2006	3707	3192	810	225	6822	3086960	6999	25120	98966	114927
Jul 2006	3538	2938	758	164	5542	2921442	5111	23522	91098	109684
Jun 2006	3730	3127	781	215	5179	2895163	6475	23448	93825	111923
Totals						73553177	141018	1075204	2361511	3048322



Top 70 of 98 Total Countries									
#	Hits	Files	KBytes	Country					
1	172242	41.41%	145889	39.70%	2362612	27.95%	Italy		
2	96887	23.29%	93705	25.50%	943202	11.16%	network (.net)		
3	59788	14.37%	53950	14.68%	2732326	32.33%	unresolved		
4	47979	11.53%	38250	10.41%	1607326	19.02%	commercial (.com)		
5	3566	0.86%	3452	0.94%	39525	0.47%	Mexico		
6	3210	0.77%	2997	0.82%	67642	0.80%	Brazil		
7	3056	0.73%	2752	0.75%	57252	0.68%	Switzerland		
8	2605	0.63%	2435	0.66%	50448	0.60%	France		
9	2231	0.54%	2110	0.57%	130552	1.54%	Germany		
10	2180	0.52%	2164	0.59%	12323	0.15%	Argentina		
11	1669	0.40%	1258	0.34%	53196	0.63%	Australia		
12	1614	0.39%	1416	0.39%	21299	0.25%	Romania		
13	1509	0.36%	1490	0.41%	15660	0.19%	Poland		
14	1460	0.33%	1426	0.39%	12327	0.15%	Turkey		
15	1302	0.31%	1139	0.31%	24768	0.29%	Portugal		
16	1111	0.27%	1095	0.30%	21757	0.26%	India		
17	1102	0.26%	1095	0.30%	7289	0.09%	Peru		
18	1090	0.26%	924	0.25%	25451	0.30%	United Kingdom		
19	936	0.23%	928	0.25%	5595	0.07%	Japan		
20	787	0.19%	738	0.20%	11205	0.13%	Belgium		
21	768	0.18%	710	0.19%	17068	0.20%	Canada		
22	704	0.17%	704	0.19%	4429	0.05%	Russia		
23	575	0.14%	529	0.14%	10323	0.12%	Denmark		
24	529	0.13%	471	0.13%	9935	0.12%	US educational (.edu)		
25	501	0.12%	496	0.13%	2304	0.03%	Malaysia		
26	453	0.11%	405	0.11%	47102	0.56%	Spain		
27	445	0.11%	445	0.12%	4582	0.05%	Saudi Arabia		
28	426	0.10%	416	0.11%	3712	0.04%	Chile		
29	356	0.09%	347	0.09%	3845	0.05%	Croatia		
30	320	0.08%	317	0.09%	1739	0.02%	Singapore		
31	305	0.07%	296	0.08%	2959	0.04%	Hungary		
32	303	0.07%	254	0.07%	14258	0.17%	Greece		
33	276	0.07%	272	0.07%	2728	0.03%	Colombia		
34	261	0.06%	261	0.07%	1318	0.02%	Pakistan		
35	256	0.06%	237	0.06%	16011	0.19%	United States of America		
36	226	0.05%	190	0.05%	7474	0.09%	Czech Republic		
37	208	0.05%	192	0.05%	11995	0.14%	Netherlands		

ical Observation, Modelling, and Forecasting Workshop Roma, Italy, 26-28 June 2007



Meteo-climatological Observatory



Thank you for your attention

Antarctic Meteorological Observation, Modelling, and Forecasting Workshop Roma, Italy, 26-28 June 2007