Indicator info service

Purpose of the *Indicator info web service* is to provide descriptive information on indicators that are available for download.
For each indicator it provides information on:

- indicator_group - thematic group of the indicator (RAIN, FPAR, WSI, TEMP, RAD)
- indicator_name - the name of the indicator
- location - download location of the indicator
- level - indicator processing level [n..0], 0 being the final level
- sources_level - descriptive list of indicator sources, with their levels, that the indicator is created from
- CRS - download raster native coordinate system
- resolution - download raster native resolution
- description - Additional description for the raster providing information on the content, flag values and transformation parameters

The info service is available on the following endpoint https://agricultural-production-hotspots.ec.europa.eu/getIndicatorsInfo.php as a GET request.
The service provides filtering options through the request parameters and requires at least one filter parameter to avoid fetching all the indicators data at once.
The filter can be applied on the following parameters:

- indicator_group
- indicator_name
- dekad

An example request for the *"FPAR difference with historical average"* (FPARd) indicator for the 2021-05-01 dekad could be:
https://agricultural-production-hotspots.ec.europa.eu/getIndicatorsInfo.php?dekad=20210501&indicator_name=FPARd&indicator_group=FPAR

Currently the data is available for download from our production server via WebDAV. Most of the datasets are available in GeoTiff format and some are available in ENVI format. The files in ENVI format include the **.img* and the **.hdr* files and for those files the download location in the service points to the **.img* file.

These are the links to the data directories:
https://agricultural-production-hotspots.ec.europa.eu/data/indicators_rain/rain/
https://agricultural-production-hotspots.ec.europa.eu/data/indicators_rain/spi1/
https://agricultural-production-hotspots.ec.europa.eu/data/indicators_rain/spi3/
https://agricultural-production-hotspots.ec.europa.eu/data/indicators_wsi/wsi_hp/
https://agricultural-production-hotspots.ec.europa.eu/data/indicators_fpar/

Service output

The service outputs the indicator information as a dictionary in JSON format with the dekads as keys and individual indicators as values.

Output structure:

```
{
    [dekad_1]:{
        [indicator_1]:{
            indicator_name:...,
            indicator_group:...,
            level:...,
            sources_level:...,
            crs:...,
            resolution:...,
            description: ...,
            location: ...
        },
        [indicator_2]:{
            indicator_name:...,
            indicator_group:...,
            level:...,
            sources_level:...,
            crs:...,
            resolution:...,
            description: ...,
            location: ...
        },
        ...
        [indicator_n]:{
            indicator_name:...,
            indicator_group:...,
            level:...,
            sources_level:...,
            crs:...,
            resolution:...,
            description: ...,
            location: ...
        }
    },
    [dekad_2]:{
        [indicator_1]:{
            level:...,
            sources_level:...,
            description: ...,
            crs:...,
            resolution:...,
            location: ...
        },
        [indicator_2]:{
            level:...,
            sources_level:...,
            crs:...,
            resolution:...,
            description: ...,
            location: ...
        },
```

```
        ...
        [indicator_n]:{
            level:...,
            sources_level:...,
            crs:...,
            resolution:...,
            description: ...,
            location: ...
        }
    },
    ...
    [dekad_n]:{
        [indicator_1]:{
            level:...,
            sources_level:...,
            crs:...,
            resolution:...,
            description: ...,
            location: ...
        },
        [indicator_2]:{
            level:...,
            sources_level:...,
            crs:...,
            resolution:...,
            description: ...,
            location: ...
        },
        ...
        [indicator_n]:{
            level:...,
            sources_level:...,
            crs:...,
            resolution:...,
            description: ...,
            location: ...
        }
    },
}
```

