List of Symbols, with page references to the PDF version

A=area, 93
$a_{0,1,2,3}$=coefficients, pressure correction, GV, 30
α=angle of attack, 30
α_T= $\tanh(e_s(T-T_x)$, Murphy/Koop equations, 39
α_r= recovery factor, temperature probe, 34

b_{0-3}=coefficients, vapor pressure equation, 39

c_{0-9}=coefficients, vapor pressure equation, 39
C_{flow} = flow conversion factor, 75
χ=liquid water content, 50, 59
C_{kg2g}= conversion factor, g to kg, 59
c_p or c_{pd} = specific heat of dry air at constant pressure, 4
c'_p= specific heat at constant pressure for moist air, 34
c_v or c_{vd} = specific heat of dry air at constant volume, 4
c'_v =specific heat at constant volume for moist air, 34
c_w= specific heat of liquid water, 59
C_{x2y}=conversion factor from x to y, 45
Cy_i= concentration from hydrometeor probe y in channel i, 63

d=diameter, 59
$d_{e,i}$= equivalent melted diameter for channel i of a hydrometeor spectrometer, 64
Δp=correction to pressure, 30
Δt=time interval, 75, 77, 93
d_{0-2}=coefficients, pressure correction, C-130, 30
d_i= diameter of hydrometeor in channel i, 63

e= water vapor pressure, 39
e_{0-2}=sensitivity coefficients, angle of attack, 54
e_a= ambient water vapor pressure, 38
e_h= water vapor pressure in an instrument housing, 39
$\varepsilon = M_W/M_d$, 34
$e_{s,i}$= equilibrium vapor pressure over a plane ice surface, 39
$e_{s,l}$= equilibrium vapor pressure over a plane water surface, 39
η =update constant for exponential updating, 27

f_{1-3}=coefficients, vapor pressure equation, 39
f_c= cutoff frequency for the filter F_L, 25
F_d= interpolation formula for dew point, 40
$F_d(e)$=interpolation formula for dew point, 41
F_L= digital low-pass filter, 25
$f(p,T_p)$=water vapor pressure enhancement factor, 38, 39

g= acceleration of gravity, 4
$\gamma' = c'_p/c'_v$, 35, 36
γ or γ_d = ratio of specific heats of air, c_p/c_v, 4

k=Boltzmann Constant, 4

L =length (of a King-probe element), 59
λ=latitude, 4, 82
λ_a= tropospheric lapse rate, standard atmosphere, 23
λ_c= thermal conductivity, dry air, 59
L_G=distance from IRU to GPS antenna, 51
L_v=latent heat of vaporization of water, 49, 59

M= Mach number, ratio of airspeed to the speed of sound, 35
m=mass, 93
M_d= molecular weight of dry air, 4
μ_a= dynamic viscosity of air, 59
M_w= molecular weight of water, 4

N=day number, 81
n=number density, 5
N_A = Avogadro constant, molecules per kmol, 4, 42
Nu= Nusselt number, 59

Ω= angular rotation rate of the Earth, 4

Ω_{Sch}= angular frequency of the Schuler oscillation, 4

p= pressure, 36
p_0= reference pressure equal to 1000 hPa, 46
$p_0^{\ddagger}$= reference pressure for zero altitude, ISA, 23
p_a= ambient air pressure, 36
p_d= partial pressure of dry air, 47
p_h= pressure in a sensor housing, 40
P=power, 59
ψ=longitude, 82
p_{std}=standard pressure, 73
p_T= pressure at the ISA tropopause, 23
p_t=total pressure, 31
p_t =total pressure (ambient + dynamic), 36

q= dynamic pressure, 30

R' =gas constant for moist air, 34
R_0= universal gas constant, 4
r=water-vapor mixing ratio, dimensionless, 47, 49
R_d =gas constant for dry air, 4
R_E= radius of the Earth, 4
Re= Reynolds number, 59
ρ_a= density of air, 59
ρ_w= density of liquid water, 64
r_m=mixing ratio by mass, 6
r_v=mixing ratio by volume, 6
r_v=water vapor mixing ratio by volume, 70
R_W= gas constant for water vapor, 4

S(t)=sensitivity function, calibration, 68
$s_{0,1}$=sensitivity coefficients, sideslip, 55
σ= Stephan-Boltzmann constant, 4

t=time, 93
T_0=273.15 K, temperature in kelvin corresponding to 0°C, 4
T_3= triple point temperature of water, 4
T_a= ambient air temperature in absolute units; sometimes, T_K, 34
τ_{Sch}=period of a Schuler oscillation, 10
T_b= boiling temperature of water, 59
T_{DP}= temperature at the dew point, 39
T_L= temperature, lifted condensation level, 47
Θ_q =temperature, wet-equivalent potential, 49
T_{FP}= temperature at the frost point, 39
θ_G=Greenwich hour angle, 82
θ_L=local hour angle, 82
Θ_P=temperature, pseudo-adiabatic equivalent potential, 46
T_K= absolute temperature in kelvin, 41
T_p=mirror temperature, 41
T_p =dew point temperature if above 0°C, frost point temperature otherwise, 39
T_r= recovery temperature, 34
T_{std}= absolute reference temperature, STP, 74
T_s=temperature of a sensor, 59
T_{std}=standard temperature, 73
T_T= temperature at the ISA tropopause, 23
T_t= total air temperature, 34
T_x= 218.8 K, Murphy/Koop equations, 39

U_a= true airspeed (sometimes U), 34
U_s= speed of sound, 35

V= volume, 36

z = height, 4
Z(t)=zero function, calibration, 68
Z_r= scale factor for calculation of the radar reflectivity factor, 64