

CMEMS INSTAC Parameters list – V3.2.0

variable name	long_name	unit	CF standard_name	additional attributes ('O'ptional or 'M'andatory)	SDN Param	SDN UoM
<b>Coordinates</b>						
TIME	Time	days since 1950-01-01T00:00:00Z	time	-	-	-
LATITUDE	Latitude of each location	degree_north	latitude	-	-	-
LONGITUDE	Longitude of each location	degree_east	longitude	-	-	-
DEPH	Depth	m	depth	-	SDN:P01:ADEPZZ01	SDN:P06:ULAA
PRES	Sea pressure	dbar	sea_water_pressure	-	SDN:P01:PRESPR01	SDN:P06:UPDB
<b>Coordinates (HF radar specific)</b>						
BEAR <sup>(2)(3)</sup>	Bearing away from instrument	degree_true	TBD	-	SDN:P01:BEARFRTR	SDN:P06:UABB
RNGE <sup>(2)(3)</sup>	Range away from instrument	km	TBD	-	SDN:P01:RIFNAX01	SDN:P06:ULKM
<b>Coordinates (Wave spectra specific)</b>						
FREQUENCY <sup>(4)</sup>	Central frequency of the band	s-1	wave_frequency	-	TBD	TBD
<b>Oceanographical</b>						
TEMP	Sea temperature	degrees_C	sea_water_temperature	-	SDN:P01:TEMPPR01	SDN:P06:UPAA
PSAL	Practical salinity	0.001	sea_water_practical_salinity	-	SDN:P01:PSLTZZ01	SDN:P06:UUUU
CNDC	Electrical conductivity	S m-1	sea_water_electrical_conductivity	-	SDN:P01:CNDCZZ01	SDN:P06:UECA
DENS	Sea density (sigma-theta)	kg m-3	sea_water_sigma_theta	-	SDN:P01:SIGTEQ01	SDN:P06:UKMC
SVEL	Sound velocity	m s-1	speed_of_sound_in_sea_water	-	SDN:P01:SVELXXXX	SDN:P06:UVAA
BATH	Bathymetric depth	m	sea_floor_depth_below_sea_surface	-	SDN:P01:MBANZZZZ	SDN:P06:ULAA
HCSP	Horizontal current speed	m s-1	sea_water_speed	-	SDN:P01:LCSAZZ01	SDN:P06:UVAA
HCDT	Current to direction relative true north	degree	direction_of_sea_water_velocity	-	SDN:P01:LCDAZZ01	SDN:P06:UABB
EWCT	West-east current component	m s-1	eastward_sea_water_velocity	-	SDN:P01:LCEWZZ01	SDN:P06:UVAA
NSCT	South-north current component	m s-1	northward_sea_water_velocity	-	SDN:P01:LCSNZZ01	SDN:P06:UVAA
VCSP	Bottom-top current component	m s-1	upward_sea_water_velocity	-	SDN:P01:LRZAZZZZ	SDN:P06:UVAA
RDVA <sup>(2)(3)</sup>	Radial sea water velocity away from instrument	m s-1	radial_sea_water_velocity_away_from_instrument	-	SDN:P01:LCSAVWRD	SDN:P06:UVAA
DRVA <sup>(2)(3)</sup>	Direction of radial vector away from instrument	degree_true	direction_of_radial_vector_away_from_instrument	-	SDN:P01:LCSAVWRD	SDN:P06:UABB
<b>Sea Level</b>						
SLEV	Water surface height above a specific datum	m	water_surface_height_above_reference_datum	time_sampling = n (M, in minutes) sea_level_datum = "chart datum", "geoidetic datum", "... (M) processing_method = "instantaneous values", "filtered values", "average", "... (M) TGBM_name = "... (O) TGBM_sea_level_datum = n (O) co_location_with_GNSS = "Distance (km)", "No", "Unknown" (O) TGBM_ellipsoidal_height_estimate = n (O) vertical_land_movement_estimate = "trend (mm/year) - period", "unknown" (O) GNSS_campaign = "Yes", "No" (O) comment="..." (O)	SDN:P01:ASLVZZ01	SDN:P06:ULAA