With actual values:


```
{
  "20210301": {
    "NDVI": {
      "indicator_group": "NDVI",
      "indicator_name": "NDVI",
      "location": "/data/indicators_ndvi/ndvi/ndvi_20210301.img",
      "level": "0",
      "sources_level": "[\"BOKU NDVI:OF:0\"]",
      "crs": "EPSG:4326",
      "resolution": "14673,40320",
      "description": "values = {NDVI-toc, -, 0, 250, 0, 250, -0.2000,  0.0048}; flags = {254=water,
255=missing}"
    },
    "WSIhp_pasture": {
      "indicator_group": "WSI",
      "indicator_name": "WSIhp_pasture",
      "location": "/data/indicators_wsi/wsi_hp/wsi_hp_pasture_20210301.tif",
      "level": "0",
```

```
      "sources_level": "[\"Alterra WSI:version12_based_on_CHIRPS_ERA5-NRT:0\"]",
      "crs": "EPSG:4326",
      "resolution": "29346,80640",
      "description": "description = {Historical probability, HistYears=1991-2021, ActYear=2021,
IncludeAct=1, IN=../data/indicators_wsi/wsi\\wsi_YYYYMMDD_pasture.img}; values = {HPh[WSI], %, 0, 220, 10,
210, -5, 0.5}; flags = {251=missing, 252=cloud, 253=snow, 254=sea, 255=background}"
    },
    "WSIhp_crop": {
      "indicator_group": "WSI",
      "indicator_name": "WSIhp_crop",
      "location": "/data/indicators_wsi/wsi_hp/wsi_hp_crop_20210301.tif",
      "level": "0",
      "sources_level": "[\"Alterra WSI:version12_based_on_CHIRPS_ERA5-NRT:0\"]",
      "crs": "EPSG:4326",
      "resolution": "29346,80640",
      "description": "description = {Historical probability, HistYears=1991-2021, ActYear=2021,
IncludeAct=1, IN=../data/indicators_wsi/wsi\\wsi_YYYYMMDD_crop.img}; values = {HPh[WSI], %, 0, 220, 10,
210, -5, 0.5}; flags = {251=missing, 252=cloud, 253=snow, 254=sea, 255=background}"
    },
    "RAIN": {
      "indicator_group": "RAIN",
      "indicator_name": "RAIN",
      "location": "/data/indicators_rain/rain/chirps_final_ecmwf_era5_20210301.img",
      "level": "0",
      "sources_level": "[\"CHIRPS RAIN:Final:0\", \"ECMWF meteo:ERA5:0\"]",
      "crs": "OGC:CRS84",
      "resolution": "2500,7200",
      "description": "values = {rainfall,mm,0,10000,0,10000,0,1}; flags = {-9999=nodata}"
    },
    "FPAR": {
      "indicator_group": "FPAR",
      "indicator_name": "FPAR",
      "location": "/data/indicators_fpar/fpar/fpar_20210301.tif",
      "level": "0",
      "sources_level": "[\"BOKU FPAR:CF:0\"]",
      "crs": "EPSG:4326",
      "resolution": "29346,80640",
      "description": "description = {Terra/Aqua MODIS, FPAR, Smoothed ~500m, Product-version=V062}; values
= {FPAR}; flags = {255=nodata}"
    },
    "zFPAR": {
      "indicator_group": "FPAR",
      "indicator_name": "zFPAR",
      "location": "/data/indicators_fpar/zfpar/zfpar_20210301.tif",
      "level": "0",
      "sources_level": "[\"BOKU FPAR:CF:0\"]",
      "crs": "EPSG:4326",
      "resolution": "29346,80640",
      "description": "description = {INDEX=(Y1-Y2)/Y3, Y1=../data/indicators_fpar/fpar/fpar_YYYYMMDD.tif,
Y2=../data/indicators_fpar/fpar_lta/fpar_lta_1962MMDD.tif,
Y3=../data/indicators_fpar/fpar_lta/fpar_lta_1963MMDD.tif}; values = {SDh[FPAR]}; flags =
{-9999=missing/div0}"
    },
    "zFPARc": {
      "indicator_group": "FPAR",
      "indicator_name": "zFPARc",
      "location": "/data/indicators_fpar/zfparc/zfparc_20210301.tif",
      "level": "0",
      "sources_level": "[\"BOKU FPAR:CF:0\"]",
      "crs": "EPSG:4326",
```

```
      "resolution": "29346,80640",
      "description": "description = {INDEX=(Y1-Y2)/Y3,
Y1=../data/indicators_fpar/mfpar/mfpar_YYYYMMDD.tif,
Y2=../data/indicators_fpar/mfpar_lta/mfpar_lta_1962MMDD.tif,
Y3=../data/indicators_fpar/mfpar_lta/mfpar_lta_1963MMDD.tif}; values = {SDh[MEAN of [FPAR]]}; flags =
