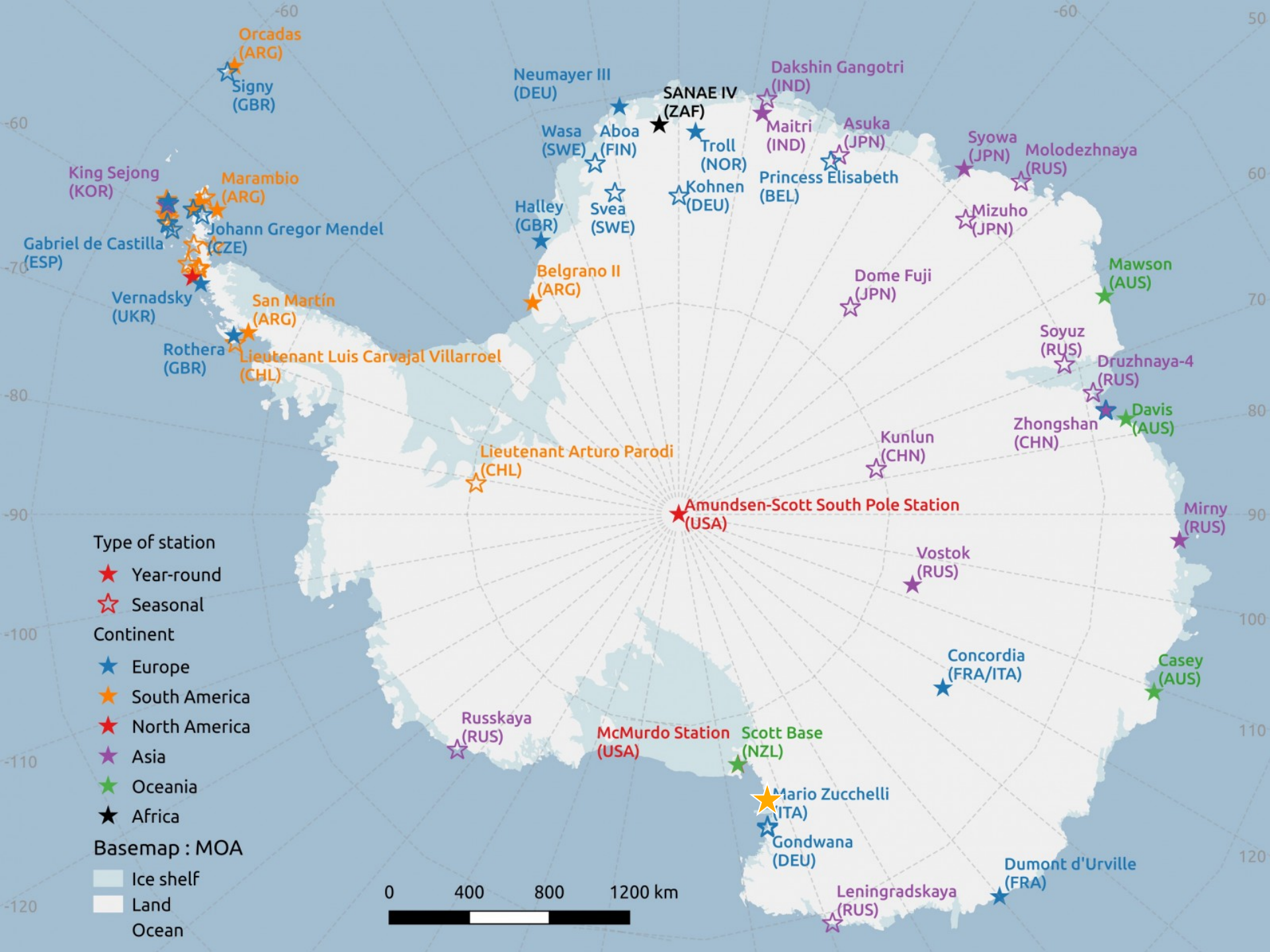
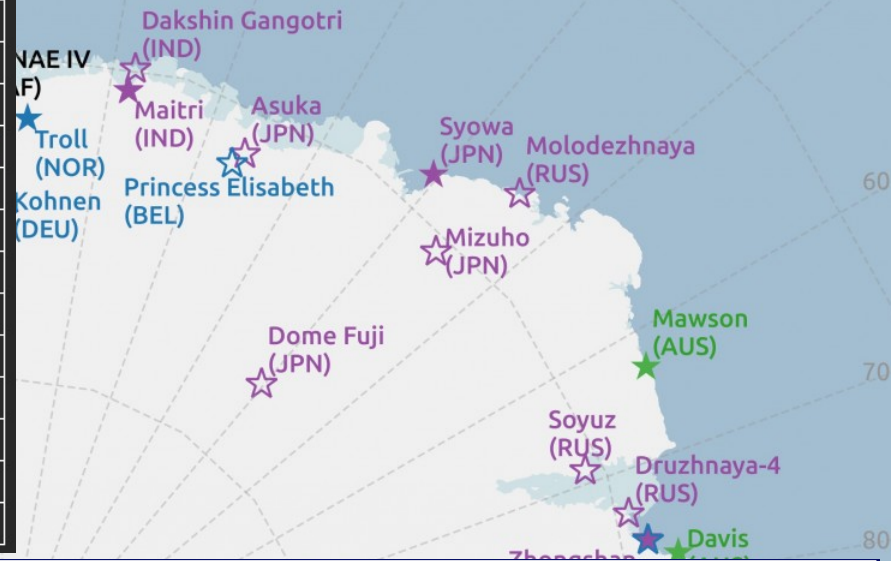


