System for Analysis of Wind Collocations (SAWC):

A Novel Archive and Collocation Application for the Intercomparison of Winds from Multiple Observing Platforms

Variable Definitions

Version 1.0.1

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Prepared by:
Katherine E. Lukens, *U. Maryland/ESSIC/CISESS, NOAA/NESDIS/STAR*
Kevin Garrett, *NOAA/NWS/OSTI*
Kayo Ide, U. *Maryland*
David Santek, *U. Wisconsin-Madison/CIMSS*
Brett Hoover, *NOAA/NWS/NCEP/EMC, Lynker Technologies*
Ross N. Hoffman, *U. Maryland/ESSIC/CISESS, NOAA/NESDIS/STAR*
Hui Liu, *U. Maryland/ESSIC/CISESS, NOAA/NESDIS/STAR*

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1.0.0	April 15, 2023	Initial Release of Variable Definitions Document
1.0.1	April 21, 2023	Version number updated in line with User Manual. No changes here.

Preface

This document comprises the National Oceanic and Atmospheric Administration (NOAA) National Environmental Satellite, Data, and Information Service (NESDIS) publication of the System for Analysis of Wind Collocations (SAWC) *Variable Definitions document*.

The document provides important information about the NetCDF wind datasets included in SAWC. It defines all available variables in each wind dataset as well as the collocation index files. It also provides each variable's type, dimensions, and units, if applicable. Each table corresponds to a different dataset: The dataset is listed in the top left corner of each table, with the variables defined below.

The document will be updated as required.

AEOLUS				
Variable from NetCDF File	**Units**	**Type**	**Dimensions**	**Definition**
day	days	integer (2 digits)	[nobs]	Days
height_bot	km	float	[nobs]	Height at bottom of layer over which measurements are accumulated
height_mid	km	float	[nobs]	Height at middle of layer over which measurements are accumulated
height_top	km	float	[nobs]	Height at top of layer over which measurements are accumulated
HLOS_azimuth	degrees	float	[nobs]	Line-of-sight (LOS) azimuth angle ...Ascending Orbit (180 < LOS Azimuth Angle = ~260) ...Descending Orbit (~100 = LOS Azimuth Angle < 180) ...Neither (LOS Azimuth Angle = all other angles)
HLOS_error	m/s	float	[nobs]	Horizontal LOS (HLOS) wind error estimate
HLOS_wind_velocity	m/s	float	[nobs]	HLOS wind velocity ...Can have either positive or negative sign
hour	hours	integer (2 digits)	[nobs]	Hours
latitude	degrees north	float	[nobs]	Latitude
length	km	float	[nobs]	Integration (accumulation) length over which measurements are accumulated per observation
level_index	--	float	[nprofiles]	Index of vertical level in Aeolus profile. ...Value of 1 indicates top of atmospheric column. ...Index increases with decreasing height (i.e., as one descends toward surface)
longitude	degrees east	float	[nobs]	Longitude
minute	minutes	integer (2 digits)	[nobs]	Minutes
month	months	integer (2 digits)	[nobs]	Months
nobs	--	DIMENSION: integer	--	Number of observations
nobs_per_profile	--	integer	[nprofiles]	Number of observations (discrete vertical levels) per Aeolus profile
nprofiles	--	DIMENSION: integer	--	Number of Aeolus profiles
orbit_flag	--	integer	[nobs]	Orbit flag ...1 = Ascending Orbit (LOS Azimuth Angle > 180) ...-1 = Descending Orbit (LOS Azimuth Angle < 180) ...0 = Neither (LOS Azimuth Angle = 180)
pressure	hPa	float	[nobs]	Reference atmospheric pressure at observation level computed from ECMWF model forecast
qc_flag	--	float	[nobs]	Quality control flag ...0 = Keep, good quality (passes all QC) ...1 = Do not use (does not pass QC) ...Based on ESA-recommended QC for Mie-cloudy winds in Early FM-B Period: 2 August 2019 until 31 December 2019 (from 2020-08-31 Technical Note)
scattering_ratio	--	float	[nobs]	Scattering ratio
second	seconds	integer (2 digits)	[nobs]	Seconds
sensitivity_pressure	m/(s hPa)	float	[nobs]	Sensitivity of wind to pressure
sensitivity_temperature	m/(s K)	float	[nobs]	Sensitivity of wind to temperature
temperature	K	float	[nobs]	Reference atmospheric temperature at observation level computed from ECMWF model forecast
year	years	integer (4 digits)	[nobs]	Year

