

SeasFire Cube v2

This is the second version of the SeasFire DataCube. Variables have been added, many variables have been updated and all contain attributes with useful information for the user. Some of the changes include:

- The NOAA oceanic indices now appear as variables with only time dimension,
- some variables have new interpolation, and
- others are masked land or ocean with the ERA-5 land-sea mask that is also added as a separate variable in the cube.

Table 1, track the changes for each variable and their name in the two versions.

Table 1: Changes between the two SeasFire DataCube versions (With color blue appear the new variables added)

Changes	SeasFireCube v1.0	SeasFireCube v2.0
Masked_ocean	BA_GWIS	gwis_ba
-	BurntArea	gfed_ba
Masked_ocean	FCCI_BA	fcci_ba
New_interpolation_and_unpacking	FCD_emissions	cams_co2fire
New_interpolation_and_unpacking	FRP_emissions	cams_frpfire
-	LST_Day_CMG	lst_day
-	Lai	lai
-	NDVI	ndvi
Only_time_dimension	censo	oci_censo
New_interpolation	drought_code_max	drought_code_max
Only_time_dimension	ea	oci_ea
Only_time_dimension	epo	oci_epo
New_interpolation	fwi	fwi_max
Only_time_dimension	gmsst	oci_gmsst
New_interpolation	mean_fwi	fwi_mean

New_interpolation	mslp	mslp
Only_time_dimension	nao	oci_nao
Only_time_dimension	nina34_anom	oci_nina34_anom
Only_time_dimension	pdo	oci_pdo
Only_time_dimension	pna	oci_pna
Corrected_Nan_values	population_density	pop_dens
-	rH_cf	rel_hum
-	skt	skt
Only_time_dimension	soi	oci_soi
-	ssr	ssr
Added_two_years	ssrd	ssrd
-	sst	sst
Masked_ocean	swvl1	swvl1
-	t2m	t2m
-	t2mmax	t2mmax
-	t2mmin	t2mmin
-	tp	tp
-	Vpd_cf	vpd
-	wp	wp
-	ws10	ws10
Added	-	lsm
Added	-	fcci_fraction_of_burnable_area
Added	-	fcci_fraction_of_observed_area
Added	-	fcci_number_of_patches
Added	-	drought_code_mean
Added	-	gfed_valid_mask

Added	-	gwis_valid_mask
Added	-	fcci_valid_mask
Added	-	lccs_class_0
Added	-	lccs_class_1
Added	-	lccs_class_2
Added	-	lccs_class_3
Added	-	lccs_class_4
Added	-	lccs_class_5
Added	-	lccs_class_6
Added	-	lccs_class_7
Added	-	lccs_class_8

The data collection and processing has been thoroughly reported in the Seasfire datacube report on July 15, 2022. In table 2, there are useful information about the new data added.

Table 2: Added variables information

Source	DataArray Name	Full Variable Name	Description	Websites
Copernicus	lsm	Land and sea mask	Binary mask of sea and land. Over 0.5 is considered land surface	https://confluence.ecmwf.int/display/CKB/ERA5-Land%3A+data+documentation
	fcci_fraction_of_burnable_area	Fraction of burnable area	The fraction of burnable area is the fraction of the cell that corresponds to vegetated land covers that could burn. The land cover classes are those from CCI Land Cover, http://www.esa-landcover-cci.org/	https://catalogue.ceda.ac.uk/uuid/3628cb2fdb443588155e15dee8e5355
	fcci_fraction_of_observed_area	Fraction of observed area	The fraction of the total burnable area in the cell (fraction_of_burnable_area variable of this file) that was observed during the time interval, and was not marked as unsuitable/not observable. The latter refers to the area where it was not possible to obtain observational burned area information for the whole time interval because of lack of input data (non-existing data for that location and period).	
	fcci_number_of_patches	Number of patches	Number of contiguous groups of burned pixels	
	drought_code_mean	Drought Code Mean	The Drought code is an indicator of the moisture content in deep compact organic layers. This code represents a fuel layer at approximately 10-20 cm deep. The Drought	https://cds.climate.copernicus.eu/cdsapp#!/dataset/cems-fire-historicall?tab=overview

			code fuels have a very slow drying rate, with a time lag of 52 days. The Drought code scale is open-ended, although the maximum value is about 800	
In-house	gfed_valid_mask	Temporal mask for gfed dataset	Binary mask True/ False for the weeks containing valid data in the dataset ba_gfed	-
	gwis_valid_mask	Temporal mask for gwis dataset	Binary mask True/ False for the weeks containing valid data in dataset ba_gwis	-
	fcci_valid_mask	Temporal mask for fcci dataset	Binary mask True/ False for the weeks containing valid data in dataset ba_fcci	-
Copernicus	lccs_class_0	Land Cover Class 0 - No data	Class 0, contains the percentage of LCCS code [0]	https://cds.climate.copernicus.eu/cdsapp#!/dataset/satellite-land-cover?tab=form
	lccs_class_1	Land Cover Class 1 - Agriculture	Class 1, contains only the percentage of LCCS codes [10,11,12,20,30,40]	
	lccs_class_2	Land Cover Class 2 - Forest	Class 2, contains only the percentage of LCCS codes [50,60,61,62,70,71,72,80,81,82,90,100]	
	lccs_class_3	Land Cover Class 3 - Grassland	Class 3, contains only the percentage of LCCS codes [110,130]	
	lccs_class_4	Land Cover Class 4 - Wetlands	Class 4, contains only the percentage of LCCS codes [160,170,180]	
	lccs_class_5	Land Cover Class 5 - Settlement	Class 5, contains only the percentage with LCCS codes [190]	

	lccs_class_6	Land Cover Class 6 - Shrubland	Class 6, contains only the percentage of Water Bodies with LCCS codes [120,121,122]	
	lccs_class_7	Land Cover Class 7 - Sparse vegetation, bare areas, permanent snow and ice	Class 7, contains only the percentage with LCCS codes [140,150,151,152,153,200,201,202,220]	
	lccs_class_8	Land Cover Class 8 - Water Bodies	Class 8, contains only the percentage LCCS codes [210]	

