



Italian National Agency for New Technologies,
Energy and Sustainable Economic Development

CONCORDIA STATION

A candidate GRUAN site on the high Antarctic Plateau

C. Scarchilli¹, V. Ciardini¹, L. De Silvestri¹, M. Proposito¹, G. Camporeale², A. Iaccarino¹ and P. Grigioni¹

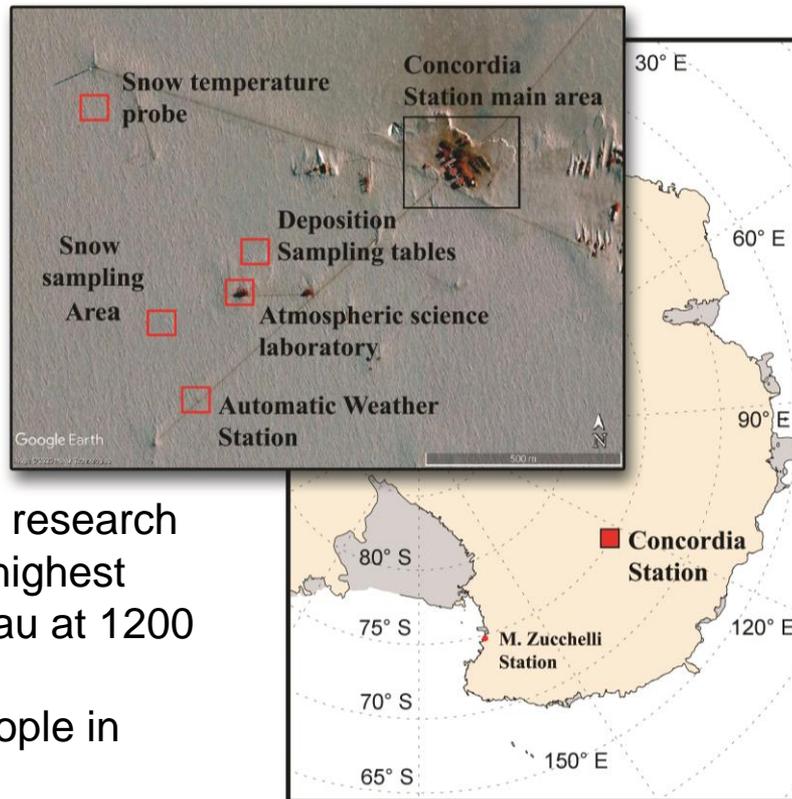
¹ENEA Italian National Agency for New Technologies Energy and Sustainable Economic Development

²CNR National Research Council

15th GRUAN Implementation-Coordination Meeting (ICM-15), Bern, 11-15 March 2023



CONCORDIA STATION



CONCORDIA ($75^{\circ}5' S$ $123^{\circ}19' E$) is a French/Italian research station placed at 3233 m amsl, over the one of the highest dome (Dome Charly-DC) of the high Antarctic plateau at 1200 km far from the coast.

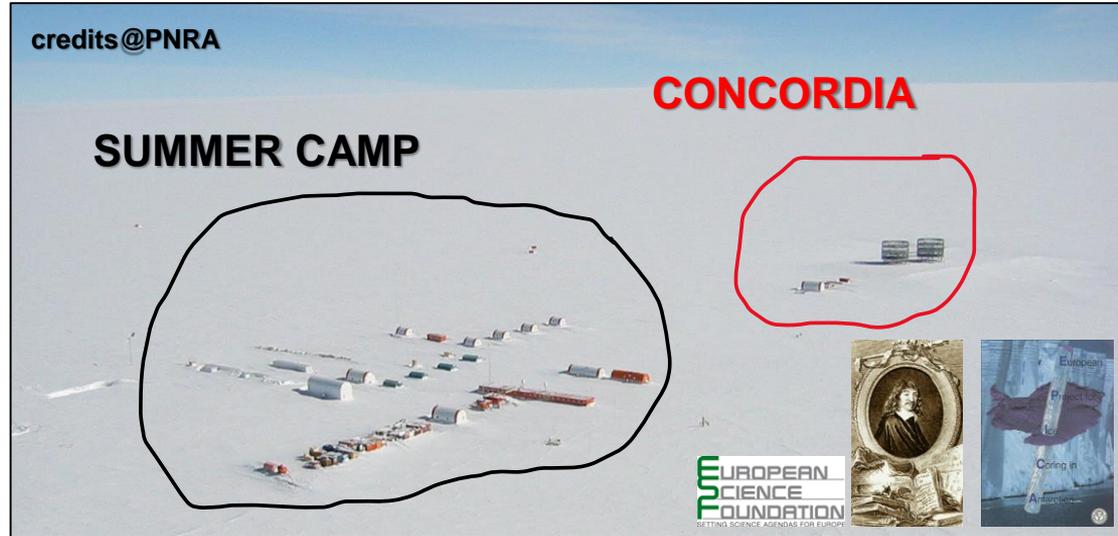
Concordia is open all year round and hosts ~70 people in summer and from 12 to 15 in winter.