AIRCRAFT					
Variable from NetCDF File	**Units**	**Type**	**Dimensions**	**BUFR Mnemonic Code**	**Definition** Note: See here for additional information: **https://www.nco.ncep.noaa.gov/sib/jeff/bufrtab_tableb.html**
acars_interp	--	float	[nrecord]	INTV	ACARS interpolated values indicator
aircraft_altitude	m	float	[nrecord]	IALT	Indicated aircraft altitude
aircraft_group_description	--	string	--	--	Aircraft group name
aircraft_roll_angle_flag	--	float	[nrecord]	ROLF	FSL aircraft roll angle flag
aircraft_icing	--	float	[nrecord]	AFIC	Airframe icing
aircraft_id	--	character	[nrecord]	ACID	Aircraft flight number
aircraft_nav_system	--	float	[nrecord]	ACNS	Aircraft navigational system
aircraft_phase_flight	--	float	[nrecord]	POAF	Phase of aircraft flight
aircraft_phase_flight_detail	--	float	[nrecord]	DPOF	Detailed phase of flight
aircraft_relay_system	--	float	[nrecord]	TADR	Type of aircraft data relay system
aircraft_tail_number	--	character	[nrecord]	ACRN	Aircraft registration number or other identification
aircraft_type	--	character	[nrecord]	ACTP	Type of commercial aircraft
airport_destination	--	character	[nrecord]	OAPT	Origination airport
airport_origin	--	character	[nrecord]	DAPT	Destination airport
cloud_amount	--	float	[nrecord]	CLAM	Cloud amount
cloud_type	--	float	[nrecord]	CLTP	Cloud type
corrected_report_indicator	--	float	[nrecord]	CORN	Corrected report indicator
day	days	float	[nrecord]	DAYS	Day
degree_turbulence	--	float	[nrecord]	DGOT	Degree of turbulence
dew_point_temperature	K	float	[nrecord]	TMDP	Dewpoint temperature
flight_level	m	float	[nrecord]	FLVL	Flight level
fsl_decode_indicator	--	float	[nrecord]	DINT	FSL decoding correction indicator
fsl_location_interpolation_indicator	--	float	[nrecord]	LINT	FSL location interpolation indicator
fsl_time_interpolation_indicator	--	float	[nrecord]	TINT	FSL time interpolation indicator
geopotential	m^2 / s^2	float	[nrecord]	GP10	Geopotential
hdob_quality_meteo_status	--	float	[nrecord]	QHDOM	Quality for observed meteorological parameters
hdob_quality_potential	--	float	[nrecord]	QHDOP	Quality for observed position
height	m	float	[nrecord]	HMSL	Height or altitude
height_bot_cloud	m	float	[nrecord]	HOCB	Height of base of cloud
height_bot_icing	m	float	[nrecord]	HBOI	Height of base of icing
height_bot_turbulence	m	float	[nrecord]	HBOT	Height of base of turbulence
height_bot_weather	m	float	[nrecord]	HBWX	Height of base of present weather
height_top_cloud	m	float	[nrecord]	HOCT	Height of top of cloud
height_top_icing	m	float	[nrecord]	HTOI	Height of top of icing
height_top_turbulence	m	float	[nrecord]	HTOT	Height of top of turbulence
height_top_weather	m	float	[nrecord]	HTWX	Height of top of present weather
horiz_visibility	m	float	[nrecord]	HOVI	Horizontal visibility
hour	hours	float	[nrecord]	HOUR	Hour
inst_altitude_rate	m/s	float	[nrecord]	IALR	Instantaneous altitude rate
latitude	degrees north	float	[nrecord]	CLAT, CLATH	Latitude of observation
longitude	degrees east	float	[nrecord]	CLON, CLONH	Longitude of observation
minutes	minutes	float	[nrecord]	MINU	Minutes

