

Progress Report of Mingantu Observing Station of NSSC

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Mingantu Observing Station of National Space Science Center, Chinese Academy of Sciences (NSSC), is located in Mingantu Town, Inner Mongolia of China, about 400 km northwest from Beijing. The main facility at Mingantu Observing Base is the Mingantu Spectral Radioheliograph (MUSER), which is an aperture-synthesis imaging telescope, dedicated to observe the Sun, operating on multiple frequencies in dm to cm range[1]. MUSER is composed of two arrays of 40 4.5m antennas covering 400MHz -2 GHz, and 60 2m antennas covering 2 - 15 GHz including outdoor devices with antennas, LNBS, and indoor devices including receivers, and correlators, etc. The building constructions at Mingantu Observing Base have just finished in 2019. During 2014-2019, about 94 solar radio burst events have been registered by MUSER. Recently, MUSER also records some new events.

The project to extend MUSER to 40-400 MHz frequency regime with 224 log-periodic dipole antennas and construction of a new 3-site Interplanetary Scintillation (IPS) telescope [2] with the main site having three 140 m by 40m cylinder antennas at Mingantu Observing Base and 2 sub-sites having 30 m parabolic antennas ~200 km apart have been approved and are under construction due to complete this year. Figure 1 shows the MUSER arrays and buildings at Mingantu Observing base, Inner Mongolia of China.



Figure 1. Up left panel: Central part of MUSER arrays; Up right panel: Mingantu Observing Base buildings; Lower left panel: Design of three 140m×40m cylinder antennas; Lower right panel: Construction process of extension of MUSER in decametric waverange.

References

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- [2] Yan, Y. H., Wang, W., Chen, L. J., Liu, F., Geng, L. H. and Chen, Z. J. (2018), “New Interplanetary Scintillation Array in China for Space Weather,” *Sun and Geosphere*, **13**, pp. 153-155, doi:10.31401/SunGeo.2018.02.05.