High Resolution Snow and Ice Monitoring: Aggregated River and Lake Ice Extent (ARLIE)

The Aggregated River and Lake Ice Extent (ARLIE) product is a spatially aggregated information on surface water conditions of rivers and lakes. ARLIE information is stored in a geodatabase, enriched every day from the different River and Lake Ice Extent products (RLIE S1, RLIE S2, RLIE S1+S2) for the entire EEA38 and the United Kingdom. It provides percent coverage of snow-covered or snow-free ice on lakes and on 10 km river sections described by the EU-HYDRO river and lake network database.

The ARLIE data is stored in a PostGIS persistent geodatabase. They can be retrieved by using a specific REST API. Users can query ice sheet summary information of river segments and lakes (ARLIE statistics) together with the geometry and caracteristics of the features on which these statistics were estimated. All geometry features are delivered in the ETRS89 LAEA (EPSG:3035) coordinate reference system.

ARLIE is one of the products of the pan-European High-Resolution Snow and Ice service (HR-S&I), which are provided at high spatial resolution from the Sentinel-2 and Sentinel-1 constellations data from September 1, 2016 onwards.

Simple

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Citation identifier	DAT-244-en

Point of contact

Organisation name	Individual name	Electronic mail address	Website	Role
European Commission			https://commission.europa.eu	Owner
Copernicus Land Monitoring Service		copernicus@eea.europa.eu	https://land.copernicus.eu	Custodian
European Environment Agency		sdi@eea.europa.eu	http://www.eea.europa.eu	Publisher
Copernicus Land Monitoring Service helpdesk		copernicus@eea.europa.eu	https://land.copernicus.eu/en/contact-service-helpdesk	Point of contact

Maintenance and update frequency	Continual
GEMET - INSPIRE themes, version 1.0	• Land cover
Keywords	
Continents, countries, sea regions of the world.	• United Kingdom • EEA38 (from 2020)
Keywords	
GEMET	• snow • landscape alteration • climate change impact • land cover • monitoring • ice
Spatial scope	• European
Temporal resolution	• Irregular

EEA topics	• Land use
EEA Management Plan	• 2020 3.6.7
Access constraints	Other restrictions
Other constraints	no limitations to public access
Use constraints	Other restrictions
Other constraints	The Copernicus component is governed by Regulation (EU) No 2021/696 of the European Parliament and of the Council of 28 April 2021 establishing the Union Space Programme and the European Union Agency for the Space Programme and repealing Regulations (EU) No 912/2010, (EU) No 1285/2013 and (EU) No 377/2014 and Decision No 541/2014/EU. Within the Copernicus component, a portfolio of land monitoring activities has been delegated by the European Union to the European Environment Agency (EEA) and the DG Joint Research Centre of the European Commission.
	The Copernicus land monitoring products and services are made available on a principle of full, open and free access, as established by the Commission Delegated Regulation (EU) No 1159/2013 of 12 July 2013.
	Free, full and open access to the products and services of the Copernicus Land Monitoring Service is made on the conditions that:
	1. When distributing or communicating Copernicus Land Monitoring Service products and services (data, software scripts, web services, user and methodological documentation and similar) to the public, users shall inform the public of the source of these products and services.
	2. Where the Copernicus Land Monitoring Service products and services have been adapted or modified by the user, the user shall clearly state this.
	3. Users shall make sure not to convey the impression to the public that the user's activities are officially endorsed by the European Union.
Spatial representation type	Vector
Denominator	50000
Language of dataset	English
Character set	UTF8

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Begin date	2016-09-01
Coordinate reference system identifier	EPSG:3035
Distribution format	• Postgis ( )

OnLine resource	**Protocol**	**Linkage**	**Name**
	WWW:LINK-1.0-http--link	https://land.copernicus.eu/en/technical-library/hrsi-ice-pum/@@download/file	Product user manual
	WWW:LINK-1.0-http--link	https://land.copernicus.eu/en/technical-library/hrsi-ice-s1-atbd/@@download/file	Algorithm theoretical basis document
	WWW:LINK-1.0-http--link	https://cryo.land.copernicus.eu/arlie/get_arlie	REST API to retrieve ARLIE data
	WWW:LINK-1.0-http--link	https://cryo.land.copernicus.eu/arlie/get_geometries	REST API to retrieve geometry data
	WWW:LINK-1.0-http--link	https://github.com/eea/clms-hrsi-api-client-python-arlie	Python client to download ARLIE products
	WWW:LINK-1.0-http--link		Download (requires authentication)
	WWW:LINK-1.0-http--link		EEA Taskman ticket

OnLine resource

No information provided.

