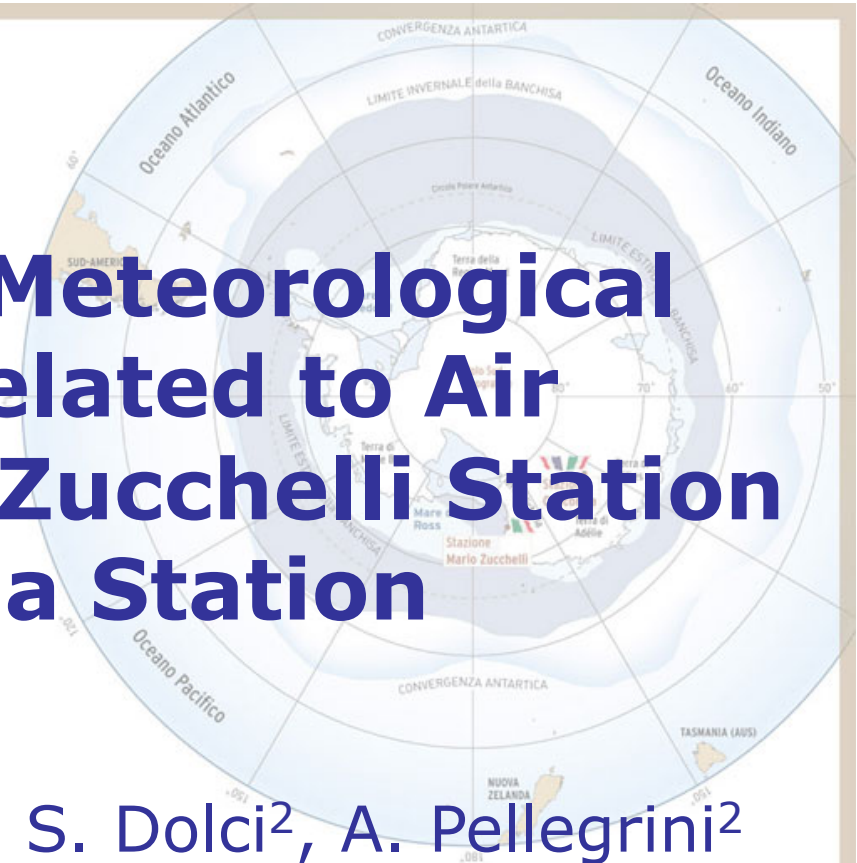


Current Status of Meteorological Observations Related to Air Operations at Mario Zucchelli Station and Concordia Station

G. De Rossi², L. De Silvestri¹, S. Dolci², A. Pellegrini²

1 ENEA – CLIM (Roma, Italy)

2 PNRA Scrl – (Roma, Italy)



CURRENT STATUS OF METEOROLOGICAL OBSERVATIONS RELATED TO AIR OPERATIONS
AT M. ZUCHELLI STATION AND CONCORDIA STATION

2nd Antarctic Meteorological Observation, Modeling and Forecasting Workshop (CNR Rome – 26-28 June 2007)



**CURRENT STATUS OF METEOROLOGICAL OBSERVATIONS RELATED TO AIR OPERATIONS
AT M. ZUCHELLI STATION AND CONCORDIA STATION**

2nd Antarctic Meteorological Observation, Modeling and Forecasting Workshop (CNR Rome – 26-28 June 2007)



The Fleet



CURRENT STATUS OF METEOROLOGICAL OBSERVATIONS RELATED TO AIR OPERATIONS
AT M. ZUCHELLI STATION AND CONCORDIA STATION

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Lockheed Hercules L-100/30

The Hercules is used in the Intercontinental link between Christchurch (NZ) and MZS.

It carries 11 T of cargo or 60 passengers. On average, 10 flights/season.

It is used from October to early December.



**CURRENT STATUS OF METEOROLOGICAL OBSERVATIONS RELATED TO AIR OPERATIONS
AT M. ZUCHELLI STATION AND CONCORDIA STATION**

2nd Antarctic Meteorological Observation, Modeling and Forecasting Workshop (CNR Rome – 26-28 June 2007)

De Havilland Twin Otter DHC-6/300

The Twin Otter is used between MZS and Concordia Station.

In this route, it carries 1 T of cargo or 8 passengers.

Also, it is used to connect MZS with D.d'U., McMurdo, and remote field camps.



**CURRENT STATUS OF METEOROLOGICAL OBSERVATIONS RELATED TO AIR OPERATIONS
AT M. ZUCHELLI STATION AND CONCORDIA STATION**

2nd Antarctic Meteorological Observation, Modeling and Forecasting Workshop (CNR Rome – 26-28 June 2007)

Aerospaziale Ecureuil AS-350/B2

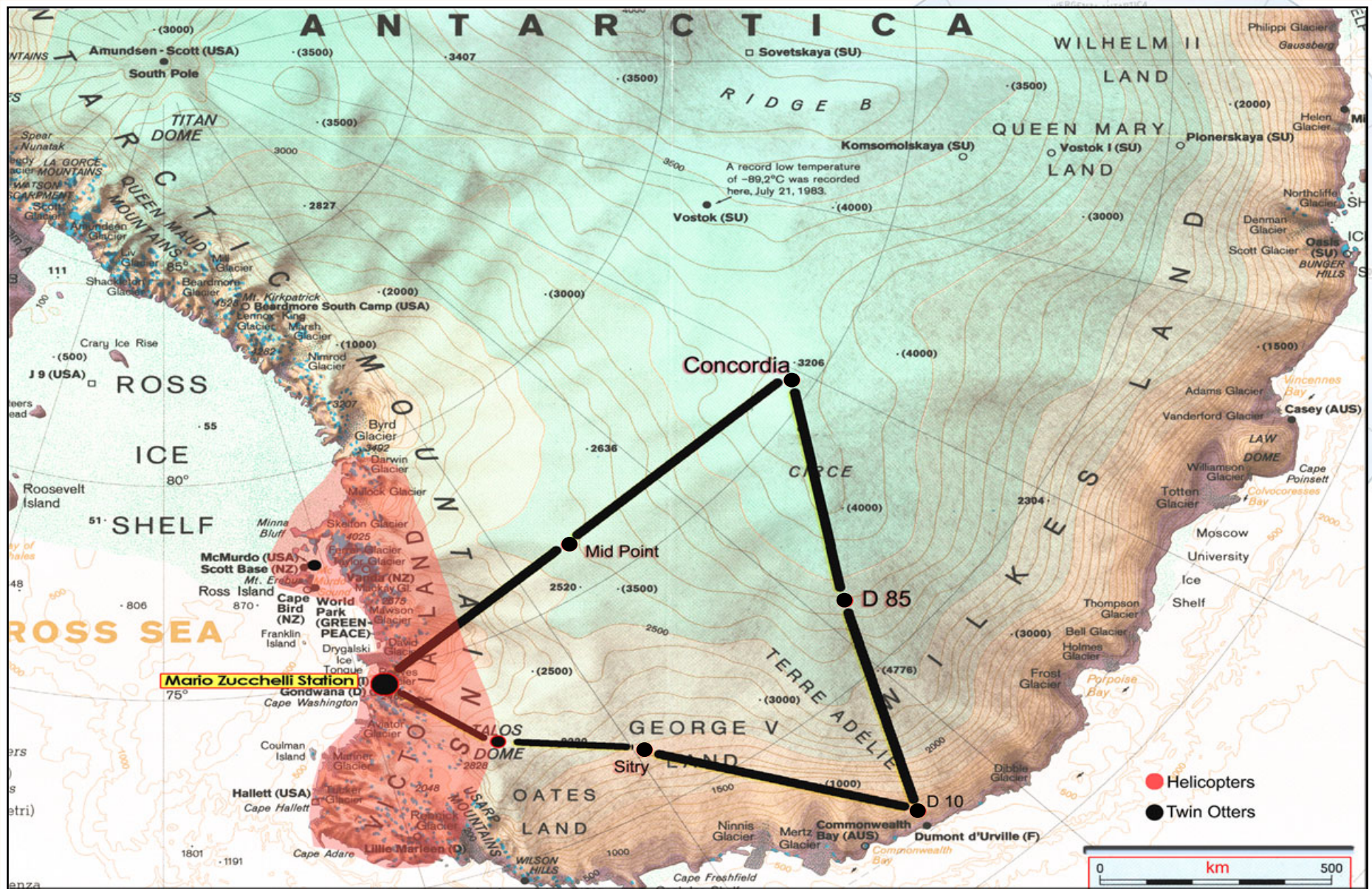
Depending on the scientific programme, 2 to 4 light helicopters are used.

In the very short range, it carries up to 1 T at the sling hook, or 5 passengers



CURRENT STATUS OF METEOROLOGICAL OBSERVATIONS RELATED TO AIR OPERATIONS
AT M. ZUCHELLI STATION AND CONCORDIA STATION

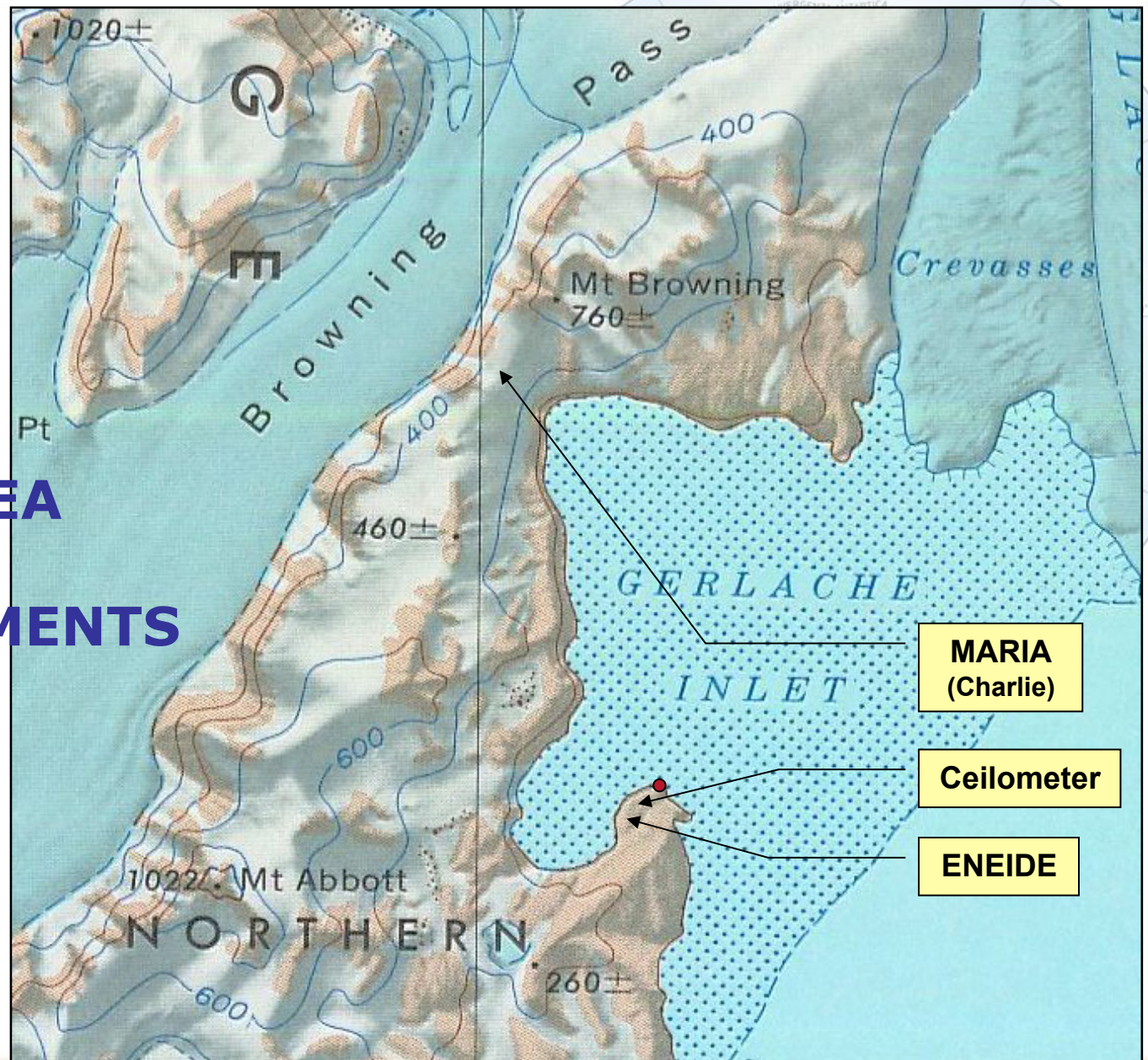
2nd Antarctic Meteorological Observation, Modeling and Forecasting Workshop (CNR Rome – 26-28 June 2007)



