

## Direct imaging of fine structures of daytime midlatitude sporadic-*E* with space-borne InSAR

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Kilometer-scale fine structures of plasma irregularities associated with daytime sporadic-*E*(Es) over Japan are observed by interferometric synthetic aperture radar (InSAR) images. Here we present two images that capture fine scale structures of Es, in which perturbed plasma irregularities are clearly evident. Supported by GPS total electron content (TEC) observations and their height constraint technique, we have confirmed these two structures imaged in interferograms are caused by anomalous phase delay due to Es. Large-scale frontal structures have been reported by Maeda and Heki (2014 and 2015), which possibly represent the vertical shear of meridional winds. However, small-scale structures of daytime Es have rarely been reported except Maeda et al (2016). In this study, we put one more case study which is observed over the central part of Japan in 2009, to determine if there are any similarities and/or differences in the fine structure of daytime Es. Discussion on possible generation mechanisms of such small-scale structures is also going to be presented.