Antarctic Activity Plan of KASI

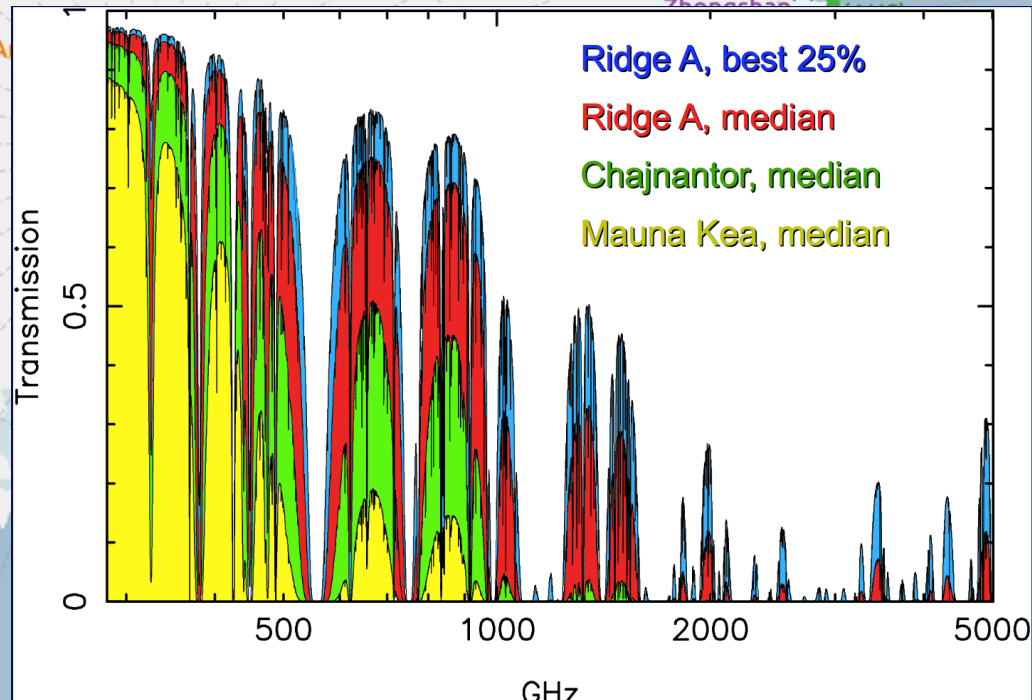
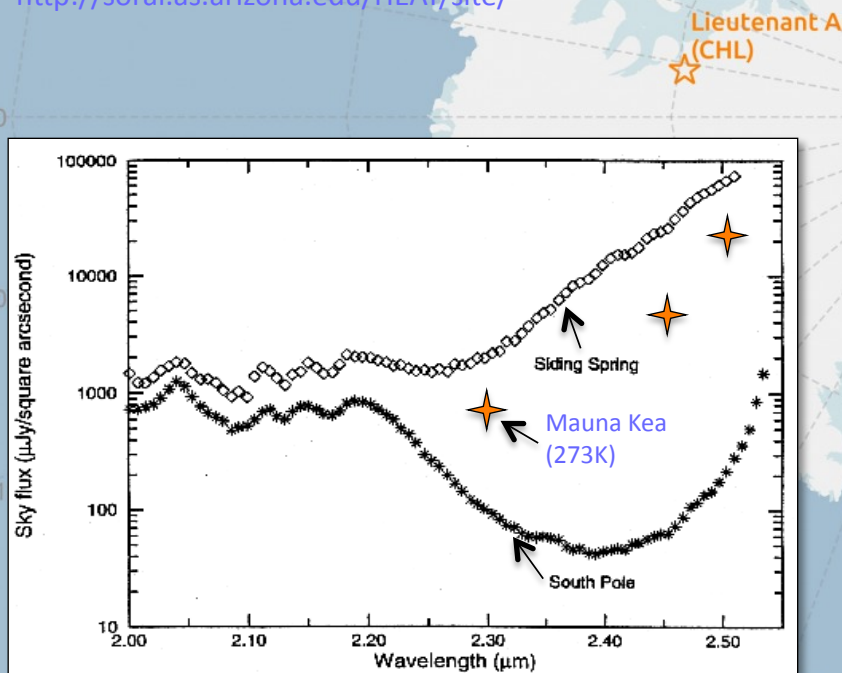




