WMO FM 301 NetCDF Validation Report of ODIM.nc

Section Summaries

Section	Pass	Fail Mandatory	Fail optional
Global_Attributes	6	9	0
Global_Ancillary_variables	13	8	0
sweep_variables	34	5	0
data_variables	30	30	0
radar_parameters	8	0	0
radar_calibration	14	0	1
Overall	105	52	1

Detailed Results

Group	Name	Available	Expected Dtype	Actual Dtype	Expected Value	Actual Value	Requirement	Result
Global_Attributes	instrument_name	Yes	string	str	None	EE41	Mandatory	pass
Global_Attributes	institution	No	string	None	None	None	Mandatory	fail_mandatory
Global_Attributes	references	No	string	None	None	None	Mandatory	fail_mandatory
Global_Attributes	source	No	string	None	None	None	Mandatory	fail_mandatory
Global_Attributes	history	Yes	string	str	None	Fri Sep 09 15:05:24 2025: fm301-convert SUR.202506091000.VOL.h5 ODIM.nc	Mandatory	pass
Global_Attributes	comment	No	string	None	None	None	Mandatory	fail_mandatory
Global_Attributes	platform_is_mobile	Yes	string	str	None	false	Mandatory	pass
Global_Attributes	Conventions	Yes	string	str	CF-1.8, WMO CF-1.0	CF-1.8, WMO CF-1.0, ACDD-1.3	Mandatory	fail_mandatory
Global_Attributes	wmo__cf_profile	Yes	string	str	FM 301-2022	FM 301-XX	Mandatory	fail_mandatory
Global_Attributes	title	No	string	None	None	None	Mandatory	fail_mandatory
Global_Attributes	wmo__data_category	Yes	string	int32	None	6	Mandatory	fail_mandatory
Global_Attributes	wmo__data_policy	No	string	None	['core', 'recommended']	None	Mandatory	fail_mandatory
Global_Attributes	wmo__id	Yes	string	str	None	26232	Optional	pass

Group	Name	Available	Expected Dtype	Actual Dtype	Expected Value	Actual Value	Requirement	Result
Global_Attributes	wmo__wsi	Yes	string	str	None	0-233-2-26232	Optional	pass
Global_Attributes	site_name	Yes	string	str	None	Sürgavere	Optional	pass
Global_Ancillary_variables	volume_number	No	int	None	None	None	Mandatory	fail_mandatory
Global_Ancillary_variables	time_coverage_start	Yes	string	float64	None	0.0	Mandatory	fail_mandatory
Global_Ancillary_variables:time_coverage_start	units	Yes	string	str	seconds since .	seconds since 2025-06-09T10:00:07Z	Mandatory	pass
Global_Ancillary_variables:time_coverage_start	calendar	Yes	string	str	['gregorian', 'standard']	standard	Mandatory	pass
Global_Ancillary_variables:time_coverage_start	standard_name	Yes	string	str	time	time	Mandatory	pass
Global_Ancillary_variables	time_coverage_end	Yes	string	float64	None	0.0	Mandatory	fail_mandatory
Global_Ancillary_variables:time_coverage_end	units	Yes	string	str	seconds since .	seconds since 2025-06-09T10:04:41Z	Mandatory	pass
Global_Ancillary_variables:time_coverage_end	calendar	Yes	string	str	['gregorian', 'standard']	standard	Mandatory	pass
Global_Ancillary_variables:time_coverage_end	standard_name	No	string	None	time	None	Mandatory	fail_mandatory
Global_Ancillary_variables	latitude	Yes	double	float64	None	58.48231002688408	Mandatory	pass
Global_Ancillary_variables:latitude	units	Yes	string	str	degrees_north	degrees_north	Mandatory	pass
Global_Ancillary_variables:latitude	standard_name	No	string	None	latitude	None	Mandatory	fail_mandatory
Global_Ancillary_variables	longitude	Yes	double	float64	None	25.518660116940737	Mandatory	pass
Global_Ancillary_variables:longitude	units	Yes	string	str	degrees_east	degrees_east	Mandatory	pass
Global_Ancillary_variables:longitude	standard_name	No	string	None	longitude	None	Mandatory	fail_mandatory
Global_Ancillary_variables	altitude	Yes	double	float64	None	157.0	Mandatory	pass