<b>Waves</b>						
VGHS <sup>(2)</sup>	Generic significant wave height (Hs)	m	sea_surface_wave_significant_height	type_of_analysis="unknown" (M)	SDN:P01:GTDHZZ01	SDN:P06:ULAA
VHM0	Spectral significant wave height (Hm0)	m	sea_surface_wave_significant_height	type_of_analysis="spectral analysis" (M)	SDN:P01:HMZEEZ01	SDN:P06:ULAA
VAVH	Average height highest 1/3 wave (H1/3)	m	sea_surface_wave_significant_height	type_of_analysis="zero crossing" (M)	SDN:P01:GAVHZZ01	SDN:P06:ULAA
VH110 <sup>(2)</sup>	Average height highest 1/10 wave (H1/10)	m	sea_surface_wave_mean_height_of_highest_tenth	type_of_analysis="zero crossing" (M)	SDN:P01:GTDZ01	SDN:P06:ULAA
VHZA <sup>(2)</sup>	Average zero crossing wave height (Hzm)	m	sea_surface_wave_mean_height	type_of_analysis="zero crossing" (M)	SDN:P01:HZAVZZ01	SDN:P06:ULAA
VEMH <sup>(2)</sup>	Estimated maximum wave height	m	sea_surface_wave_maximum_height	type_of_analysis="unknown" (M)	SDN:P01:GCMXVS01	SDN:P06:ULAA
VZMX	Maximum zero crossing wave height (Hmax)	m	sea_surface_wave_maximum_height	type_of_analysis="zero crossing" (M)	SDN:P01:GZMXZZ01	SDN:P06:ULAA
VCMX	Maximum crest trough wave height (Hc,max)	m	sea_surface_wave_maximum_height	type_of_analysis="crests" (M)	SDN:P01:GCMXZZ01	SDN:P06:ULAA
VMNL <sup>(2)</sup>	Depth of the deepest trough	m	sea_surface_wave_maximum_trough_depth	type_of_analysis="crests" (M)	SDN:P01:GMNLZZ01	SDN:P06:ULAA
VMXL	Height of the highest crest	m	sea_surface_wave_maximum_crest_height	type_of_analysis="crests" (M)	SDN:P01:GMXLZZ01	SDN:P06:ULAA
VEPK	Wave spectrum peak energy (Smax)	m2 s	sea_surface_wave_energy_at_variance_spectral_density_maximum	type_of_analysis="spectral analysis" (M)	SDN:P01:GEPKZZ01	SDN:P06:UMHZ
VTM10 <sup>(2)</sup>	Spectral moments (-1,0) wave period (Tm-10)	s	sea_surface_wave_mean_period_from_variance_spectral_density_inverse_frequency_moment	type_of_analysis="spectral analysis" (M)	SDN:P01:GTZAMZZZ	SDN:P06:UTBB
VTM02 <sup>(2)</sup>	Spectral moments (0,2) wave period (Tm02)	s	sea_surface_wave_mean_period_from_variance_spectral_density_second_frequency_moment	type_of_analysis="spectral analysis" (M)	SDN:P01:GTZAMZZZ	SDN:P06:UTBB
VZTA	Average zero crossing wave period (Tz)	s	sea_surface_wave_mean_period	type_of_analysis="zero crossing" (M)	SDN:P01:GTZAZZ01	SDN:P06:UTBB
VGTA <sup>(2)</sup>	Generic average wave period	s	sea_surface_wave_mean_period	type_of_analysis="unknown" (M)	SDN:P01:GTAMZZ01	SDN:P06:UTBB
VTPK	Wave period at spectral peak / peak period (Tp)	s	sea_surface_wave_period_at_variance_spectral_density_maximum	type_of_analysis="spectral analysis" (M)	SDN:P01:GTPKZZ01	SDN:P06:UTBB
