

JAPANESE ACTIVITIES RELATED TO (RADIO) ASTRONOMY IN THE ANTARCTIC

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Japanese activities related to radio astronomy in Antarctica are briefly reviewed.

1. Very long baseline interferometry (VLBI)

The Japanese base, Showa, is located on the coast and is based on rocks rather than ice. A 10 metre diameter microwave antenna has been built at the Showa station and a series of VLBI experiments have been made between the Showa base and a station in Japan in 1988–1989. The experiments have been geophysically motivated and an accurate measurement of the location of the Showa base was determined relative to Japan, which has a well determined position relative to other continents.

From the astrophysical viewpoint, VLBI experiments including the Showa station are quite efficient in getting a long north-south baseline, which is desirable for astrometry in the southern hemisphere.

2. A 60-cm (sub-) millimetre telescope

A group in the Communication Research Laboratory, Tokyo, is building a radio spectrometer system with an offset 60 cm main reflector (a copy of the Tokyo-Nobeyama 230 GHz Galactic Survey Telescope), which will be set in the Showa base in 1994–1995 to monitor ozone and other species in the earth's atmosphere. The receiver will cover a frequency range of 210–280 GHz. The telescope will also be used for astronomical observations of molecular clouds in the Galaxy and Magellanic clouds.

3. Future

Although the astronomical activities stated above are relatively limited, there is general interest in Antarctic astronomy within the Institute for Polar Research, the governmental institute which organizes Japanese scientific activities. Among several topics of conversations between scientists in the Institute and astronomers outside is a plan to build a medium-sized (a few to ten meters) submillimetre telescope at a good site.