Group	Name	Available	Expected Dtype	Actual Dtype	Expected Value	Actual Value	Requirement	Result
Global_Ancillary_variables:altitude	units	Yes	string	str	metres	meters	Mandatory	fail_mandatory
Global_Ancillary_variables:altitude	standard_name	No	string	None	height_above_reference_ellipsoid	None	Mandatory	fail_mandatory
Global_Ancillary_variables	platform_type	Yes	string		['fixed', 'vehicle', 'ship', 'aircraft', 'aircraft_fore', 'aircraft_aft', 'aircraft_tail', 'aircraft_belly', 'aircraft_roof', 'aircraft_nose', 'satellite_orbit', 'satellite_geostat']	fixed	Mandatory	pass
Global_Ancillary_variables	instrument_type	Yes	string		['radar', 'lidar']	radar	Mandatory	pass
Global_Ancillary_variables	primary_axis	Yes	string		['axis_z', 'axis_y', 'axis_x', 'axis_z_prime', 'axis_y_prime', 'axis_x_prime']	axis_z	Optional	pass
sweep_variables	sweep_0/time	Yes	double	float64	None	0.03055555745959282	Mandatory	pass
sweep_variables:sweep_0/time	units	Yes	string	str	seconds since .	seconds since 2025-06-09T10:00:07Z	Mandatory	pass
sweep_variables:sweep_0/time	calendar	No	string	None	['gregorian', 'standard']	None	Mandatory	fail_mandatory
sweep_variables:sweep_0/time	standard_name	Yes	string	str	time	time	Mandatory	pass
sweep_variables	sweep_0/range	Yes	float	float32	None	150.0	Mandatory	pass
sweep_variables:sweep_0/range	units	Yes	string	str	metres	meters	Mandatory	fail_mandatory
sweep_variables:sweep_0/range	standard_name	Yes	string	str	projection_range_coordinate	projection_range_coordinate	Mandatory	pass
sweep_variables:sweep_0/range	long_name	Yes	string	str	range_to_measurement_volume	range_to_measurement_volume	Mandatory	pass
sweep_variables:sweep_0/range	axis	Yes	string	str	cradial_range_coordinate	radial_range_coordinate	Mandatory	pass
sweep_variables:sweep_0/range	spacing_is_constant	Yes	string	int32	None	1	Mandatory	fail_mandatory
sweep_variables:sweep_0/range	meters_to_center_of_first_gate	Yes	float	float32	None	150.0	Mandatory	pass
sweep_variables:sweep_0/range	meters_between_gates	Yes	float	float32	None	300.0	Mandatory	pass

Group	Name	Available	Expected Dtype	Actual Dtype	Expected Value	Actual Value	Requirement	Result
sweep_variables	sweep_0/frequency	Yes	float	float32	None	5628517888.0	Mandatory	pass
sweep_variables:sweep_0/frequency	units	Yes	string	str	s-1	s-1	Mandatory	pass
sweep_variables:sweep_0/frequency	standard_name	Yes	string	str	radiation_frequency	radiation_frequency	Mandatory	pass
sweep_variables	sweep_0/sweep_number	Yes	int	int32	None	0	Mandatory	pass
sweep_variables	sweep_0/sweep_mode	No	string	None	['sector', 'coplane', 'rhi', 'vertical_pointing', 'idle', 'azimuth_surveillance', 'elevation_surveillance', 'sunscan', 'pointing', 'manual_ppi', 'manual_rhi', 'doppler_beam_swinging', 'complex_trajectory', 'electronic_steering']	None	Mandatory	fail_mandatory
sweep_variables	sweep_0/follow_mode	No	string	None	['none', 'sun', 'vehicle', 'aircraft', 'target', 'manual']	None	Mandatory	fail_mandatory
sweep_variables	sweep_0/prt_mode	Yes	string		['fixed', 'staggered', 'dual', 'hybrid']	dual	Mandatory	pass
sweep_variables	sweep_0/fixed_angle	Yes	float	float32	None	0.5	Mandatory	pass
sweep_variables:sweep_0/fixed_angle	units	Yes	string	str	degrees	degrees	Mandatory	pass
sweep_variables	sweep_0/azimuth	Yes	float	float32	None	81.07635498046875	Mandatory	pass
sweep_variables:sweep_0/azimuth	units	Yes	string	str	degrees	degrees	Mandatory	pass
sweep_variables:sweep_0/azimuth	standard_name	Yes	string	str	sensor_to_target_azimuth_angle	sensor_to_target_azimuth_angle	Mandatory	pass
sweep_variables:sweep_0/azimuth	long_name	Yes	string	str	Azimuth angle from true north	Azimuth angle from true north	Mandatory	pass
sweep_variables:sweep_0/azimuth	axis	Yes	string	str	cradial_azimuth_coordinate	radial_azimuth_coordinate	Mandatory	pass
sweep_variables	sweep_0/elevation	Yes	float	float32	None	0.5	Mandatory	pass
sweep_variables:sweep_0/elevation	units	Yes	string	str	degrees	degrees	Mandatory	pass
sweep_variables:sweep_0/elevation	standard_name	Yes	string	str	sensor_to_target_elevation_angle	sensor_to_target_elevation_angle	Mandatory	pass
sweep_variables:sweep_0/elevation	long_name	Yes	string	str	Elevation angle from horizontal plane	Elevation angle from horizontal plane	Mandatory	pass

