

LIST OF SYMBOLS

RADAR	= Radio Detection and Ranging
T_x	= Transmitting antenna
R_x	= Receiving antenna
P_t	= Transmitted power
P_r	= Received power
P_r^{Al}	= Reflected power by aluminum sheet
P_r^{std}	= Reflected power by standard object
$ R_0^2 $	= Reflectivity of the target
R_1	= Distance of transmitting antenna from the centre of the target
R_2	= Distance of receiving antenna from the centre of the target
R	= Rang from target to antenna
σ^0	= Bistatic scattering coefficient
G_r	= Received antenna gain
G_t	= Transmitted antenna gain
G_{rm}	= Maximum received antenna gain
G_{tm}	= Maximum transmitted antenna gain
θ	= Look angle or incidence angle
θ_i	= Incidence angle
θ_r	= Receiving angle
ϕ	= Azimuth angle
ϕ_s	= Scattering angle in azimuth
θ_s	= Scattering angle in elevation
ϕ_{el}	= Half power beam width in elevation
ϕ_{az}	= Half power beam width in azimuth
D_1	= Minor axis of ellipse
D_2	= Major axis of ellipse
I_0	= Illuminated area by the antenna beam of the target
λ	= Wavelength of signal used
f	= Frequency of operation

GHz	= Giga hertz
MHz	= Mega hertz
g	= Weight in gram
kg	= Weight in kilogram
$^{\circ}\text{C}$	= Temperature in degree centigrade
cm	= Length in centimeter
M_g	= Gravimetric soil moisture content on dry basis
Z_i	= Vertical surface height at <i>ith</i> location
x_i	= Horizontal <i>ith</i> location of the surface
\bar{z}	= mean of the vertical surface height
s	= Root mean square height of the surface
$\rho(\xi)$	= Auto correlation function
l	= Correlation length
x_i	= Horizontal <i>ith</i> location of the surface
ξ	= Displacement
ANN	= Artificial Neural Network
FFBPANN	= Feed Forward Back Propagation Artificial Neural Networks
BPANN	= Back Propagation Artificial Neural Network
RBFANN	= Radial Basis Function Artificial Neural Network
GRANN	= General Propagation Artificial Neural Network
LRM	= Linear Regression Model
σ	= spread or smoothing factor
$\phi(r)$	= Gaussian function
Err	= Error between estimated and observed values
E_{\min}	= Minimum error between estimated and observed values
d_i	= Euclidian distance
x^i	= Input vector
y^i	= Output vector
CP	= Crop variables
VWC	= Vegetation Water Content
LAI	= Leaf Area Index
PH	= Plant Height
SPAD	= Soil-Plant Analysis Development

HH-	= Horizontal transmit –Horizontal receive
VV-	= Vertical transmit –Vertical receive
HH-	= Horizontal transmit–Horizontal receive
Pol.	= Polarization of the antenna
RMSE	= Root Mean Square Error
R^2	= Coefficient of determination
NSE	= Nash-Sutcliff Efficiency
%bais	= Percentage of bais
SE	= Standard Error
SSE	= Standard Error of Estimation