**CURRENT STATUS OF METEOROLOGICAL OBSERVATIONS RELATED TO AIR OPERATIONS
AT M. ZUCHELLI STATION AND CONCORDIA STATION**

2nd Antarctic Meteorological Observation, Modeling and Forecasting Workshop (CNR Rome – 26-28 June 2007)

MZS: STATION AREA AWSs and INSTRUMENTS



CURRENT STATUS OF METEOROLOGICAL OBSERVATIONS RELATED TO AIR OPERATIONS
AT M. ZUCHELLI STATION AND CONCORDIA STATION

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MZS: STATION AREA AWSs and INSTRUMENTS



AWS ENEIDE



CURRENT STATUS OF METEOROLOGICAL OBSERVATIONS RELATED TO AIR OPERATIONS
AT M. ZUCHELLI STATION AND CONCORDIA STATION

2nd Antarctic Meteorological Observation, Modeling and Forecasting Workshop (CNR Rome – 26-28 June 2007)

MZS: STATION AREA AWSs and INSTRUMENTS



AWS ENEIDE

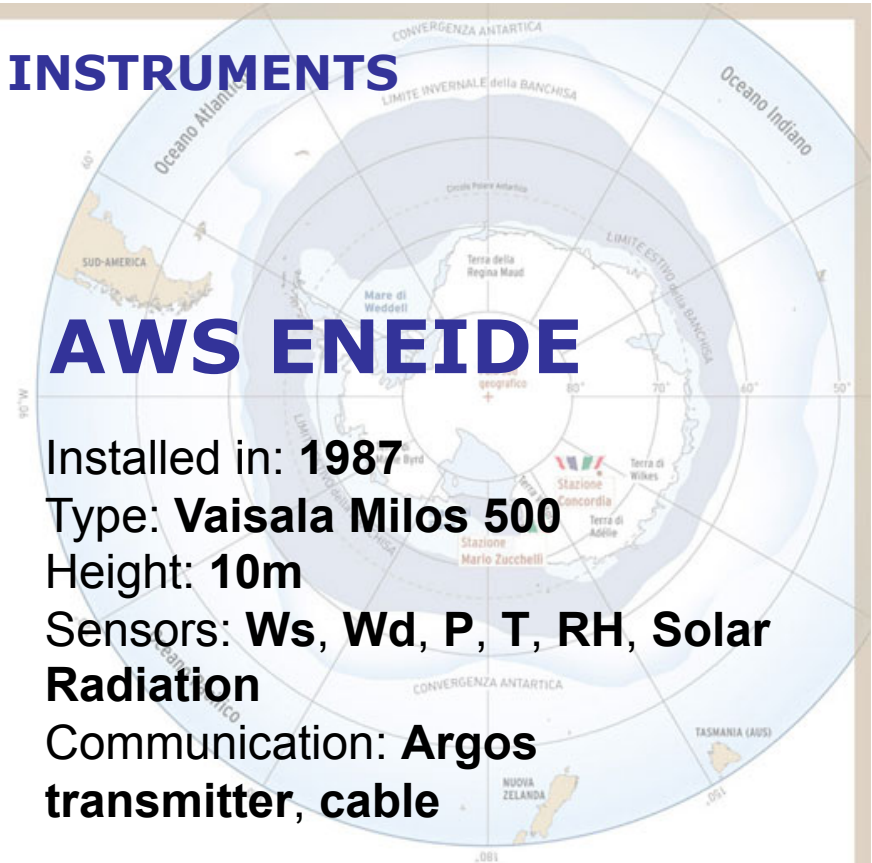
Installed in: **1987**

Type: **Vaisala Milos 500**

Height: **10m**

Sensors: **Ws, Wd, P, T, RH, Solar Radiation**

Communication: **Argos transmitter, cable**



CURRENT STATUS OF METEOROLOGICAL OBSERVATIONS RELATED TO AIR OPERATIONS
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MZS: STATION AREA AWSs and INSTRUMENTS



AWS MARIA (Charlie)



CURRENT STATUS OF METEOROLOGICAL OBSERVATIONS RELATED TO AIR OPERATIONS
AT M. ZUCHELLI STATION AND CONCORDIA STATION

2nd Antarctic Meteorological Observation, Modeling and Forecasting Workshop (CNR Rome – 26-28 June 2007)

MZS: STATION AREA AWSs and INSTRUMENTS



AWS MARIA (Charlie)

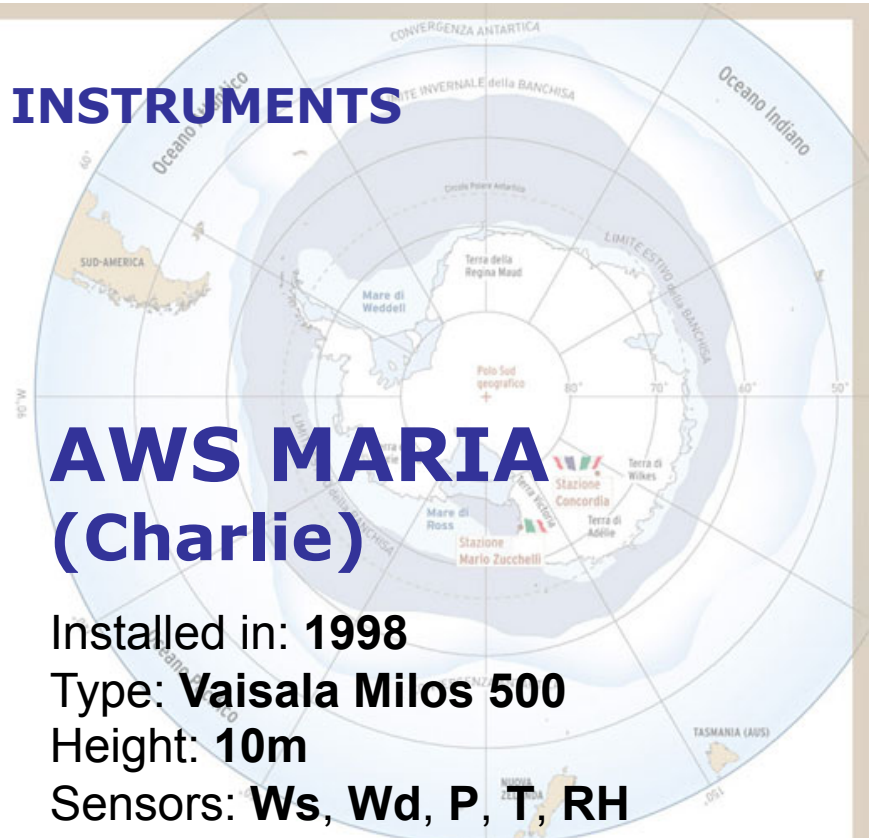
Installed in: **1998**

Type: **Vaisala Milos 500**

Height: **10m**

Sensors: **Ws, Wd, P, T, RH**

Communication: **Radiomodem**



CURRENT STATUS OF METEOROLOGICAL OBSERVATIONS RELATED TO AIR OPERATIONS
AT M. ZUCHELLI STATION AND CONCORDIA STATION

2nd Antarctic Meteorological Observation, Modeling and Forecasting Workshop (CNR Rome – 26-28 June 2007)

MZS: STATION AREA AWSs and INSTRUMENTS



CEILOMETER

Installed in: **1998**

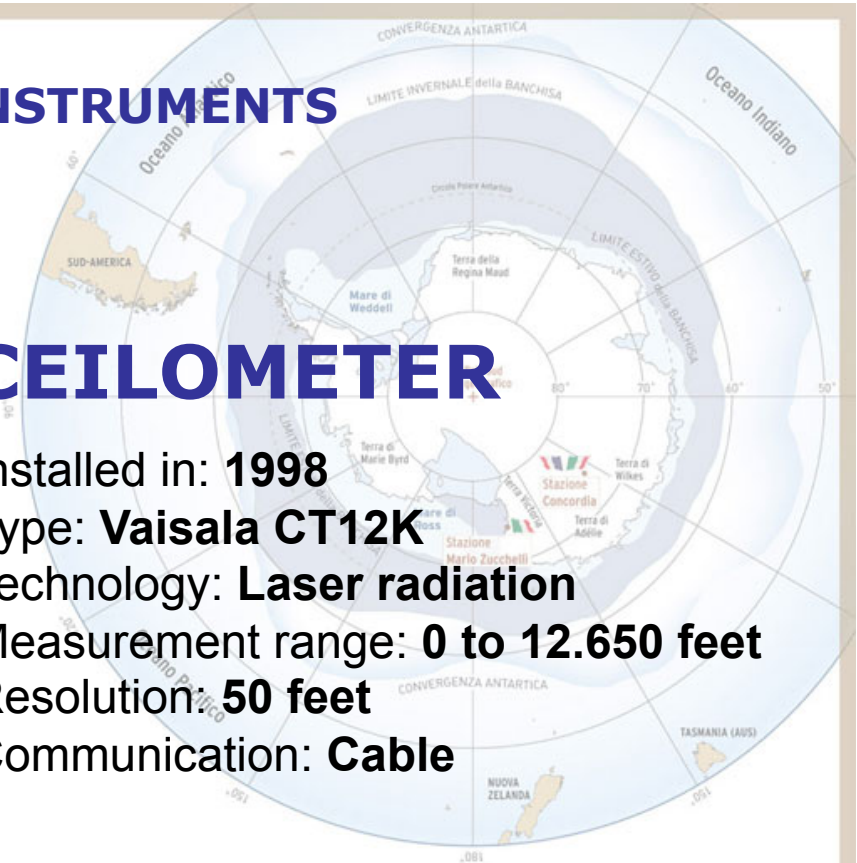
Type: **Vaisala CT12K**

Technology: **Laser radiation**

Measurement range: **0 to 12.650 feet**

Resolution: **50 feet**

Communication: **Cable**



CURRENT STATUS OF METEOROLOGICAL OBSERVATIONS RELATED TO AIR OPERATIONS
AT M. ZUCHELLI STATION AND CONCORDIA STATION

2nd Antarctic Meteorological Observation, Modeling and Forecasting Workshop (CNR Rome – 26-28 June 2007)

MZS: STATION AREA AWSs and INSTRUMENTS

RADIOSOUNDING STATION



Installed in: **1987**

Receiving Ground station: **Vaisala Marwin12**

Sondes: **Vaisala RS92-SGP**

Baloons: **Totex TA-200**

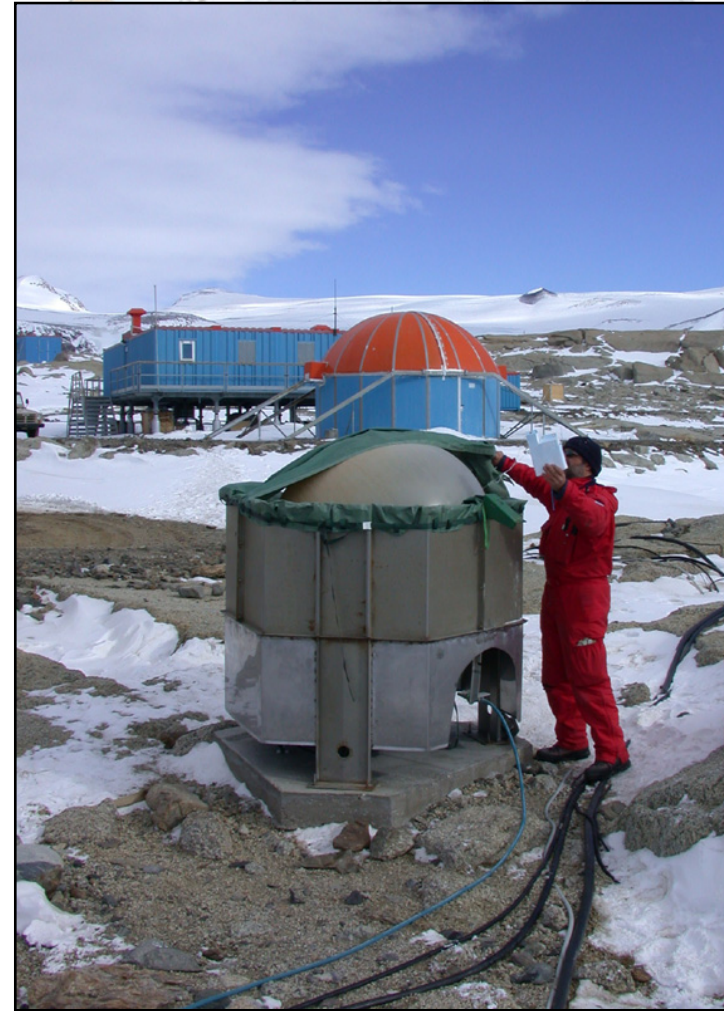
Launch time: **00:00 and 12:00 GMT**



CURRENT STATUS OF METEOROLOGICAL OBSERVATIONS RELATED TO AIR OPERATIONS
AT M. ZUCHELLI STATION AND CONCORDIA STATION

2nd Antarctic Meteorological Observation, Modeling and Forecasting Workshop (CNR Rome – 26-28 June 2007)