AIRCRAFT					
Variable from NetCDF File	**Units**	**Type**	**Dimensions**	**BUFR Mnemonic Code**	**Definition** Note: See here for additional information: **https://www.nco.ncep.noaa.gov/sib/jeff/bufrtab_tableb.html**
mixing_ratio	kg/kg	float	[nrecord]	MIXR	Mixing ratio
moisture_quality	--	float	[nrecord]	MSTQ	Moisture quality
month	months	float	[nrecord]	MNTH	Month
nrecord	--	DIMENSION: integer	--	--	Number of records (observations)
peak_surface_wind_speed	m/s	float	[nrecord]	PKSWSP	Peak surface wind speed
peak_turbulence_intensity	$m^{2/3} / s$	float	[nrecord]	PTRB	Peak turbulence intensity (eddy dissipation rate)
peak_wind_speed	m/s	float	[nrecord]	PKWDSP	Peak wind speed
percent_confidence	%	float	[nrecord]	PCCF	Percent confidence
platform_speed	m/s	float	[nrecord]	SMMO	Speed of motion of moving observing platform
present_weather	--	float	[nrecord]	PRWE	Present weather
pressure	Pa	float	[nrecord]	PRLC	Pressure
pressure_alt	m	float	[nrecord]	PSAL	Pressure altitude relative to mean sea level pressure
pressure_msl	Pa	float	[nrecord]	PMSL	Pressure reduced to mean sea level
qm_moisture	--	float	[nrecord]	QMDD	SDMEDIT/QUIPS quality mark for moisture
qm_sst	--	float	[nrecord]	QMST	SDMEDIT quality mark for sea surface temperature
qm_temperature	--	float	[nrecord]	QMAT	SDMEDIT/QUIPS quality mark for air temperature
qm_wind	--	float	[nrecord]	QMWN	SDMEDIT/QUIPS quality mark for wind (does not include NESDIS produced satellite winds)
relative_humidity	%	float	[nrecord]	REHU, RAWHU	Relative humidity
roll_angle_quality	--	float	[nrecord]	ROLQ	Aircraft roll angle quality
sea_temperature	K	float	[nrecord]	SST1	Sea/water temperature
seconds	seconds	float	[nrecord]	SECO	Seconds
spec_lat_lon	--	float	[nrecord]	OSLL	Original specification of latitude/longitude
station_arinc	--	character	[nrecord]	ARST	ACARS ground-receiving station
station_type	--	float	[nrecord]	TOST	Type of station
surface_wind_direction	degrees	float	[nrecord]	WDIR1	Surface wind direction
surface_wind_speed	m/s	float	[nrecord]	WSPD1	Surface wind speed
temperature	K	float	[nrecord]	TMDB	Temperature/air temperature
temperature_precision	K	float	[nrecord]	PCAT	Precision of temperature observation
total_rain_rate	mm/hour	float	[nrecord]	TRRT	Total rain rate
turbulence_index	--	float	[nrecord]	TRBX	Turbulence index
vert_gust_speed	m/s	float	[nrecord]	MDEVG	Maximum derived equivalent vertical gust speed
vert_sounding_sig	--	float	[nrecord]	VSIG	Vertical sounding significance
wind_direction	degrees	float	[nrecord]	WDIR	Wind direction
wind_instrument_type	--	float	[nrecord]	TIWM	Type of instrumentation for wind measurement
wind_speed	m/s	float	[nrecord]	WSPD	Wind speed
year	years	float	[nrecord]	YEAR	Year