Group	Name	Available	Expected Dtype	Actual Dtype	Expected Value	Actual Value	Requirement	Result
sweep_variables:sweep_0/elevation	axis	Yes	string	str	cradial_elevation_coordinate	radial_elevation_coordinate	Mandatory	pass
sweep_variables	sweep_0/polarization_mode	Yes	string		['horizontal', 'vertical', 'hv_alt', 'hv_sim', 'circular']	hv_sim	Optional	pass
sweep_variables	sweep_0/target_scan_rate	Yes	float	float32	None	16.924438	Optional	pass
sweep_variables:sweep_0/target_scan_rate	units	Yes	string	str	degrees/s	degrees/s	Optional	pass
sweep_variables	sweep_0/calib_index	Yes	int	int32	None	0	Optional	pass
sweep_variables	sweep_0/prt	Yes	float	float32	None	0.001754386001266539	Optional	pass
sweep_variables:sweep_0/prt	units	Yes	string	str	seconds	seconds	Optional	pass
sweep_variables	sweep_0/prt_ratio	Yes	float	float32	None	1.0	Optional	pass
sweep_variables	sweep_0/n_samples	Yes	int	int32	None	32	Optional	pass
radar_parameters	radar_parameters/antenna_gain_h	Yes	float	float32	None	0.0	Optional	pass
radar_parameters:radar_parameters/antenna_gain_h	units	Yes	string	str	dBi	dBi	Optional	pass
radar_parameters	radar_parameters/antenna_gain_v	Yes	float	float32	None	0.0	Optional	pass
radar_parameters:radar_parameters/antenna_gain_v	units	Yes	string	str	dBi	dBi	Optional	pass
radar_parameters	radar_parameters/beam_width_h	Yes	float	float32	None	0.95000005	Optional	pass
radar_parameters:radar_parameters/beam_width_h	units	Yes	string	str	degrees	degrees	Optional	pass
radar_parameters	radar_parameters/beam_width_v	Yes	float	float32	None	0.95000005	Optional	pass
radar_parameters:radar_parameters/beam_width_v	units	Yes	string	str	degrees	degrees	Optional	pass
radar_calibration	radar_calibration/calib_index	Yes	uint8	uint8	None	2	Optional	pass
radar_calibration	radar_calibration/pulse_width	Yes	float	float32	None	8.000000093488779e-07	Optional	pass

Group	Name	Available	Expected Dtype	Actual Dtype	Expected Value	Actual Value	Requirement	Result
radar_calibration:radar_calibration/pulse_width	units	Yes	string	str	seconds	seconds	Optional	pass
radar_calibration	radar_calibration/antenna_gain_h	Yes	float	float32	None	0.0	Optional	pass
radar_calibration:radar_calibration/antenna_gain_h	units	Yes	string	str	dB	dB	Optional	pass
radar_calibration	radar_calibration/antenna_gain_v	Yes	float	float32	None	0.0	Optional	pass
radar_calibration:radar_calibration/antenna_gain_v	units	Yes	string	str	dB	dB	Optional	pass
radar_calibration	radar_calibration/radar_constant_h	Yes	float	float32	None	70.6500015258789	Optional	pass
radar_calibration:radar_calibration/radar_constant_h	units	Yes	string	str	m/mW dB units	dB(m/mW)	Optional	fail_optional
radar_calibration	radar_calibration/base_1km_hc	Yes	float	float32	None	-38.9375	Optional	pass
radar_calibration:radar_calibration/base_1km_hc	units	Yes	string	str	dBZ	dBZ	Optional	pass
radar_calibration	radar_calibration/base_1km_vc	Yes	float	float32	None	-39.25	Optional	pass
radar_calibration:radar_calibration/base_1km_vc	units	Yes	string	str	dBZ	dBZ	Optional	pass
radar_calibration	radar_calibration/zdr_correction	Yes	float	float32	None	-0.3125	Optional	pass
radar_calibration:radar_calibration/zdr_correction	units	Yes	string	str	dB	dB	Optional	pass