HISTORY OF CONCORDIA

DC has been chosen as the main core drilling site of the European Project for Ice Coring in Antarctica (EPICA).

Between 1995 and 2005, first the summer camp dedicated to the coring and then the actual Concordia station were created around the coring site.

After the end of EPICA, various national and international scientific projects and observatories are carried out at Concordia in the framework of National Italian Antarctic Program (PNRA) and French Polar Institute Paul-Emile Victor (IPEV)



IAMCO OBSERVATORY

The **Italian Antarctic Meteorological Climatological Observatory (IAMCO)** has been carrying out a program of meteorological observations since the Concordia station opening



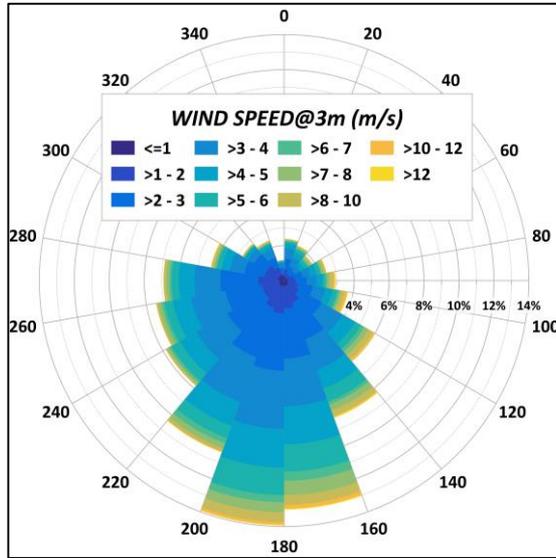
<http://www.climantartide.it>

- Disdrometer (since 2021)
- Celiometer (since 2018)
- Automatic Weather Station (since 2006)
- Radio Sounding system (since 2006)

} **WMO N°89625**

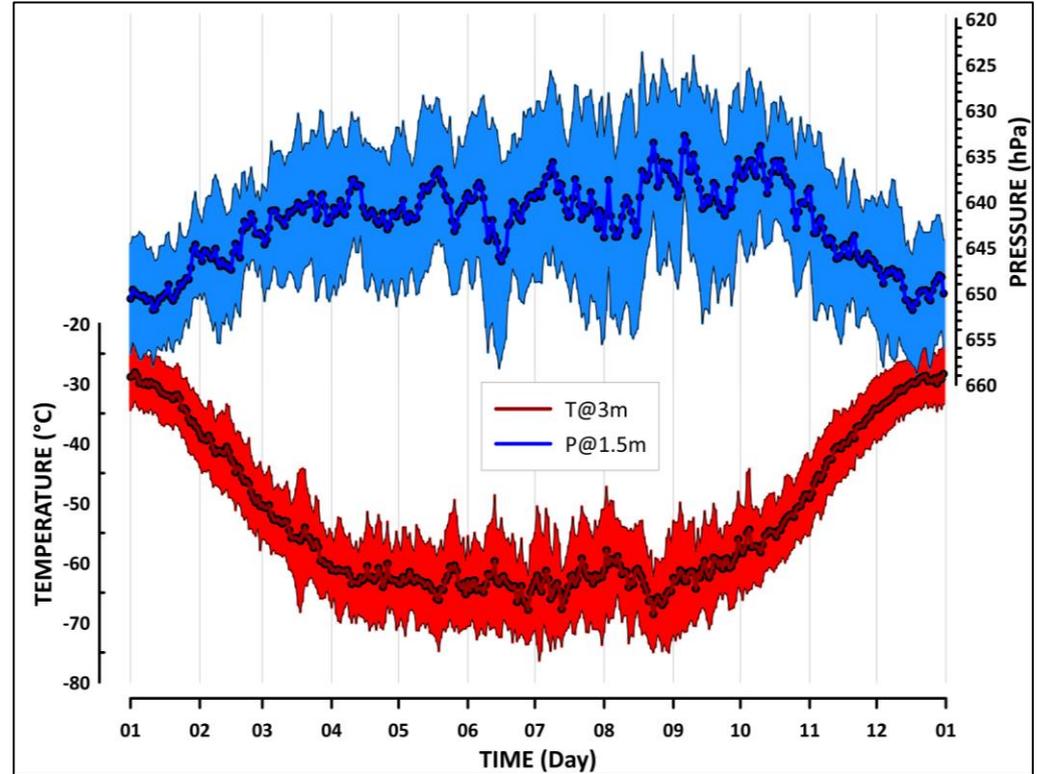


SURFACE CONDITIONS AT CONCORDIA



Mean annual temperature: -55 °C

Mean accumulated annual precipitation:
20-40 mm w.e.



