Report from Council of Managers of National Antarctic Programs

COMNAP

Professor Kazuyuki Shiraishi
COMNAP Chairman

Reminder of COMNAP's composition, role and purposes

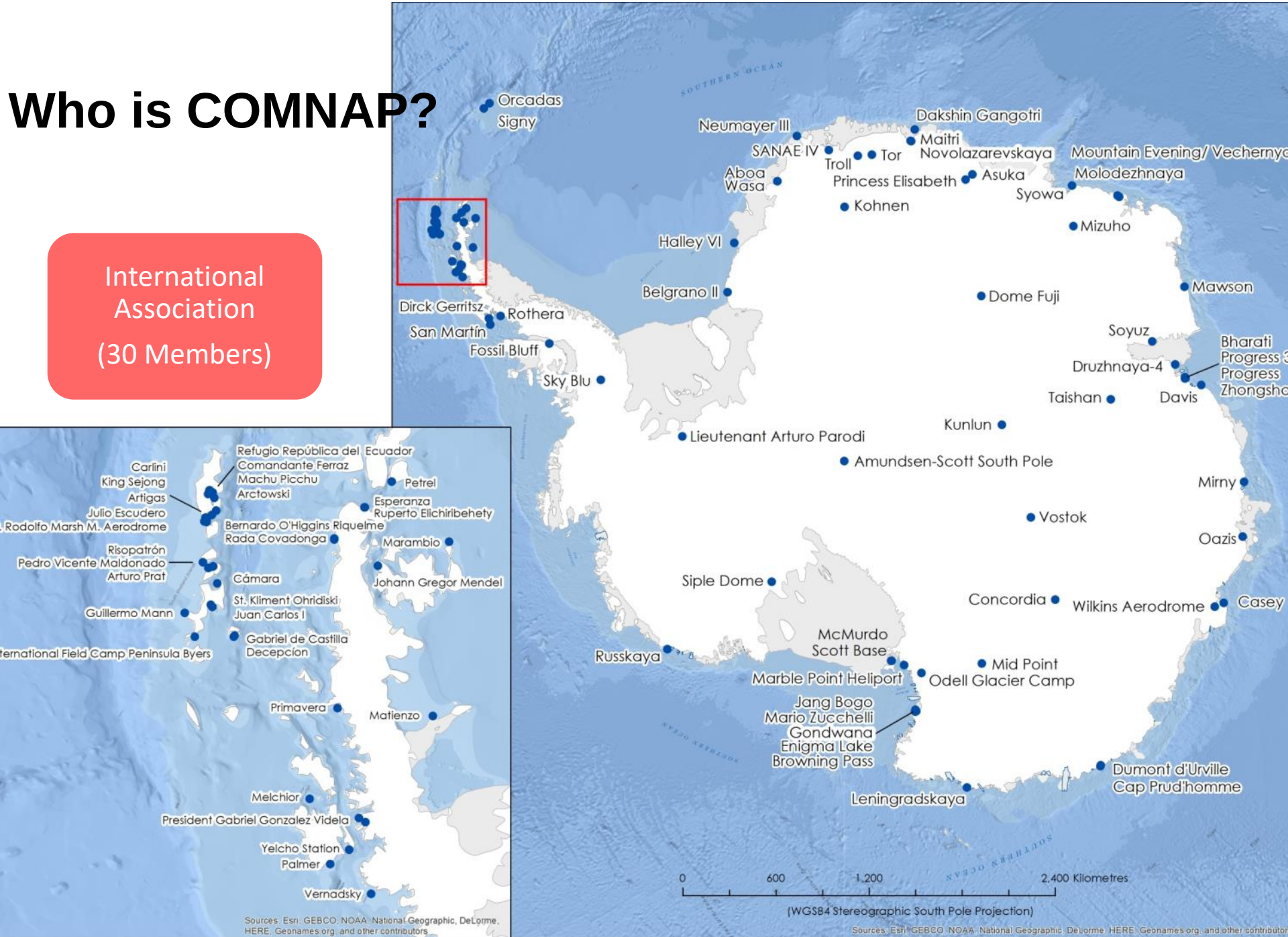
COMNAP

- International Association (30 Members)
- Provide Practical and Technical Advice
- International Partnerships
- Forum – Develop Best Practice & Information Exchange

Who is COMNAP?