Hierarchy level	Dataset

Conformance result

Title	
Date (Publication)	
Explanation	See the referenced specification
Statement	

The algorithm for ARLIE retrieval is fully described in the Algorithm Theoretical Basis Document:

https://land.copernicus.eu/en/technical-library/hrsi-ice-s1-atbd/@@download/file. Its validation is described https://land.copernicus.eu/en/technical-library/hrsi-ice-qar/@@download/file.

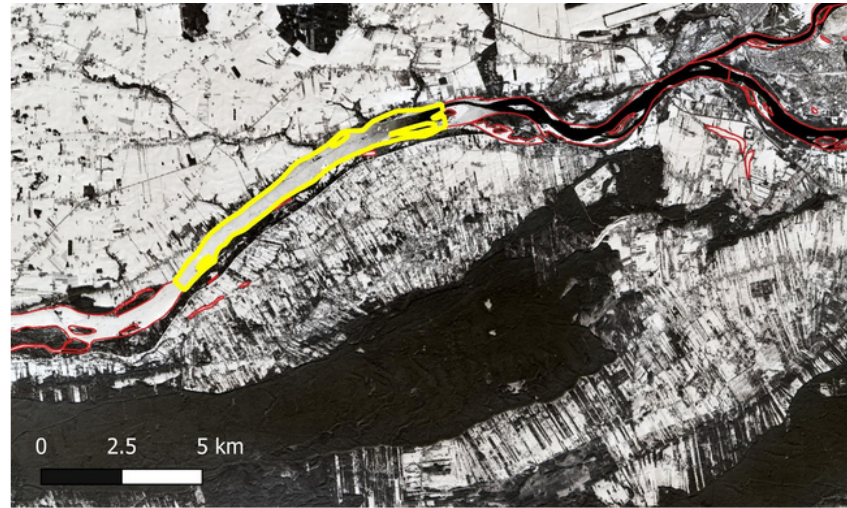Input data for the ARLIE are the WIC S1, the WIC S2 and the WIC S1+S2.

Source	• High Resolution Snow and Ice Monitoring: River and Lake Ice Extent (raster 20m) • EU-Hydro – River Network Database - version 1.0, Nov. 2019

Metadata

File identifier	219a6cd4-edfe-4982-8470-39b60421ed74 XML
Metadata language	English
Character set	UTF8
Hierarchy level	Dataset
Date stamp	2025-04-03T12:45:43.556147Z
Metadata standard name	ISO 19115/19139
Metadata standard version	1.0
Metadata author	

Organisation name	Individual name	Electronic mail address	Website	Role
European Environment Agency		sdi@eea.europa.eu		Point of contact

Overviews

id	object_nam	river_km	basin_name	eu_hydro_id	area
346527	Vistula	380	Vistula		5946111.52921436

id	river_km_id	datetime	water_perc	ice_perc	other_perc	cloud_perc	nd_perc	qc	type
100323	346527	2021-02-06T09:56:18.000	26	0	2	68	4	0	Sentinel-2
106629	346527	2021-02-11T09:56:16.000	5	9	9	74	3	0	Sentinel-2
116921	346527	2021-02-18T09:46:22.000	6	88	4	0	2	0	Sentinel-2
119869	346527	2021-02-20T16:19:25.000	10	88	0	0	2	0	Sentinel-1 Sentinel-2
120737	346527	2021-02-21T09:56:59.000	0	0	0	98	2	0	Sentinel-2
124492	346527	2021-02-22T10:15:59.000	21	76	0	0	3	0	Sentinel-1 Sentinel-2

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