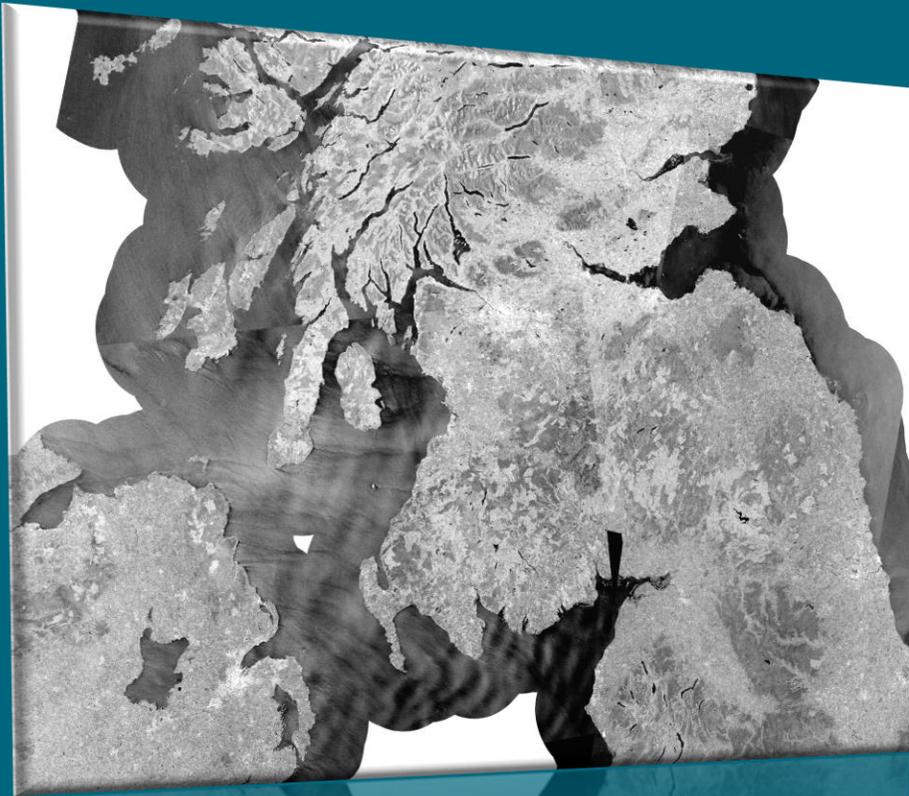


Simple ARD Service

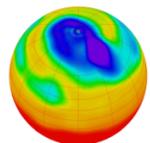
Sentinel-1 and Sentinel-2 analysis-ready data for Scotland and Northern Ireland



Webinar: Thursday 30th July 2020

Gwawr Jones, Ulric Wilson and Paula Lightfoot, JNCC

Shona Nicol, Scottish Government and Iain Davies, DAERA, Northern Ireland Environment Agency



**Centre for Environmental
Data Analysis**

SCIENCE AND TECHNOLOGY FACILITIES COUNCIL
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Department of
**Agriculture, Environment
and Rural Affairs**