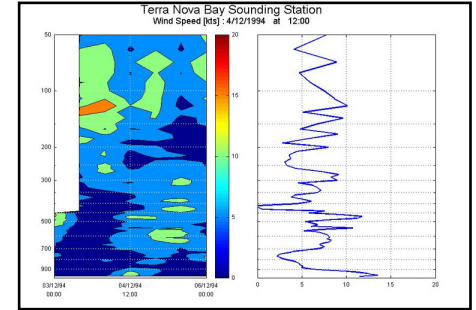
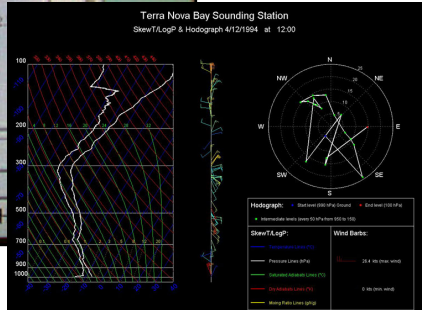
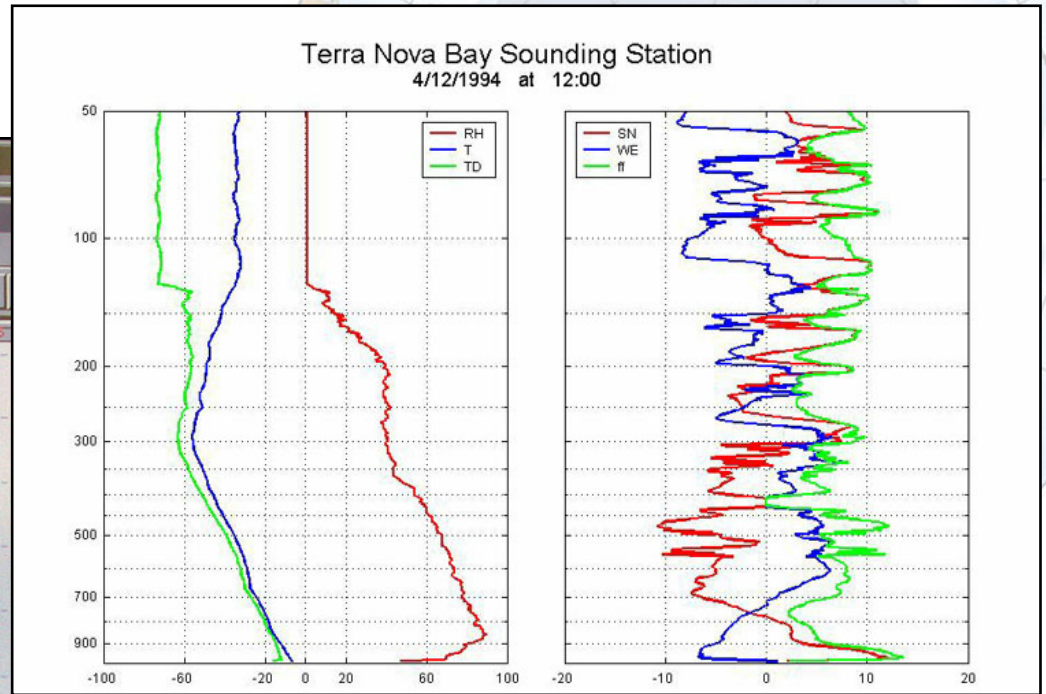
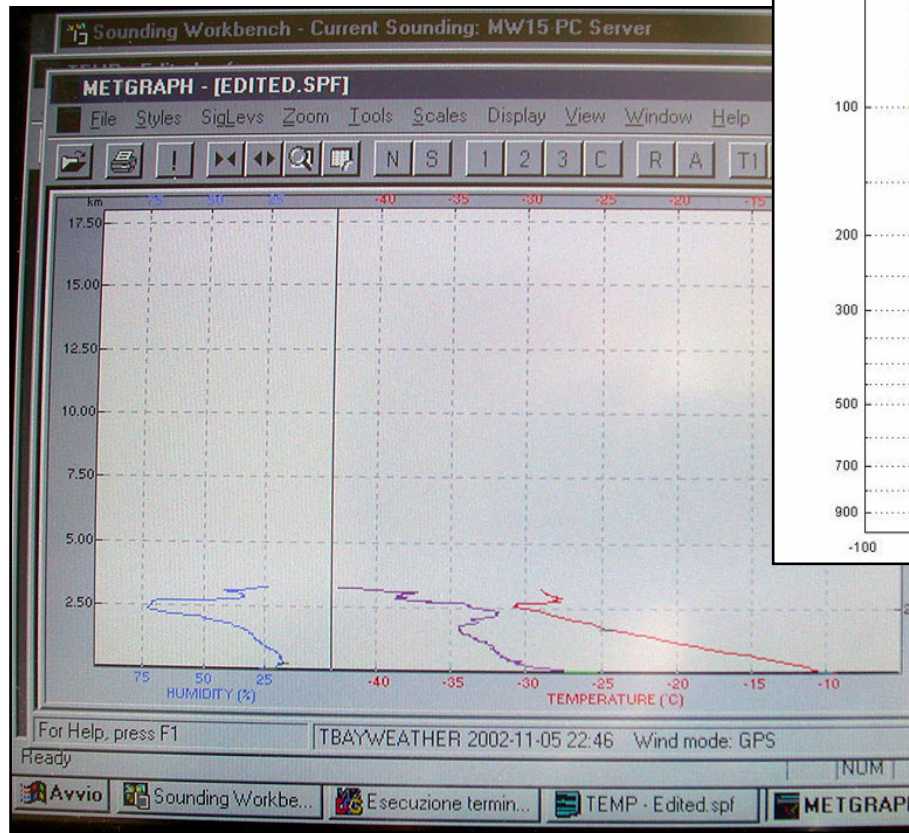
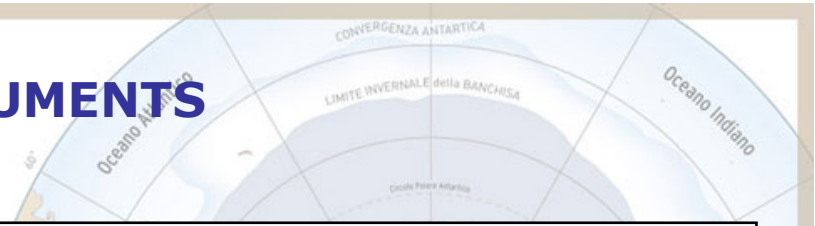
MZS: STATION AREA AWSs and INSTRUMENTS RADIOSONDING STATION



CURRENT STATUS OF METEOROLOGICAL OBSERVATIONS RELATED TO AIR OPERATIONS
AT M. ZUCHELLI STATION AND CONCORDIA STATION

2nd Antarctic Meteorological Observation, Modeling and Forecasting Workshop (CNR Rome – 26-28 June 2007)

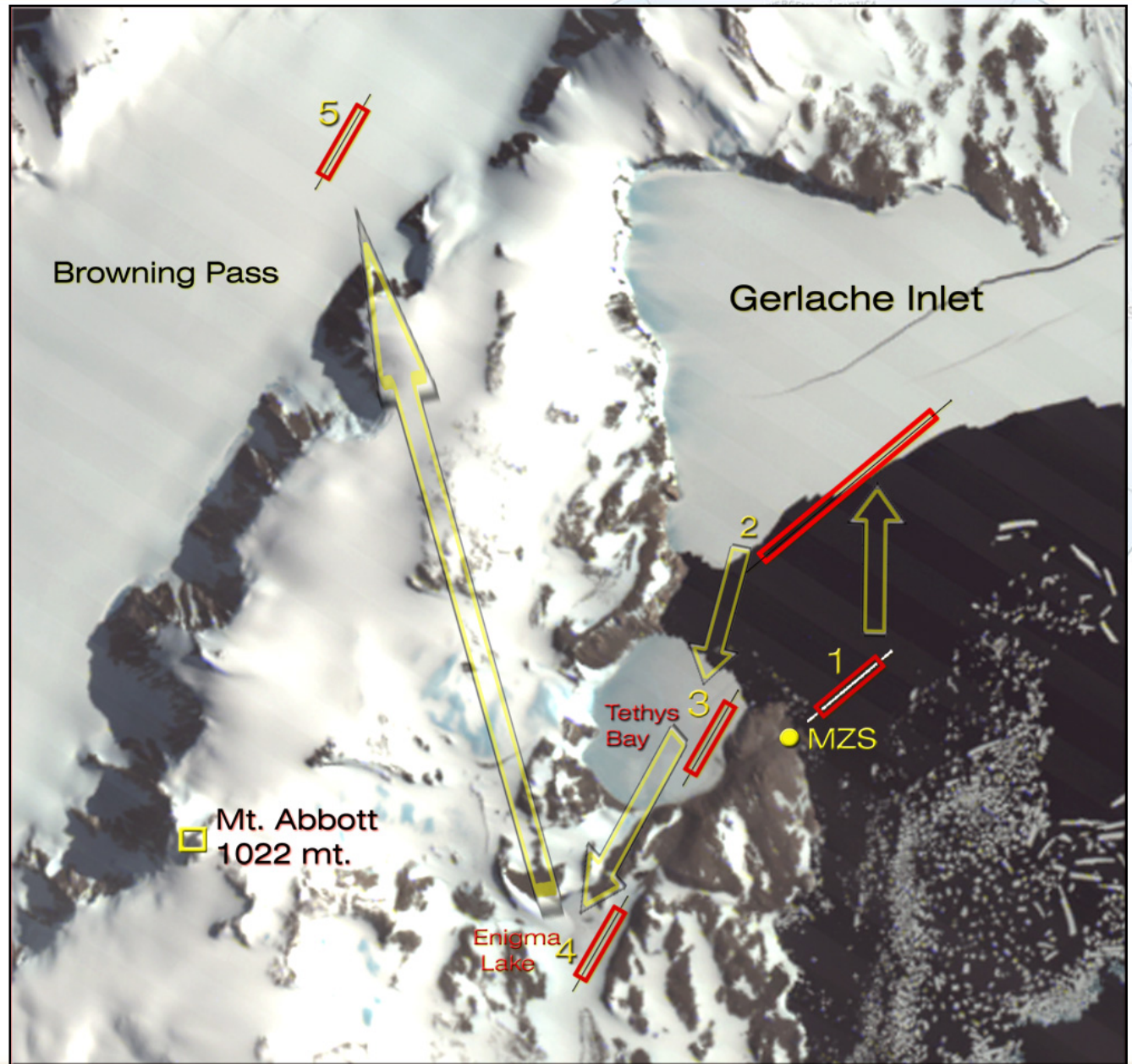
MZS: STATION AREA AWSs and INSTRUMENTS RADIO SOUNDING STATION



