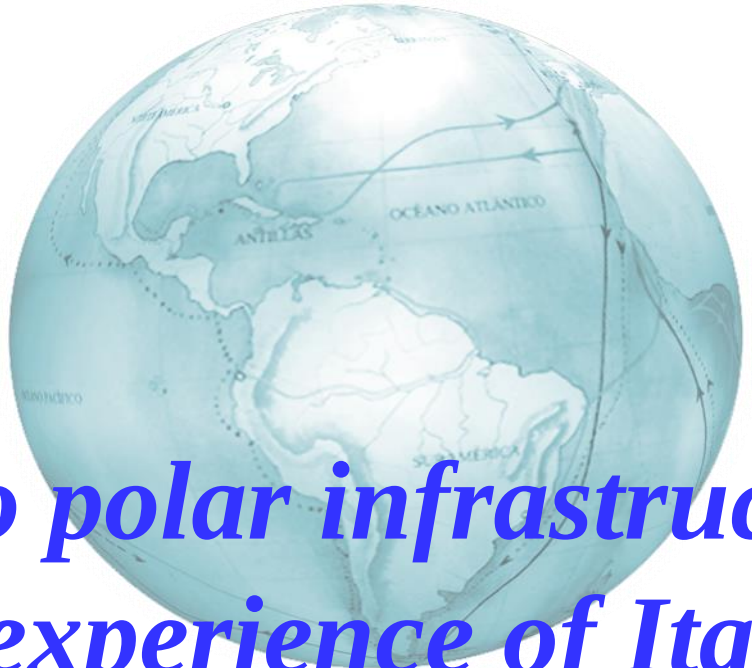

Access to polar infrastructures: the experience of Italy

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Participants to Italian Expeditions (1985-2010)

Ente Spedizione	Università	C.N.R.	ENEA	Min. Difesa	O.G.S.	I.N.G.	a contr.	Altri Enti (°)	Addetti ai voli	TOTALI
1ª (85-86)	5	6	8	8			5*	2	4	33+05*
2ª (86-87)	6	9	29	14		2	2*	4	5	69+02*
3ª (87-88)	35	19	37	21	13			11	5	141
4ª (88-89)	37	26	51	18	14	2		3	10	161
5ª (89-90)	64+07*	31	63	35	16	3		15	8	235+07*
6ª (90-91)	71+08*	39	51	22	18	4		14+10*	8	227+18*
7ª (91-92)	18	13	24	5	18	2		12	4	96
8ª (92-93)	4	6	15	1	2	2		1	2	33
9ª (93-94)	57+07*	36	48	18	20	7		13+11*	8	207+18*
10ª (94-95)	111+15*	59	58	22	21	7		34+06*	7	319+21*
11ª (95-96)	51+05*	31	53	25	2	7		07+14*	10	186+19*
12ª (96-97)	42+06*	20	57	14	24	5		12+07*	16	190+13*
13ª (97-98)	85+01*	45	67	20	4	13	9	21+04*	17	281+05*
14ª (98-99)	68+10*	26	59	22	1	10	13	07+06*	11	217+16*
15ª (99-00)	60+11*	35	57	19	14	13	16	18+09*	18	250+20*
16ª (00-01)	62+07*	26	58	21	1	7	15	26+02*	12	228+09*
17ª (01-02)	74+06*	33	67	18	11	7	15	15+06*	12	252+12*
18ª (02-03)	69+05*	21	56	22	6	5	20	22+07*	12	233+12*
19ª (03-04)	79+08*	42	50	23	18	14	22	23+09*	20	291+17*
20ª (04-05)	58+01*	44	55	19	5	11	22	19+03*	12	245+04*
21ª (05-06)	67+05*	40	45	17	19	15	18	26+12*	19	266+17*
22ª (06-07)	24+03*	16	31	13	3	9	11	14+05*	10	131+08*
23ª (07-08)	15	18	18	8	1	6	16	10+04*	9	101+04*
24ª (08-09)	10	10	16	4	2	7	16	10	7	82
25ª (09-10)	25+1*	17	23	15	2	7	21	14	6	130+01*
TOTALI	1197+106*	668	1096	424	235	165	214+07*	353+115*	252	4604+228*
										4832

