

Atmospheric Sciences 5300 Radiosonde Calculations

p	RH	e	e_s	w	w_s	θ	T	T_d	T_v
(mb)	(%)	(mb)	(mb)	(g/kg)	(g/kg)	(K)	(K)	(K)	(K)
850	73						291.2		
700	35						283.8		

Know p , T , r

1. Get $e_s(T)$ from function or graph.
2. To get e , use $r = e/e_s$.
3. Get $w_s(T, p)$ from function; use $e_s(T)$ from (1).
4. To get w , use $r \approx w/w_s$ and w_s from (3), or use $w = \epsilon e / (p - e)$ and e from (2).
5. To get T_d , use function of T and r .
6. To get T_v , use function of T and w .

p	RH	e	e_s	w	w_s	θ	T	T_d	T_v
(mb)	(%)	(mb)	(mb)	(g/kg)	(g/kg)	(K)	(K)	(K)	(K)
850	73	15.7	21.5	11.9	15.2	305.8	291.2	287.1	

p	RH	e	e_s	w	w_s	θ	T	T_d	T_v
(mb)	(%)	(mb)	(mb)	(g/kg)	(g/kg)	(K)	(K)	(K)	(K)
700	35	4.5	12.8	3.96	11.6	314.2	283.8	268.8	