GMED Environment Layers Metadata

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Physical

Layer	File Name Code	Description	Unit	Type	In
Depth	gb_depth	Water Depth Taken from GEBCO 08 Digital Atlas.	m	-	D
Slope	gb_slope	Slope derived from GEBCO 08 using ArcGIS Spatial Analyst.	degree	-	In
Aspect (East-West)	msp_aspect_ew	East/West Aspect of seafloor (sin(aspect in radians))	radians x 100	-	In
Aspect (North-South)	msp_aspect_ns	North/South Aspect of seafloor (sin(aspect in radians))	radians x 100	-	In
Land Distance	msp_distancetoshore	Distance (km) to the nearest land cell (water cells only) calculated using eucleadean distance formula using ArcGIS.	km	-	E fo
Port Distance	port_distance	Distance to the nearest seaport, calculated using Euclidian distance formula using ArcGIS.	eucledian distance	-	E fo
Ice Cover	aq_ice_x	Mean annual ice cover in percent as derived from the National Snow and Ice Data Centre. Interpolation was done to get rid of missing cells and values for the ice shelves in the Antarctic was set to 1.5. Example: 0.00000..., 1.0	% (0-1.0)	Annual Climatology	R &
Tide average	kg_tide_average	Tides, avg of maximum amplitude. These tide model results are from a global 1/4-degree tide model which assimilated tide estimates derived from the TOPEX/Poseidon altimeter.	m	Annual Climatology	U B
Waveheight	aq_waveheight	Height of waves in scaled discrete classes as provided by the Original LOICZ Database, for all coastal and oceanic cells.	m	-	-
Windspeed	kg_wind_speed	Yearly variations of the surface marine atmosphere over the global oceans.	m/s	Annual Climatology	In In P
Surface Current	ecco2_uv_surface_current	Zonal velocity (UVEL), meridional velocity (VVEL).	m/s	Monthly Climatology	N A (M
Euphotic Layer Depth	gc_zeu_mean	Depth of the bottom of the Euphotic Layer i.e. the depth for which the down-welling irradiance is 1% of its value at the surface. It characterizes the upper layer of the ocean, which can support phytoplankton photosynthesis. It depends on the turbidity of the water.	m	Monthly climatology	E
Diffuse attenuation coefficient	bo_da_mean	The diffuse attenuation coefficient is an indicator of water clarity. It expresses how deeply visible light in the blue to the green region of the spectrum (490 nm) penetrates in to the water column.	m^{-1}	Monthly climatology	R M
Temperature	bo_sst_x	Sea surface temperature is the temperature of the water at the ocean surface. This parameter indicates the temperature of the topmost meter of the ocean water column.	°C	Monthly climatology	R M
	kg_b_temp	Temperature of sea bottom.	°C	Annual Climatology	W
	na_x_x_sst / na_b_temp	Long term monitoring of Temperature on Multiple Levels.	°C	Monthly Climatology	N R
Salinity	bo_salinity	Salinity indicates the dissolved salt content in the ocean surface.	PSS	In situ measure: WOD 2009	S S D re Te
	na_b_salinity	Long term monitoring of Salinity on multiple depth levels.	PPT	Monthly Climatology	N R
Photosynthetically Active	bo_parmean	Photosynthetically Active Radiation (PAR)	Einstein/m²/day	Monthly climatology	Te

Radiation		indicates the quantum energy flux from the Sun (in the spectral range 400-700 nm) reaching the ocean surface.			(S

Chemical

Layer	File Name Code	Description	Unit	Type	In
Chlorophyll-a	bo_chla_x	Chlorophyll A concentration indicates the concentration of photosynthetic pigment chlorophyll A (the most common “green” chlorophyll) in oceans. Please note that in shallow water these values may reflect any kind of autotrophic biomass.	mg/m³	Monthly climatology	R M
	kg_chla_x	Chlorophyll-a concentration data consists of satellite measurements of global and regional ocean color data.	mg/m³	Annual Climatology	R S
Chlorophyll-a (Primary Productivity)	aq_primprod	Proportion of annual primary production in a cell. See reference for details about the productivity calculation methods.	mgC·m-²·/day/cell	Annual Climatology	R S
pH	bo_ph	Measure of acidity in the ocean surface.	-	In situ measure: WOD 2009	S S D re Te
Total Suspended Matter	gc_tcm_mean	Total suspended matter concentration. It is a measure of the turbidity of the water. The product is useful typically for coastal waters where inorganic particle dominate over phytoplankton.	$g.m^{-3}$	Monthly Climatologu	M