International Association

(30 Members)



What we do?

COMNAP

Provide Practical and Technical Advice

International Partnerships

Forum – Develop Best Practice & Information Exchange

- Search and Rescue
- Remotely Piloted Vehicles
- Education & Outreach
- Environmental Management (non-native species, waste water)
- Science Support Collaborative Activities

PROGRAMMATIC NOTICE

Date: September 15, 2014

Subject: Restrictions for Use of Unmanned Aerial Vehicles in the United States Antarctic Program

Due to the potential operational, environmental and safety hazards posed to Antarctic activities by the operation of Unmanned Aerial Vehicles (UAVs), the use of any UAV, drone, or remotely piloted aircraft in Antarctica by U.S. Antarctic Program (USAP) personnel is prohibited without specific authorization from the National Science Foundation (NSF). This prohibition includes the operation of commercially available or custom designed "quad copters", remote controlled camera systems, and any other unmanned airborne systems.

Implementing Scientific Data Collection across the Arctic Oceanic Region Utilizing Unmanned Aircraft Systems (UAS)

Arctic Monitoring and Assessment Programme (AMAP) Unmanned Aircraft Systems Expert Group (UASEG)

IAATO Statement on the use of Unmanned Aerial Vehicles
IAATO accept the general use of UAVs within their members' operations, provided the following criteria have been met:

For the 2015–16 season, recreational UAV flights are not allowed in coastal areas;
UAV flights for scientific or commercial purposes are allowed, if conducted with the permission/authorization from a competent authority;
UAV flights are allowed at deep field sites, including coastal areas bound by ice shelves, if conducted with the permission/authorization from a competent authority.

Members who allow UAV flights should have Standard Operating Procedures in place that are specific to their operation.

Antarctic Unmanned Aerial Systems (UAS) Operator's Handbook

-prepared by the COMNAP UAS Working Group

Purpose of this Handbook

The challenge for any national Antarctic programs that is beginning to utilize UAS technologies in the Antarctic Treaty region is to identify and manage risks associated with the technology and to develop guidelines that will regulate UAS use in differing circumstances in order to reduce or mitigate those risks. This handbook may be used to develop a process for UAS deployment in the Antarctic Treaty area.

The COMNAP UAS Handbook should be viewed as a living document which, as UAS technology evolves, and as published research on the use of and impacts, including environmental impacts, from UAS in Antarctica is made available and further developed in conjunction with SCAR and others, the recommendations and appendices are expected to evolve.

RELEASE NOTES AND RECORD OF AMENDMENTS

Version 31 March 2016

What we do?

COMNAP

Provide Practical and Technical Advice

International Partnerships

Forum – Develop Best Practice & Information Exchange

- Search & Rescue III Workshop (June 2016)
- Wintering-over Challenges Symposium (August 2016)
- UPCOMING: Energy & Technology session (August 2017)
- FUTURE: Symposium Davos, Switzerland (June 2018)

COMNAP Antarctic Roadmap Challenges (ARC) project





Technology

Infrastructure

Access

Cost

International Collaboration

Antarctic Science, volume 28, issue 6
http://dx.doi.org/10.1017/S0954102016000481

Key general points to note were:

- Status of critical technologies: 1/3 scientists said they **did not have access to critical technologies which already existed** .
- More-effective use of existing facilities amongst community.
- Greater ability to **rapidly deploy science teams to rapidly changing areas** of the Antarctic region to collect benchmark observations (West Antarctica).
- No one country can do Antarctic research alone.
- Antarctic community must engage with “external” science & technology communities.