Characteristic	Ridge A advantage
Clear	No clouds >80% of the time
High	>13,000 ft elevation for 100 miles
Dry	Super-dry polar desert (winter PWV is 0.1 mm)
Cold	Winter temperature -100F, mid-summer a balmy -30F.
Clean	Cleanest air on Earth, few aerosols, little scattering
Dark	Almost 6 months of continuous darkness
Good atmospheric seeing	~0.2 arcsec above a ~15m ground layer
Stable climate	No prevailing weather, seemingly constant
Minimal lightning	What's lightning?
Low wind throughout atmosphere	No jet stream, calm surface winds (4 knots avg)
Low seismic activity	Seismically quiet
Accessible	Land a plane right next to your telescope!
Continuous observing possible	Most southern astronomical objects are circumpolar



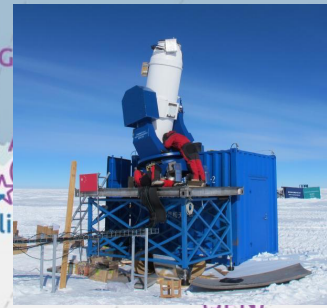
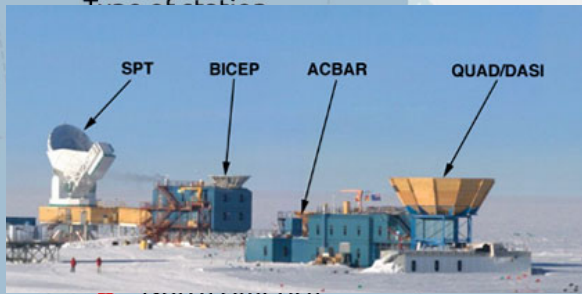
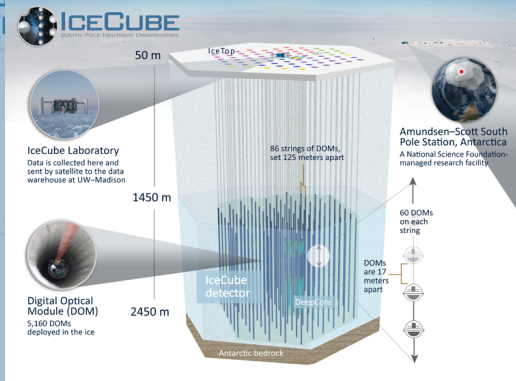
<http://soral.as.arizona.edu/HEAT/site/>



Ashley et. al, 1996 (from A. Moore's slide)

Land
Ocean





Sejong (1988)



Jang Bogo (2014)



Araon (Icebreaker)