CURRENT STATUS OF METEOROLOGICAL OBSERVATIONS RELATED TO AIR OPERATIONS
AT M. ZUCHELLI STATION AND CONCORDIA STATION

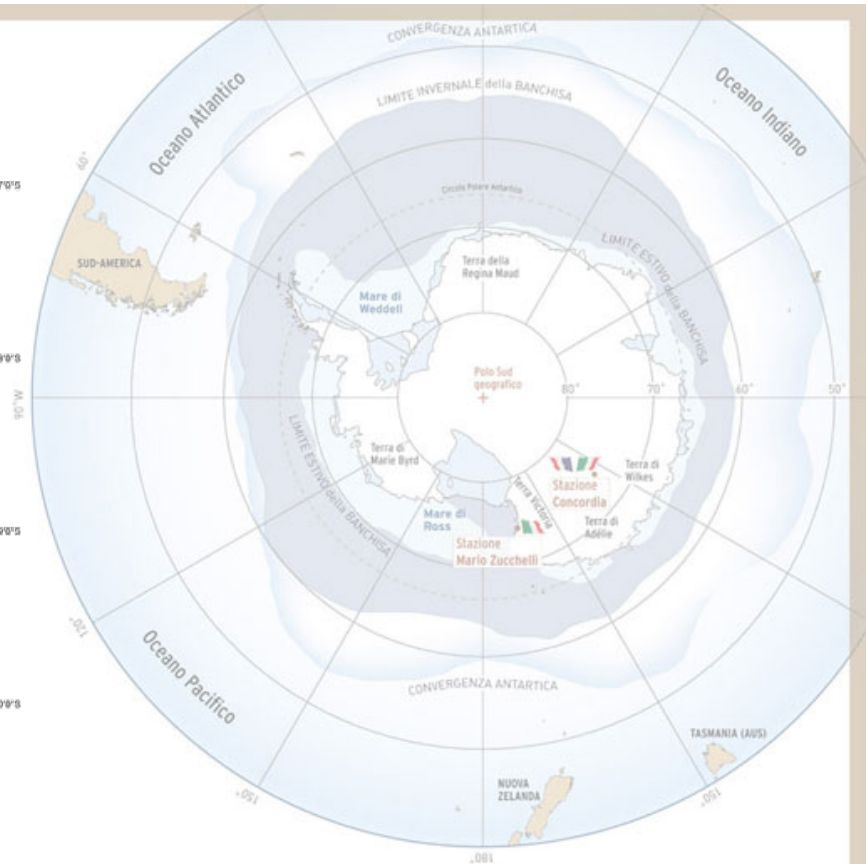
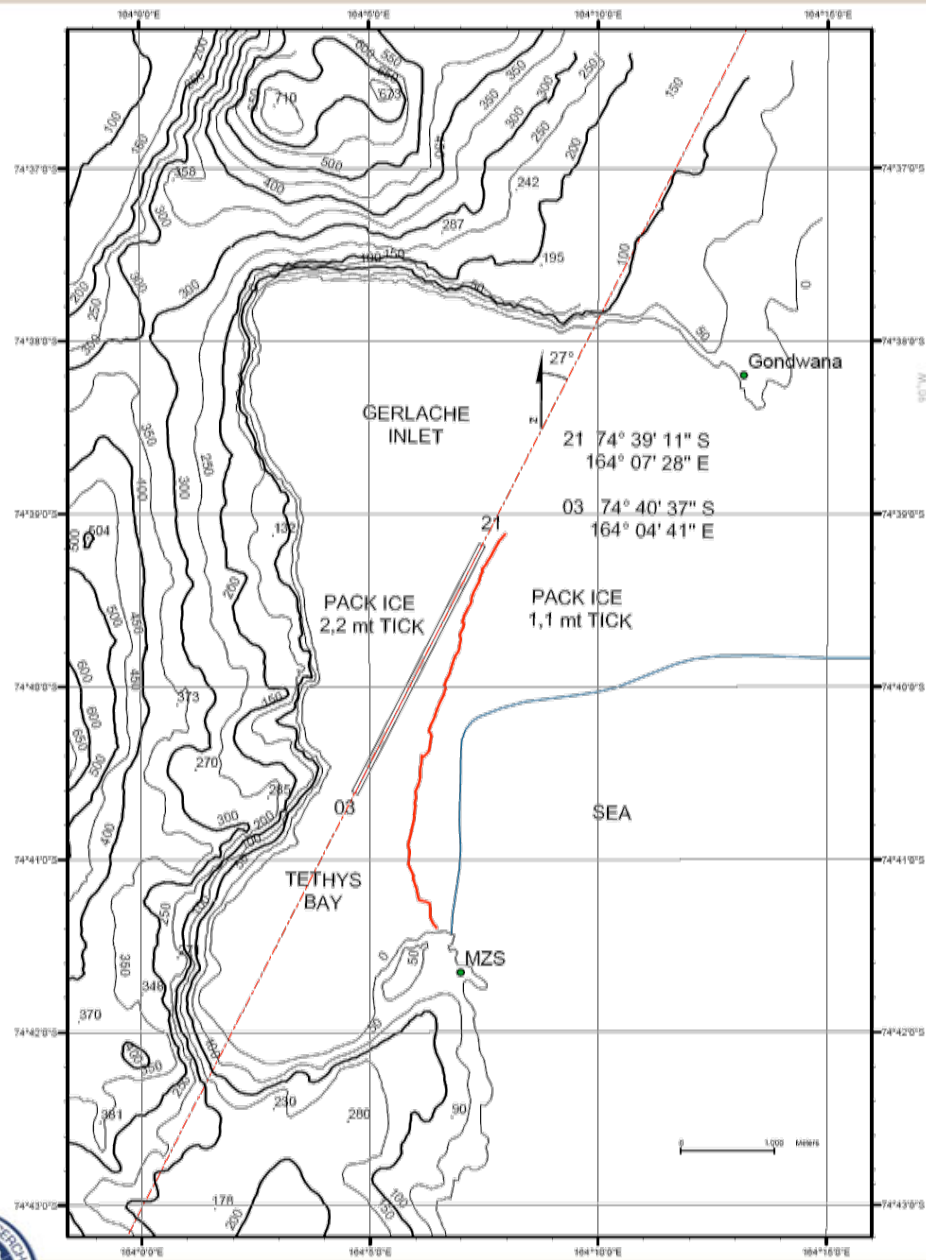
2nd Antarctic Meteorological Observation, Modeling and Forecasting Workshop (CNR Rome – 26-28 June 2007)

The airstrip system at MZS



CURRENT STATUS OF METEOROLOGICAL OBSERVATIONS RELATED TO AIR OPERATIONS
AT M. ZUCHELLI STATION AND CONCORDIA STATION

2nd Antarctic Meteorological Observation, Modeling and Forecasting Workshop (CNR Rome – 26-28 June 2007)



Planning the Hercules airstrip

(October 2005)



CURRENT STATUS OF METEOROLOGICAL OBSERVATIONS RELATED TO AIR OPERATIONS
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MZS: AIRSTRIP AWSs Hercules airstrip



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AT M. ZUCHELLI STATION AND CONCORDIA STATION

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MZS: AIRSTRIP AWSs Hercules airstrip

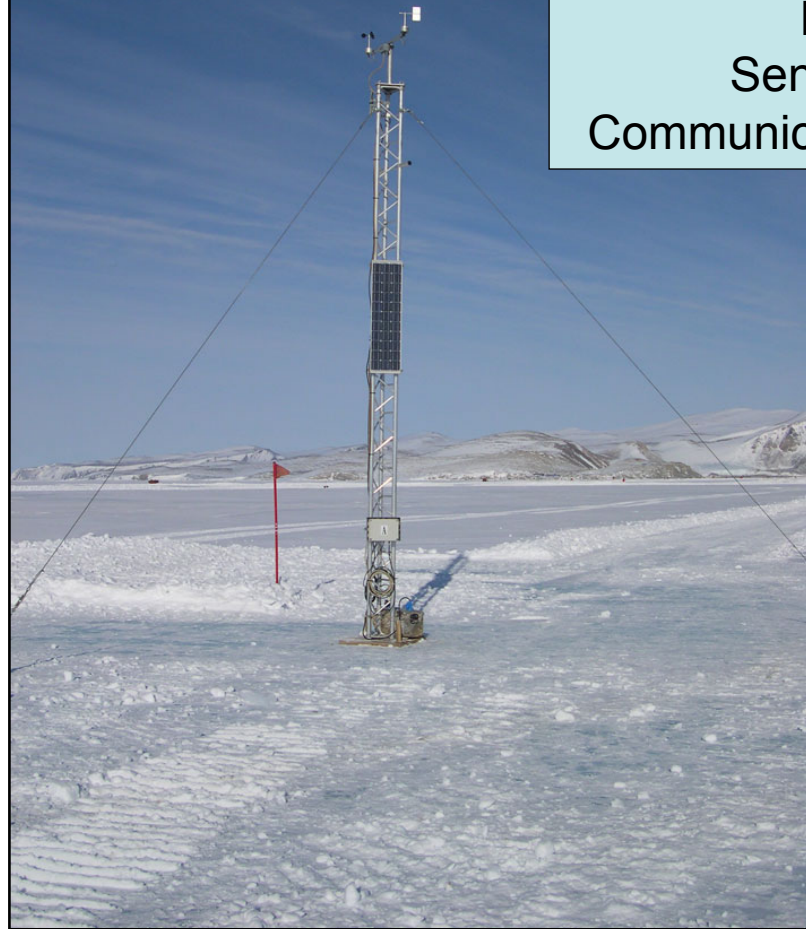


CURRENT STATUS OF METEOROLOGICAL OBSERVATIONS RELATED TO AIR OPERATIONS
AT M. ZUCHELLI STATION AND CONCORDIA STATION

2nd Antarctic Meteorological Observation, Modeling and Forecasting Workshop (CNR Rome – 26-28 June 2007)

MZS: AIRSTRIP AWSS

ALFA



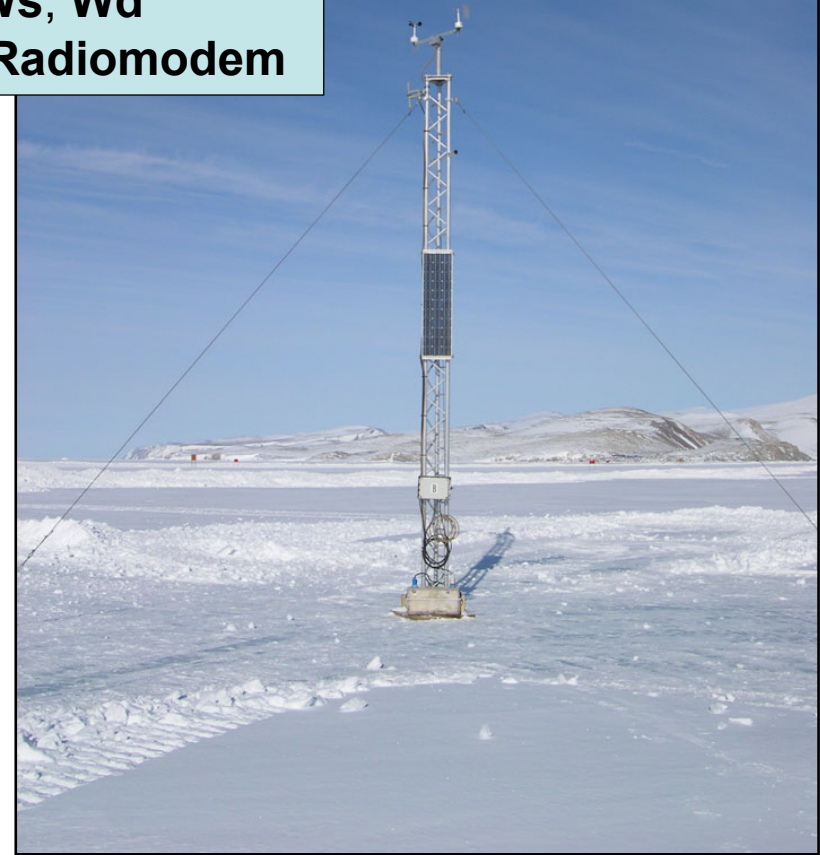
Type: **Vaisala WT501**

Height: **6m**

Sensors: **Ws, Wd**

Communication: **Radiomodem**

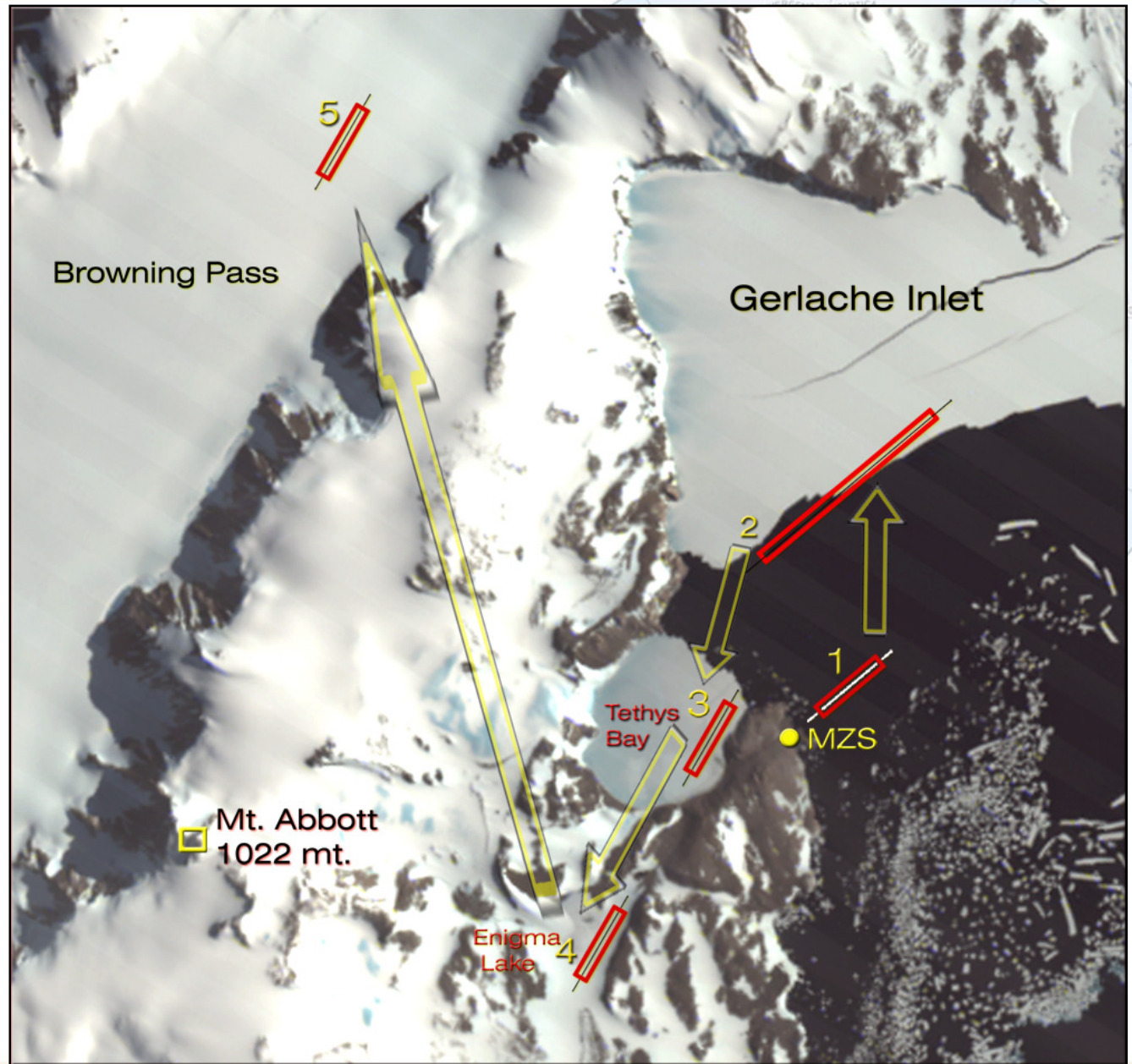
BRAVO



CURRENT STATUS OF METEOROLOGICAL OBSERVATIONS RELATED TO AIR OPERATIONS
AT M. ZUCHELLI STATION AND CONCORDIA STATION

2nd Antarctic Meteorological Observation, Modeling and Forecasting Workshop (CNR Rome – 26-28 June 2007)