{-9999=missing/div0}"
    },
    "mFPARd": {
      "indicator_group": "FPAR",
      "indicator_name": "mFPARd",
      "location": "/data/indicators_fpar/mfpard/mfpard_20210301.tif",
      "level": "0",
      "sources_level": "[\"BOKU FPAR:CF:0\"]",
      "crs": "EPSG:4326",
      "resolution": "29346,80640",
      "description": "description = {INDEX=Y1-Y2, Y1=../data/indicators_fpar/mfpar/mfpar_YYYYMMDD.tif,
Y2=../data/indicators_fpar/mfpar_lta/mfpar_lta_1962MMDD.tif}; values = {ADha[MEAN of [FPAR-toc]], -, 0,
250, 0, 250, -0.125, 0.001}; flags = {-9999=missing/div0}"
    },
    "FPARd": {
      "indicator_group": "FPAR",
      "indicator_name": "FPARd",
      "location": "/data/indicators_fpar/fpard/fpard_20210301.tif",
      "level": "0",
      "sources_level": "[\"BOKU FPAR:CF:0\"]",
      "crs": "EPSG:4326",
      "resolution": "29346,80640",
      "description": "description = {INDEX=Y1-Y2, Y1=../data/indicators_fpar/fpar/fpar_YYYYMMDD.tif,
Y2=../data/indicators_fpar/fpar_lta/fpar_lta_1962MMDD.tif}; values = {ADha[FPAR]}; flags =
{-9999=missing/div0}"
    },
    "rFPARc": {
      "indicator_group": "FPAR",
      "indicator_name": "rFPARc",
      "location": "/data/indicators_fpar/rfparc/rfparc_20210301.tif",
      "level": "0",
      "sources_level": "[\"BOKU FPAR:CF:0\"]",
      "crs": "EPSG:4326",
      "resolution": "29346,80640",
      "description": "description = {RelDif to hist average: INDEX=(Y1-Y2)/Y2}; values = {rfparc}; flags =
{-9999=missing/div0}"
    },
    "SM_combined": {
      "indicator_group": "SM",
      "indicator_name": "SM_combined",
      "location": "/data/indicators_sm/sm_combined/sm_combined_20210301.tif",
      "level": "0",
      "sources_level": "[\"CDS_SOIL_MOISTURE:CDR:0\"]",
      "crs": "EPSG:4326",
      "resolution": "720,1440",
      "description": "Estimate of volumetric soil moisture. Content of liquid water in a surface soil
layer of 2 to 5 cm depth expressed as m3 water per m3 soil, unit m^3m^-3. Combined means a combination of
Soil Moisture and Gapfilled Soil Moisture. SM is gapfilled using seasonal decomposition and gaussain
process to estimate residuals. Gpafilled datasets are up to dekad 2024-07-01, after that dekad regular
soil mosture continues up to date."
    },
    "SPI1": {
      "indicator_group": "RAIN",
      "indicator_name": "SPI1",
      "location": "/data/indicators_rain/spi1/spi1_20210301.img",
```

```
      "level": "0",
      "sources_level": "[\"CHIRPS RAIN:Final:0\", \"ECMWF meteo:ERA5:0\"]",
      "crs": "OGC:CRS84",
      "resolution": "2500,7200",
      "description": "description = {SPI for target year=2021 and period MMDD=301, from IN-IMGs
../DATA/INDICATORS_RAIN/RAIN\\RAIN_[yyyymmdd] with frequency=10, over years 1989-2021, averaged over 3
periods (MINgood=100%)}; values = {SPI, -, 0, 250, 0, 250, -2.5, 0.02}; flags = {251=below historical MIN,
252=above historical MAX, 253=missing, 254=SPI-error, 255=water/out}"
    },
    "SPI3": {
      "indicator_group": "RAIN",
      "indicator_name": "SPI3",
      "location": "/data/indicators_rain/spi3/spi3_20210301.img",
      "level": "0",
      "sources_level": "[\"CHIRPS RAIN:Final:0\", \"ECMWF meteo:ERA5:0\"]",
      "crs": "OGC:CRS84",
      "resolution": "2500,7200",
      "description": "description = {SPI for target year=2021 and period MMDD=101, from IN-IMGs
../DATA/INDICATORS_RAIN/RAIN\\RAIN_[yyyymmdd] with frequency=10, over years 1989-2021, averaged over 9
periods (MINgood=100%)}; values = {SPI, -, 0, 250, 0, 250, -2.5, 0.02}; flags = {251=below historical MIN,
252=above historical MAX, 253=missing, 254=SPI-error, 255=water/out}"
    }
  }
}
```