www.daera-ni.gov.uk



JNCC

Joint Nature Conservation Committee

Webinar contents

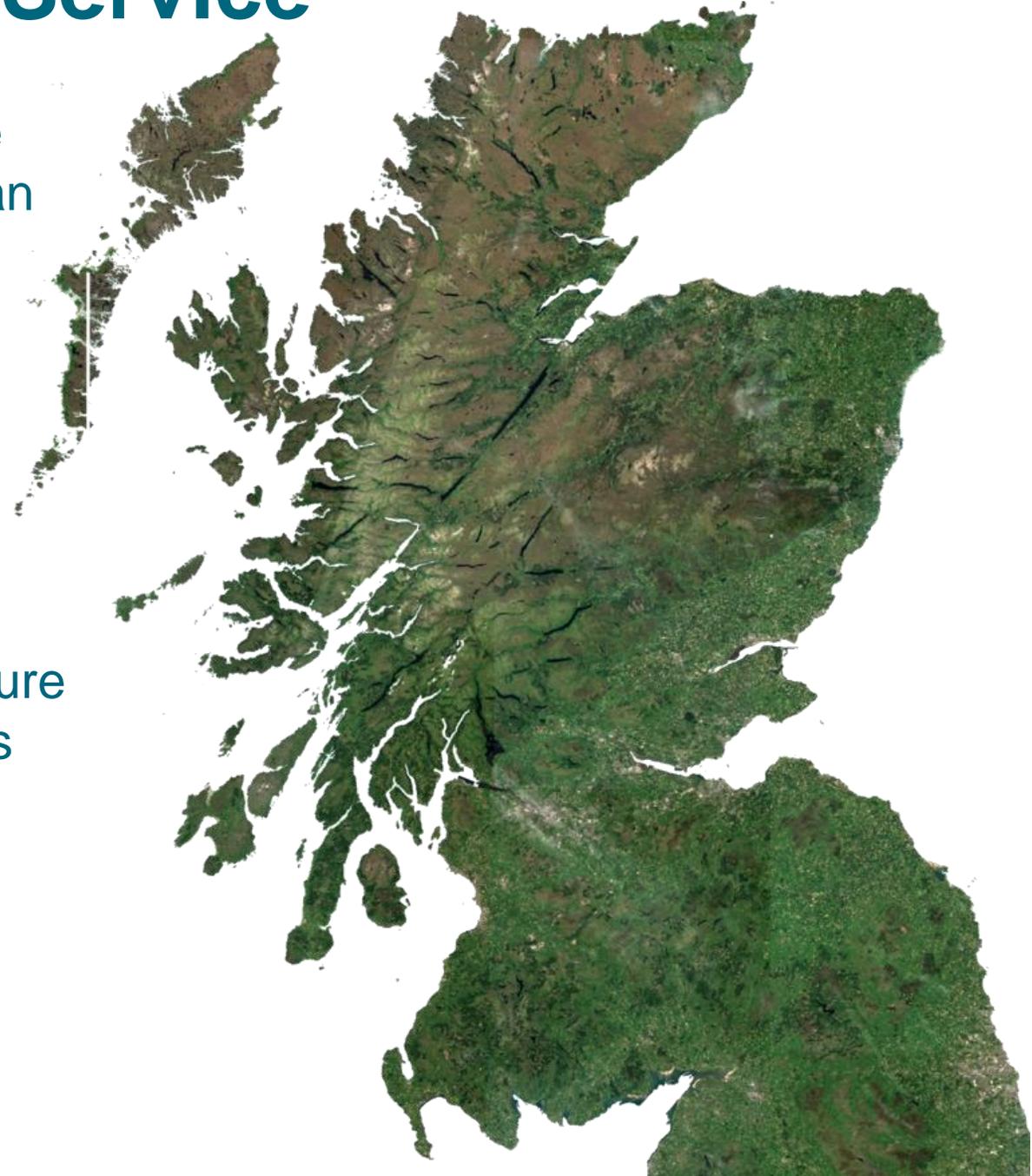


- Background to Simple ARD Service
 - Sentinel-1 and Sentinel-2 analysis-ready data
 - Technical and operational infrastructure
 - Environmental applications
 - Accessing data
 - Resources for users
- Questions
 - ask via 'question'
 - webinar is recorded but questions anonymised
 - recording and slides will be available after the event

Background to Simple ARD Service

Ensure the Scottish public sector has access to the right skills and infrastructure to enable them to be an intelligent user of EO data and applications:

- Support the mainstreaming of EO data through removal of user burden and data complexity
- Demonstrate the benefit of analysis-ready data through pilots for a range of use cases
- Provide access to data and analytical infrastructure so they can develop into operational applications
- Train and develop technical skills within Scottish organisations



Background to Simple ARD Service

The Northern Ireland Environment Agency's primary purpose is to protect and enhance Northern Ireland's environment.

NIEA requires a current, comprehensive habitat and land cover map for Northern Ireland, to assess Natural Capital and elements of habitat condition; to monitor change; and enhance modelling capabilities, e.g. wildfire risk management.

