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Science and innovation from the Moon: Radio antenna precursor observations

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In coordination with ILEWG EuroMoonMars, a number of radio antenna tests have been carried out and analysed for solar observations. The instrument used for this data collection is the radio Jove, connected to a single dipole antenna at a set height. Data is recorded using a software program known as Radio-SkyPipe and the audio from the observations is analysed in person by the operator and recorded using livestreaming platforms for later analysis. Noise is a major factor while trying to operate this device, as such, a quiet location and fine tuning is essential for isolating the favoured frequency range. Solar activity plays a major role in the success of the device. While carrying out solar observations, the sought after transmissions are from solar bursts and flares. These transmissions can be very difficult to capture as a result of low solar activity, up-time of the device and external noise. The device has been tested in a number of locations in Leiden, Netherlands and will be later tested on on lunar volcanic ash analogue in Cratere di Laghetto, in Mount Etna, Catania, Sicily. As a result of observations to date, a solar burst has been isolated for later analysis. In the near future, the device will be used for Jupiter observations. This data will be analysed and compared to data which has been obtained through solar observations in order to see the changes between the two transmissions. We shall learn from this EMM-Etna field tests to prepare the analysis of DLR-ESA ARCHES Etna 2022 tele-robotic campaign that will deploy with rovers an array of 4 radio VLF antennas, among a number of rover science and technical tasks.

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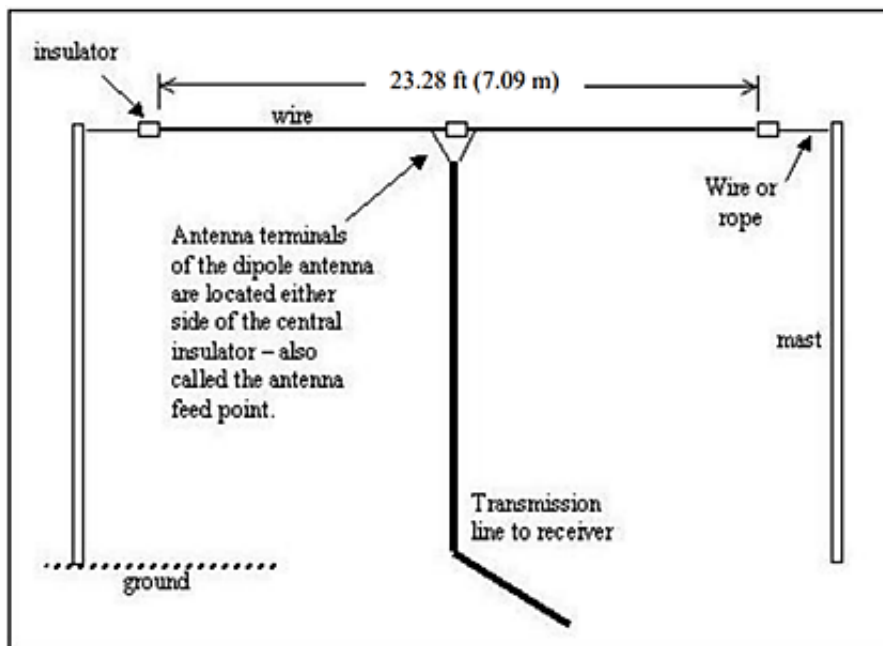


Fig. Single dipole set-up for solar, jovian and cosmic observations