Code lists

Indicators

Below is a table with a list of indicators with respective groups. This is the full list of available indicators on the system and not all of them are available for download. The column “downloadable“ indicates if the indicator is available for download.

id	group	name	downloadable
2	WSI	WSIhp_pasture	TRUE
3	WSI	WSIhp_crop	TRUE
4	WSI	WSI_crop	FALSE
5	WSI	WSI_pasture	FALSE
6	RAIN	RAIN30d	FALSE
7	RAIN	RAIN90rd	FALSE
8	RAIN	RAINd	FALSE

11	RAIN	RAIN	TRUE
12	RAIN	SPI1	TRUE
13	RAIN	SPI3	TRUE
14	RAIN	RAIN30	FALSE
15	TEMP	TEMP	FALSE
16	TEMP30	TEMP30	FALSE
17	TEMP30d	TEMP30d	FALSE
18	Solar Radiation	rad	FALSE
19	RAIN	rain+10	FALSE
20	RAIN	rain+10d	FALSE
23	TEMP	TEMPd	FALSE
24	SM	SM	FALSE
25	SM	zSM	FALSE
27	FPAR	FPAR	TRUE
28	FPAR	zFPAR	TRUE
29	FPAR	zFPARc	TRUE
30	FPAR	mFPARd	TRUE
31	FPAR	FPARd	TRUE
32	FPAR	rFPARc	TRUE
33	SM	SM_combined	TRUE
34	SWI	SWI	FALSE
35	SWI	zSWI	FALSE

Source data sets

Source datasets define the external datasets that are downloaded every dekad and provide information on the datasource, level of processing along with it's priority within a group. This information is used to populate the sources level attribute.

id	data_source	level	priority	name
7	CHIRPS RAIN	Preliminary	1	rain
8	CHIRPS RAIN	Final	0	rain
9	ECMWF meteo	OPERATIONAL	2	rain
10	ECMWF meteo	OPERATIONAL	2	tav
11	ECMWF meteo	OPERATIONAL	2	tmin
12	ECMWF meteo	OPERATIONAL	2	tmax
13	ECMWF meteo	OPERATIONAL	2	rad
14	ECMWF meteo	OPERATIONAL	2	evpt
15	ECMWF meteo	ERA5	0	rain
16	ECMWF meteo	ERA5	0	tav
17	ECMWF meteo	ERA5	0	tmin
18	ECMWF meteo	ERA5	0	tmax
19	ECMWF meteo	ERA5	0	rad
20	ECMWF meteo	ERA5	0	evpt
21	Alterra WSI	version9_based_on_CHIRPS_ERA5	30	wsi
22	CHIRPS RAIN forecast	CHIRPS-GEFS_precip	0	rain+10
23	Alterra WSI	version9_based_on_CHIRPS_ERA5	30	wsi_pasture
24	Alterra WSI	version9_based_on_CHIRPS_ERA5	30	wsi_crop
25	CHIRPS RAIN forecast	CHIRPS-GEFS_precip	0	rain+10d

26	Alterra WSI	version9_based_on_CHIRPS_ERA5_PRELIM	31	wsi_pasture
27	Alterra WSI	version9_based_on_CHIRPS_ERA5_PRELIM	31	wsi_crop
28	ECMWF meteo	DUMMY	100	rain
29	ECMWF meteo	DUMMY	100	tav
30	ECMWF meteo	DUMMY	100	rad
31	Alterra WSI	version11_based_on_CHIRPS_ERA5-NRT	20	wsi_pasture
32	Alterra WSI	version11_based_on_CHIRPS_ERA5-NRT	20	wsi_crop
33	Alterra WSI	version11_based_on_CHIRPS_ERA5-NRT_PRELIM	21	wsi_pasture
34	Alterra WSI	version11_based_on_CHIRPS_ERA5-NRT_PRELIM	21	wsi_crop
35	CDS_SOIL_MOISTURE	v202212_CDR	0	soil_moisture
36	CDS_SOIL_MOISTURE	v202212_ICDR	1	soil_moisture
37	BOKU FPAR	C0	8	fpar
38	BOKU FPAR	C1	7	fpar
39	BOKU FPAR	C2	6	fpar
40	BOKU FPAR	C3	5	fpar
41	BOKU FPAR	C4	4	fpar
42	BOKU FPAR	CF	0	fpar
43	Alterra WSI	version12_based_on_CHIRPS_ERA5-NRT	0	wsi_pasture
44	Alterra WSI	version12_based_on_CHIRPS_ERA5-NRT	0	wsi_crop
45	Alterra WSI	version12_based_on_CHIRPS_ERA5-NRT_PRELIM	1	wsi_pasture
46	Alterra WSI	version12_based_on_CHIRPS_ERA5-NRT_PRELIM	1	wsi_crop

47	CDS_SOIL_MOISTURE	DUMMY	100	soil_moisture
48	MO6 SWI	t_010	0	swi