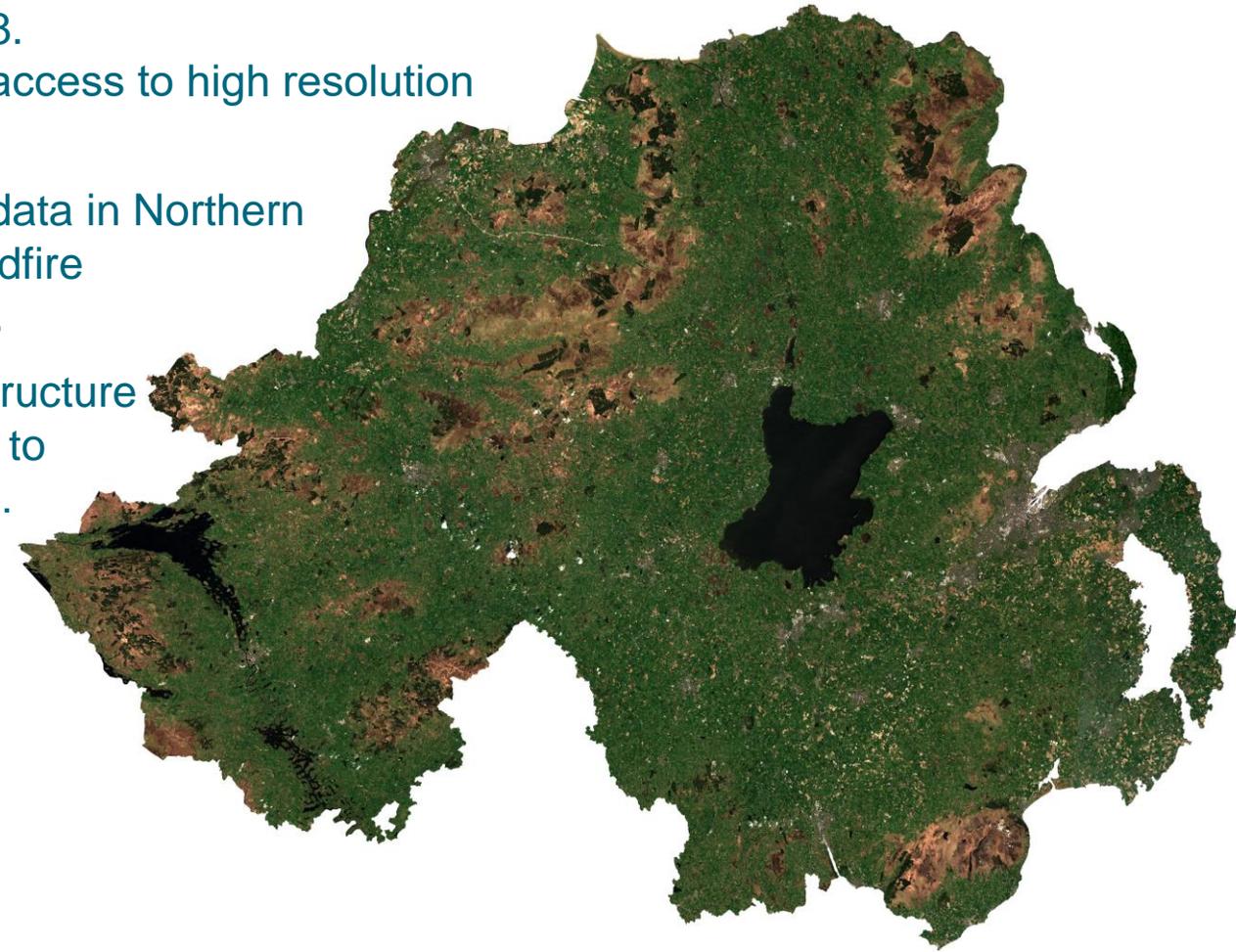
The Living Map of Northern Ireland project commenced in 2018.

The Copernicus programme offers continuous 'open and free' access to high resolution Sentinel-1 and Sentinel-2 data throughout the year.

Numerous other potential dynamic applications for S1 and S2 data in Northern Ireland have emerged, such as monitoring and reporting of: wildfire damage; water level changes; forest felling and storm damage.

The Simple ARD Service offers an efficient, flexible data infrastructure from which to access archived Analysis-Ready Data, produced to standards consistent with Defra's EO Data Service for England.