KONPOR: Korea National Committee on Polar Research

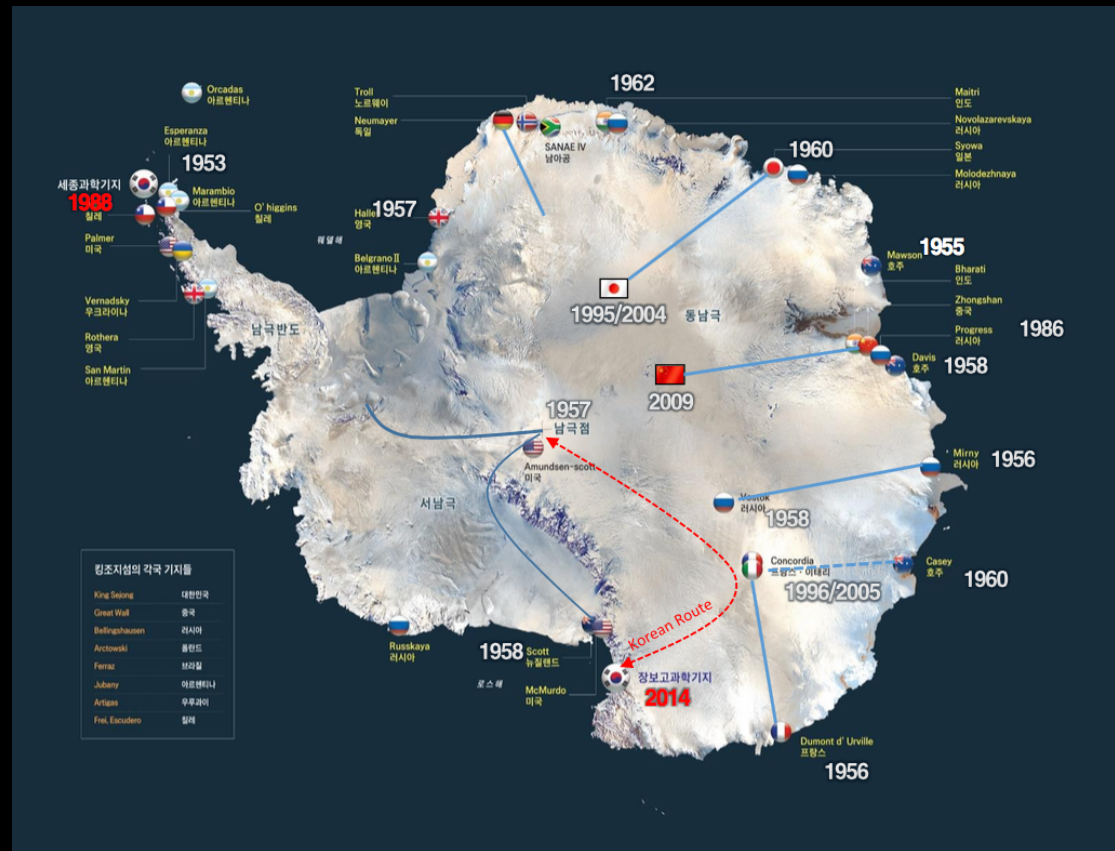
KOPRI: Korea Polar Research Institute

KIOST: Korea Institute of Ocean Science and Technology

KIGAM: Korea Institute of Geoscience and Mineral Resources

...

Universities, Academic societies, ...



KOPRI: K-Route Development Project

To develop a route from Jang Bogo Station → Dome C → South Pole

- 1st phase (2017-2020) : Jang Bogo Station → Dome C (1500 km)
- 2nd phase (2021-2023) : Dome C → South Pole (3000 km)
- 3rd phase (2024-2026) : Converged Exploration

- Finding and developing the route
- Study on the deep part of glaciers, lakes under glaciers by drilling of glaciers

K-Route (KOPRI)



South Pole

2021 -

DIC camp

Dome C

2018 - 2020

Plan B

Plan A (JBS – 500km)
- Snow Vehicle, 5-10km/h

Plan A

SGL camp

1000km

500km

2016 - 2017

JBS

300km

GPR 탐사



Plan B (JBS – 1,500km)
- A/T scouting, 30-50km/h



Science Subject Candidates of KASI

- ◆ • **THz Radio telescope:** VLBI (+ KVN, ALMA, JCMT), Astrochemistry
- ◆ • **Space Weather:** GPS scintillation monitor (2015. 12~), All-sky imager (2016. 12~), Neutron monitor, Ionosphere Physics, ...
- ◆ • **(IR: K_{dark} Band)**
- ◆ • **Solar Telescope:** Balloon (Aerostat), Coronagraph, High Speed Imaging Spectrometer
- ◇ • **(CMB: Lensing Field, Gravitational Wave)**

KARCASS: KASI Antarctic Research Center for Astronomy and Space Science



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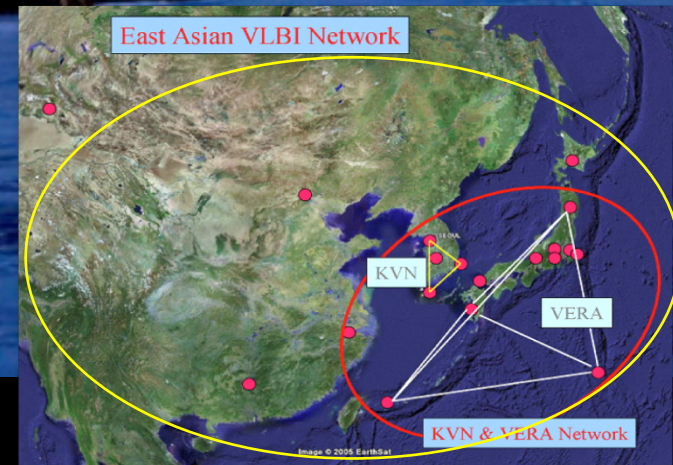
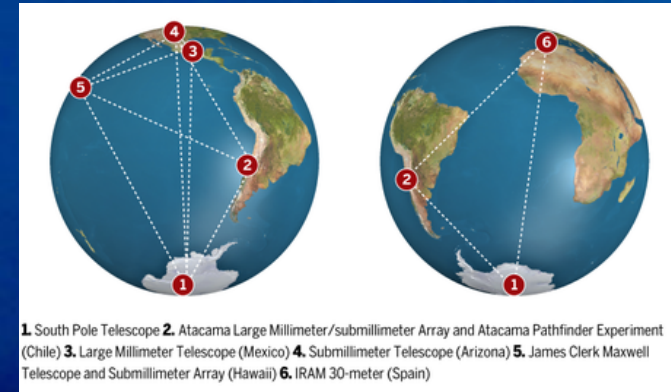
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◆ VLBI (≥ 230 GHz) Antenna / THz Radio Telescope