~ 220 (8%) participations of foreign researchers

27 (1%) as guests (non strictly connected to Italian projects)

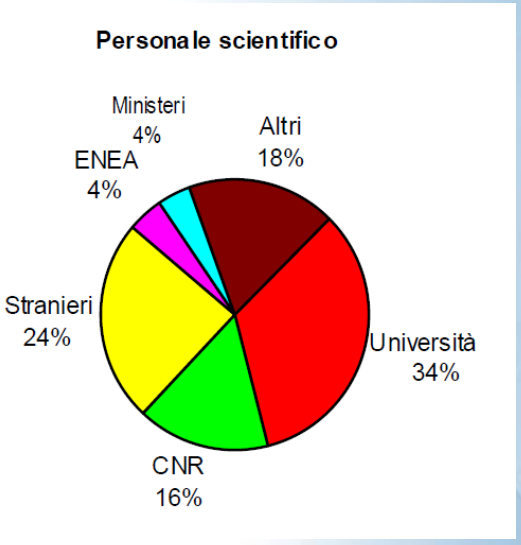
54 participations of journalists/media

Participations of foreign researchers/guests/media

550 (49%) researchers participated to only 1 field campaign

~ 130 (59%) of them are foreign researchers

percentage rise to 100% for guest scientists and to about 80% for journalists/media.



- as general rule, foreign participation through cooperation with Italian projects/scientists (**but not a law carved in stone**)
- a quite stable dynamic along the first 25 expeditions (no significant changes in the following expeditions)
- approach strongly drived by status of activities in the Ross Sea Area in the 80's and 90's. (**see later**) and ratio demand of Italian researchers/ resources at disposal
- not included "support" to activities not bringing people at the station for more than 3 days. (**access concept issue**) Kind of "support" can be sometime really unexpexted.

Support for a Blue Planet documentary

- In 1999 PNRA was contacted by BBC producer Martha Holmes.
- **At that time she was yet produced the famous BBC Wildlife Special Polar Bear (1997)**
- they ask Italian support to take one month field camp at the Emperor penguin colony of Cape Washington with the aim film for the first time a leopard seal hunting penguins.
- they received a strong support from us and this engagement was an high risk for PNRA cosidering their mission
- at the end they was also luky and able to take were brief scene of a leopard seal attach to emperor penguin
- videos werre used for a documentary of the blue planet series . You can find easily on youtube. As an example the nice clip on the web site

http://www.bbc.com/travel/story/20140417-antarcticas-most-fearsome-hunter

Rules for participation

- they arise from Italian low establishing PNRA that ask for medical inspection and also training courses
- normally PNRA accept certification/declaration arising from another Antarctic Programme
- if not, medical documentation nee to be produced and evaluated by health PNRA Responsible
- foreing researchers as well as journalists/media need to cover only travel to starting “harbour/airport” for Antarctica.

- an issue not clearly stated refers to responsabilities if something happen (**see also later**)

Advantages/Disavantages/improvements

- access system promote internationalization of Italian research
- a lot of flexibility
- good connection with level of activities/needs/requests

- difficult to manage when requests and number increase
- need to structure a little bit more the approach to avoid too big bottom-up/single project pressure
- no knowledge of leve of cooperation
- no clear connection/framework with respective Antarctic Programme (**consequence also related to legal aspects**)
- no specific rules for journalists until at least 2013

- international contacts need to be included in the proposal as participants/partners (clear state in application form that they will not receive any money)

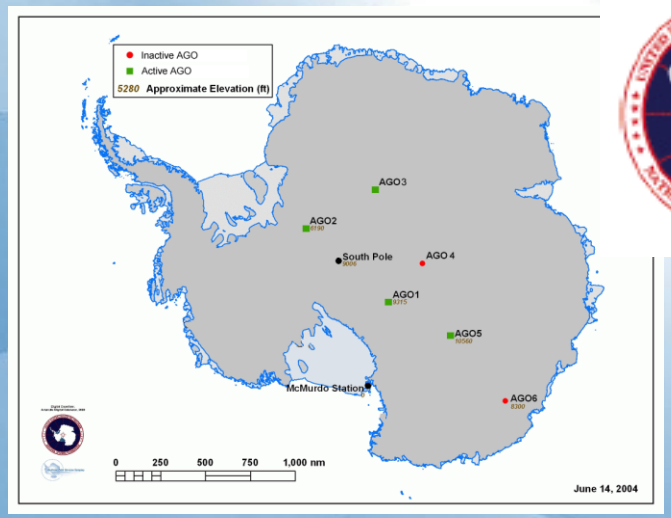
- for journalist we lunch a call in spring every year, and the selection of proposals is made by an internal committee involving CNR and ENEA.