The airstrip system at MZS



CURRENT STATUS OF METEOROLOGICAL OBSERVATIONS RELATED TO AIR OPERATIONS
AT M. ZUCHELLI STATION AND CONCORDIA STATION

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MZS: T.O. AIRSTRIP AWSs

Tethis Bay



CURRENT STATUS OF METEOROLOGICAL OBSERVATIONS RELATED TO AIR OPERATIONS
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MZS: T.O. AIRSTRIP AWSs

Enigma Lake



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MZS: T.O. AIRSTRIP AWSs

Enigma Lake



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MZS: T.O. AIRSTRIP AWSs Enigma Lake



CURRENT STATUS OF METEOROLOGICAL OBSERVATIONS RELATED TO AIR OPERATIONS
AT M. ZUCHELLI STATION AND CONCORDIA STATION

2nd Antarctic Meteorological Observation, Modeling and Forecasting Workshop (CNR Rome – 26-28 June 2007)

MZS: T.O. AIRSTRIP AWSs Browning Pass

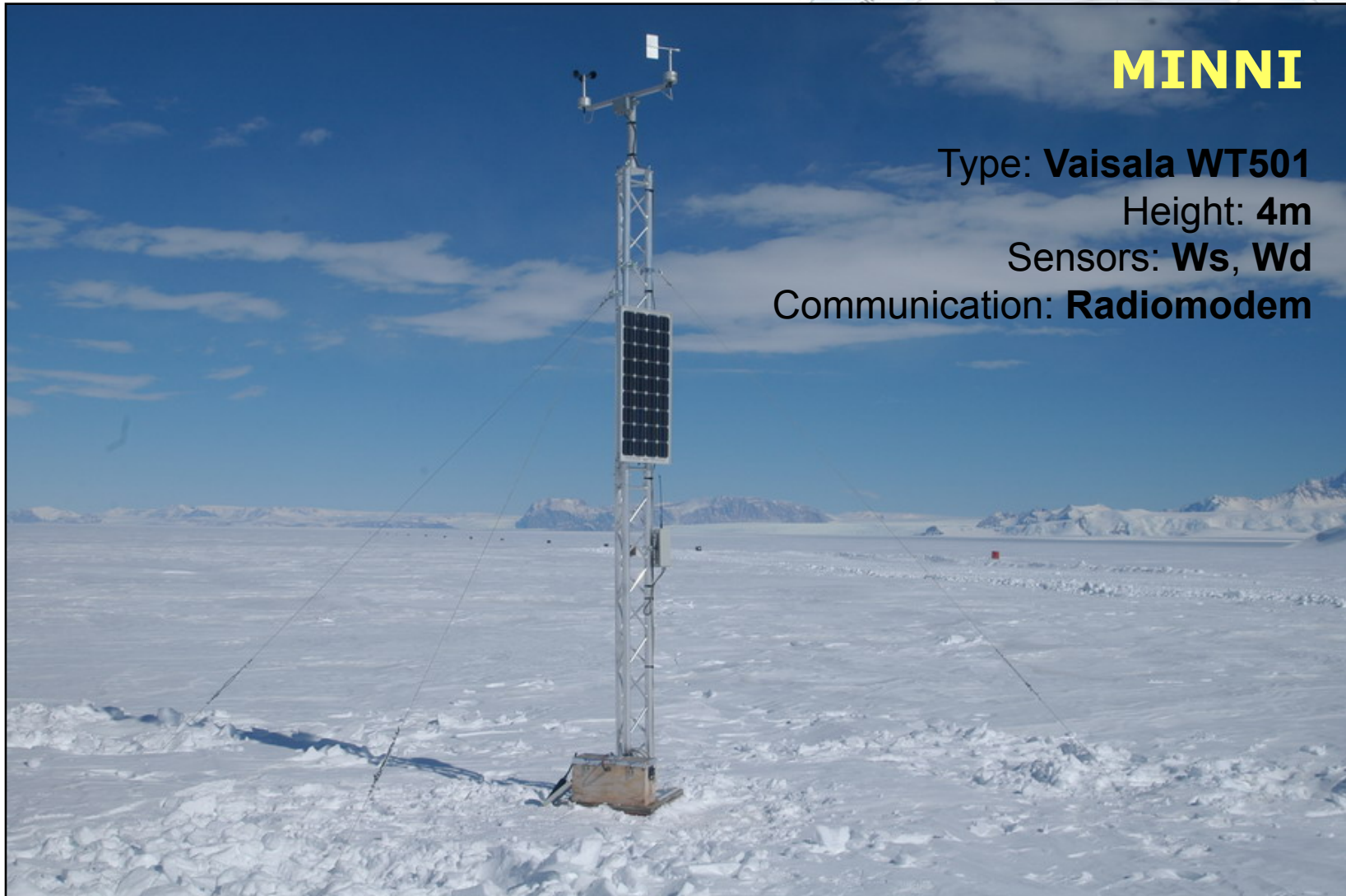


CURRENT STATUS OF METEOROLOGICAL OBSERVATIONS RELATED TO AIR OPERATIONS
AT M. ZUCHELLI STATION AND CONCORDIA STATION

2nd Antarctic Meteorological Observation, Modeling and Forecasting Workshop (CNR Rome – 26-28 June 2007)

MZS: T.O. AIRSTRIP AWSs

Browning Pass



MINNI

Type: **Vaisala WT501**

Height: **4m**

Sensors: **Ws, Wd**

Communication: **Radiomodem**

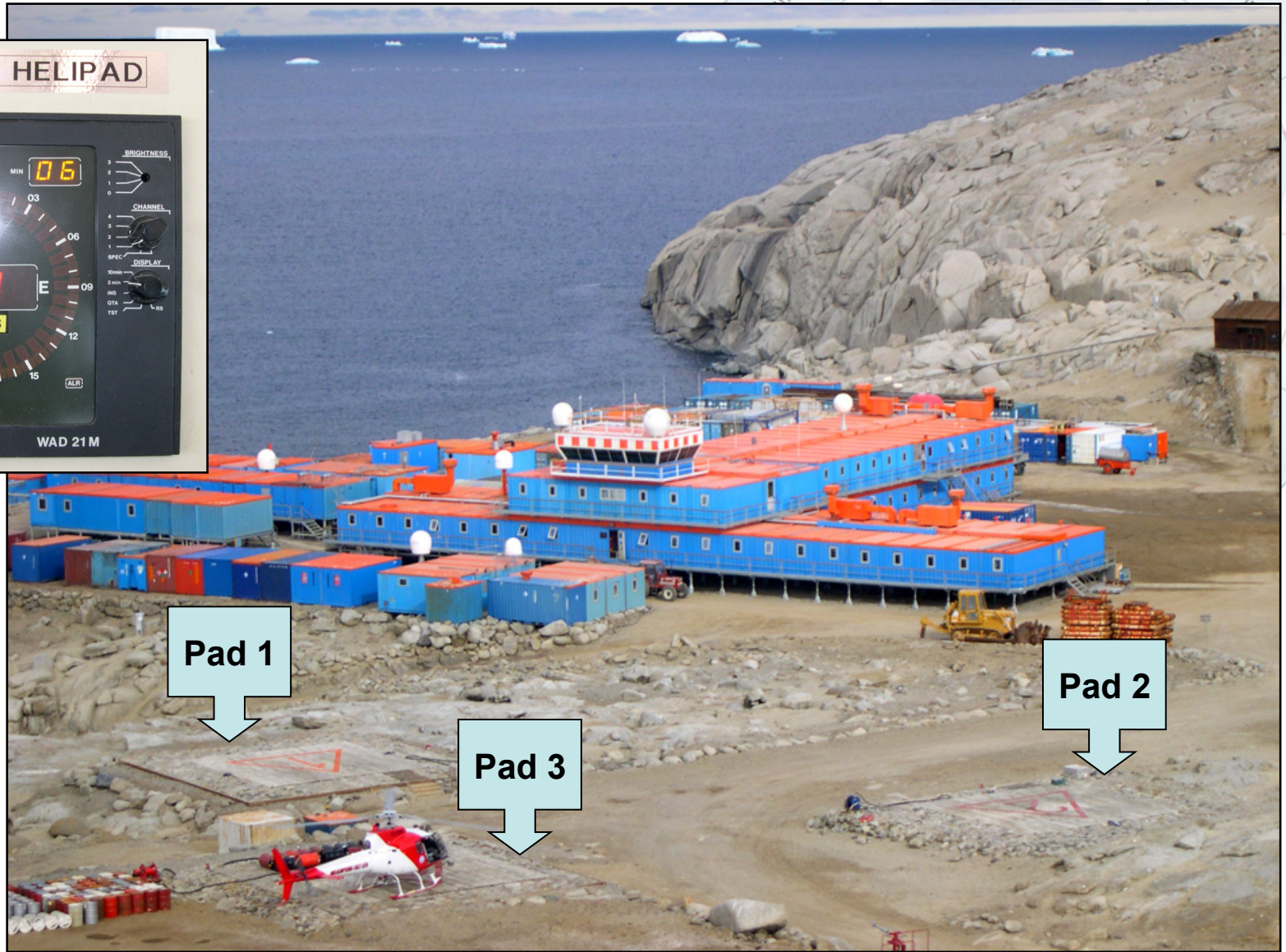


CURRENT STATUS OF METEOROLOGICAL OBSERVATIONS RELATED TO AIR OPERATIONS
AT M. ZUCHELLI STATION AND CONCORDIA STATION

2nd Antarctic Meteorological Observation, Modeling and Forecasting Workshop (CNR Rome – 26-28 June 2007)

MZS: HELICOPTERS

HELIPAD AWS



CURRENT STATUS OF METEOROLOGICAL OBSERVATIONS RELATED TO AIR OPERATIONS
AT M. ZUCHELLI STATION AND CONCORDIA STATION

2nd Antarctic Meteorological Observation, Modeling and Forecasting Workshop (CNR Rome – 26-28 June 2007)

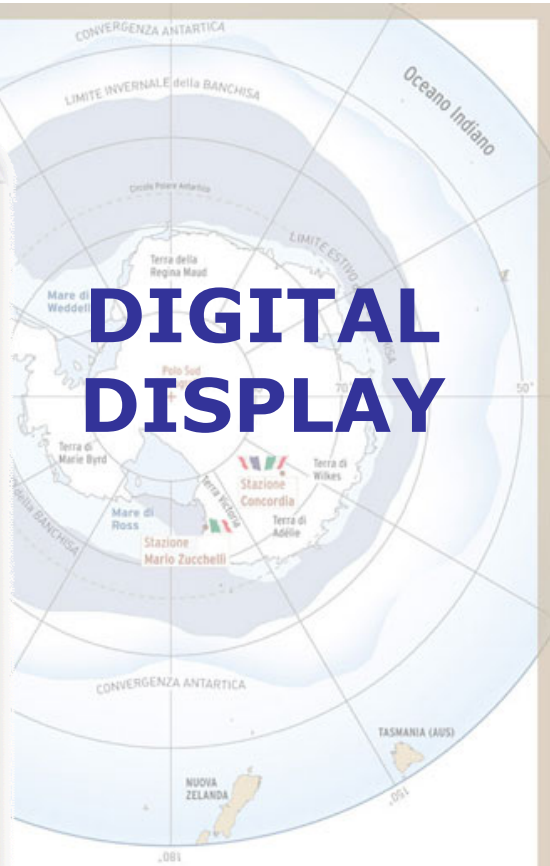
MZS: REAL-TIME DATA MONITORING Operation Room



