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INDEX OF SYMBOLS

θ	Beam width/Potential temperature
θ_{s0}	Virtual potential temperature at the surface
θ_s	Virtual potential temperature at the top of ABL
$\phi_n(K)$	Three dimensional wave number
Δv	ADC bit resolution
$\Delta\theta$	Difference in potential temperature
$\Delta\theta/\Delta z$	Vertical gradient in the potential temperature
Δu_h	Wind shear at the top of ABL
θ_v	Virtual Potential Temperature
$ K ^2$	Complex dielectric factor
A_e	Effective antenna aperture
A_i	Empirical constants (i=1, 2, 3)
A_R	Entrainment ratio
B_N	Effective receiver bandwidth
C	Speed of light
C_s	Speed of sound
C_n^2	Refractivity structure parameter
d_l	Depth of entrainment zone
dT/dx	Temperature gradient along latitude
dT/dy	Temperature gradient along longitude
D	Diameter
e	Partial pressure of water vapor
f_i	Frequency of a bin
f_d	Doppler frequency
f_s	Backscattered sound
f_t	Transmitted frequency
g	Acceleration due to gravity
G	Antenna gain
$C\tau$	Pulse length
k	Boltzmann constant
K	Wave number
L	Loss factor due to both transmission and reception (= $\alpha_t\alpha_r$) or Monin-Obukhov length/ Noise level
l_0	Inner scale size of the turbulence
L_0	Outer scale size of the turbulence
m	Complex index of refraction
M_i	Moments (i=0, 1, 2)
N	Radio refractivity/Number of FFT points
n	Refractive index
N_c	Number of coherent integrations

p_i	Power of a bin
P	Atmospheric pressure
P_N	Noise power
P_r	Received backscattered power
P_t	Transmitted power
q	Humidity
r	Range
r/R	Mixing ratio
R_x	Receiver
T_b	Brightness temperature
T_c	Sky noise temperature
T_r	System temperature
T_x	Transmitter
T	Temperature
u/U	Zonal wind
v/V	Meridional wind
V_r	Speed of target
V_d	Radial velocity
V_i	Velocity in i direction
w	Vertical velocity
\bar{w}	Average vertical velocity
w_e	Entrainment velocity
z_i	Top of ABL
Z	Radar reflectivity factor
α_r	Reception loss
α_t	Transmission loss
Δr	Radar range resolution
ε	Turbulent eddy dissipation rate
η	Radar reflectivity
γ	Ratio of heat capacities
λ_R	Radar probing wavelength
Σ	Radar cross-section
Σ	Spectral width
T	Temperature
ws	Wind speed
wd	Wind direction
u_*	Friction velocity
\bar{u}	Mean wind speed
σ	Spectral width or Scattering cross-section
σ_w^2	Wind variance

INDEX OF ACRONYMS

a.g.l.	above ground level
a.s.l.	above mean-sea level
ABL	Atmospheric Boundary Layer
ABLE	Amazon Boundary Layer Experiment
AC	Alternate Current
ADC	Analog to Digital Converter
AMEX	Air Mass Transformation EXperiment
ARM	Atmospheric Radiation Measurement
ARMEX	ARabian sea Monsoon EXperiment
ARW	Advanced Research WRF
AS	Arabian Sea
AT	Afternoon Transition
ATEX	Atlantic Trade wind EXperiment
AWS	Automatic Weather Station
BEARPEX	Biosphere Effects on Aerosol and Photochemistry EXperiment
BFN	Beam Forming Network
BL	Boundary Layer
BLH	Boundary Layer Height
BLLAST	Boundary Layer Late Afternoon and Sunset Turbulence
BLX	Boundary Layer eXperiment
BOB	Bay Of Bengal
BOBMEX	Bay Of Bengal Monsoon EXperiment
BOMEX	Barbados Oceanographic and Meteorological EXperiment
BW	Band Width/Beam Width
CALIPSO	Cloud Aerosol LIDAR and Infrared Pathfinder Satellite Observation
CASES	Cooperative Atmospheric Surface Exchange Study
CAPE	Convective Available Potential Energy
CBL	Convective Boundary Layer
CERES	Clouds and the Earth's Radiant Energy System
CFL	Constant Flux Layer
CIN	Convective INhibition
CoABL	Coastal Atmospheric Boundary Layer
CPC	Climate Prediction Center
DPU	Data Processing Unit
DR	Digital Receiver
ECMWF	European Centre for Medium range Weather Forecasting
ERA	ECMWF Re-Analysis
ET	Evening Transition
EZ	Entrainment Zone
FA	Free Atmosphere
FFT	Fast Fourier Transform
FIFE	First ISLSCP Field Experiments