Access at Concordia: more challenges

- large limitations (on science topics, infrastructures, working area, transportation of materials, power supply, etc.)
- larger costs (no easy to find a good compromise between need to cover costs and interest to cooperate)
- not easy place to sustain (need to give relevance to the support but also to develop a robust long-term scientific plan)

but also some good opportunities

- simplify/support access to remote installations over the Plateau



Automatic Geophysical Observatories

Astronomical site testing 2004: AASTINO

Using a completely robotic observatory, the AASTINO, built at University of New South Wales (UNSW), first wintertime astronomical seeing measurements from Dome C was made in 2004 by Storey et al.

Lawrence et al., NATURE, vol. 431, 16 SEPTEMBER 2004, pp. 278-281

Cosmic Ray Flux measurements (in the framework of LTCPAA project)

FINNARP and Academy of Finland Project: CRIPA - “Cosmic Rays In Polar Atmosphere” (PI: Prof. I. Usoskin, University of Oulu, Finland).

Scientific objectives: Continuous measurements of cosmic ray variability in the high-elevation polar atmosphere and study of their effects.

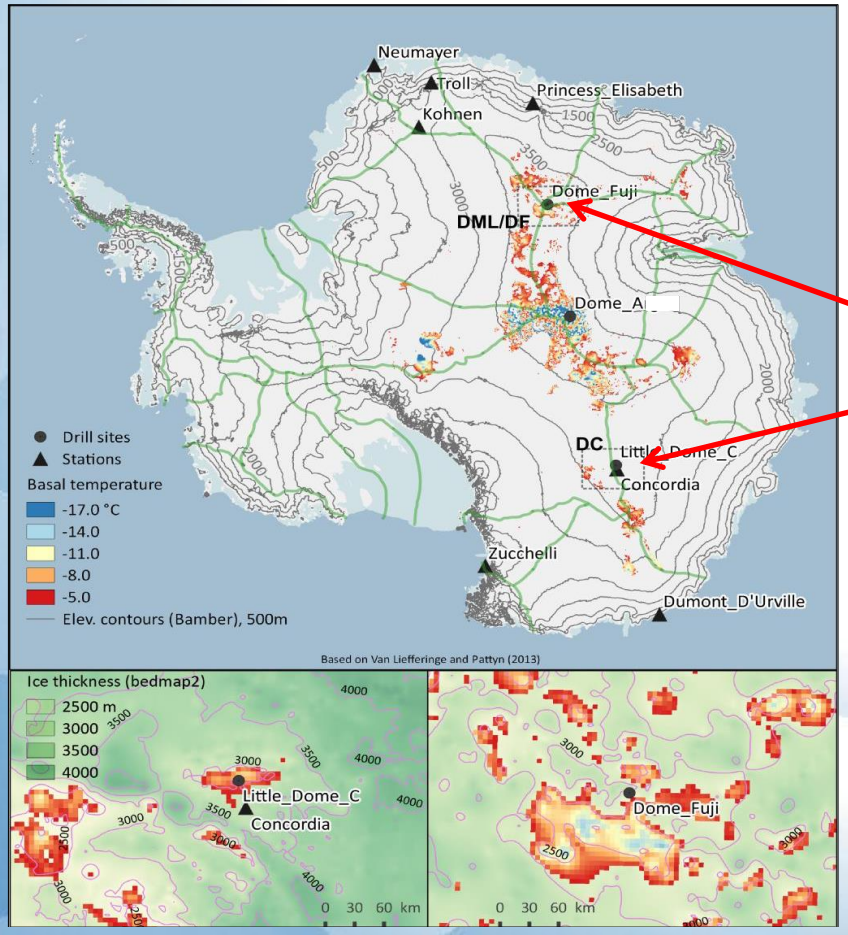
Instruments: 2 mini neutron monitors: a standard one and a "bare" lead-free one
The instruments were installed in 2014 and have been working continuously all year-round since then.