VAVT	Average period highest 1/3 wave (T1/3)	s	sea_surface_wave_significant_period	type_of_analysis="zero crossing" (M)	SDN:P01:GTZHZZ01	SDN:P06:UTBB
VT110 <sup>(2)</sup>	Average period highest 1/10 wave (T1/10)	s	sea_surface_wave_mean_period_of_highest_tenth	type_of_analysis="zero crossing" (M)	SDN:P01:GTZHTN01	SDN:P06:UTBB
VTMX <sup>(2)</sup>	Maximum wave period (Tmax)	s	sea_surface_wave_maximum_period	type_of_analysis="zero crossing" (M)	SDN:P01:GTZMZZ01	SDN:P06:UTBB
VTZM <sup>(2)</sup>	Period of the highest wave (Tthmax)	s	sea_surface_wave_period_of_highest_wave	type_of_analysis="zero crossing" (M)	SDN:P01:GTHMXX01	SDN:P06:UTBB
VMDR	Mean wave direction from (Mdir)	degree	sea_surface_wave_from_direction	type_of_analysis="spectral analysis" (M)	SDN:P01:GMWDZZ01	SDN:P06:UABB
VDIR	Wave direction rel. true north	degree	sea_surface_wave_from_direction	type_of_analysis="unknown" (M)	SDN:P01:GWRDZZ01	SDN:P06:UABB
VPED	Wave principal direction at spectral peak	degree	sea_surface_wave_from_direction_at_variance_spectral_density_maximum	type_of_analysis="spectral analysis" (M)	SDN:P01:GPEDDZ01	SDN:P06:UABB
VST1 <sup>(2)</sup>	Maximum wave steepness	1	sea_surface_wave_maximum_steepness	-	SDN:P01:WVSTZZ01	SDN:P06:UUUU
VPSP	Wave directional spreading at spectral peak	degree	sea_surface_wave_directional_spread_at_variance_spectral_density_maximum	type_of_analysis="spectral analysis" (M)	SDN:P01:GSPRZZ01	SDN:P06:UAAA
VSPEC1D <sup>(2)(4)</sup>	Wave scalar spectral density	m2 s	sea_surface_wave_variance_spectral_density	type_of_analysis="1st order spectral analysis" (M)	TBD	TBD
THETA1 <sup>(2)(4)</sup>	Mean wave from direction	degree	sea_surface_wave_from_direction	type_of_analysis="1st order spectral analysis" (M)	TBD	TBD
STHETA1 <sup>(2)(4)</sup>	Directional spread around THETA1	degree	sea_surface_wave_directional_spread	type_of_analysis="1st order spectral analysis" (M)	TBD	TBD
THETA2 <sup>(2)(4)</sup>	Principal wave from direction	degree	sea_surface_wave_from_direction	type_of_analysis="2nd order spectral analysis" (M)	TBD	TBD
STHETA2 <sup>(2)(4)</sup>	Directional spread around THETA2	degree	sea_surface_wave_directional_spread	type_of_analysis="2nd order spectral analysis" (M)	TBD	TBD
<b>BGC</b>						
DOXY	Dissolved oxygen	mmol m-3	mole_concentration_of_dissolved_molecular_oxygen_in_sea_water	last_calibration_date="YYYY-MM-DD" (O) calibration_method="..." (O) used_salinity=value or salinity="varname" (O) used_temperature=value or temperature="varname" (O) used_pressure=value or pressure="varname" (O) compensated="YES" "NO" (O - default="YES")	SDN:P01:DOXYZZXX	SDN:P06:UPOX
