List of symbols and abbreviations

A	contingency table
ACSBTE	assumed clear sky brightness temperature estimation
APOLLO	AVHRR processing scheme over clouds, land, and ocean
AQUA	polar orbiting NASA satellite
AVHRR	advanced very high resolution radiometer
B	black body radiation
BT_{ch}	brightness temperature measured by the SEVIRI channel ch
BT_{ACSBTE}	assumed clear sky brightness temperature at $10.8\,\mu m$ estimated by the ACSBTE algorithm
c	speed of light
c_{onf}	confidence value specifying the certainty in how far it is possible to assign a cloud coverage status to a given network output
c_t	confidence threshold
CBH	cloud base height
ch	index for the SEVIRI channels
CLA	cloud analysis product processed by EUMETSAT
CM	cloud mask
CTP	cloud top pressure

Δt	time difference between last include operation and current dataset
day_..._nn	neural network identifiers of networks for daytime conditions
DC	array for the up-to-date brightness temperature diurnal cycle
depth	number of time slots of the estimated diurnal cycles
DU	Dobson unit
ε	emissivity
EDT	extra-diurnal time series maximum gradient threshold
EUMETSAT	European organization for the exploitation of meteorological satellites
$EUMETSAT_{CLA}$	operational EUMETSAT cloud mask
FUB	Freie Universität Berlin
FUB_{ACSBTE}	FUB cloud detection algorithm, solely based on those neural networks that use BT_{ACSBTE}
$FUB_{ACSBTE(n.,t.)}$	FUB cloud detection algorithm utilizing BT_{ACSBTE} information only at nighttime and twilight
$FUB_{no\ ACSBTE}$	FUB cloud detection algorithm, solely based on those neural networks that do not use BT_{ACSBTE}
g	asymmetry factor
$G_{0,2}$	gradients within the diurnal cycles
GERB	geostationary earth radiation budget
GMS	geostationary meteorological satellite
GOES	geostationary operational environmental satellite
h	Planck's constant
HRV	high resolution visible channel of SEVIRI
IDT	intra-diurnal time series maximum gradient threshold
in	neural network input vector
in'	preprocessed neural network input vector
$IR_{039,...,134}$	SEVIRI channels in the thermal infrared spectral region at $3.9,...,13.4\mu m$
ISCCP	international satellite cloud climatology project
IWV	columnar integrated water vapor

k_B	Boltzmann's constant
KSS	Kuipers skill score
λ	wavelength
L	radiance
LIDAR	light detection and ranging
METEOSAT	European geostationary meteorological satellite
mod	modulo operator
MODIS	moderate resolution imaging spectrometer
MOMO	matrix-operator-modell
MSG	METEOSAT second generation
MTG	METEOSAT third generation
N	total number of samples
$N_{h/i}$	number of hidden neurons in the hidden/input layer
nig_..._nn	neural network identifiers of networks for nighttime conditions
NIR_{016}	SEVIRI channel in the near infrared spectral region at $1.6\,\mu m$
NN	(artificial) neural network
NASA	national aeronautic and space administration
NOAA	national oceanic and atmospheric administration
octa	unit of cloud coverage
out	postprocessed neural network output
out'	neural network output
$p_{1/e}$	penetration depth into a cloud [*m*]
p_{cc}	cloud covered probability
ppm	parts per million
ρ	total water content (liquid and/or ice)
r_{eff}	effective droplet radius
RADAR	radio detection and ranging
σ	mass extinction coefficient
σ_a	mass absorption coefficient

σ_s	mass scattering coefficient
$\sigma_{in/out/fit}$	sigmoid functions
SEVIRI	spinning enhanced visible and infrared imager
synop	synoptical (observation)
τ	optical thickness
$t_{0,1,2}$	positions in the diurnal cycles
T	temperature [K]
TCC	(quasi) true color composite
TERRA	polar orbiting NASA satellite
TOA	top of atmosphere
$twi\_..\_nn$	neural network identifiers of networks for twilight and sun glint conditions
TWP	columnar total water path (liquid and/or ice) [$g\ m^{-2}$]
VAL	new temperature value for the include operation of the ACSBTE algorithm
$VIS_{006,}\ VIS_{008}$	SEVIRI channels in the visible spectral region at 0.6 and $0.8\,\mu m$
wf	normalized channel weighting function
ω_s	single scattering albedo
$w_{in/out}$	weights of the dendrites connected to the input/output layer
WDC	array of weights corresponding to the up-to-date diurnal cycle array DC
WEI	new weight value for the include operation of the ACSBTE algorithm
XTRA	extended line-by-line atmospheric transmittance and radiance algorithm