PHYSICS shelter: Neutron monitors working within LTCPAA – FINNARP CRIPA Project

EPICA and "Beyond"

Beyond-Epica-Old Ice (BE-OI)
A large EU project

EPICA: better understanding of major climatic and environmental changes in the last 8-9 glacial cycles (last 800 kyr)

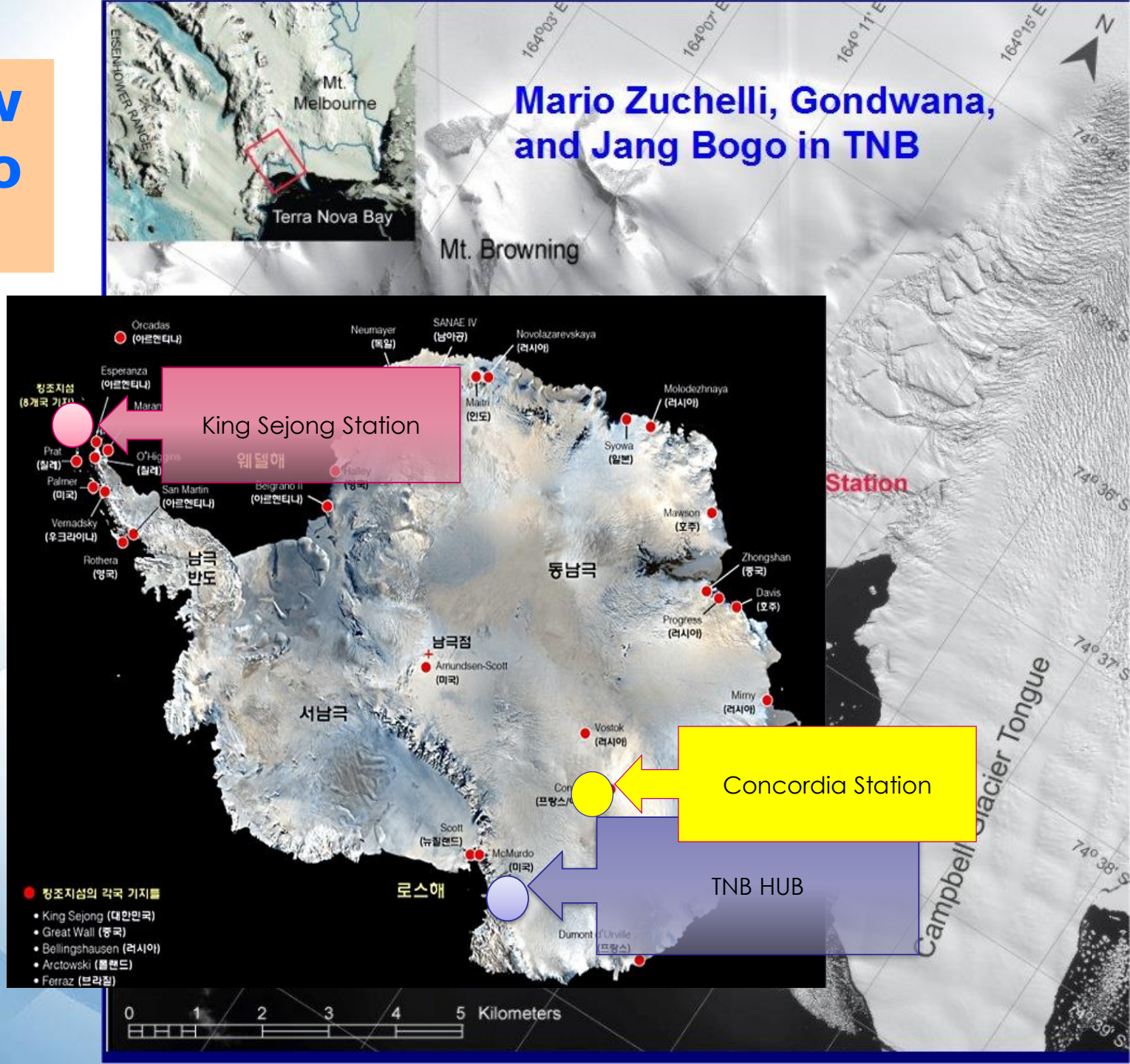


region of interest for BE-OI:

1.Dronning Maud Land, near Dome Fuji (DML/DF)
2.near Dome C (DC) – Little Dome C

BE-OI: At the end of the Mid-Pleistocene Transition MPT (800-1200 kyr BP), glacial-interglacial periodicity changed from 40 kyr to 100 kyr without a significant change in orbital forcing suggesting that an "internal" change took place (CO_2?). in order to characterise the response of the Earth's climate system on short timescales, a higher temporal resolution is needed

The new scenario a TNB



Activities during austral campaign 1994-95 (IX)

- a BTN, con apertura della Base per più di quattro mesi;
- a bordo della nave Italica, per due campagne oceanografiche nel Mare di Ross e due nello Stretto di Magellano;
- a bordo della nave OGS-Explora per quattro campagne di geofisica marina lungo la Penisola antartica, nell'Arco di Scotia e lungo la costa meridionale cilena (due campagne);
- all'imboccatura atlantica dello Stretto di Magellano (campagna a terra);
- nello stretto di Magellano per la campagna congiunta cileno-tedesco-italiana per una serie di studi relativi alla struttura dei popolamenti in acque costiere nell'area di Punta Arenas;
- presso la Base USA Amundsen-Scott al Polo Sud per concludere l'esperienza Lidar (smontare la strumentazione e spedirla in Italia);
- presso la Base USA McMurdo per lo studio delle caratteristiche delle nubi stratosferiche e per gli aviolanci;
- presso la Base neozelandese Scott per misure di ozono con spettrofotometro Brewer;
- presso la Base argentina Esperanza per misure con una stazione sismometrica;
- presso la Base argentina Jubany per la misura in continuo della CO_2 atmosferica;
- presso la Base francese Dumont d'Urville per la manutenzione del Lidar, per la traversa a Dôme C e l'allestimento del campo a Cape Prud'homme;
- a bordo della R/V Nathaniel B. Palmer, per l'acquisizione di un grigliato di sismica ad alta risoluzione nel Mare di Ross;
- a bordo della R/V Polarstern, per la spedizione geologica internazionale Euroshack 1994-95 nello Shackleton Range.

A causa delle cattive condizioni climatiche, è stata effettuata una sola traversa verso Dôme C, nel corso della quale sono stati recuperati i mezzi lasciati lungo il percorso durante la spedizione precedente.

we have even a permanent observatory (sismic network) in the Scotia Sea thanks to a very long cooperation with Argentina

A more structured approach to PNRA research at regional scale

- Since 2013 we introduced in the call for proposals a line devoted to projects aiming to perform activities not at Italian stations and/or infrastructures
- call allows to include in the budget contribution for logistic support at the foreign station/site/infrastructure
- single proposal are request to present support letters securing support by other Antarctic Programme or foreign Institutions. Than individual agreements need to be signed
- in parallel, PNRA promote discussion and signature of bilateral top.level agreement with other countries/Antarctic programmes to offer a broader framework to develop in a harmonized way cooperation
- some of this bilateral agreement include at the same time sciencfe asnd logistics
- in the Ross Sea and Victoria land this approach can have some difficulties. We are starting to phase and we need to find solutions.

Actions/issues that we need to consider in implementing a broad access programme

- identify/develop access modalities (**access can not imply a bad but always imply use of resources/logistics in different way**)
- for each modality build a robust instrument to correctly evaluate resources that are necessary for each request/application
- identify stakeholder categories (**not only scientists**)
- develop one or more framework environment for access programme (**bilateral, multi-lateral, top level vs. bottom level**)
- consider that Antarctic Programme with infrastructure need provide visibility to national researchs in order to secure funds and look to the access issue in a bidirectional way (**more to export**).
- solve with clarity regulatory issues (**if something goes wrong**). That means not only medical inspection to secure participation but also legal aspects and duties connected with foreigners operating in another station. Keep in mind differences between a programme and another.
- .....


Thank you for your attention