AMVs					
Variable from NetCDF File	**Units**	**Type**	**Dimensions**	**BUFR Mnemonic Code**	**Definition** Note: See here for additional information: **https://www.nco.ncep.noaa.gov/sib/jeff/bufrtab_tableb.html**
channel_center_frequency	Hz	float (2 digits)	[nrecord]	SCCF	Satellite channel center frequency
day	days	float (2 digits)	[nrecord]	DAYS	Day
generating_application	--	float	[nrecord]	GNAP	Generating application
height_assignment_method	--	float	[nrecord]	HAMD	Height assignment method
hour	hours	float	[nrecord]	HOUR	Hour
latitude	degrees north	float	[nrecord]	CLAT, CLATH	Latitude
longitude	degrees east	float	[nrecord]	CLON, CLONH	Longitude
minutes	minutes	float (2 digits)	[nrecord]	MINU	Minutes
month	months	float (2 digits)	[nrecord]	MNTH	Month
nrecord	--	DIMENSION: integer	--	--	Number of records (observations)
percent_confidence_expected_error	%	float	[nrecord]	PCCF	Percent confidence based on expected error (from data producers)
percent_confidence_no_forecast	%	float	[nrecord]	PCCF	Percent confidence without forecast consistency test (from data producers)
percent_confidence_yes_forecast	%	float	[nrecord]	PCCF	Percent confidence with forecast consistency test (from data producers)
pressure	Pa	float	[nrecord]	PRLC	Pressure
quality_mark	--	float	[nrecord]	SWQM	NCEP satellite wind quality mark ... 0-2 : use ... >=3 and <=7 : inflate error ... 8-15 : don't use
satellite_id	--	float	[nrecord]	SAID	Satellite identifier
satellite_name	--	character	[nrecord]	--	Satellite name (based on satellite_id)
satellite_zenith_angle	degrees	float	[nrecord]	SAZA	Satellite zenith angle
wind_calculation_method	--	float	[nrecord]	SWCM	Satellie derived wind calculation method
wind_direction	degrees	float	[nrecord]	WDIR	Wind direction
wind_speed	m/s	float	[nrecord]	WSPD	Wind speed
year	years	float (2 digits)	[nrecord]	YEAR	Year

INDEX FILES				
Variable from NetCDF File	**Units**	**Type**	**Dimensions**	**Definition**
dist_max	km	double	[1]	Collocation criterion used: Maximum great circle distance
DP_match_drv_dset1	hPa	double	[nobs]	Difference (DEPENDENT minus DRIVER) in pressure per collocated pairing
DPlog_match_drv_dset1	log10(hPa)	double	[nobs]	Difference (DEPENDENT minus DRIVER) in log10(pressure) per collocated pairing
drv	--	character	[6 chars]	Name of DRIVER dataset with which all dependent datasets are collocated. Contains several attributes like the datafile path and QC notes.
dset1	--	character	[8 chars]	Name of DEPENDENT dataset. Contains several attributes like the datafile path and QC notes.
DT_match_drv_dset1	minutes	double	[nobs]	Time difference (DEPENDENT minus DRIVER) per collocated pairing
GCD_match_drv_dset1	km	double	[nobs]	Great circle distance for each collocated pairing between DRIVER and DEPENDENT
hgt_max	km	double	[1]	Collocation criterion used: Maximum absolute height difference
HT_match_drv_dset1	km	double	[nobs]	Height difference (DEPENDENT minus DRIVER) for each collocated pairing
idx_drv_dset1	--	int64	[nobs]	Indices of DRIVER that match DEPENDENT
idx_dset1	--	int64	[nobs]	Indices of DEPENDENT that match DRIVER
ndset	--	double	[1]	Number of DEPENDENT datasets collocated with the DRIVER
nobs	--	DIMENSION: integer	--	Number of matches (collocations)
pres_max	hPa	double	[1]	Collocation criterion used: Maximum absolute log10(pressure) difference
time_max	minutes	double	[1]	Collocation criterion used: Maximum absolute time difference