Chuck Kennicutt, Immediate Past SCAR President
Yeadong Kim (KOPRI/COMNAP)
Kazuyuki Shiraishi (NIPR/COMNAP)
Michelle Rogan-Finnemore (COMNAP)

COMNAP Antarctic Infrastructures Project

Station

EU-POLARNET | COMNAP | INTERACT — **STATION FORM**

Background

Station code	CO1102
Facility name*	Concordia
Website	http://www.institut-polaire.fr/ipev-en/infrastructures-2/st
Location	Antarctic
Current status of facility*	Open
Operating country*	France
INTERACT Status	None
Type*	Station
First opened/Opening year (yyyy)*	2005
Operational period*	All year

Data source

Contact person*	Yves Frenot
Email*	yves.frenot@ipev.fr
Date of last update (dd/m/yyyy)*	

Introduction

Facility name and operator*	Concordia station is jointly funded, staffed and operated by Italy (Programma Nazionale di Ricerche in Antartide - PNRA) and France (French Polar Institute Paul-Emile Victor - IPEV)
Location*	Concordia station is located at Dôme C, on the high East Antarctic plateau. The site is one of the coldest and among the most remote places on Earth. Among the permanent stations in Antarctica, only 3 are located inland the continent (Amundsen-Scott, Vostok and Concordia). The closest stations are Dumont d'Urville and Mario Zucchelli

Operator/Manager

Facility operator/ manager*	Institut Polaire Francais (IPEV)
Type of entity*	Government
Other type of entity	
Institution managing/ operating the facility*	Institut Polaire Francais (IPEV)
Contact facility*	stationleader@concordiastation.aq
Website (operator)	http://www.institut-polaire.fr/language/en/

Partner Institutions

Partnership	Yes	Partner institution name	ENEA / PNRA
Partner country	Italy		

Location

Latitude*	75° 06´ 06. ´´S	Region*	Continental Antarctica
Longitude*	123° 19´ 95. ´´E	Antarctic environmental domain	East Antarctic high interior ice sheet
Altitude of facility (m)*	322		
Min Altitude within study area (m)			

Concordia

Institut Polaire Francais Paul Emile Victor /
Programma Nazionale Di Ricerche in Antartide

75°06'06"S 123°19'95"E

Type: Station

Operational period: Year-round

Location

Concordia station is located at Dôme C, on the high East Antarctic plateau. The site is one of the coldest and among the most remote places on Earth. Among the year-round stations in Antarctica, only 3 are located inland the continent (Amundsen-Scott, Vostok and Concordia). The closest stations are Dumont d'Urville and Mario Zucchelli.

Biodiversity and natural environment

Dome C is 1100 km from the coast at a height of 3233m a.s.l., surrounded by thousands of kilometers of solid ice. Temperatures hardly rise above – 25°C in summer and can fall below – 80°C in winter with record of – 84.6°C reached in 2010. As a consequence, there is no fauna and no flora.

History and facilities

The idea of constructing a European permanent research station in the heart of Antarctica, with an environment particularly hostile for humans, sprang up when the site at Dome C was revealed to be especially favourable for deep ice coring and astronomy. This scientific challenge is accompanied by another, parallel adventure: the design and construction of a modern station, capable of yielding new scientific knowledge concerning not only Antarctica, but also concerning the whole our planet and beyond, the Universe. IPEV and PNRA have therefore pooled their skills and know-how, resources and combined operations to develop this new station between 1999 and 2005. Concordia has been continuously occupied since that time.

CLIMATE	
Climate zone	Inland Antarctica
Permafrost	None
Mean annual wind speed (km/h)	10.8
Max wind speed (km/h)	114.8
Dominant wind direction	S
Sea Ice Break Up	
Snow free period	None
Total annual precipitation (mm)	
Precipitation type	Snow
Mean annual temperature (°C)	-52.1
Mean temperature in February (°C)	-43.7
Mean temperature in July (°C)	-64.2
ENVIRONMENT	
Region	Continental Antarctica
Antarctic environmental domain: D – East Antarctic high interior ice sheet	
Antarctic Conservation Biogeographic Region:	
Attitude of facility (m)	3220
Type of surface facility built on	Ice-sheet
Long term monitoring	Yes
Waste management	Yes
Hazard(ous) management	Yes
Fuel spill response capability	Yes

CONCORDIA

General research and databases

The research projects implemented at Concordia are linked to many subjects involving societal concerns, such as climate change, the role of greenhouse gases or aerosols in past and present trends or the hole in the ozone layer. Beside the EPICA ice-core, which was completed in December 2004 and extended the record of climate variability to around 800,000 years BP, Concordia remains an active site for glaciology. Dome C also offers an exceptional environment for astronomical observations and provides good conditions for calibration and validation of sensors embarked on polar orbit satellites. Observatories in seismology, geomagnetism, or Earth-Sun interactions are present. Concordia station itself is also considered as an excellent Earth-based analogue for orbital space stations or Mars-bound vessels and projects in collaboration with ESA are implemented.

