ANNEXES

ANNEX I. TABLES OF PRECIPITABLE WATER IN A SATURATED PSEUDO-ADIABATIC ATMOSPHERE

As stated in Chapter 2, precipitable water is a term used mostly by hydrometeorologists for expressing the total mass of water vapour in a vertical column of the atmosphere. It represents the depth of liquid water that would accumulate at the base of the column if all its water vapour were condensed. The term is a misnomer since no natural process can condense or precipitate all the water vapour in the atmosphere, and substitute terms such as liquid equivalent of water vapour or liquid water equivalent are sometimes used.

The general formula for computing precipitable water, W, in cm, is:

$$W = \frac{\overline{q}\Delta p}{g\ell} \qquad \text{(A.1.1)}$$

where $\overline{q}$ is the mean specific humidity in g/kg of a layer of moist air; Δp is the depth of the layer in hPa; g is the acceleration of gravity in cm/s^2; and ℓ is the density of water, which is equal to 1 g/cm^3.

In most hydrometeorological work the atmosphere is assumed to contain the same amount of water vapour as saturated air with saturation pseudo-adiabatic temperature lapse rate. The precipitable water in various layers of the saturated atmosphere can be determined and listed in tables or in nomogram form. Table A.1.1 presents values of precipitable water (mm) between the 1 000-hPa surface and various pressure levels up to 200 hPa in a saturated pseudo-adiabatic atmosphere as a function of the 1 000-hPa dewpoint. Table A.1.2 lists similar values for layers between the 1 000-hPa surface, assumed to be at zero elevation, and various heights up to 17 km. Table A.1.3 gives values of precipitable water (mm) in the atmosphere between the indicated pressure and 300 hPa. Table A.1.4 provides mixing ratios along specified pseudo-adiabats for specified 1 000-hPa dewpoints at given elevations in metres above 1 000 hPa. These are used in the moisture adjustment for barrier discussed in section 2.3.4.2.

Table A.1.1. Precipitable water (mm) between 1 000-hPa surface and indicated pressure (hPa) in a saturated pseudo-adiabatic atmosphere as a function of the 1 000-hPa dew point (°C)

Pressure (hPa)	*Temperature (°C)*																														
	0	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*27*	*28*	*29*	*30*
990	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	3
980	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	3	3	3	3	3	4	4	4	4	5	5	5
970	1	1	1	1	1	2	2	2	2	2	2	2	3	3	3	3	3	4	4	4	4	5	5	5	5	6	6	7	7	7	8
960	1	2	2	2	2	2	2	2	3	3	3	3	3	4	4	4	4	5	5	5	6	6	6	7	7	8	8	9	9	10	11
950	2	2	2	2	2	3	3	3	3	3	4	4	4	4	5	5	6	6	6	7	7	8	8	9	9	10	10	11	12	12	13
940	2	2	2	3	3	3	3	3	4	4	4	5	5	5	6	6	7	7	7	8	9	9	10	10	11	12	12	13	14	15	16
930	2	3	3	3	3	3	4	4	4	5	5	5	6	6	7	7	8	8	9	9	10	11	11	12	13	14	14	15	16	17	18
920	3	3	3	3	4	4	4	5	5	5	6	6	7	7	8	8	9	9	10	10	11	12	13	14	14	15	16	17	19	20	21
910	3	3	3	4	4	4	5	5	5	6	6	7	7	8	8	9	10	10	11	12	13	13	14	15	16	17	18	20	21	22	23
900	3	4	4	4	4	5	5	6	6	6	7	7	8	9	9	10	11	11	12	13	14	15	16	17	18	19	20	22	23	24	24
890	4	4	4	5	5	5	6	6	7	7	8	8	9	9	10	11	12	12	13	14	15	16	17	18	20	21	22	24	25	27	28
880	4	4	4	5	5	6	6	7	7	8	8	9	9	10	11	12	12	13	14	15	16	17	19	20	21	23	24	26	27	29	31
870	4	4	5	5	6	6	7	7	8	8	9	9	10	11	12	13	13	14	15	16	18	19	20	21	23	24	26	28	29	31	33
860	4	5	5	6	6	6	7	7	8	9	9	10	11	12	12	13	14	15	16	18	19	20	21	23	24	26	28	30	32	34	36
850	5	5	5	6	6	7	7	8	9	9	10	11	11	12	13	14	15	16	18	19	20	21	23	24	26	28	30	32	34	36	38
840	5	5	6	6	7	7	8	8	9	10	10	11	12	13	14	15	16	17	19	20	21	23	24	26	28	30	32	34	36	38	40
830	5	5	6	6	7	7	8	9	9	10	11	12	13	14	15	16	17	18	19	21	22	24	26	27	29	31	33	35	38	40	43
820	5	6	6	7	7	8	8	9	10	11	11	12	13	14	15	17	18	19	20	22	24	25	27	29	31	33	35	37	40	42	45
810	5	6	6	7	8	8	9	10	10	11	12	13	14	15	16	17	19	20	21	23	25	26	28	30	32	34	37	39	42	44	47
800	6	6	7	7	8	8	9	10	11	12	12	13	15	16	17	18	19	21	22	24	26	28	29	32	34	36	38	41	44	46	49
790	6	6	7	7	8	9	9	10	11	12	13	14	15	16	17	19	20	22	23	25	27	29	31	33	35	38	40	43	46	49	52
780	6	7	7	8	8	9	10	11	11	12	13	14	16	17	18	19	21	23	24	26	28	30	32	34	37	39	42	45	48	51	54
770	6	7	7	8	9	9	10	11	12	13	14	15	16	17	19	20	22	23	25	27	29	31	33	35	38	41	43	46	49	53	56
760	6	7	7	8	9	10	10	11	12	13	14	15	17	18	19	21	22	24	26	28	30	32	34	37	39	42	45	48	51	55	58
750	6	7	8	8	9	10	11	12	13	14	15	16	17	18	20	21	23	25	27	29	31	33	35	38	41	44	47	50	53	57	60
740	7	7	8	9	9	10	11	12	13	14	15	16	18	19	20	22	24	26	28	30	32	34	37	39	42	45	48	51	55	59	62
730	7	7	8	9	9	10	11	12	13	14	15	17	18	20	21	23	24	26	28	30	33	35	38	40	43	46	50	53	57	60	64
720	7	7	8	9	10	11	11	12	13	15	16	17	18	20	22	23	25	27	29	31	34	36	39	42	45	48	51	55	58	62	66
710	7	8	8	9	10	11	12	13	14	15	16	17	19	20	22	24	26	28	30	32	35	37	40	43	46	49	53	56	60	64	68
700	7	8	8	9	10	11	12	13	14	15	16	18	19	21	23	24	26	28	31	33	35	38	41	44	47	50	54	58	62	66	70