model is necessary before adding multiphase flow and energy transfer equation; because it would help to ease model inspection in case of simulation error.

TABLE II
WATER INFILTRATION DATA FROM PHILIP'S SEMI-ANALYTICAL SOLUTION AND VAN GENUCHTEN CONSTITUTIVE FUNCTION ON SANDY LOAM SOIL. WATER INFILTRATION TIMES ARE 6, 12 AND 30 MINUTES

θ_L ($m^3 \cdot m^{-3}$)	t = 6 mins	t = 12 mins	t = 30 mins
0.3994	2.9315	4.7377	9.6365
0.3864	3.6475	5.7333	11.0423
0.3734	4.0413	6.2641	11.7769
0.3604	4.3063	6.6159	12.2590
0.3474	4.5018	6.8729	12.6074
0.3344	4.6540	7.0717	12.8741
0.3214	4.7768	7.2312	13.0865
0.3084	4.8784	7.3627	13.2604
0.2954	4.9641	7.4733	13.4061
0.2824	5.0375	7.5679	13.5301
0.2694	5.1012	7.6498	13.6373
0.2564	5.1570	7.7217	13.7310
0.2434	5.2066	7.7853	13.8141
0.2304	5.2511	7.8425	13.8885
0.2174	5.2916	7.8945	13.9562
0.2044	5.3293	7.9428	14.0191
0.1914	5.3654	7.9891	14.0794
0.1784	5.4019	8.0361	14.1406
0.1654	5.4441	8.0903	14.2113
0.1524	5.5260	8.1957	14.3489

Note: the second to fourth columns datasets are in centimeter unit, which is referring to the depth with respect to the volumetric water content in the first column

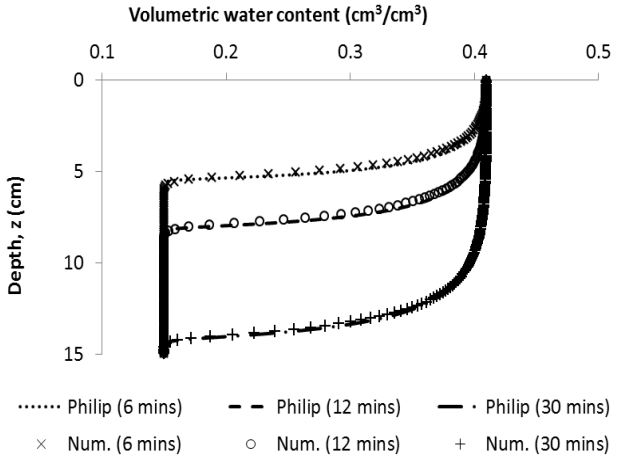

Fig. 1 The comparison of water infiltration in sandy loam soil estimated by Philip's semi-analytical solution and numerical simulation at 6, 12 and 30 minutes. Note: Philip is referred to Philip's semi-analytical solution and Num. is referred to numerical simulation with the spatial size of 0.1 cm

III. CONCLUSION

Philip's semi-analytical solution originated from Kirkham and Powers [6] was programmed to model water infiltration into unsaturated soil. A new dataset based on van Genuchten equation was generated for sandy loam. It would be a useful reference for model validation because van Genuchten equation is widely used in soil physics modelingon the importance of the work or suggest applications and extensions.

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