Datasets

Group	Name	Available	Expected Dtype	Actual Dtype	Expected Value	Actual Value	Requirement	Result
data_variables	sweep_0/DBZH	Yes					dataset	pass
data_variables:sweep_0/DBZH	standard_name	Yes			radar_equivalent_reflectivity_factor_h	radar_equivalent_reflectivity_factor_h	Mandatory	pass
data_variables:sweep_0/DBZH	long_name	Yes			Equivalent reflectivity factor H	Equivalent reflectivity factor H	Mandatory	pass

Group	Name	Available	Expected Dtype	Actual Dtype	Expected Value	Actual Value	Requirement	Result
data_variables:sweep_0/DBZH	wmo__parameter_url	No	string	None	None	None	Mandatory	fail_mandatory
data_variables:sweep_0/DBZH	wmo__parameter_name	No	string	None	None	None	Mandatory	fail_mandatory
data_variables:sweep_0/DBZH	valid_range	No		None	None	None	Mandatory	fail_mandatory
data_variables:sweep_0/DBZH	units	Yes			None	dBZ	Mandatory	pass
data_variables	sweep_0/DBTH	Yes					dataset	pass
data_variables:sweep_0/DBTH	standard_name	Yes			radar_equivalent_reflectivity_factor_h	radar_equivalent_reflectivity_factor_h	Mandatory	pass
data_variables:sweep_0/DBTH	long_name	Yes			Total power H (uncorrected reflectivity)	Total power H (uncorrected reflectivity)	Mandatory	pass
data_variables:sweep_0/DBTH	wmo__parameter_url	No	string	None	None	None	Mandatory	fail_mandatory
data_variables:sweep_0/DBTH	wmo__parameter_name	No	string	None	None	None	Mandatory	fail_mandatory
data_variables:sweep_0/DBTH	valid_range	No		None	None	None	Mandatory	fail_mandatory
data_variables:sweep_0/DBTH	units	Yes			None	dBZ	Mandatory	pass
data_variables	sweep_0/VRADH	Yes					dataset	pass
data_variables:sweep_0/VRADH	standard_name	Yes			radial_velocity_of_scatterers_away_from_instrument_h	radial_velocity_of_scatterers_away_from_instrument_h	Mandatory	pass
data_variables:sweep_0/VRADH	long_name	Yes			Radial velocity of scatterers away from instrument H	Radial velocity of scatterers away from instrument H	Mandatory	pass
data_variables:sweep_0/VRADH	wmo__parameter_url	No	string	None	None	None	Mandatory	fail_mandatory
data_variables:sweep_0/VRADH	wmo__parameter_name	No	string	None	None	None	Mandatory	fail_mandatory
data_variables:sweep_0/VRADH	valid_range	No		None	None	None	Mandatory	fail_mandatory
data_variables:sweep_0/VRADH	units	Yes			None	m s-1	Mandatory	pass
data_variables	sweep_0/WRADH	Yes					dataset	pass
data_variables:sweep_0/WRADH	standard_name	Yes			radar_doppler_spectrum_width_h	radar_doppler_spectrum_width_h	Mandatory	pass

Group	Name	Available	Expected Dtype	Actual Dtype	Expected Value	Actual Value	Requirement	Result
data_variables:sweep_0/WRADH	long_name	Yes			Doppler spectrum width H	Doppler spectrum width H	Mandatory	pass
data_variables:sweep_0/WRADH	wmo__parameter_url	No	string	None	None	None	Mandatory	fail_mandatory
data_variables:sweep_0/WRADH	wmo__parameter_name	No	string	None	None	None	Mandatory	fail_mandatory
data_variables:sweep_0/WRADH	valid_range	No		None	None	None	Mandatory	fail_mandatory
data_variables:sweep_0/WRADH	units	Yes			None	m s-1	Mandatory	pass
data_variables	sweep_0/ZDR	Yes					dataset	pass
data_variables:sweep_0/ZDR	standard_name	Yes			radar_differential_reflectivity_hv	radar_differential_reflectivity_hv	Mandatory	pass
data_variables:sweep_0/ZDR	long_name	Yes			Log differential reflectivity H/V	Log differential reflectivity H/V	Mandatory	pass
data_variables:sweep_0/ZDR	wmo__parameter_url	No	string	None	None	None	Mandatory	fail_mandatory
data_variables:sweep_0/ZDR	wmo__parameter_name	No	string	None	None	None	Mandatory	fail_mandatory
data_variables:sweep_0/ZDR	valid_range	No		None	None	None	Mandatory	fail_mandatory
data_variables:sweep_0/ZDR	units	Yes			None	dB	Mandatory	pass
data_variables	sweep_0/PHIDP	Yes					dataset	pass
data_variables:sweep_0/PHIDP	standard_name	Yes			radar_differential_phase_hv	radar_differential_phase_hv	Mandatory	pass
data_variables:sweep_0/PHIDP	long_name	Yes			Differential phase HV	Differential phase HV	Mandatory	pass
data_variables:sweep_0/PHIDP	wmo__parameter_url	No	string	None	None	None	Mandatory	fail_mandatory
data_variables:sweep_0/PHIDP	wmo__parameter_name	No	string	None	None	None	Mandatory	fail_mandatory
data_variables:sweep_0/PHIDP	valid_range	No		None	None	None	Mandatory	fail_mandatory
data_variables:sweep_0/PHIDP	units	Yes			None	degree	Mandatory	pass
data_variables	sweep_0/KDP	Yes					dataset	pass
data_variables:sweep_0/KDP	standard_name	Yes			radar_specific_differential_phase_hv	radar_specific_differential_phase_hv	Mandatory	pass