THE IAMCO RADIOSOUNDING SYSTEM

ACTUAL SYSTEM:

Ground system: **Vaisala MW41**

Software: **DigiCora3 v2.5.0**

Ground check: **Vaisala RI41**

Radiosonde: **Vaisala RS41-SGP**

Unwinder: **RS41 Unwinder, 55 m**

Ballon: **Totex TA350**

*Start
radiosounding program*

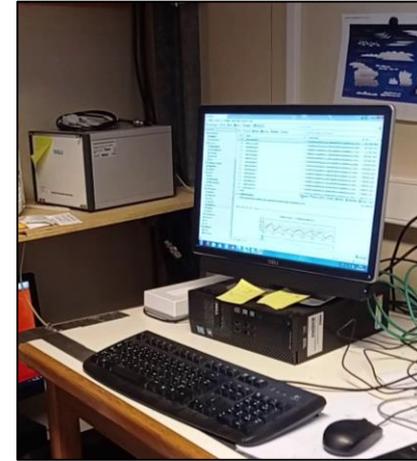
*MW31 v3.12
Ground C. GC25
Vaisala RS92
19/01/2006*

*alternation between
RS41-SPG and the
latest RS92s in stock
15/12/2017*

*YOPP summer intensive
campaign (doubling daily
radiosounding)*

*16/11/2018
15/02/2019*

*MW41 v2.17.0
01/11/2024*



15/11/2010
MW31 v3.62

01/01/2018
*MW41 v2.5.0
Ground C. RI41
Vaisala RS41-SPG*

01/04/2022
01/10/2022

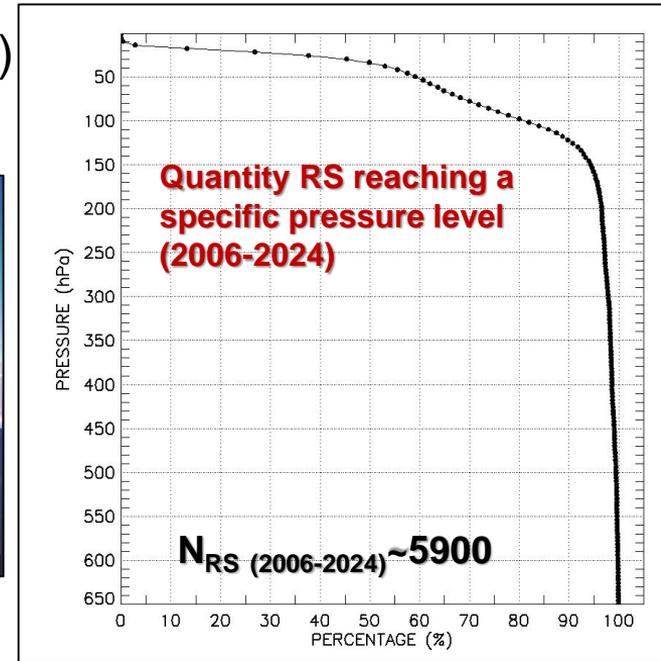
*YOPP winter intensive
campaign
(six chosen period of few days
each with two daily RS)*

SOUNDING OPERATIONS

DAILY SOUNDING AT 11 UTC (19 Local Time)