The ARD archive is freely available to all public sector, academia and partners and offers the potential for greater environmental collaboration, research and innovation



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and Rural Affairs**

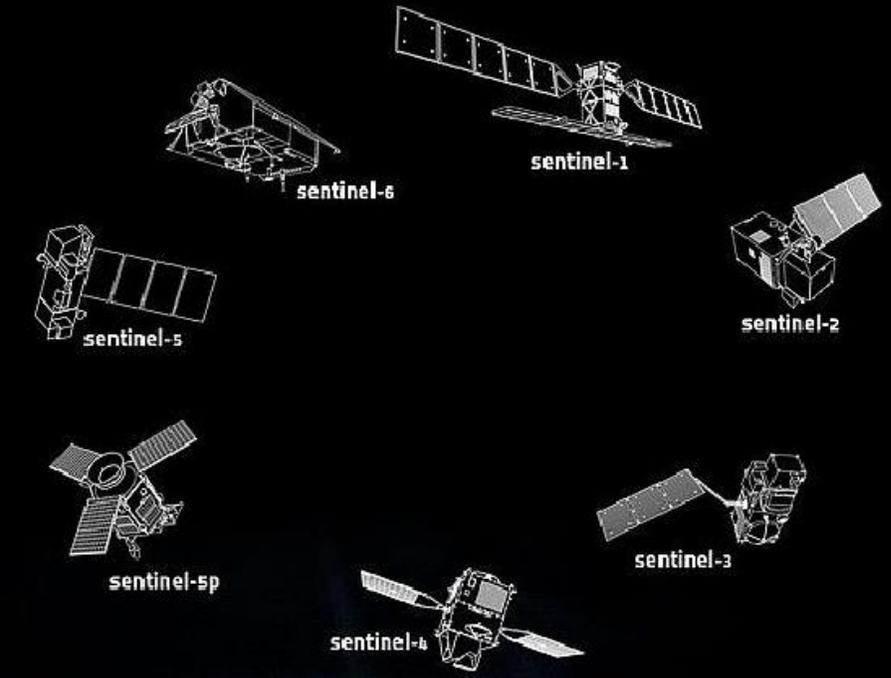
www.daera-ni.gov.uk

Simple ARD Service - overview

- Developed by JNCC with support from Scottish Government and DAERA Northern Ireland Environment Agency.
- Supporting use of satellite data for public sector environmental applications.
- Generating and supplying Sentinel-1 and Sentinel-2 analysis-ready data (ARD), including a 12-month archive.
- Providing bespoke training and support.
- Working with partners to develop analytical and operational applications.
- Launched July 2020!