CURRENT STATUS OF METEOROLOGICAL OBSERVATIONS RELATED TO AIR OPERATIONS
AT M. ZUCHELLI STATION AND CONCORDIA STATION

2nd Antarctic Meteorological Observation, Modeling and Forecasting Workshop (CNR Rome – 26-28 June 2007)

MZS: REAL-TIME DATA MONITORING



CURRENT STATUS OF METEOROLOGICAL OBSERVATIONS RELATED TO AIR OPERATIONS
AT M. ZUCHELLI STATION AND CONCORDIA STATION

2nd Antarctic Meteorological Observation, Modeling and Forecasting Workshop (CNR Rome – 26-28 June 2007)

MZS: REAL-TIME DATA MONITORING



DIGITAL DISPLAY



CURRENT STATUS OF METEOROLOGICAL OBSERVATIONS RELATED TO AIR OPERATIONS
AT M. ZUCHELLI STATION AND CONCORDIA STATION

2nd Antarctic Meteorological Observation, Modeling and Forecasting Workshop (CNR Rome – 26-28 June 2007)

MZS: REAL-TIME DATA MONITORING MetData SOFTWARE

SETTINGS | **BTN** | **POINT CHARLY** | **ALFA** | **BRAVO** | **BROWNING**

REMOTE STATIONS | **SYNOP BTN** | **NEPHOIPSOMETRO**

LastUpdate:

Pressure
 P [hPa] | P [inHg] | QNH | QFE
 | 0,00 | |

Wind Direction
 WD [°R] | WDA10 | WDA2 | GridCorr
 | | | 0,00

Wind Speed
 WS [kts] | WSA10 | WSX10 | WSA2 | WSX2
 | | | |

Temperature
 T [°C] | TA1H
 |

Relative Humidity | **Snow Depht** | **Voltage**
 RH [%] | H [mm] | VOLT
 | |

SELECT STATION TO CALL
MID POINT

OPERATION LINE CHECK | **CAMPO METEO LINE CHECK**
 |

PUSH TO CALL

WIND GUST ALARM | **WIND GUST VALUE [kts]**
 |

ALFA

11/11/2005 11.16.51

Wind Speed Gauge:
 Scale: 0 to 360 kts
 Current Value: 3,19 [kts]
 GridCorr: 198,00

STOP | **INFO**



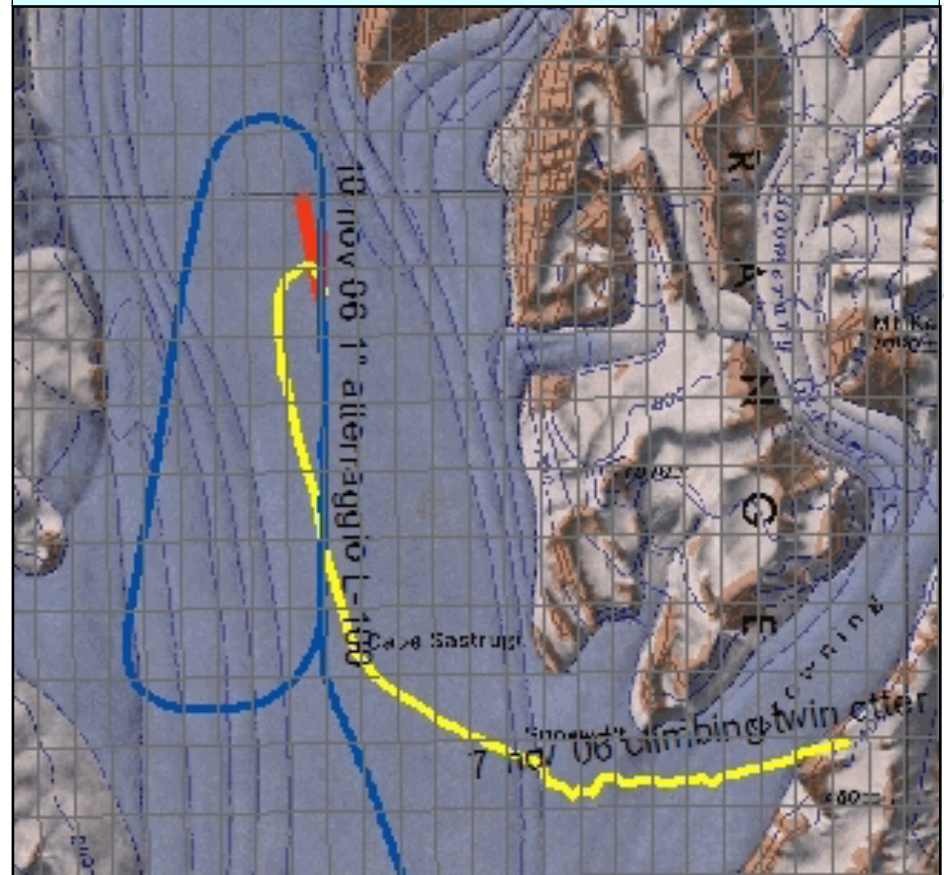
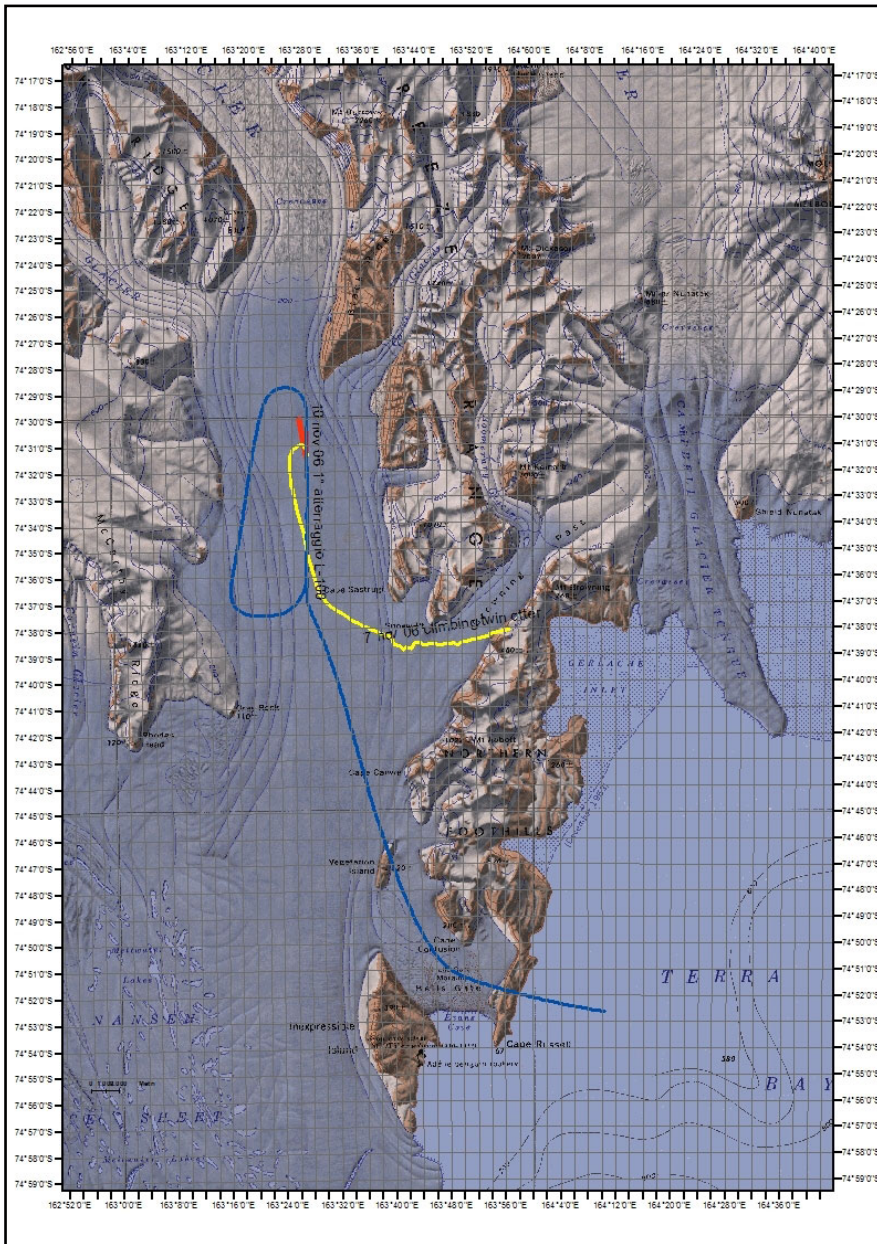
CURRENT STATUS OF METEOROLOGICAL OBSERVATIONS RELATED TO AIR OPERATIONS
AT M. ZUCHELLI STATION AND CONCORDIA STATION

2nd Antarctic Meteorological Observation, Modeling and Forecasting Workshop (CNR Rome – 26-28 June 2007)

Testing alternatives: Nansen Ice Sheet runway

Yellow track: Twin Otter (7 nov, 2006)

Blue track: Hercules (10 nov, 2006)



CURRENT STATUS OF METEOROLOGICAL OBSERVATIONS RELATED TO AIR OPERATIONS
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2nd Antarctic Meteorological Observation, Modeling and Forecasting Workshop (CNR Rome – 26-28 June 2007)

EMERGENZA ANTARTICA

Nansen Ice Sheet runway



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AT M. ZUCHELLI STATION AND CONCORDIA STATION

2nd Antarctic Meteorological Observation, Modeling and Forecasting Workshop (CNR Rome – 26-28 June 2007)

Nansen Ice Sheet runway



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AT M. ZUCHELLI STATION AND CONCORDIA STATION

2nd Antarctic Meteorological Observation, Modeling and Forecasting Workshop (CNR Rome – 26-28 June 2007)

Nansen Ice Sheet runway



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AT M. ZUCHELLI STATION AND CONCORDIA STATION

2nd Antarctic Meteorological Observation, Modeling and Forecasting Workshop (CNR Rome – 26-28 June 2007)