Features in the facility area

Clear air zone, Ice cap or glacier, Low artificial light pollution, Low humidity, Plateau, Sustrugi.

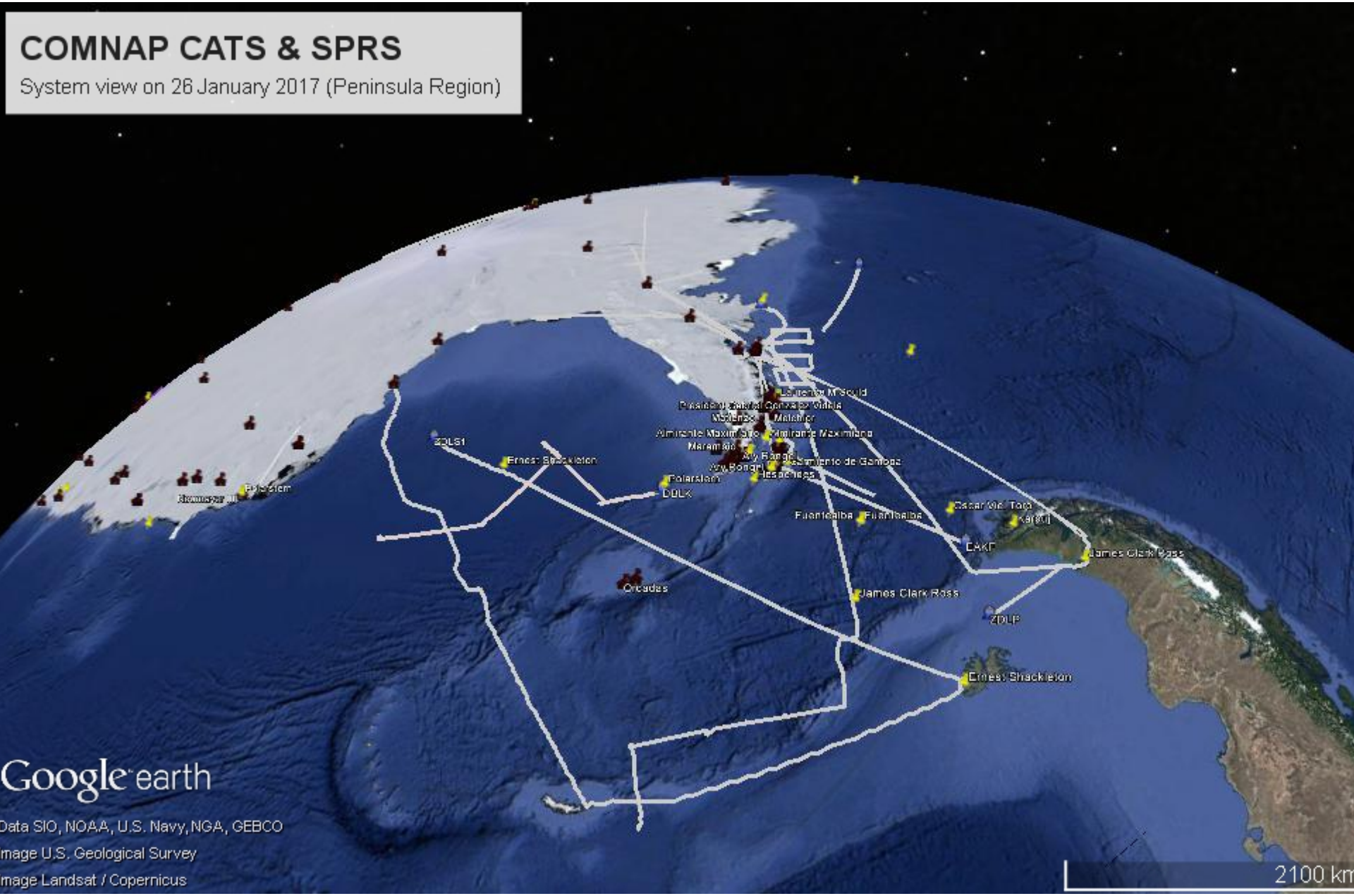
Main science disciplines