DOX1	Dissolved oxygen	ml l-1	volume_fraction_of_oxygen_in_sea_water	last_calibration_date="YYYY-MM-DD" (O) calibration_method="..." (O) used_salinity=value or salinity="varname" (O) used_temperature=value or temperature="varname" (O) used_pressure=value or pressure="varname" (O) compensated="YES" "NO" (O - default="YES")	SDN:P01:DOXYZZXX	SDN:P06:UMLL
DOX2	Dissolved oxygen	µmol kg-1	moles_of_oxygen_per_unit_mass_in_sea_water	last_calibration_date="YYYY-MM-DD" (O) calibration_method="..." (O) used_salinity=value or salinity="varname" (O) used_temperature=value or temperature="varname" (O) used_pressure=value or pressure="varname" (O) compensated="YES" "NO" (O - default="YES")	SDN:P01:DOXMZZXX	SDN:P06:KGUM
OSAT	Oxygen saturation	%	fractional_saturation_of_oxygen_in_sea_water	last_calibration_date="YYYY-MM-DD" (O) calibration_method="..." (O) used_salinity=value or salinity="varname" (O) used_temperature=value or temperature="varname" (O) used_pressure=value or pressure="varname" (O) compensated="YES" "NO" (O - default="YES")	SDN:P01:OXYSZZ01	SDN:P06:UPCT
TICW	Dissolved inorganic carbon	µmol kg-1	TBD	TBD	TBD	TBD
CORW <sup>(2)</sup>	Dissolved organic carbon	µmol kg-1	TBD	TBD	TBD	TBD
PCO2	CO2 partial pressure	µatm	surface_partial_pressure_of_carbon_dioxide_in_sea_water	-	SDN:P01:PCO2XXXX	SDN:P06:UATM
FCO2	CO2 fugacity	µatm	fugacity_of_carbon_dioxide_in_sea_water	-	SDN:P01:FCO2XXXX	SDN:P06:UATM
CPHL	Chlorophyll-a	mg m-3	mass_concentration_of_chlorophyll_a_in_sea_water	last_calibration_date="YYYY-MM-DD" (O) calibration_method="..." (O) laboratory_technique="HPLC", "spectrophotometry", "fluorometry, analysis", "... (O) laboratory_method="..." (O)	SDN:P01:CPLHZZXX	SDN:P06:UMMC
CHLT	Total chlorophyll	mg m-3	mass_concentration_of_chlorophyll_in_sea_water	-	SDN:P01:CHLTVOLU	SDN:P06:UMMC
FLU2	Chlorophyll-a fluorescence	mg m-3	mass_concentration_of_chlorophyll_a_fluorescence_in_sea_water <sup>(1)</sup>	last_calibration_date="YYYY-MM-DD" (O) calibration_method="..." (O) proxy_method="..." (O) last_proxy_method_date="YYYY-MM-DD" (O)	SDN:P01:CPLHMP01	SDN:P06:UMMC
CDOM	Cdom	1e-9	concentration_of_colored_dissolved_organic_matter_in_sea_water_expressed_as_equivalent_mass_fraction_of_quinine_sulfate_dihydrate	-	SDN:P01:FLUOCDOM	SDN:P06:UUUU
TUR4	Turbidity	1	sea_water_turbidity	last_calibration_date="YYYY-MM-DD" (O) calibration_method="..." (O)	SDN:P01:TURBXXXX	SDN:P06:USTU
TSMP	Total suspended matter	g m-3	mass_concentration_of_suspended_matter_in_sea_water	-	SDN:P01:TSEDZZZZ	SDN:P06:UMGL
NTRA	Nitrate (NO3-N)	mmol m-3	mole_concentration_of_nitrate_in_sea_water	-	SDN:P01:NTRAZZXX	SDN:P06:UPOX
NTAW	Nitrate (NO3-N)	µmol kg-1	moles_of_nitrate_per_unit_mass_in_sea_water	-	SDN:P01:MDMAP005	SDN:P06:KGUM
NTRI	Nitrite (NO2-N)	mmol m-3	mole_concentration_of_nitrite_in_sea_water	-	SDN:P01:NTRIZZXX	SDN:P06:UPOX
