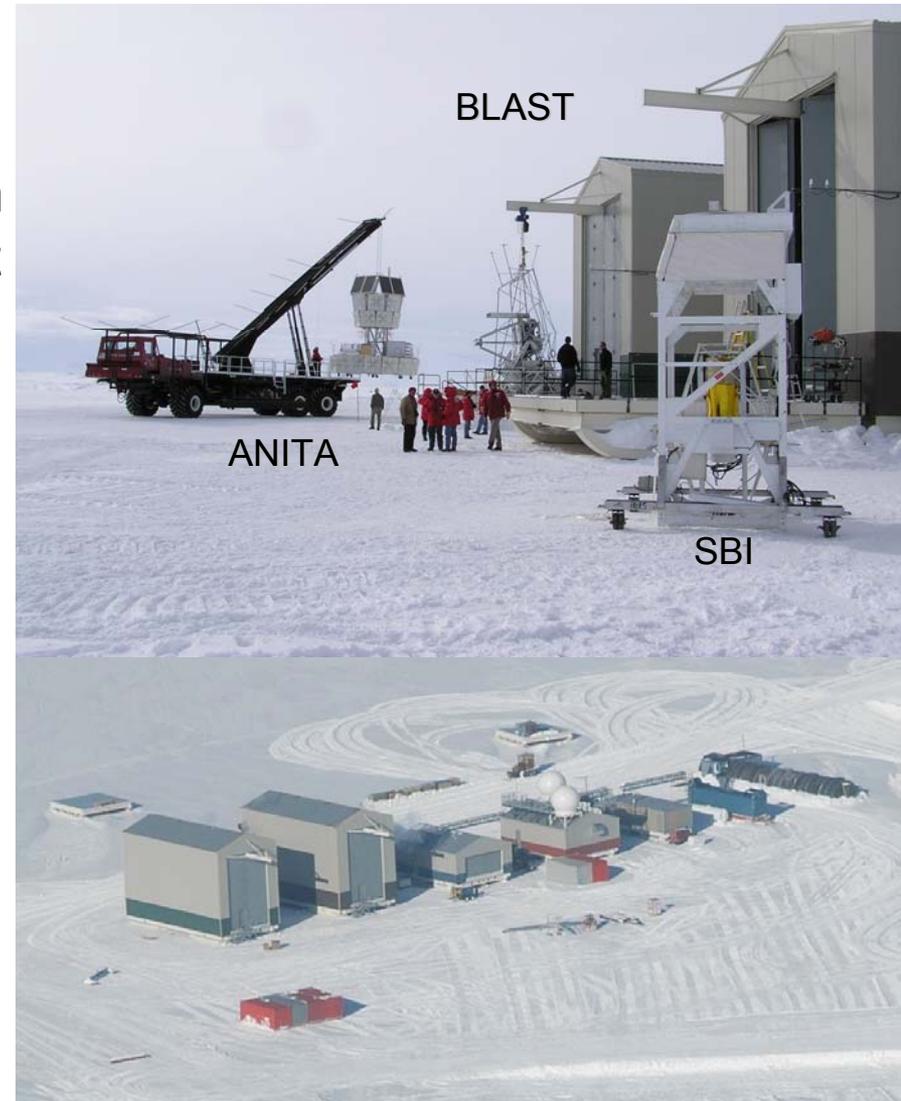


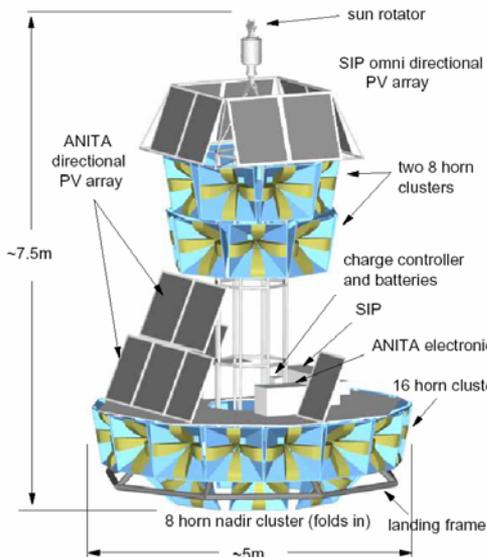
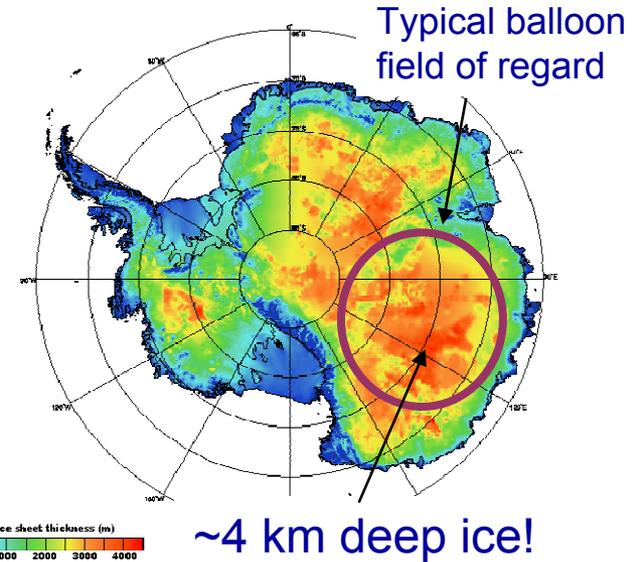
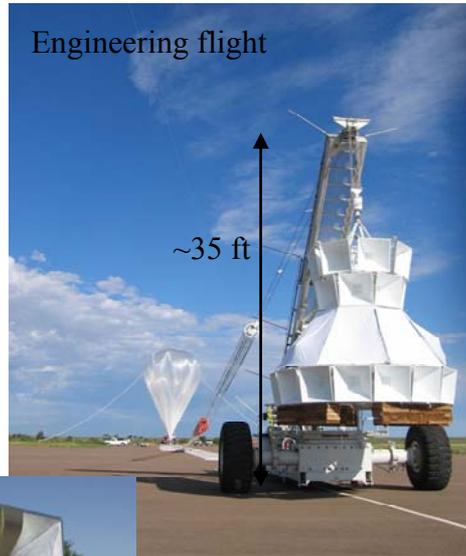
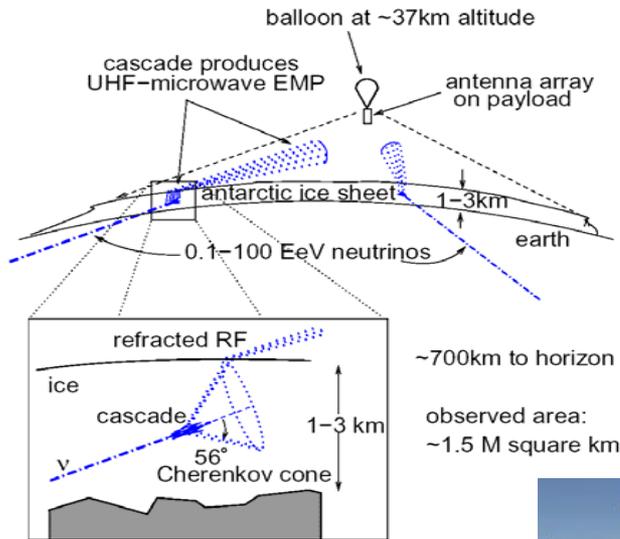
# New LDB Facilities in Antarctica

- Three LDB launches in FY 2007 were enabled by the new facilities first used in FY 2006 (Dec. 2005)
  - 3 payloads in 2 payload buildings in FY - 07 did not have commitment that it would be done again
- Three payloads have again requested flights in FY 2008
  - Studies are underway to check whether they would be compatible
  - They would have to share the two existing payload buildings
- NASA is hoping that 3 Antarctic LDB payloads can be become routine, but NSF agreement and money are needed
  - A third payload building would have to be added

