

Antarctic uniquely advantageous for both optical and thermal astronomy

1. Thermal

- 3-4 μm background 50 times less than other sites
- 10 μm background 10 times less
- spectroscopic sensitivity of 20 m telescope over most of 3-5 μm same as JWST, higher for shorter wavelengths

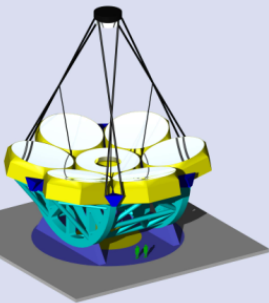
2. Optical

- Low wind speed (~ 2 m/sec) on high plateau
- Clear sky ($\sim 70\%$)
- Current data from South Pole suggest little atmospheric turbulence above 100 m.

If so, an adaptive secondary conjugated to ~ 100 m will give wide, diffraction-limited field of view. (High turbulence limits the field of view at other sites.)

Dome C measurements will show how much this improvement will be.

Giant Magellan Telescope (GMT)



Antarctic copy of GMT

~20 years away (so time to learn from smaller prototypes)

Angel proposal to NSF in June 2004 to look at tall tent poles

- Effective diameter for collection 21.5 m, for resolution 24 m
- Seven 8.4 m segments
- 18m Focal Length primary
- F/10 Gregorian adaptive secondary (only 2 warm reflections, so low thermal emission from telescope)
- Current partners: Carnegie, Harvard, MIT, Arizona, Michigan, more welcome
- Aim for completion in 2015
- Site: Chile

<http://helios.astro.lsa.umich.edu/magellan/>