Name	Chlorophyll Case 1 Water
Summary	Chlorophyll case 1 waters derived from MERIS observations at global scale
Identifier	L3_ENV_MER_CHL1_
Name convention	**Lz_SAT_INS_PRD_TC_TP_yyyymmdd_ZONE_PRJ_PRC_SRLATxSRLON_lm+lM+Lm+LM_xxxx** where: 1. Lz is the product level (L3 for level 3, L4 for combined instrument products) 2. SAT is the satellite acronym (ENV for ENVISAT, SEA for SeaStar, Nxx for NOAA 15, 16 or 17, null for L4 product) 3. INS is the instrument acronym (MER for MERIS, SWF for SeaWiFS, AVH for AVHRR, null for L4 product) 4. PRD is the product type (CHL1 for chlorophyll case 1) 5. TC is the time coverage (i for instantaneous, j for daily, w for weekly, d for decadal, m for monthly, y for yearly, n for products accumulated on n days or s for accumulation on sliding periods) 6. TP is the time position of the product during the day (not used except for AVHRR products: MO for morning, NO for noon, EV for evening, NI for night) 7. yyyymmdd is the first day of the considered time period 8. ZONE is the name of the area of interest (GLOB for global coverage, EURO for Europe, …) 9. PRJ is the projection (SI for sinusoidal, PC for plate-carrée, …) 10. PRC is the processing centre (ACR for ACRI) 11. SRLATxSRLON is the spatial resolution along latitude and longitude in meters taken at the equator for GLOB or at the center of the product for regional product 12. lm+lM+Lm+LM : is the area covered by the product : latitudes min, max, longitudes min, max. 13. xxxx is equal to 0001 for the average value product
Name Example	L3_ENV_MER_CHL1_d__20030701_GLOB_SI_ACR_9277x9277_-90+90+-180+180_0001 with extension based on format (e.g. . jpg for JPEG, .nc for netCDF, .hdf for HDF, .xml for XML, …)
Product level	3
Description	Chlorophyll case 1 water

Level 2 Algorithm short description

The level 2 algorithm uses normalized leaving reflectance [□'$_w$(B)] derived after atmospheric and ocean-interface corrections, at bands (B) 2, 3, 4, and 5 which correspond to 442.5, 490, 510, and 560 nm. The algorithm can be briefly described as :

$$bb\_over\_a(2) = \frac{\rho'_w(2)}{f\_over\_q1\_value}$$

$$bb\_over\_a(5) = \frac{\rho'_w(5)}{f\_over\_q1\_value}$$

$$LChl1 = \sum_{p=0}^{N_{A1}} log10coeff\_LUT(p,2)\left[\log_{10}\left(\frac{bb\_over\_a(2)}{bb\_over\_a(5)}\right)\right]^p$$

$$Chl1 = 10^{LChl1}$$

Where *f_over_q1_value* is the bi-directional factor extracted from a lookup table. It is a function of sun zenith angle, viewing angle below surface, azimuth angle and Chl1. The initial *f_over_q1_value* is that for actual angles and for Chl1 = 0.1.

Band Selection :

If Chl1 > 1, the calculation is remade with band 3 instead of band 2, and if Chl1 > 10, then the calculation is remade using band 4 instead of band 3.

Iterative calculation of « f_over_q1_value » :

Once the right bands have been selected, the calculation is made iteratively with the f_over_q1_value for calculated Chl1. A stable value is reached after 3 iterations.

See :

- http://envisat.esa.int/instruments/meris/pdf/atbd_2_09.pdf

Level 3 Algorithm short description	The level 3 algorithm follows the recommendations of the IOCCG. The algorithm can be briefly described as : $$AVG_i = \frac{1}{N_p}\sum_{n=1}^{Np} Chl1_n$$ Where N_p is the number of valid pixels (i.e. assessed as of good quality) in the cell *i*. Similar data-day definition as AVHRR-SeaWiFS
References	Level 2 Processing version : MEGS 7.4 Level 3 Processing version : mklv3 3.2 "Guide to the creation & use of ocean color level 3 product", IOCCG final report, 2004. "MERIS level 2 DPM", issue 7.2, June 2005
Unit	$mg.m^{-3}$
Range	[0.03 , 30]
Accuracy	relative± 13% (10 classes per decade)
Format	Image: JPG, data: netCDF, geotiff, metadata: XML
Resolution	One twelfth of a degree in both latitude and longitude at the equator
Product characteristics	Product : MERIS Chla mean quantity Auxiliary products: index of the bins, standard deviation, number of data per pixel, min, max.
Distribution	http://www.globcolour.info/
Validation References	**See :** - http://envisat.esa.int/instruments/meris/pdf/atbd_2_09.pdf - Morel, A., and S. Maritorena (2001). Bio-optical properties of oceanic waters: A reappraisal. Journal of Geophysical research, 106, 7763-7780. - Morel, A., Antoine, D. and B. Gentili (2002). Bi-directional reflectance of oceanic waters: Accounting for Raman emission and varying particle phase function, Applied Optics, 41, 6289-6306.