Current Status of the Mizusawa 10m Radio Telescope

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Nano-JASMINE satellite

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# Performance of the Mizusawa 10m Telescope

## 1) Antenna & Receiver
- **Main reflector**: 10.0m, surface accuracy: 0.34mm (rms)
- **S Band HPBW**: 54', aperture efficiency: 38%, Tsys: 180K
- **X Band HPBW**: 13', aperture efficiency: 63%, Tsys: 100K
- **22GHz Band HPBW**: 5.2', aperture efficiency: 36%, Tsys: 130K
- **43GHz Band HPBW**: 2.7', aperture efficiency: 25%, Tsys: 200K

## 2) Driving ability
- **Max. slew speed**:
  - AZ: 3.14°/sec
  - EL: 3.06°/sec
- **Max acceleration**:
  - AZ: 3.78°/sec²
  - EL: 3.71°/sec²
Nano-JASMINE

• Mizusawa 10m radio telescope will be used as the down link station of Nano –JASMINE satellite with S band 3-4 times every day.
  • URL: http://www.jasmine-galaxy.org/nano/nano-ja.html

• Nano-JASMINE is a small satellite aiming at Japanese first space astrometry, and it would be launched next year(?).
Japanese VLBI daily monitoring of our galactic center

- Mizusawa 10m radio telescope participated in the 22GHz daily VLBI Monitor observation.
  Recording system: VSSP32
  Band Width: 32MHz
  Sampling Rate: 128Mbps
  Feb 11, 2013 – August 21, 2014 (284days)

Motion of G2 cloud near SgrA*
Gillessen et al. 2012 Nature
Japanese VLBI daily monitoring of our galactic center

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Looking from SgrA*

Daily
Short baselines (80～300km) @22GHz

Mizusawa 10m
Ibaraki 32m
Kashima (NICT) 34m
Tsukuba 32m

Gifu 11m

200km
The results for 284 days have been published to APJ Letters in 2015 Jan. 1.

Fig. 1.—The light curve of Sgr A* at 22.2 GHz with the JVN monitor (filled circles). The horizontal axis is the elapsed day (DOY) from 1 Jan, 2013. The monitor had been performed from Feb. 25, 2013 to Aug. 12, 2014. The error bars show only statistical errors ($\pm 1\sigma$) of each data. We have observed no significant enhancement of the flux density of Sgr A* at 22.2 GHz in the whole monitor epoch. Open circles shows the flux densities of Sgr A* at 21.2 GHz from the NRAO public data.
Summary

We have been improving the observation system of the Mizusawa 10m radio telescope for down link of the Nano-JASMIN observations.

Sgr A* daily VLBI monitoring observations together with JVN telescopes have been done for 284 days to check the G2 cloud event. The results have been published to APJLs in this January.