

The manuscript presents important simulation results and clearly demonstrates the efficiency of constructed EISCAT_3D facility in fine-structure detection and resolution using in-beam imaging. The authors performed a thorough analysis of simulated incoherent scatter spectra employing the model of ionospheric parameters and synthesized noise to retrieve the ionospheric signature of Kelvin-Helmholtz instability. The authors used well-proven theoretical methods for data analysis and provided in-depth description and discussion. As a whole, the manuscript contains many important outputs that are useful for many scientists and other stakeholders. The results obtained can be developed further and will be useful for testing future experimental results and arranging new promising experiments.

The authors made all revisions suggested by me, additional clarifications and explanations. I think that after this revision, the manuscript is worth to be published as is.