

Interactive comment on “Planetary Radar Science Case for EISCAT 3D” by Torbjørn Tveito et al.

Anonymous Referee #2

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The present manuscript describes the capabilities of the new EISCAT 3D radar to perform planetary radar science. In particular, the manuscript explains that lunar mapping is a plausible application for the EISCAT 3D radar and that there would be multiple opportunities to conduct this type of observations in the following years. The document conducts a comparison between expected results for the EISCAT 3D radar and lunar measurements conducted with the Jicamarca radar in recent years, the comparison shows that EISCAT 3D images would be of higher quality providing useful information to study the characteristic of Moon surface. Since the proposed technique would generate lunar observations with a radar wavelength not used before for this type of studies, the results obtained with EISCAT 3D would complement previous studies and observations. Since the document is also well written and organized I would recommend its publication after the following minor comments are addressed. * In section 3, I would recommend to include the expression used to estimate the SNR of planetary targets and the parameters used in its calculation in order to be able to reproduce Table 1. This would facilitate the interpretation of the results presented here. * In section 4, I would suggest to compute and discuss the expected resolution of the lunar radar images to be obtained with EISCAT 3D. These values should be compared with the Jicamarca radar observations in order to discuss the improvement that would be achieved using the EISCAT 3D radar. * Given that lunar echo signals would be obtained at low elevation angles (30 degrees) using the EISCAT 3D radar, it is likely that the shape of the antenna beam pattern would have an impact on the observations distorting the reconstructed images. I would suggest the authors to consider including a discussion about this in the manuscript.

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