

Table 1: Correlation coefficient (R) for geometrical configurations seen in Fig. 10 relative to the instrumental measurements from the HydraProbe. Note $r_\epsilon = 13$ mm for all configurations.

R	VWC		Permittivity		Temperature	
	Freez e	Thaw	Freez e	Thaw	Freez e	Thaw
HydraProbe	1.000	1.000	1.000	1.000	1.000	1.000
Δ ($z_\epsilon = 25$ mm, $z_T = 25$ mm, $r_T = 30$ mm)	0.773	0.440	0.798	0.559	0.975	0.954
$+$ ($z_\epsilon = 25$ mm, $z_T = 31.5$ mm, $r_T = 50$ mm)	0.773	0.440	0.798	0.559	0.988	0.987
\times ($z_\epsilon = 50$ mm, $z_T = 37$ mm, $r_T = 12$ mm)	0.996	0.876	0.978	0.912	0.992	0.981
∇ ($z_\epsilon = 65$ mm, $z_T = 52$ mm, $r_T = 36$ mm)	0.938	0.992	0.959	0.993	0.996	0.994