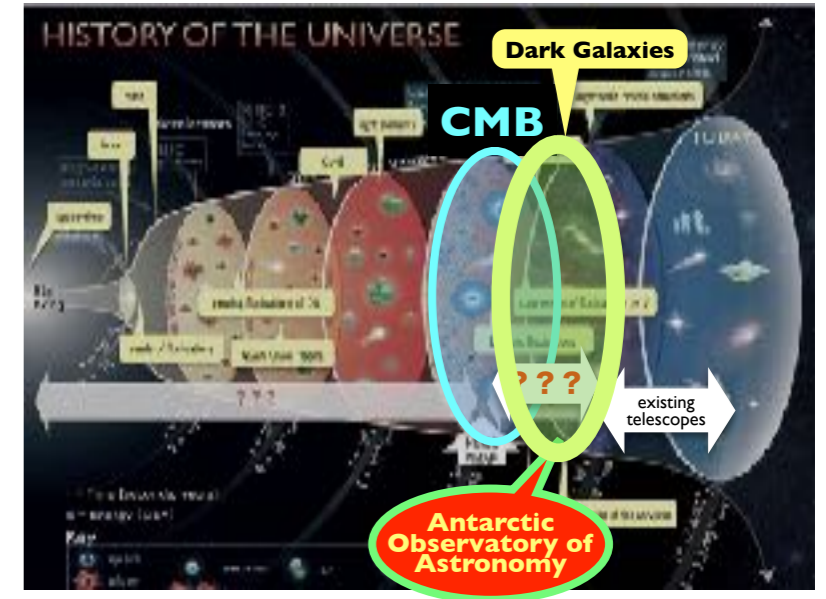


Antarctic Observatory of Astronomy

- ◆ Present Universe is in an ionized plasma state. On the other hand, it was neutral 0.3 Bi. years ago as the CMB is observable.
 <= Ionization due to UV radiation from the stars.
- ◆ Existing telescopes could identify only 30% of required stars/galaxies.
 Remaining 70% -- "dark galaxies" -- should be found in the deep space.
- ◆ To understand the formation of galaxies, stars, and life, it is indispensable to clarify the ionization mechanism.



★ Deep-space exploration by THz Telescope at Antarctica

◆ Step 1: 10m THz Telescope

Due to the expansion of the Universe, lights from the deep-space are in the THz range, which are dumped by the water vapor in the atmosphere.

=> **Antarctica with its extremely low humidity is the only place on the Earth where THz waves are observable.**

Wide angle survey up to 12.6 Bi. years ago by 10m telescope. Recommendation by SCAR (2010). Combining with the IR observation by the rocket/satellite experiment of the cosmic neutrino background project, we clarify the whole spectrum to determine the character and distance of dark galaxies.

Planned site: New Dome Fuji (3800m, Japan)

◆ Step 2: 30m THz Telescope

Survey up to 13.6-13.7 Bi. years ago.

=> **Direct observation of first stars and galaxies.**

Based on the experience of 10m telescope.

Planned site: New Dome Fuji (3800m, Japan)