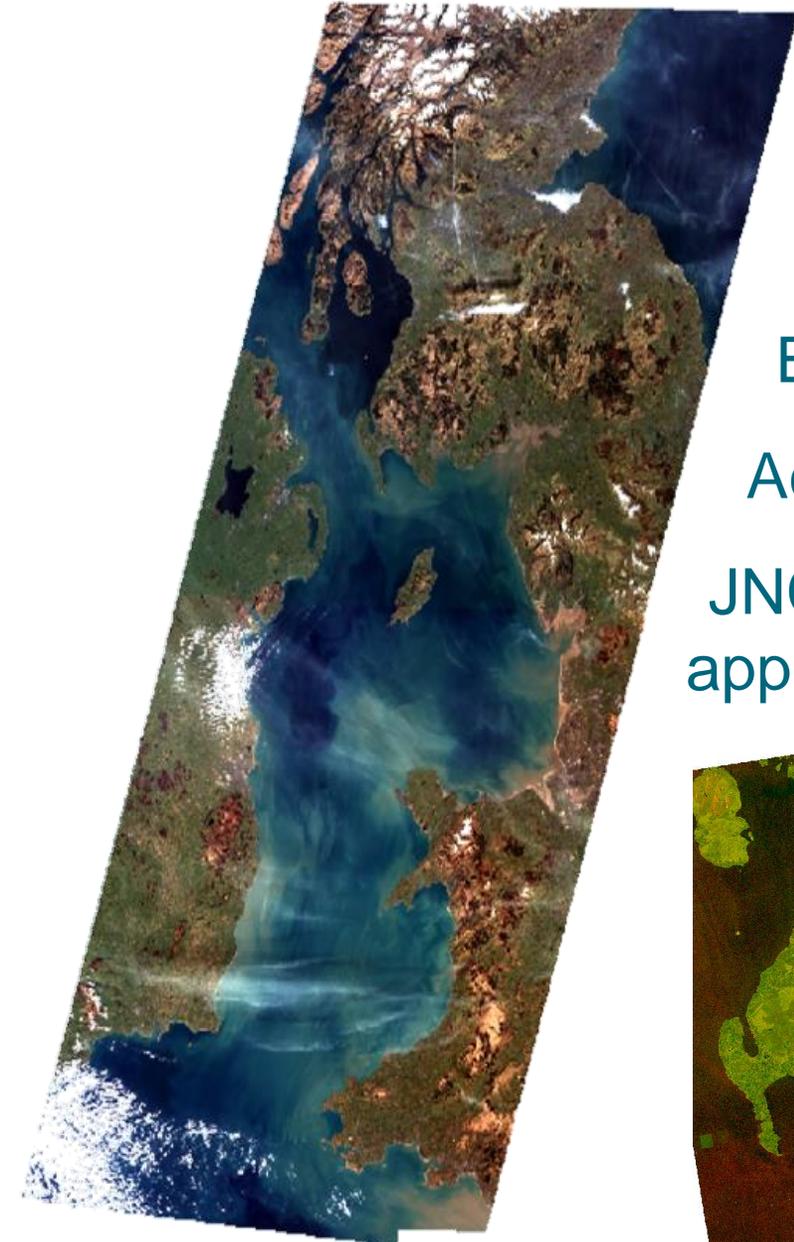
Copernicus Programme



- **Copernicus** is the Earth Observation programme run by the European Commission and European Space Agency.
- Established in 2014 providing high quality, high frequency data free of charge.
- Family of ‘Sentinel’ satellites – pairs of twin satellites per mission.
- Sentinel-1 and Sentinel-2 of particular interest for terrestrial monitoring.


Europe's eyes on Earth

Analysis-Ready Data (ARD)



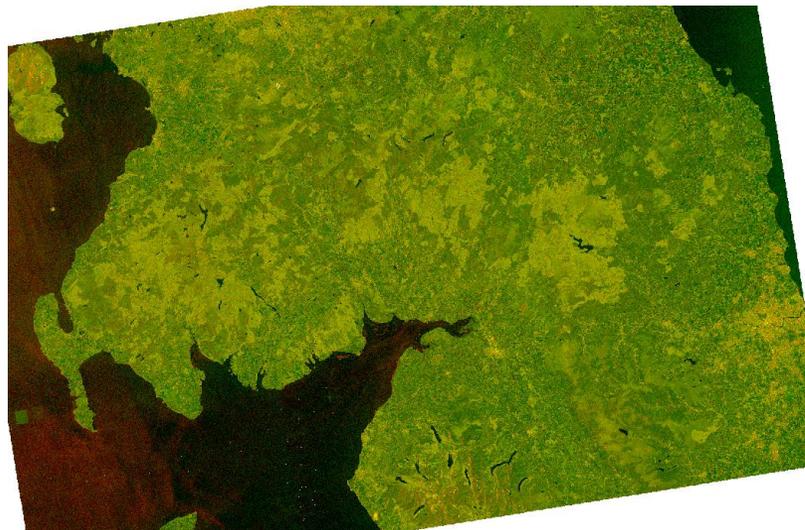
Satellite imagery must be processed before it can be used.

Processing methods and software exist, but require staff time, expertise and access to computing facilities.

Barrier to uptake and possible source of inconsistency.

Access to ARD saves up to 70% of project time.

JNCC were supplying ARD for public sector environmental applications in Scotland and Northern Ireland on an *ad hoc* basis.



Sentinel-1



Sentinel-1 provides **radar data** – an example of active remote sensing.

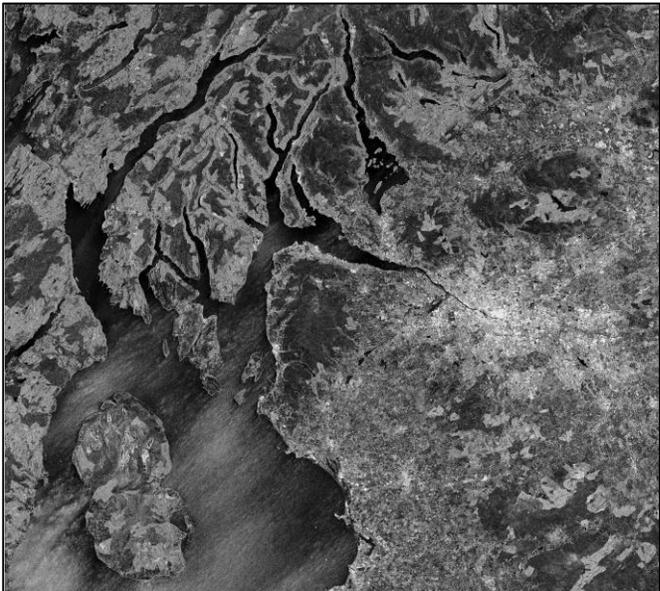
Twin satellites, Sentinel-1a and Sentinel-1b produce new data **every 2-3 days**.