LOON				
Variable from NetCDF File	**Units**	**Type**	**Dimensions**	**Definition**
acceleration	m/(s^2)	float	[time]	Acceleration
acs	--	float	[time]	Altitude control system ...1 = ACS was trying to ascend (that is, venting air from the ballonet) ...-1 = ACS was trying to descend (pumping air into the ballonet) ...0 = otherwise ...Balloon altitude or pressure may still change even when ACS is off (e.g. due to loss of superpressure, turbulence and vertical winds, or deliberate ballast drop), and in some instances may not change even if ACS is on (e.g. if trying to ascend when the ballonet is already completely vented).
altitude	m above mean sea level	float	[time]	Geometric altitude of observation ...measured at payload (i.e., bottom of the balloon) ...+/- 2.5 m uncertainty based on GPS
day	days	float	[time]	Day
earth_ir	Watts / (m^2)	float	[time]	Upward longwave radiative flux ...+/- 6 deg C; IR flux = 0.000000056704*(temperature_kelvin)^4 ...sensor points straight down with pointing uncertainty of +/- 2 deg
earth_ir_sensor_config	--	float	[time]	Earth sensor configuration ...Groups observations with similar configurations of the IR sensor on the payload. For analyses sensitive to the overall IR flux bias, these groups of observations should be treated separately or used to assess systematic biases in results.
flightID_str	--	string	[time]	Balloon flight identification number
hour	hours	float	[time]	Hour
is_daytime	--	float	[time]	Is-daytime flag ...True (1) = daytime at observation time ...False (0) = otherwise ...Because solar elevation is relative to horizontal, daytime flag can still be True even if solar elevation is slightly negative.
latitude	degrees north	float	[time]	Latitude of observation ...range: [-90,90] ...+/- 2.5 m based on GPS
longitude	degrees east	float	[time]	Longitude of observation ...range: [-180,180) ...+/- 2.5 m based on GPS
minute	minutes	float	[time]	Minutes
month	months	float	[time]	Month
pressure	hPa	float	[time]	Atmospheric ambient pressure ...measured at payload (i.e., bottom of the balloon) ...+/- 1 hPa uncertainty
propeller_on	--	float	[time]	Propeller-on flag ...1 = propellor was on at time of observation ...0 = otherwise ...wind velocity should not be computed from GPS location when flag is non-zero.
solar_azimuth_angle	degrees	float	[time]	Solar azimuth angle ...relative to North
solar_elevation_angle	degrees		[time]	Solar elevation angle ...relative to horizontal
temperature	K	float	[time]	Ambient temperature ...not corrected for daytime effects of solar radiation on temperature sensor ...+/- 5 deg C uncertainty during day ...+/- 2 deg C uncertainty at night
time	seconds since 1970-01-01T00:00:00+00:00	DIMENSION: double	[time]	Time of observation ...time taken in UTC based on GPS ...uses proleptic_gregorian calendar
velocity_u	m/s	float	[time]	U-component of wind ...zonal (west-to-east) wind. Negative value denotes east-to-west. ...computed from GPS location fixes across a short time window.
velocity_v	m/s	float	[time]	V-component of wind ...meridional (south-to-north) wind. Negative value denotes north-to-south. ...computed from GPS location fixes across a short time window.
velocity_w	hPa/s	float	[time]	Vertical velocity ...positive value = balloon is descending (lower altitude, higher pressure); negative value = otherwise. ...high absolute omega for a given point means balloon velocity was integrated over a larger range of altitudes.
wind_direction	degrees	float	[time]	Direction of horizontal wind
wind_speed	m/s	float	[time]	Horizontal wind speed

LOON				
Variable from NetCDF File	**Units**	**Type**	**Dimensions**	**Definition**
year	years	float	[time]	Year