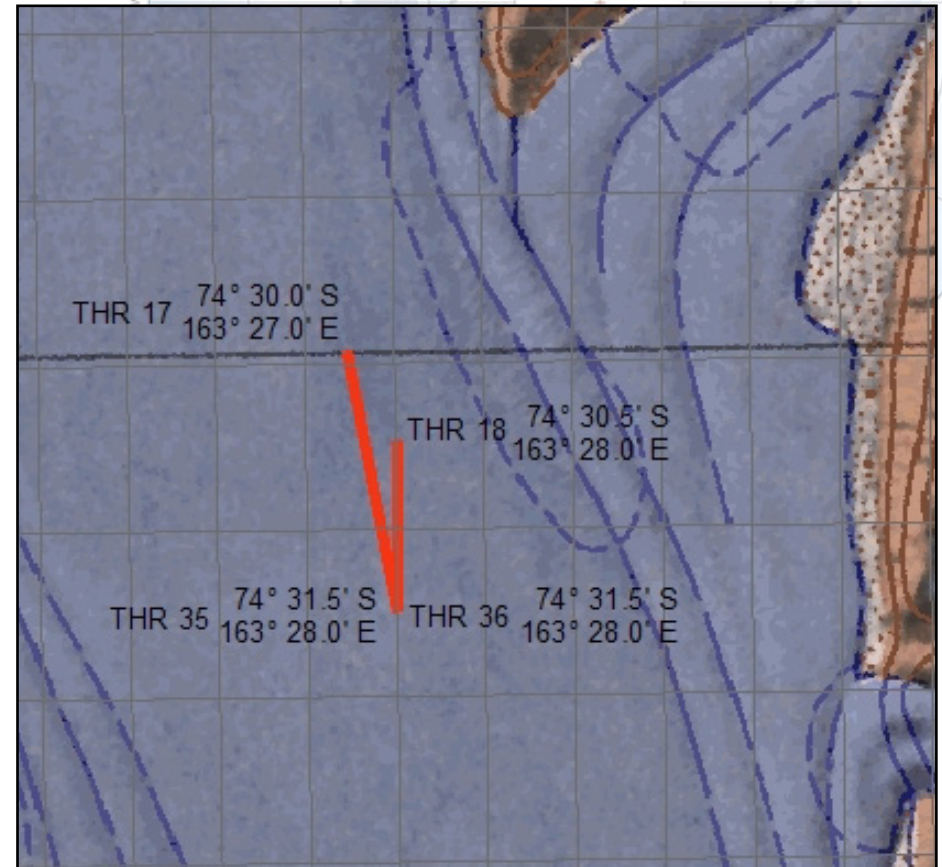
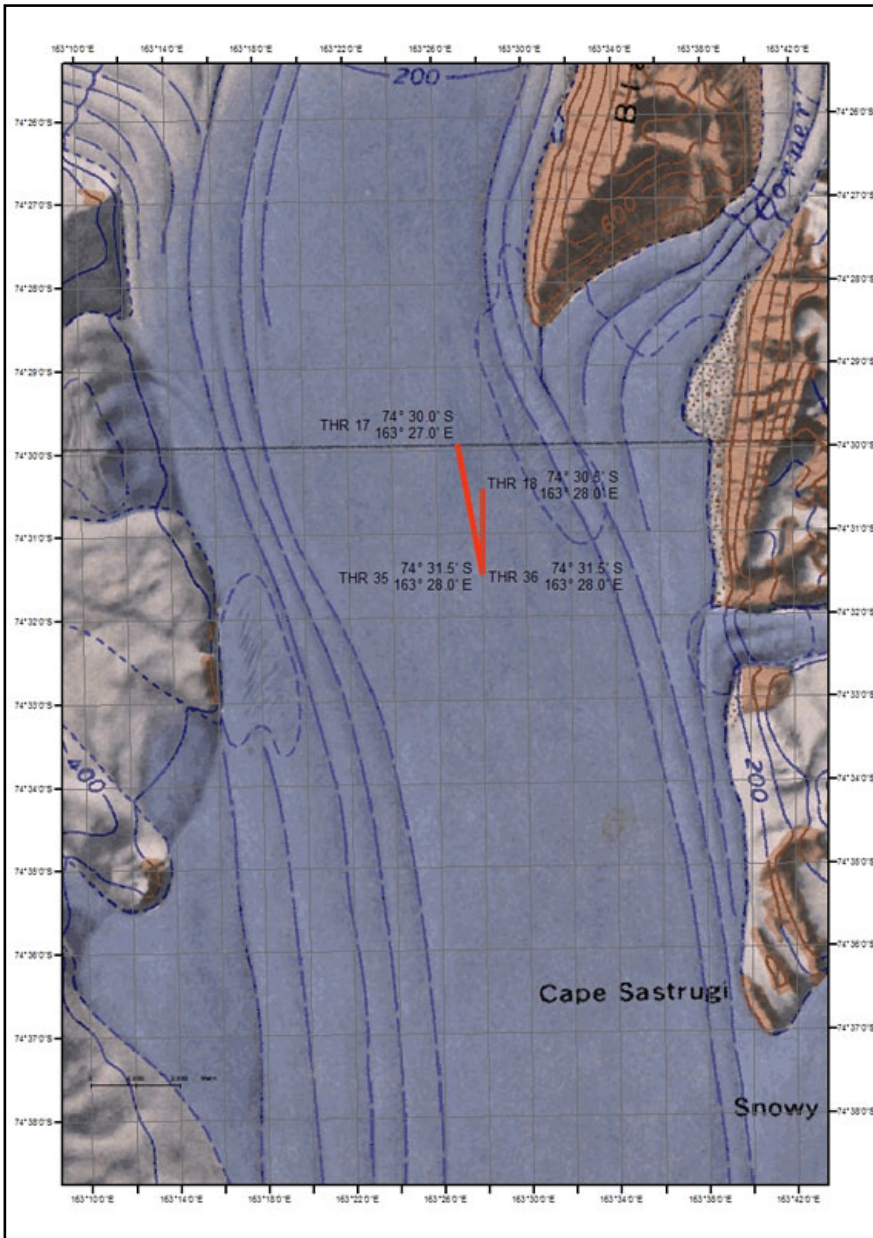
Nansen Ice Sheet runway



CURRENT STATUS OF METEOROLOGICAL OBSERVATIONS RELATED TO AIR OPERATIONS
AT M. ZUCHELLI STATION AND CONCORDIA STATION

2nd Antarctic Meteorological Observation, Modeling and Forecasting Workshop (CNR Rome – 26-28 June 2007)

Nansen Ice Sheet runway



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AT M. ZUCHELLI STATION AND CONCORDIA STATION

2nd Antarctic Meteorological Observation, Modeling and Forecasting Workshop (CNR Rome – 26-28 June 2007)

DOME CONCORDIA: AIRSTRIPS



CURRENT STATUS OF METEOROLOGICAL OBSERVATIONS RELATED TO AIR OPERATIONS
AT M. ZUCHELLI STATION AND CONCORDIA STATION

2nd Antarctic Meteorological Observation, Modeling and Forecasting Workshop (CNR Rome – 26-28 June 2007)

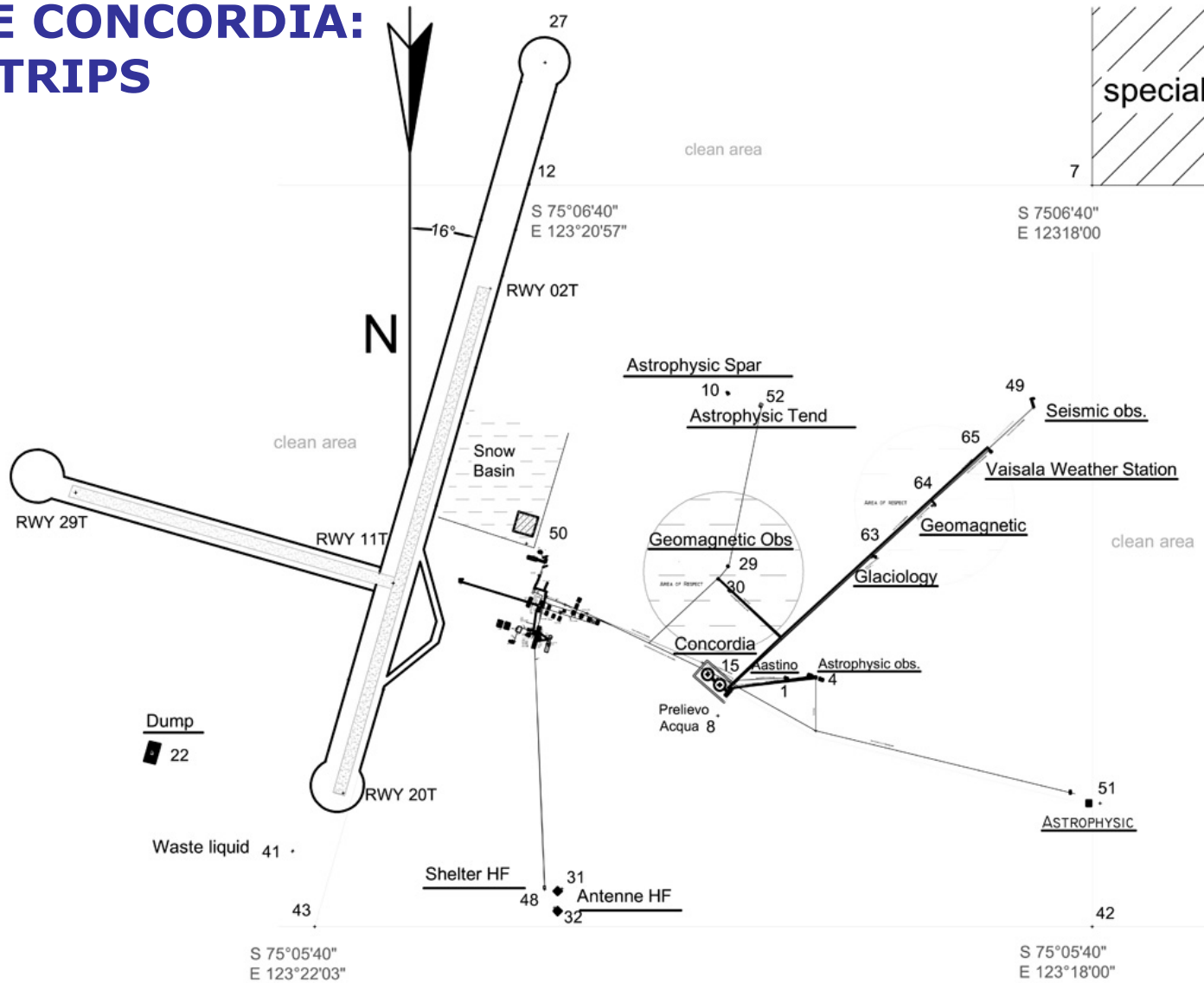
DOME CONCORDIA: AIRSTRIPS



CURRENT STATUS OF METEOROLOGICAL OBSERVATIONS RELATED TO AIR OPERATIONS
AT M. ZUCHELLI STATION AND CONCORDIA STATION

2nd Antarctic Meteorological Observation, Modeling and Forecasting Workshop (CNR Rome – 26-28 June 2007)

DOME CONCORDIA: AIRSTRIPS

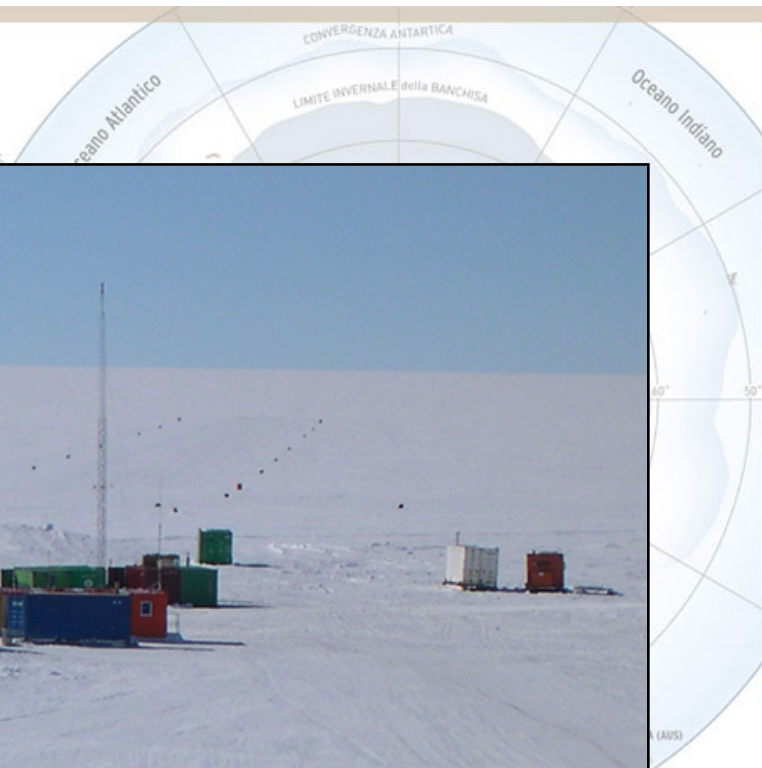


CURRENT STATUS OF METEOROLOGICAL OBSERVATIONS RELATED TO AIR OPERATIONS
AT M. ZUCHELLI STATION AND CONCORDIA STATION

2nd Antarctic Meteorological Observation, Modeling and Forecasting Workshop (CNR Rome – 26-28 June 2007)



DOME CONCORDIA: AIRSTRIPS



CURRENT STATUS OF METEOROLOGICAL OBSERVATIONS RELATED TO AIR OPERATIONS
AT M. ZUCHELLI STATION AND CONCORDIA STATION

2nd Antarctic Meteorological Observation, Modeling and Forecasting Workshop (CNR Rome – 26-28 June 2007)

DOME C: STATION AREA AWSs and INSTRUMENTS

AWS Concordia

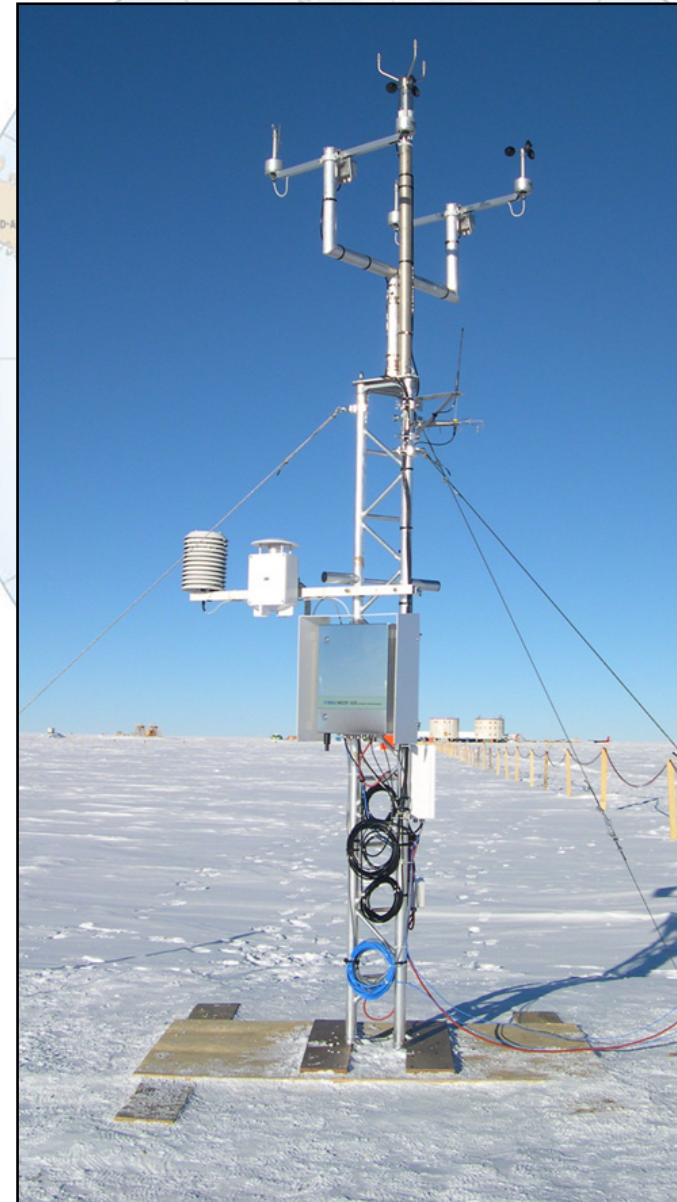
Installed in: **2005**

Type: **Vaisala Milos 520**

Height: **4m**

Sensors: **Ws, Wd, Ws (heated), Wd (heated),
P, T, RH**

Communication: **Argos transmitter,
Radiomodem, cable**



CURRENT STATUS OF METEOROLOGICAL OBSERVATIONS RELATED TO AIR OPERATIONS
AT M. ZUCHELLI STATION AND CONCORDIA STATION

2nd Antarctic Meteorological Observation, Modeling and Forecasting Workshop (CNR Rome – 26-28 June 2007)