Group	Name	Available	Expected Dtype	Actual Dtype	Expected Value	Actual Value	Requirement	Result
data_variables:sweep_0/KDP	long_name	Yes			Specific differential phase HV	Specific differential phase HV	Mandatory	pass
data_variables:sweep_0/KDP	wmo__parameter_url	No	string	None	None	None	Mandatory	fail_mandatory
data_variables:sweep_0/KDP	wmo__parameter_name	No	string	None	None	None	Mandatory	fail_mandatory
data_variables:sweep_0/KDP	valid_range	No		None	None	None	Mandatory	fail_mandatory
data_variables:sweep_0/KDP	units	Yes			None	degree km-1	Mandatory	pass
data_variables	sweep_0/RHOHV	Yes					dataset	pass
data_variables:sweep_0/RHOHV	standard_name	Yes			radar_correlation_coefficient_hv	radar_correlation_coefficient_hv	Mandatory	pass
data_variables:sweep_0/RHOHV	long_name	Yes			Correlation coefficient HV	Correlation coefficient HV	Mandatory	pass
data_variables:sweep_0/RHOHV	wmo__parameter_url	No	string	None	None	None	Mandatory	fail_mandatory
data_variables:sweep_0/RHOHV	wmo__parameter_name	No	string	None	None	None	Mandatory	fail_mandatory
data_variables:sweep_0/RHOHV	valid_range	No		None	None	None	Mandatory	fail_mandatory
data_variables:sweep_0/RHOHV	units	Yes			None	1	Mandatory	pass
data_variables	sweep_0/SNR	Yes					dataset	pass
data_variables:sweep_0/SNR	standard_name	Yes			radar_signal_to_noise_ratio	radar_signal_to_noise_ratio	Mandatory	pass
data_variables:sweep_0/SNR	long_name	Yes			Signal-to-noise ratio	Signal-to-noise ratio	Mandatory	pass
data_variables:sweep_0/SNR	wmo__parameter_url	No	string	None	None	None	Mandatory	fail_mandatory
data_variables:sweep_0/SNR	wmo__parameter_name	No	string	None	None	None	Mandatory	fail_mandatory
data_variables:sweep_0/SNR	valid_range	No		None	None	None	Mandatory	fail_mandatory
data_variables:sweep_0/SNR	units	Yes			None	dB	Mandatory	pass
data_variables	sweep_0/NCPH	Yes					dataset	pass
data_variables:sweep_0/NCPH	standard_name	Yes			radar_normalized_coherent_power_h	radar_normalized_coherent_power_h	Mandatory	pass

Group	Name	Available	Expected Dtype	Actual Dtype	Expected Value	Actual Value	Requirement	Result
data_variables:sweep_0/NCPH	long_name	Yes			Normalized coherent power co-polar H	Normalized coherent power co-polar H	Mandatory	pass
data_variables:sweep_0/NCPH	wmo__parameter_url	No	string	None	None	None	Mandatory	fail_mandatory
data_variables:sweep_0/NCPH	wmo__parameter_name	No	string	None	None	None	Mandatory	fail_mandatory
data_variables:sweep_0/NCPH	valid_range	No		None	None	None	Mandatory	fail_mandatory
data_variables:sweep_0/NCPH	units	Yes			None	1	Mandatory	pass

Measurements, Instrumentation and Traceability Section, WIGOS Division, WMO Secretariat