

## Abstract

Simulations of soil water flow are often carried out with parameters estimated using pedotransfer functions (PTFs), which are empirical relationships between the soil hydraulic properties and more easily obtainable basic soil properties available, for example, from soil surveys. The use of pedotransfer functions is necessary when the simulations have to be done for large-scale projects, or for pilot studies. Results of PTF applications are always uncertain, because the accuracy of pedotransfer functions outside of its development dataset is unknown. The use of several PTFs (multimodel ensemble prediction techniques) has been shown to be an efficient approach for estimating hydraulic properties within an uncertainty context. The computer program PTF calculator (CalcPTF) has been developed to estimate parameters of the Brooks and Corey and van Genuchten water retention equation to support the multimodeling approach. Seven PTFs estimate the Brooks and Corey parameters, four PTFs estimate the van Genuchten parameters, and five models fit the van Genuchten equation to pairs (capillary pressure, water content) estimated with PTFs. The PTF calculator also estimates the net capillary drive parameter of the three-parameter Parlange infiltration equation. The code is written in FORTRAN and is invoked from an Excel worksheet. Examples of input and output files are given.

#	PTF	Water retention model	Soil properties used in PTF					
			Sand %	Silt %	Clay %	Organic Carbon %	Bulk density g cm <sup>-3</sup>	Depth -
1	Saxton et al., 1986	BC	+		+		+	
2	Campbell and Shiosawa, 1992	BC	+		+		+	
3	Rawls and Brakensiek, 1985	BC	+		+		+	
4	Williams et al., 1992	BC	+		+		+	
5	Williams et al., 1992	BC	+		+	+	+	
6	Oosterveld and Chang, 1980	BC	+		+		+	+
7	Mayr and Jarvice, 1999	BC	+	+	+	+	+	
8	Wo <sup>o</sup> sten et al., 1999	VG	+	+	+			+
9	Varallyay et al., 1982	VG			+		+	
10	Vereecken et al., 1989	VG	+		+	+	+	
11	Wo <sup>o</sup> sten et al., 1999	VG		+	+	+	+	+
12	Tomasella and Hodnett, 1998	WH -> VG		+	+	+		
13	Rawls et al., 1982*	WH -> VG	+	+	+	+	+	
14	Gupta and Larson, 1979	WH -> VG	+	+	+	+	+	
15	Rajkai and Varallyay, 1992	WH -> VG	+		+	+	+	
16	Rawls et al., 1983*	WH -> VG	+	+	+	+	+	
17	Peterson et al., 1968	WH			+			
18	Bruand et al., 1994	WH			+			
19	Canarache, 1993	WH			+		+	
20	Hall et al., 1977	WH	+	+	+		+	