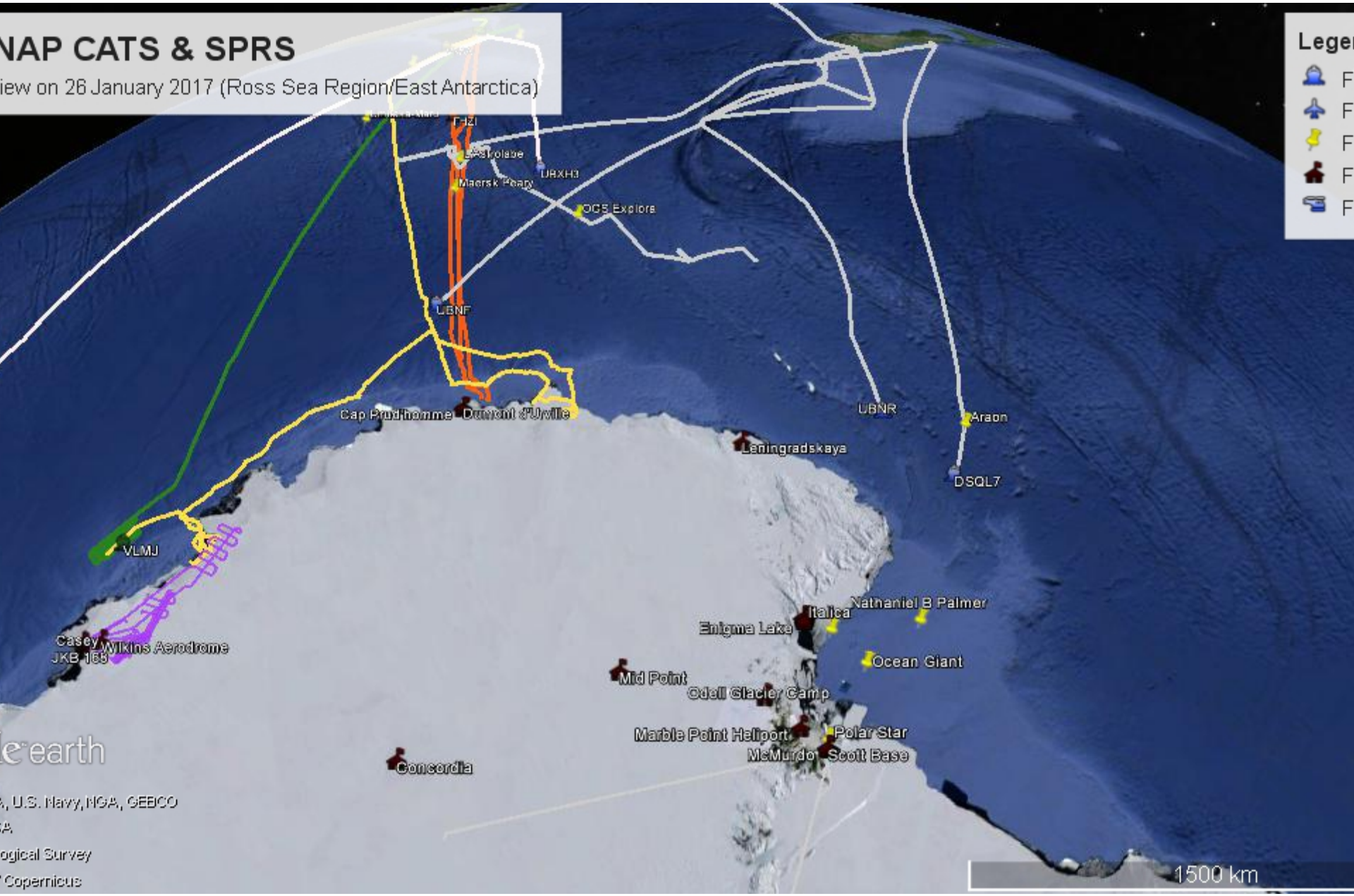
Astonomy, Astrophysics, Atmospheric chemistry and physics, Earth Observation, Engineering, Environmental sciences, Geophysics, Glaciology, Human biology, Medicine, Microbiology, Paleoclimatology.

