

Frequency (GHz)	Frozen soil			Unfrozen soil		Cal. $\omega$	Cal. $\eta_v$	Mean RMSE <sub>summer</sub> (K)	Mean annual RMSE (K)
	$\epsilon_{\text{eff}}$	$\sigma_s$ (cm)	$\beta_v$	Cal. $\sigma_s$ (cm)	Cal. $\beta_v$				
11	$3.18-0.006134i$		1.08		0.69		0.01	8.6	8.4
19	$3.42-0.00508i$	0.19	0.72	0.2	0.60	0.07	0.05	8.7	9.1
37	$4.47-0.32643i$		0.42		0.67		0.23	10.1	26.0