NRIW	Nitrite (NO2-N)	µmol kg-1	moles_of_nitrite_per_unit_mass_in_sea_water	-	SDN:P01:MDMAP007	SDN:P06:KGUM
NTRZ	Nitrate + Nitrite	mmol m-3	mole_concentration_of_nitrate_and_nitrite_in_sea_water	-	SDN:P01:NTRZZZXX	SDN:P06:UPOX
PHOS	Phosphate (PO4-P)	mmol m-3	mole_concentration_of_phosphate_in_sea_water	-	SDN:P01:PHOSZZXX	SDN:P06:UPOX
PHOW	Phosphate (PO4-P)	µmol kg-1	moles_of_phosphate_per_unit_mass_in_sea_water	-	SDN:P01:MDMAP006	SDN:P06:KGUM
SLCA	Silicate (SiO4-Si)	mmol m-3	mole_concentration_of_silicate_in_sea_water	-	SDN:P01:SLCAZZXX	SDN:P06:UPOX
SLCW	Silicate (SiO4-Si)	µmol kg-1	moles_of_silicate_per_unit_mass_in_sea_water	-	SDN:P01:MDMAP012	SDN:P06:KGUM
AMON	Ammonium (NH4-N)	mmol m-3	mole_concentration_of_ammonium_in_sea_water	-	SDN:P01:AMONZZXX	SDN:P06:UPOX
NGDW <sup>(2)</sup>	Dissolved nitrogen	µmol kg-1	TBD	TBD	TBD	TBD
NODW	Dissolved organic nitrogen	µmol kg-1	TBD	TBD	TBD	TBD
ALKY	Total alkalinity	mmol m-3	sea_water_alkalinity_expressed_as_mole_equivalent	-	SDN:P01:ALKYZZXX	SDN:P06:UPOX
ALKW	Total alkalinity	µmol kg-1	sea_water_alkalinity_per_unit_mass <sup>(1)</sup>	-	SDN:P01:MDMAP014	SDN:P06:KGUM
PHPH	Ph	1	sea_water_ph_reported_on_total_scale	-	SDN:P01:PHXXZZXX	SDN:P06:UUPH
PH25 <sup>(2)</sup>	Ph at 25 °C and 0 dbar	1	TBD	TBD	SDN:P01:PHTLX25	SDN:P06:UUPH
<b>Meteorological</b>						
WSPD	Horizontal wind speed	m s-1	wind_speed	-	SDN:P01:EW5BZZ01	SDN:P06:UVAA
WDIR	Wind from direction relative true north	degree	wind_from_direction	-	SDN:P01:EWDAZZ01	SDN:P06:UABB
GSPD	Gust wind speed	m s-1	wind_speed_of_gust	-	SDN:P01:EGTSZZ01	SDN:P06:UVAA
GDIR	Gust wind from direction relative true north	degree	wind_gust_from_direction	-	SDN:P01:EGTDZZ01	SDN:P06:UABB
WSPF	West-east wind component	m s-1	eastward_wind	-	SDN:P01:ESWZZZXX	SDN:P06:UVAA
WSPN	South-north wind component	m s-1	northward_wind	-	SDN:P01:ESNZZZXX	SDN:P06:UVAA
WBFO	Beaufort wind force	1	beaufort_wind_force	-	SDN:P01:WMOCWFBF	SDN:P06:UUUU
DRYT	Air temperature in dry bulb	degrees_C	air_temperature	-	SDN:P01:CTMPZZ01	SDN:P06:UPAA
WETT	Air temperature in wet bulb	degrees_C	wet_bulb_temperature	-	SDN:P01:CWETZZ01	SDN:P06:UPAA
DEWT	Dew point temperature	degrees_C	dew_point_temperature	-	SDN:P01:CDEWZZ01	SDN:P06:UPAA
RELH	Relative humidity	%	relative_humidity	-	SDN:P01:CRELZZ01	SDN:P06:UPCT
ATMS	Atmospheric pressure at sea level	hPa	air_pressure_at_sea_level	-	SDN:P01:CAPAZZ01	SDN:P06:UPBB
ATMP	Atmospheric pressure at altitude	hPa	air_pressure	-	SDN:P01:CAPHZZ01	SDN:P06:UPBB
ATPT	Atmospheric pressure hourly tendency	hPa h-1	tendency_of_air_pressure	-	SDN:P01:APRESSTN	SDN:P06:HPAH
RVFL	River flow rate	m3 s-1	water_volume_transport_into_sea_water_from_rivers	-	SDN:P01:RFDSCH01	SDN:P06:CMPS