Photo Programma Nazionale Di Ricerche in Antartide

Photo Dale Le Date

FACILITIES INFRASTRUCTURE	
Area under roof (m²)	3605
Area scientific laboratories (m²)	748
Type of scientific laboratories: Astronomy, Chemistry, Geophysics.	
Conference room (capacity)	
Logistic area (m²)	2856
Number of beds	80
Showers	Yes
Laundry facilities	Yes
Power supply type	Fossil fuel
Power supply (V)	230
Power supply (hours per day)	24
Hydroponics facilities	No
Number of staff on station (peak/summer season)	35
Number of scientists on station (peak/summer season)	35
Number of staff on station (off peak/winter season)	8
Number of scientists on station (off peak/winter season)	5
Max number of personnel at a time (staff, scientists and others)	80
Specific device/Scientific equipment: No basic scientific equipment. Each project should bring its own necessary scientific equipment.	
Scientific services possible: A scientific engineer (electrician) is appointed in winter for monitoring and maintenance of automated programs.	
Long-term monitoring/observations: Earth magnetism (INTERMAGNET Network), Seismology (GEOSCOPE Network), Stratospheric ozone, SuperDARN (Super Dual Auroral Radar Network), Glacier mass balance, Baseline Surface Radiation Network (BSRN), meteorology (incl. Radio-sounding).	
MEDICAL FACILITIES	Yes
Area of medical facility (m²)	120
Staff with basic medical training or doctor (Summer)	2
Staff with basic medical training or doctor (Winter)	2
Capability: Basic, Dental, Surgery	
Equipment: Altitude medicine, Anaesthesia, Biochemistry, Diagnostic ultrasound, Diagnostic X-ray, Haematology, Laboratory diagnostics, Telemedicine, Echography.	
Distance to hospital (km)	5000
Closest emergency facility in Antarctica (km)	1100
Closest emergency facility external (km)	5000
Medical research capabilities	Yes
Medical screening requirements	Yes
VEHICLES AT FACILITY	
Sea transportation:	
Land transportation: One 4WD, two snow groomers, five skidoos, one tracked loader, one telehandler, one tractor during summer, bicycles.	
WORKSHOP FACILITIES	
ICTS, Mechanical, Metal workshop, Wood workshop.	
COMMUNICATIONS	
Computer, E-mail, Internet, Satellite phone, Telephone, VHF	
TRANSPORT AND FREIGHT	
Access	Air, Land
Transport to facility: Airplane, Traverses from Cap Prudhomme.	
Number of airstrips	1
Length (m) of longest runway	2000
Width (m) of longest runway	50
Number of flight visits per year	20
Period of flight visits per year: January, February, November, December	
Helipad	No
Number of ship visits per year	
Period of ship visits per year:	
Ship landing facilities:	


COMNAP CATS & SPRS
System view on 26 January 2017 (Peninsula Region)
Google earth
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image U.S. Geological Survey
Image Landsat / Copernicus
2100 km


NAP CATS & SPRS
iew on 26 January 2017 (Ross Sea Region/East Antarctica)
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F-IZI
Astrolabe
UBXH3
Maersk Peary
OCS Explora
LBNF
Cap Prudhomme
Dumont d'Urville
UBNR
Araon
Leningradskaya
DSQL7
VLMJ
Casey
JKB 165
Wilkins Aerodrome
Nathaniel B Palmer
Italica
Enigma Lake
Ocean Giant
Mid Point
Odell Glacier Camp
Marble Point Heliport
Polar Star
McMurdo
Scott Base
Concordia
earth
, U.S. Navy, NGA, GEBCO
A
ogical Survey
Copernicus
1500 km


Thank you!
www.comnap.aq
Photo: INACH