FIR	Far-Infra Red
GABLS	GEWEX Atmospheric Boundary Layer Study
GEWEX	Global Energy Water cycle EXperiment
GPCP	Global Precipitation Climatology Project
GPI	Global Precipitation Index
GPS RO	GPS Radio Occultation
GPS	Global Position System
IF	Intermediate Frequency
IFS	Integrated Forecast System
IGCAR	Indira Gandhi Centre for Atomic Research
IIOE	International Indian Ocean Expedition
IMD	Indian Meteorological Department
INDOEX	INDian Ocean EXperiment
IPP	Inter Pulse Period
IR	Infrared Radiometer
ISA	Indian Standard Angles
ISLCP	International Satellite Land surface Climatology Project
ISM	Indian Summer Monsoon
ISMEX	Indo-Soviet Monsoon EXperiment
ISO	Intra-Seasonal Oscillations
IST	Indian Standard Time
ITCZ	Inter Tropical Convergent Zone
JAXA	Japan Aerospace Exploration Agency
KHI	Kelvin Helmholtz Instability
LASPEX	LAnd Surface Process EXperiment
LAWP	Lower Atmospheric Wind Profiler
LES	Large Eddy Simulations
LH	Latent Heat
LIDAR	Light Detection And Ranging
LIS	Lighting and Imaging Sensor
LLJ	Low Level Jet
LNA	Low Noise Amplifier
LT	Local Time
MABL	Marine Atmospheric Boundary Layer
MATLAB	MATrix LABoratory
MBLM	Mini Boundary Layer Mast
ML	Mixed Layer
MONEX	MONsoon EXperiment
MONTBLEX	MONsoon Trough Boundary Layer EXperiment
MOSDAC	Meteorological and Oceanographic Satellite Data Archival Centre
MT	Morning Transition
NARL	National Atmospheric Research Laboratory
NASA	National Aeronautical Space Agency

NAVAID	NAVigational AID
NBL	Nocturnal Boundary Layer
NCAR	National Center of Atmospheric Research
NCEP	National Center for Environmental Prediction
NDC	National Data Center
NEM	North East Monsoon
NLLJ	Nocturnal Low Level Jet
OASIS	Ocean Atmosphere Sea-Ice-Snow
OCXO	Oven Controlled Crystal Oscillator
PA	Power Amplifier
PBL	Planetary Boundary Layer
PC	Personal Computer
PR	Precipitation Radar
PST	Post Sunset Turbulence
RADAR	RADio Detection And Ranging
RASS	Radio Acoustic Sounding System
RDF	Radio Direction Finding
RF	Radio Frequency
RH	Relative Humidity
RL	Residual Layer
RS	Radio Sonde
RSDG	Radiology and Safety Division Group
SABLES	Stable Atmospheric Boundary Layer Experiment in Spain
SAMEER	Society for Applied Microwave Electronics Engineering and Research
SBL	Stable Boundary Layer
SGP	Southern Great Plain
SH	Sensible Heat
SL	Surface Layer
SNR	Signal-to-Noise Ratio
SODAR	SOund Detection And Ranging
SPU	Signal Processor Unit
STABX	STABLE Boundary layer eXperiment
SWM	South West Monsoon
SWR	Short Wave Radiation
TBL	Transition Boundary Layer
TCA	TRMM Combined instrument Algorithm
TCI	TRMM Combined Instrument
TIBL	Thermal Internal Boundary Layer
TKE	Turbulent Kinetic Energy
TMI	TRMM Microwave Imager
TMPA	TRMM Multi-satellite Precipitation Analysis
TRANSFLEX	TRANSition FLOW EXperiment
TRMM	Tropical Rainfall Measuring Mission

UHF	Ultra High Frequency
UMRBPP	Upper Missouri River Basin Pilot Project
UNSTABLE	Understanding Severe Thunderstorms and Alberta BL Experiment
UTC	Universal Time Current
VC	Ventilation Coefficient
VHF	Very High Frequency
VIMHEX	Venzulean International Meteorology and Hydrology EXperiment
VIRS	Visible and Infrared Scanner
VORTEX	Verification of the Origins of Rotation in Tornadoes EXperiment
WD	Wind Direction
WINABL	Wave-turbulence INteractions in the stAble Boundary Layer
WPR	Wind Profiling Radar
WRF	Weather Research and Forecasting
WS	Wind Speed