PRRT	Hourly precipitation rate (liquid water equivalent)	mm h-1	lwe_precipitation_rate	-	SDN:P01:CPRRR01	SDN:P06:MMPH
PRRD	Daily precipitation rate (liquid water equivalent)	mm d-1	lwe_precipitation_rate	-	SDN:P01:CPRRR01	SDN:P06:MMPD
SINC	Shortwave/solar incoming radiation	W m-2	surface_downwelling_shortwave_flux_in_air	-	SDN:P01:CSLRZZXX	SDN:P06:UFAA
LINC	Longwave/atmospheric incoming radiation	W m-2	surface_downwelling_longwave_flux_in_air	-	SDN:P01:LWRDZZ01	SDN:P06:UFAA
RDIN	Total incoming radiation	W m-2	surface_downwelling_radiative_flux_in_sea_water	-	SDN:P01:TLRDZZ01	SDN:P06:UFAA
NRAD	Net total incoming radiation	W m-2	surface_net_downward_radiative_flux	-	SDN:P01:NLTRDZZ01	SDN:P06:UFAA
LGHT	Immersed incoming photosynthetic active radiation	µmol m-2 s-1	downwelling_photosynthetic_photon_flux_in_sea_water	-	SDN:P01:PARERXUD	SDN:P06:UMES
LGH4	Surface incoming photosynthetic active radiation	µmol m-2 s-1	surface_downwelling_photosynthetic_photon_flux_in_air	-	SDN:P01:PARERXSD	SDN:P06:UMES

Remarks  
 (1) Standard name being discussed by the CF community  
 (2) Codes not in the P09 list. Those with 4 characters need to be requested.  
 (3) For HF Radar data  
 (4) For wave spectra data

## CMEMS INSTAC Parameters list – Related variables

variable name	long_name	unit	CF standard_name	type_of_analysis	Comment
<PARAM>_QC	quality flag	none	none	none	The QC flags associated to the values of the parameter
POSITION_QC	quality flag	none	none	none	The QC flag associated to the position given in LATITUDE and LONGITUDE
<PARAM>_ADJUSTED	<PARAM:long_name> adjusted	<PARAM:unit>	<PARAM:standard_name>	<PARAM:type_of_analysis>	The adjusted values of the parameter, usually the delayed mode ajustement
<PARAM>_ADJUSTED_QC	quality flag	none	none	none	The QC flags associated to the adjusted values of the parameter
<PARAM>_ADJUSTED_ERROR	<PARAM:long_name> adjusted error	<PARAM:unit>	none	none	The errors associated to the adjusted values of the parameter
<PARAM>_DM	method of data processing	none	none	none	The data mode : "R"eal-time, "P"rovisional, "D"elayed-mode, "M"ixed
<PARAM>_UNCERTAINTY	<PARAM:long_name> relative uncertainty	1 or % ?	none	none	The relative uncertainties associated to the values of the parameter

## History of CMEMS INSTAC parameters list

Date	Version	Who	Description
13/01/2017	3.0.0	ST	First version published
21/03/2017	3.0.0	ST	New standard name for VEPK and VEPD
03/09/2018	3.1.0	ST	New definition for SLEV 13 new parameters added Updated P01 & P06 mapping New tab for the related parameters
10/01/2019	3.1.0	ST	New standard name for VPSP
06/04/2020	3.2.0	ST	New parameters from HF-Radar radial velocities New parameters for wave spectra New BGC parameters