DOME C: AIRSTRIP AWS

AWS AW11

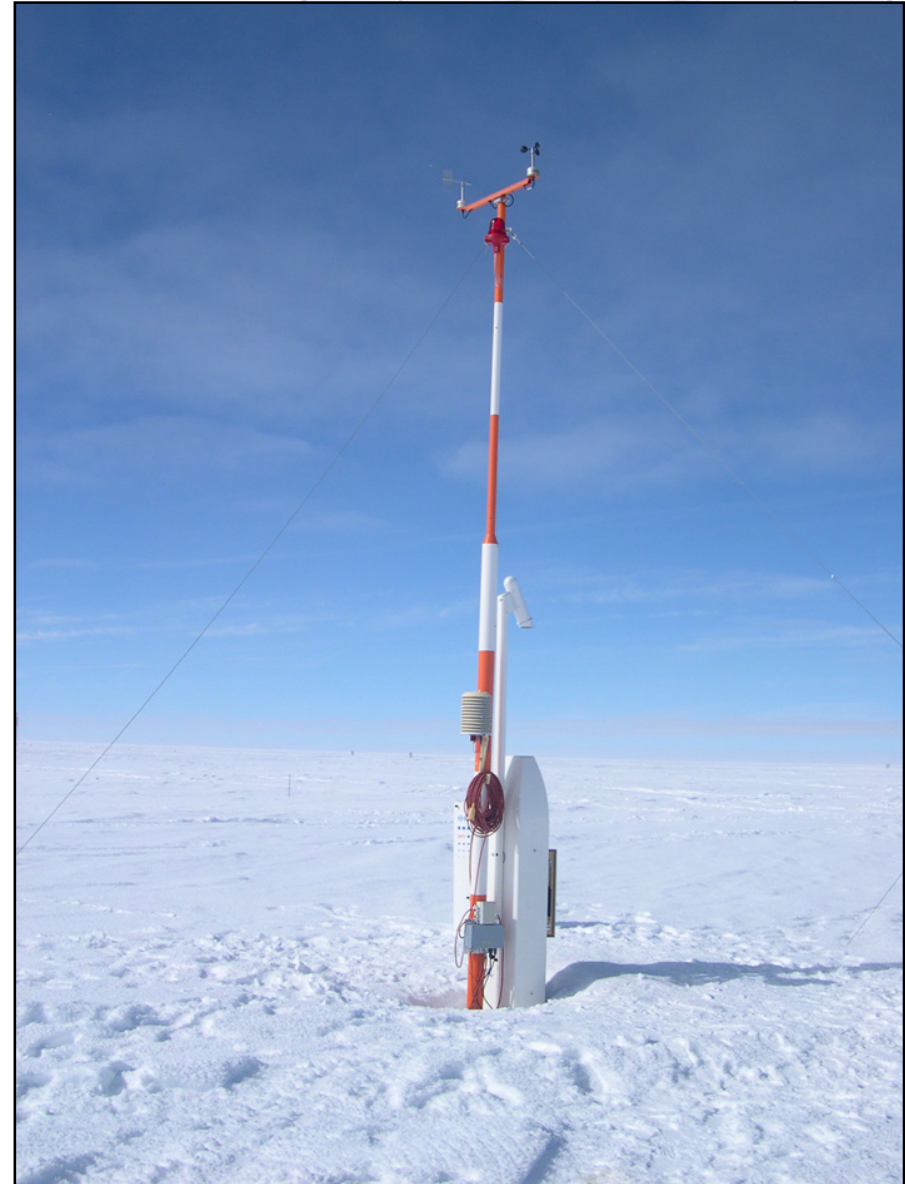
Installed in: **1997**

Type: **Vaisala AW11**

Height: **6m**

Sensors: **Ws, Wd, P, T, RH,
Ceilometer, Visibility meter**

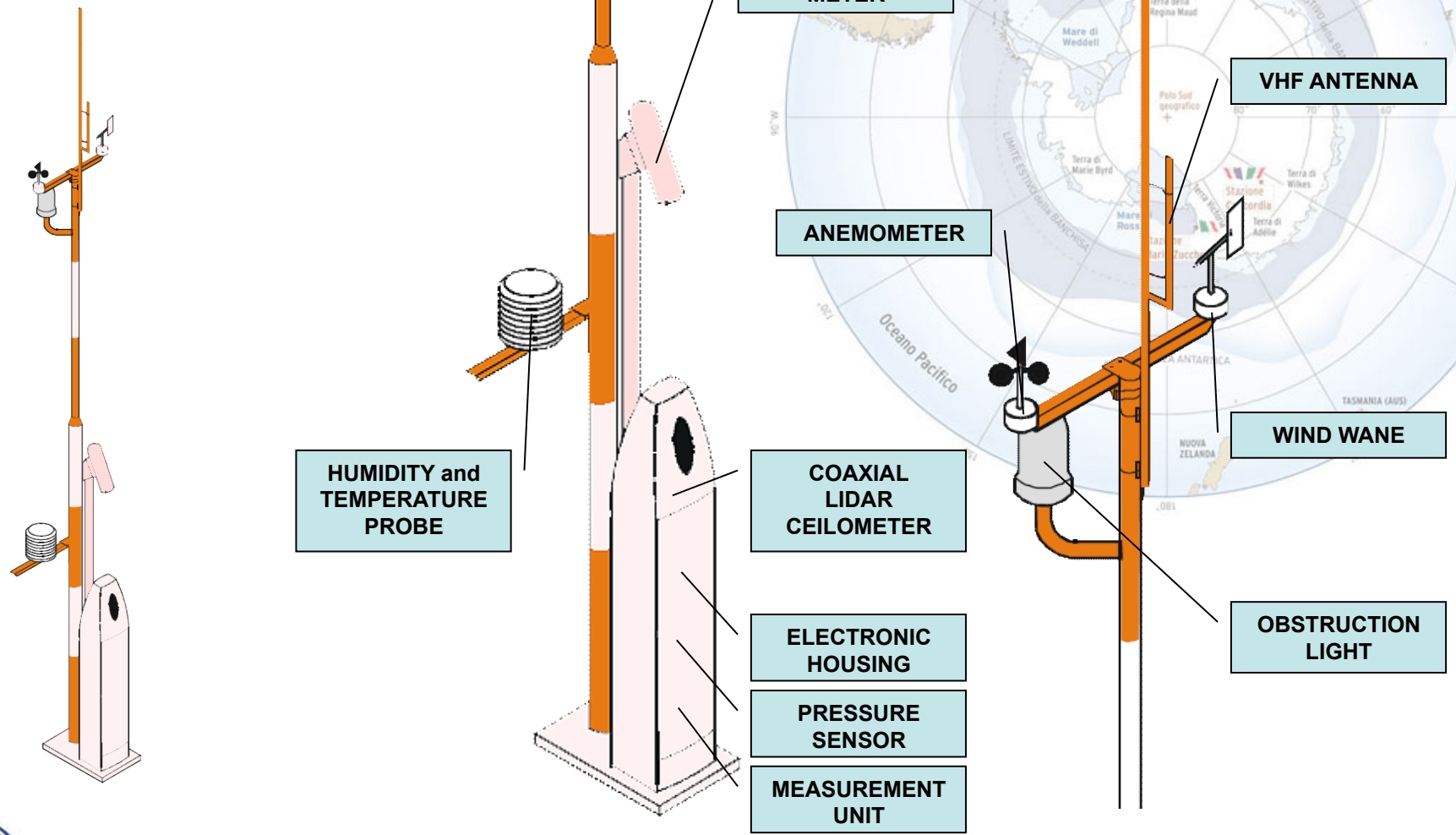
Communication: **VHF, Radiomodem,
cable**



CURRENT STATUS OF METEOROLOGICAL OBSERVATIONS RELATED TO AIR OPERATIONS
AT M. ZUCHELLI STATION AND CONCORDIA STATION

2nd Antarctic Meteorological Observation, Modeling and Forecasting Workshop (CNR Rome – 26-28 June 2007)

DOME C: AIRSTRIP AWS AWS AW11



CURRENT STATUS OF METEOROLOGICAL OBSERVATIONS RELATED TO AIR OPERATIONS
AT M. ZUCHELLI STATION AND CONCORDIA STATION

2nd Antarctic Meteorological Observation, Modeling and Forecasting Workshop (CNR Rome – 26-28 June 2007)

DOME C: REAL-TIME DATA MONITORING Operation Room

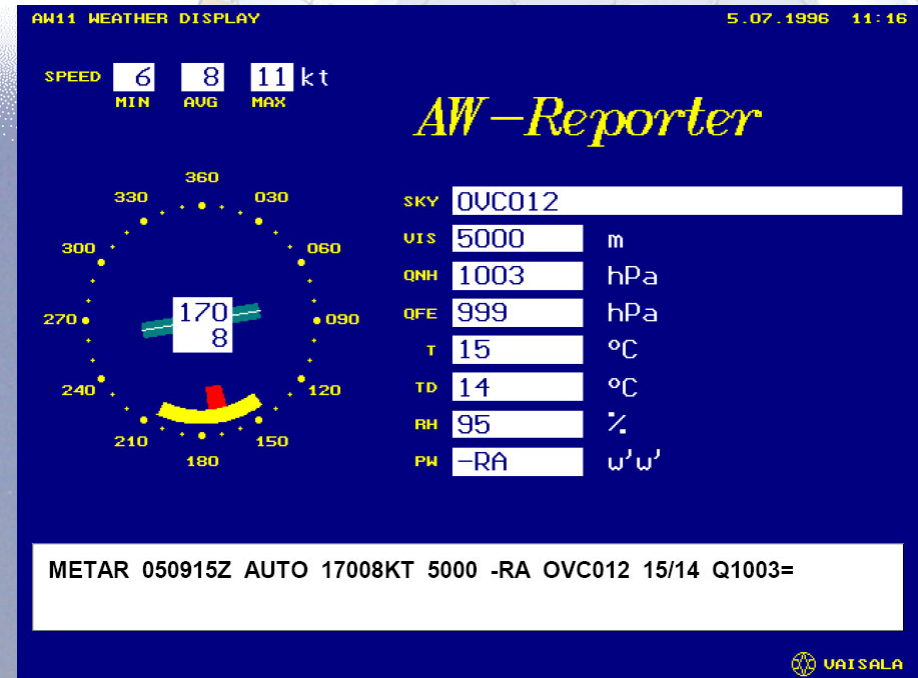


CURRENT STATUS OF METEOROLOGICAL OBSERVATIONS RELATED TO AIR OPERATIONS
AT M. ZUCHELLI STATION AND CONCORDIA STATION

2nd Antarctic Meteorological Observation, Modeling and Forecasting Workshop (CNR Rome – 26-28 June 2007)

DOME C: REAL-TIME DATA MONITORING Operation Room

Spoken weather reports
(speech synthesizer) via VHF radio
(118-137 MHz)



Automatic data processing:
METAR and SPECI
Sky condition:
cloud layer height and coverage
Visibility



CURRENT STATUS OF METEOROLOGICAL OBSERVATIONS RELATED TO AIR OPERATIONS
AT M. ZUCHELLI STATION AND CONCORDIA STATION

2nd Antarctic Meteorological Observation, Modeling and Forecasting Workshop (CNR Rome – 26-28 June 2007)



Thank you.



**CURRENT STATUS OF METEOROLOGICAL OBSERVATIONS RELATED TO AIR OPERATIONS
AT M. ZUCHELLI STATION AND CONCORDIA STATION**

2nd Antarctic Meteorological Observation, Modeling and Forecasting Workshop (CNR Rome – 26-28 June 2007)