RADIOSONDE					
Variable from NetCDF File	**Units**	**Type**	**Dimensions**	**BUFR Mnemonic Code**	**Definition** Note: See here for additional information: **https://www.nco.ncep.noaa.gov/sib/jeff/bufrtab_tableb.html**
3db_beamwidth	degree	float	[nsondes]	BEAMW	3-dB beamwidth
abs_wind_shear_1km_above	m/s	float	[nsondes,nlevels]	AWSA	Absolute wind shear in 1 km layer above
abs_wind_shear_1km_below	m/s	float	[nsondes,nlevels]	AWSB	Absolute wind shear in 1 km layer below
antenna_beam_azimuth	degree	float	[nsondes,nlevels]	ANAZ	Antenna beam azimuth
antenna_beam_elevation	degree	float	[nsondes,nlevels]	ANEL	Antenna beam elevation
antenna_type	--	float	[nsondes]	ANTYP	Type of antenna
buoy_id	--	float	[nsondes]	BPID	Buoy/platform identifier
cloud_amount	--	float	[nsondes,nlevels]	CLAM	Cloud amount
cloud_type	--	float	[nsondes,nlevels]	CLTP	Cloud type
corrected_report_indicator	--	float	[nsondes]	CORN	Corrected report indicator
day	days	float	[nsondes]	DAYS	Day
dew_point_temperature	K	float	[nsondes,nlevels]	TMDP	Dewpoint temperature
doppler_mean_velocity_radial	m/s	float	[nsondes,nlevels]	DMVR	Doppler mean velocity (radial)
doppler_velocity_spectral_width	m/s	float	[nsondes,nlevels]	DVSW	Doppler velocity spectral width
extrapolated_geopotential	m^2 / s^2	float	[nsondes,nlevels]	XMGP10	Extrapolated mandatory level geopotential
extrapolated_pressure	Pa	float	[nsondes,nlevels]	XMPRLC	Extrapolated mandatory level pressure
geopotential_class7	m^2 / s^2	float	[nsondes,nlevels]	GP07	Geopotential
geopotential_class10	m^2 / s^2	float	[nsondes,nlevels]	GP10	Geopotential
group_description	--	string	--	--	Radiosonde group name
height	m	float	[nsondes,nlevels]	HEIT	Height
height_above_lowest_cloud_base	--	float	[nsondes,nlevels]	HBLCS	Height above surface of the base of the lowest cloud seen
hour	hours	float	[nsondes]	HOUR	Hour
latitude	degrees north	float	[nsondes]	CLAT	Latitude of observation
longitude	degrees east	float	[nsondes]	CLON	Longitude of observation
mean_frequency	Hz	float	[nsondes]	MEFR	Mean frequency
mean_speed_estimation	--	float	[nsondes]	MSPE	Mean speed estimation
mean_wind_direction_lower_layer	degrees	float	[nsondes,nlevels]	MWDL	Mean wind direction for surface - 1500 m (5000 feet)
mean_wind_direction_upper_layer	degrees	float	[nsondes,nlevels]	MWDH	Mean wind direction for 1500 - 3000 m
mean_wind_speed_lower_layer	m/s	float	[nsondes,nlevels]	MWSL	Mean wind speed for surface - 1500 m (5000 feet)
mean_wind_speed_upper_layer	m/s	float	[nsondes,nlevels]	MWSH	Mean wind speed for 1500 - 3000 m
measured_ozone_partial_pressure_sounding	Pa	float	[nsondes,nlevels]	MOPP	Measured ozone partial pressure (sounding)
measuring_equipment_type	--	float	[nsondes]	A4ME	Type of measuring equipment used
meridional_wind	m/s	float	[nsondes,nlevels]	VWND	v-component of wind
minute	minutes	float	[nsondes]	MINU	Minutes
month	months	float	[nsondes]	MNTH	Month
NOAA_wind_profiler_qc_test_results	--	float	[nsondes,nlevels]	NPQC	Wind profiler quality control test results
nlevels	--	DIMENSION: integer	--	--	Number of observations (levels) per radiosonde profile
nsondes	--	DIMENSION: integer	--	--	Number of radiosonde profiles
ozone_instrument_id	--	character	[nsondes]	OISN	Ozone instrument serial number/identification
ozone_instrument_type	--	float	[nsondes]	OITP	Ozone instrument type
ozone_mixing_ratio	cm^3 / m^3	float	[nsondes,nlevels]	OZMR	Ozone mixing ratio
ozone_pressure	DU	float	[nsondes,nlevels]	OZOP	Ozone pressure
ozone_sounding_correction_factor	--	float	[nsondes]	OSCF	Ozone sounding correction factor (CF)
ozone_vert_souding_significance	--	float	[nsondes]	OVSS	Ozone vertical sounding significance
pressure	Pa	float	[nsondes,nlevels]	PRLC	Pressure