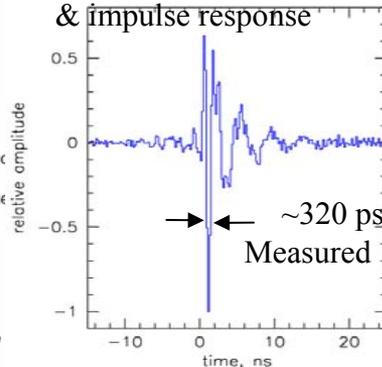


# Antarctic Impulsive Transient Antenna (ANITA)

Peter Gorham, U. Hawaii, PI



Quad-ridge horn Antenna & impulse response



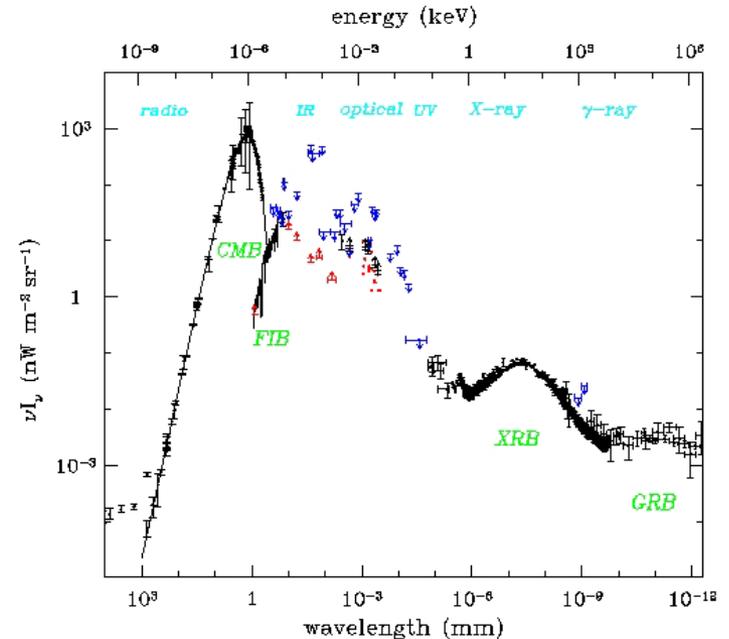
- NASA SR&T start in 2003
- 18-day Prototype flight (ANITA-lite 2004) verified ultra-low Antarctic EMI levels
  - Physical Review Letters, in review, astro-ph/0512265
- Full-scale engineering flight (ConUS) in Aug. 2005, flight system proven
- Antarctic flight 2006-2007 will give 2 - 3 orders of magnitude improvement in sensitivity!

# Balloon-borne Large Aperture Sub-mm Telescope (BLAST)

Mark Devlin/U. Penn., PI (6 Co-I Institutions)

BLAST will:

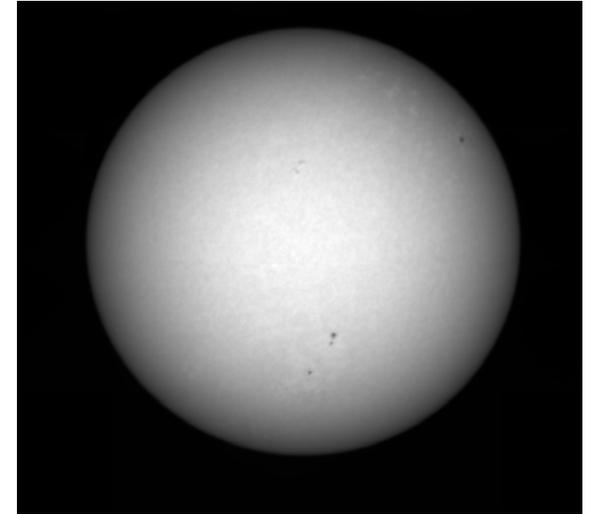
- Explore the sub-mm background
- Identify the galaxy populations producing the far-IR and sub-mm backgrounds
  - Determine amplitude of clustering on scales of 0.1 - 10 deg.
- Measure the 250 - 300 micron Spectral Energy Distributions of sub-mm galaxies
  - Determine rest-frame luminosities and star formation rate
- Place strongest constraints to date on evolutionary models and global star formation history of starburst galaxies at high red shift
- Conduct surveys of diffuse interstellar emission, molecular clouds, and identify dense pre-stellar cores associated with earliest star formation stages
- BLAST flew for 4.2 days from Kiruna, Sweden to Canada in June 2005
  - Did not meet objective: Herschel precursor



# Solar Bolometric Imager (SBI-2)

Dave Rust/JHU-APL, PI

- New design solar telescope that **images** solar photosphere with **non-selective spectral response** over 0.25 – 2.6 microns, i.e. 94% of total Solar Irradiance (TSI), with  $\sim 5$  arcsec resolution
- Optimized for directly measuring **brightness contrast** of photospheric structures such as faculae, network, umbrae, penumbrae, thermal shadows, and other brightness in-homogeneities
- Does not require absolute accuracy, nor long term reproducibility
- Complementary to space based radiometers like ACRIM and VIRGO which provide **highly reproducible** TSI measurements over the same wavelength range **but no angular resolution**
- SBI-2 will study sources of TSI variation at sunspot minimum
  - Local magnetic fields are weakest
  - Allows understanding of long-term TSI variation



# FY2007: First time 3 LDB payloads flown in Antarctica

- ANITA - Peter Gorham, U Hawaii, PI
  - 35 days, 3 ½ circumnavigations
  - Science and Operations Success
  - Payload recovered in single aircraft flight
- BLAST - Mark Devlin, U Penn, PI
  - 11 days, 1 circumnavigation
  - Science Level 1 Requirements were met, and science data vault recovered
  - Parachute release system failed, and payload damaged. Recovered highest valued components (mirror & cryostat)
  - Currently investigating the termination system failure
- SBI - Applied Physics Lab., Dave Rust, PI
  - The payload experienced a command and control failure during ascent

