Ph.D. Dissertation

Atmospheric-Boundary-Layer Height Retrieval using Microwave Radiometer and Lidar Sensors: Algorithms and Error Estimation

A thesis submitted to the Universitat Politècnica de Catalunya
in partial fulfillment for the degree of

Doctor of Philosophy

Umar Saeed

UNIVERSITAT POLITÈCNICA DE CATALUNYA BARCELONATECH

Remote Sensing Laboratory
Department of Signal Theory and Communications

Doctorate program in
Signal Theory and Communications

Supervisors: Prof. Francesc Rocadenbosch Burillo

Prof. Susanne Crewell

Barcelona, June 2016

Atmospheric-Boundary-Layer Height Retrieval using Microwave Radiometer and Lidar Sensors: Algorithms and Error Estimation

Umar Saeed, June 2016

Errata

Page 26, 31, 114, 136:
Where it says: Rodger
Should be read as: Rodgers

Page 12:
Where it says: synegrtic
Should be read as: synergetic

Page 14:
Where it says: Integrated Precipitable Water (IPW)
Should be read as: Integrated Cloud Liquid Water (ICLW)

Page 31:
Where it says: lidar-lidar
Should be read as: lidar-MWR

Page 32:
Where it says: applies a regression coefficients
Should be read as: applies regression coefficients

Page 32:
Where it says: For temperature profiling, the brightness temperature measurements...
Should be read as: For temperature profiling, one of the challenge is that the brightness temperature measurements...

Page 38:
Where it says: and low synoptic conditions
Should be read as: and under low influence by synoptic systems

Page 40:

Where it says: ...give a measure of the *thermally-induced* turbulence.
Should be read as: ...give a measure of the *thermally-induced* turbulence, though temperature is also affected by *mechanically-induced* turbulence.

Page 44:
Where it says: low-height
Should be read as: low-level

Page 74:
Where it says: variantions
Should be read as: variations

Page 116:
Where it says: "$\mathrm{MLH_{LES}}$" and "$\mathrm{MLH_{PARAM}}$" as x and y labels, respectively, for Fig. 6.6 (c) & (d) and Fig. 6.6 (e) & (f)
Should be read as: "$\mathrm{T_{0,LES}}$" and "$\mathrm{T_{0,PARAM}}$" as x and y labels, respectively, for Fig. 6.6 (c) & (d), and "$\Delta z_{\mathrm{EZ,LES}}$" and "$\Delta z_{\mathrm{EZ,PARAM}}$" as x and y labels, respectively, for Fig. 6.6 (e) & (f)

Page 118:
Where it says: $T_{RET,PARAm}$
Should be read as: $T_{RET,PARAM}$