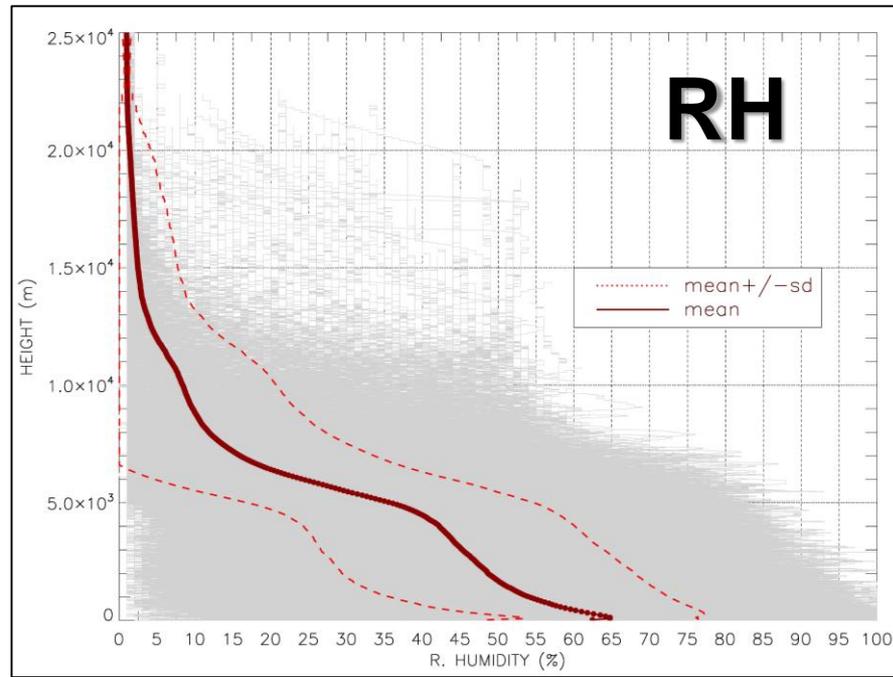
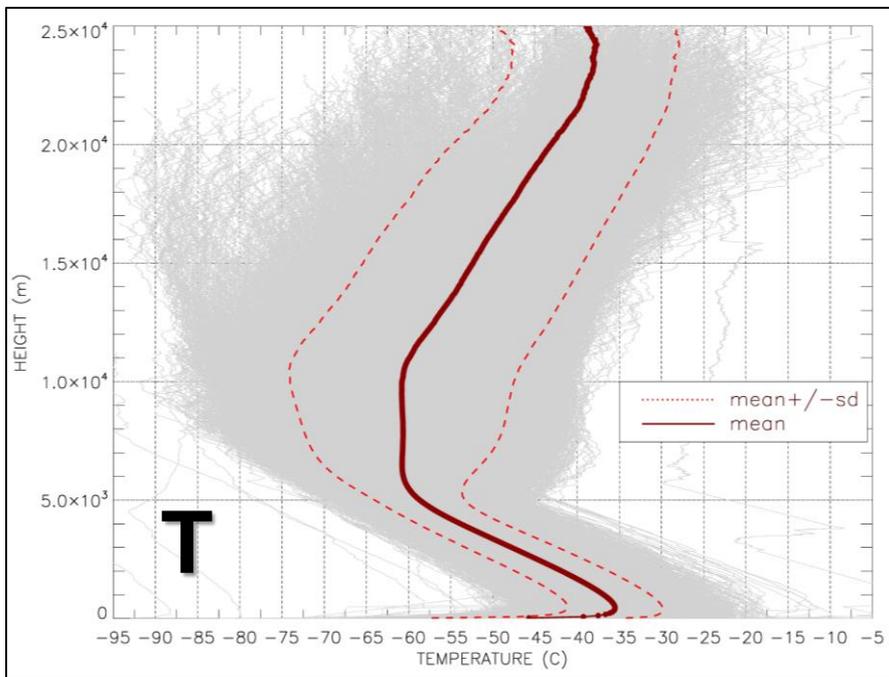
credits@PNRA



Once the sonde is initialized in the laboratory inside the station, the operator leaves the base and reaches the shelter where the radiosounding take place. The shelter is located approximately 100 m outside the base.

The sonde is left outside the shelter for 15-20 minutes on a wooden pedestal for stabilization, while the operator inflates the balloon inside

ATMOSPHERIC PROFILE AT CONCORDIA

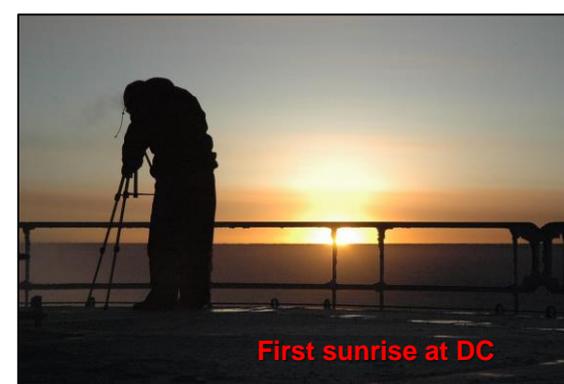




Southern Lighths at DC

Karim agabi Concordia (c) 2005

Claudio Scarchilli
claudio.scarchilli@enea.it



First sunrise at DC



DC during polar night



credits@PNRA



Concordia towers