GLT (Green Land Telescope) for EHT (SAO/ASIAA)



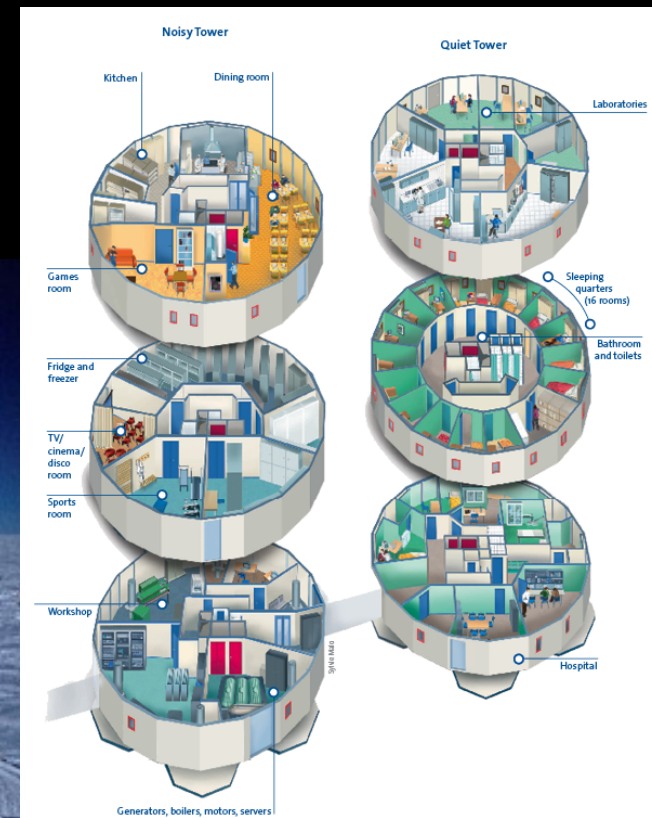


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Halley VI Antarctic research station by Hugh Broughton Architects comprises eight modules on extendible hydraulic legs. The World's First Modular Research Station in Antarctica Can Climb Through Snow. Module C connected to Module E1 at the Halley research station, Antarctica. The glass window seen here is insulated with a silica aerogel between two panes of glass. (Credit: BRITISH ANTARCTIC SURVEY/SCIENCE PHOTO LIBRARY)

Concordia at Dome C





ASTRO Sciences

Science

- Facilitate larger scale international projects (e.g. next gen. CMB, FIR, IR etc.)
- Investigate new science from multi-base applications (e.g. THz Interferometry, 100% temporal coverage)
- Investigate Antarctica as a window to the skies for satellite traffic management
- Enable wider scale data sharing
- Ensure SCAR is on every publication

Collaboration

- Improve access and awareness of projects with strong emphasis on non-SCAR member communities
- Enable knowledge sharing between member and non-member communities
- Create YouTube channel dedicated to knowledge dissemination
- Bring researchers from bases closer in contact, especially those deploying with experiments

Outreach

- Build Antarctic Astronomy globally e.g. in Latin America
- Provide coordinated outreach on international stage
- Raise public awareness internationally
- Provide updates/alerts/twitter feed

◆ Estimated Budget

First Science Activities

- VLBI/THz Radio telescope, Space Weather, IR, Solar Telescope, ...
- Jang Bogo Station, Along the K-Route
- Astronomical Site Search/Test
- 약 5-10 억/년 (2-3 년간) (? KASI + KOPRI)

KARCASS: KASI Antarctic Research Center for Astronomy and Space Science

- Comprehensive Astronomy/Space Science Platform: Construction - 5years
- 총액: 약 1000-2000 억 / 5 년간 (다부처사업: 과기부, 해수부, 국토부,...)