RADIOSONDE					
Variable from NetCDF File	Units	Type	Dimensions	BUFR Mnemonic Code	Definition Note: See here for additional information: https://www.nco.ncep.noaa.gov/sib/jeff/bufrtab_tableb.html
quality_flag_VAD_wind	--	float	[nsondes,nlevels]	QFV2	Quality flag for VAD winds generated from Level II decoder
quality_information	--	float	[nsondes,nlevels]	QMRK	Quality information
qm_geopotential	--	float	[nsondes,nlevels]	QMGP	SDMEDIT quality mark for geopotential
qm_moisture	--	float	[nsondes,nlevels]	QMDD	SDMEDIT/QUIPS quality mark for moisture
qm_pressure	--	float	[nsondes,nlevels]	QMPR	SDMEDIT/QUIPS quality mark for pressure
qm_sst	--	float	[nsondes]	QMST	SDMEDIT quality mark for sea surface temperature
qm_station_elevation	--	float	[nsondes]	QCEVR	Station elevation quality mark (for mobile stations)
qm_temperature	--	float	[nsondes,nlevels]	QMAT	SDMEDIT/QUIPS quality mark for air temperature
qm_wind	--	float	[nsondes,nlevels]	QMWN	SDMEDIT/QUIPS quality mark for wind (does not include NESDIS produced satellite winds)
radar_signal_doppler_0th_moment	dB	float	[nsondes,nlevels]	SPP0	Radar signal Doppler spectrum 0th moment
radiosonde_diag_code	--	float	[nsondes]	UARDC	Radiosonde report diagnostic code
radiosonde_id	--	character	[nsondes]	RSML	Radiosonde ship, drop, or mobile land station ID
radiosonde_launch_hour	hours	float	[nsondes]	UALNHR	Radiosonde launch time
radiosonde_launch_minute	minutes	float	[nsondes]	UALNMN	Radiosonde launch time
radiosonde_part_name	--	character	[nsondes]	UAPART	Upper-air report part name
radiosonde_type	--	float	[nsondes]	RATP	Radiosonde type
range_gate_length	m	float	[nsondes]	RAGL	Range-gate length
relative_humidity	%	float	[nsondes,nlevels]	REHU	Relative humidity
report_id	--	character	[nsondes]	RPID	Report identifier
rmse_vector_wind	m/s	float	[nsondes,nlevels]	RMSW	Root mean square vector wind error
sd_horiz_wind_speed	m/s	float	[nsondes,nlevels]	SDHS	Standard deviation of horizontal wind speed
sd_vert_wind_speed	m/s	float	[nsondes,nlevels]	SDVS	Standard deviation of vertical wind speed
sea_surface_temperature	K	float	[nsondes]	SST1	Sea/water temperature
showalter_stability_index	--	float	[nsondes,nlevels]	STBS5	Modified Showalter stability index
signal_to_noise_ratio	dB	float	[nsondes,nlevels]	STNR	Signal to noise ratio
solar_IR_radiation_correction	--	float	[nsondes]	SIRC	Solar and infrared radiation correction
station_height	m	float	[nsondes]	SELV	Height of station
station_short_name	--	character	[nsondes]	SSTN	Short station or site name
station_type	--	float	[nsondes]	TOST	Type of station
temperature	K	float	[nsondes,nlevels]	TMDB	Temperature/air temperature
time_increment_since_launch_time	minutes	float	[nsondes]	TIMI	Time increment
time_period	seconds	float	[nsondes]	TPSE	Time period or displacement
time_period_displacement	minutes	float	[nsondes]	TPMI	Time period or displacement
time_significance	--	float	[nsondes]	TSIG	Time significance
total_number_wrt_accum_avg	--	float	[nsondes,nlevels]	ACAV	Total number (with respect to accumulation or average)
tracking_technique	--	float	[nsondes]	TTSS	Tracking technique/status of system used
vert_sounding_significance	--	float	[nsondes,nlevels]	VSIG	Vertical sounding significance
virtual_temperature	K	float	[nsondes,nlevels]	TMVR	Virtual temperature
w_component	m/s	float	[nsondes,nlevels]	WCMP	w-component of wind
wind_computation_enhancement	--	float	[nsondes]	WICE	Wind computation enhancement
wind_direction	degrees	float	[nsondes,nlevels]	WDIR	Wind direction
wind_instrument_type	--	float	[nsondes]	TIWM	Type of instrumentation for wind measurement
wind_speed	m/s	float	[nsondes,nlevels]	WSPD	Wind speed
WMO_block_number	--	float	[nsondes]	WMOB	WMO block number
WMO_region_number	--	float	[nsondes]	WMOR	WMO region number/geographical area

RADIOSONDE					
Variable from NetCDF File	**Units**	**Type**	**Dimensions**	**BUFR Mnemonic Code**	**Definition** Note: See here for additional information: **https://www.nco.ncep.noaa.gov/sib/jeff/bufrtab_tableb.html**
WMO_station_number	--	float	[nsondes]	WMOS	WMO station number
year	years	float	[nsondes]	YEAR	Year
zonal_wind	m/s	float	[nsondes,nlevels]	UWND	u-component of wind