Nutrients

Layer	File Name Code	Description	Unit	Type	In
Calcite	bo_calcite	Calcite concentration indicates the concentration of calcite (CaCO3) in oceans.	mol/m³	Seasonal climatology	R M
Nitrate	bo_nitrate	This surface layer contains both [NO3] and [NO3+NO2] data. By this we mean chemically reactive dissolved inorganic nitrate and nitrate or nitrite.	µmol/l	In situ measure: WOD 2009	S S D
	kg_b_nitrate	Nitrate Concentration.	µmol/l	Annual Climatology	W
Phosphate	kg_phosphate / kg_b_phosp	Phosphorous Concentration.	µmol/l	Annual Climatology	W
Silicate	bo_silicate	This variable indicates the concentration of silicate or ortho-silicic acid [Si(OH)4] in the ocean surface.	µmol/l	In situ measure: WOD 2009	S S D
	kg_b_silicate	Silicate Concentration.	µmol/l	Annual Climatology	W
Dissolved Oxygen	bo_o2dis	Dissolved oxygen concentration [O2] in the surface.	ml/l	In situ measure: WOD 2009	S S D re Te
	kg_b_o2dissolve	Dissolved Oxygen Concentration	ml/l	Annual Climatology	W
Saturated Oxygen	kg_s_o2saturate	Amount of dissolved oxygen as a percentage of maximum potential oxygen amount that could be present for the given temperature and salinity at standard amospheric pressure (760 mmHg) (i.e., sea level).	ml/l	Annual Climatology	W
Utilized Oxygen	kg_b_o2utilized	Apparent oxygen utilization (AOU) in ml/l - oxygen saturation concentration minus measured dissolved oxygen concentration.	ml/l	Annual Climatology	W
Particulate Organic Carbon		Particulate Organic Carbon is an important component in the carbon cycle and serves as a primary food sources for aquatic food webs.	$mg.m^{-3}$	Monthly climatology	S
Particulate Inorganic Carbon		Particulate Inorganic Carbon or suspended calcium carbonate concentration	$mg.m^{-3}$	Monthly climatology	S

Past

Layer	File Name Code	Description	Unit	Type	In
Last Glacial Maxima Depth	lgm_depth	Water depth calculated from GEBCO 08 (using formula current depth-130 m; the average depth decrease mentioned in literature).	m	-	G
Last Glacial Maxima Temperature	lgm_sst	Sea surface temperature during last glacial maxima (22 myr).	°C	Gridded Global LGM SST and Salinity Reconstruction	P. M
Last Glacial Maxima Salinity	lgm_salinity	Sea surface salinity during last glacial maxima (22 myr).	PSS	Gridded Global LGM SST and Salinity Reconstruction	P. M
Last Glacial Maxima Ice Thickness	lgm_ice_thickness	Thickness of ice sheets during last glacial maxima (22 myr).	km	Gridded Global LGM SST and Salinity Reconstruction	P. M

Future

Layer	File Name Code	Description	Unit	Type	In
Temperature at 2100	bo_21k_a1b_sst	Future 4 grids of monthly mean sea surface temperature , A1B (720 ppm stabilization) scenario.	°C	Monthly climatology	U
	aq_x_temp_21k/aq_sst_21k	Predicted sea temperature for year 2100.	°C	Annual Climatology	-
Salinity at 2100	bo_21k_a1b_salinity	Future 1 grid of average monthly mean sea surface salinity.	ppt	Monthly climatology	U
	aq_salinity_21k	Predicted sea salinity for year 2100.	PSU	Annual Climatology	-
Chlorophyll-a at 2100	aq_primaryprod_21k	Predicted primary productivity for year 2100.	$mgC \cdot m^{-2} \cdot /day$	Annual Climatology	-
Ice Concentration at 2100	aq_ice_con_21k	Predicted ice cover (area proportion) for year 2100.	% (0-1)	Annual Climatology	-

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