They gather data day and night, **unaffected by cloud**.

Analysis-ready Sentinel-1 data is a **2-band raster** with **10m x 10m pixels**.

It is a **backscatter product**. Radar backscatter is influenced by terrain structure and surface roughness.

Structurally complex areas such as cities have high backscatter values, while flat surfaces such as water bodies have lower backscatter values.



Sentinel-2



Sentinel-2 provides **multispectral imagery** – an example of passive remote sensing.

Twin satellites, Sentinel-2a and Sentinel-2b produce new data **every 2-3 days**.

Imagery may be obscured by cloud.

Analysis-ready Sentinel-2 imagery is a **10 band raster** with **10m x 10m** pixels.

It is a **surface reflectance product**, showing which wavelengths are most strongly reflected by the earth's surface (and by implication, which are absorbed).

This is useful for **visualisation**, and can also give insight into **environmental conditions**, e.g. vegetation productivity.

Technical and Operational Infrastructure Standards

- **Data standards** were developed by JNCC and EOCoE partners (80:20 rule)
- **Processing chains** created by JNCC based on open source software
 - Sentinel-1 SNAP toolbox (ESA)
 - Sentinel-2 ARCSI (Aberystwyth University)
- Defra Earth Observation Data Service (EODS) use the same standards and principle processing tools so data is compatible

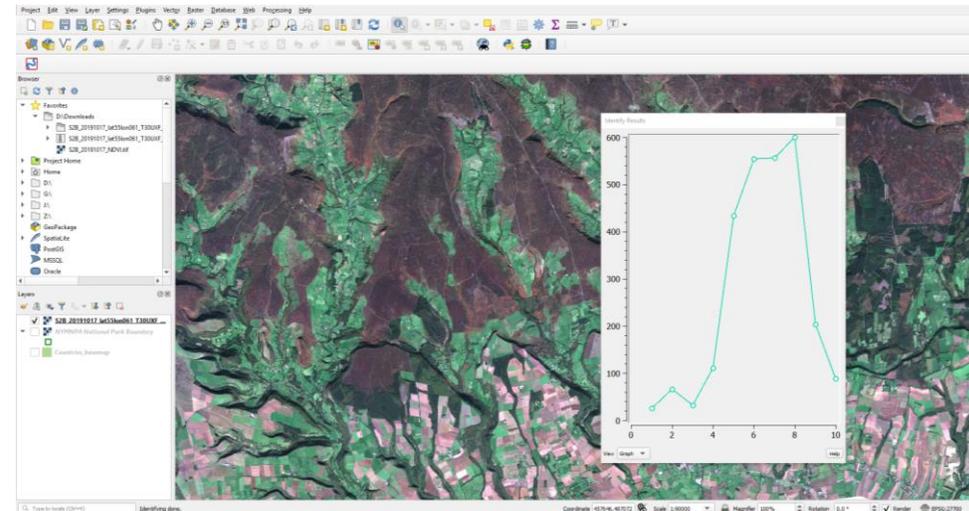
Technical and Operational Infrastructure Workflow

- **Level 1** 'raw' data pulled from Mundi DIAS platform
- **Processed on JASMIN** 'super data cluster'
- **ARD outputs** and metadata stored and distributed via CEDA
- Staff and compute resources supported by SG and DAERA/NIEA
- Storage and distribution underwritten by NCEO



Technical and Operational Infrastructure Process

- **Processed** in weekly batches – not fully automated
- **QA/QC** stage – samples of processing runs
 - geographical registration (Scotland: British National Grid, EPSG:27700; Northern Ireland: Irish National Grid TM65, EPSG:29902))
 - Layers / band responses
 - Obvious anomalies
- **Ingestion** to CEDA
- **Latency** 7-14 days



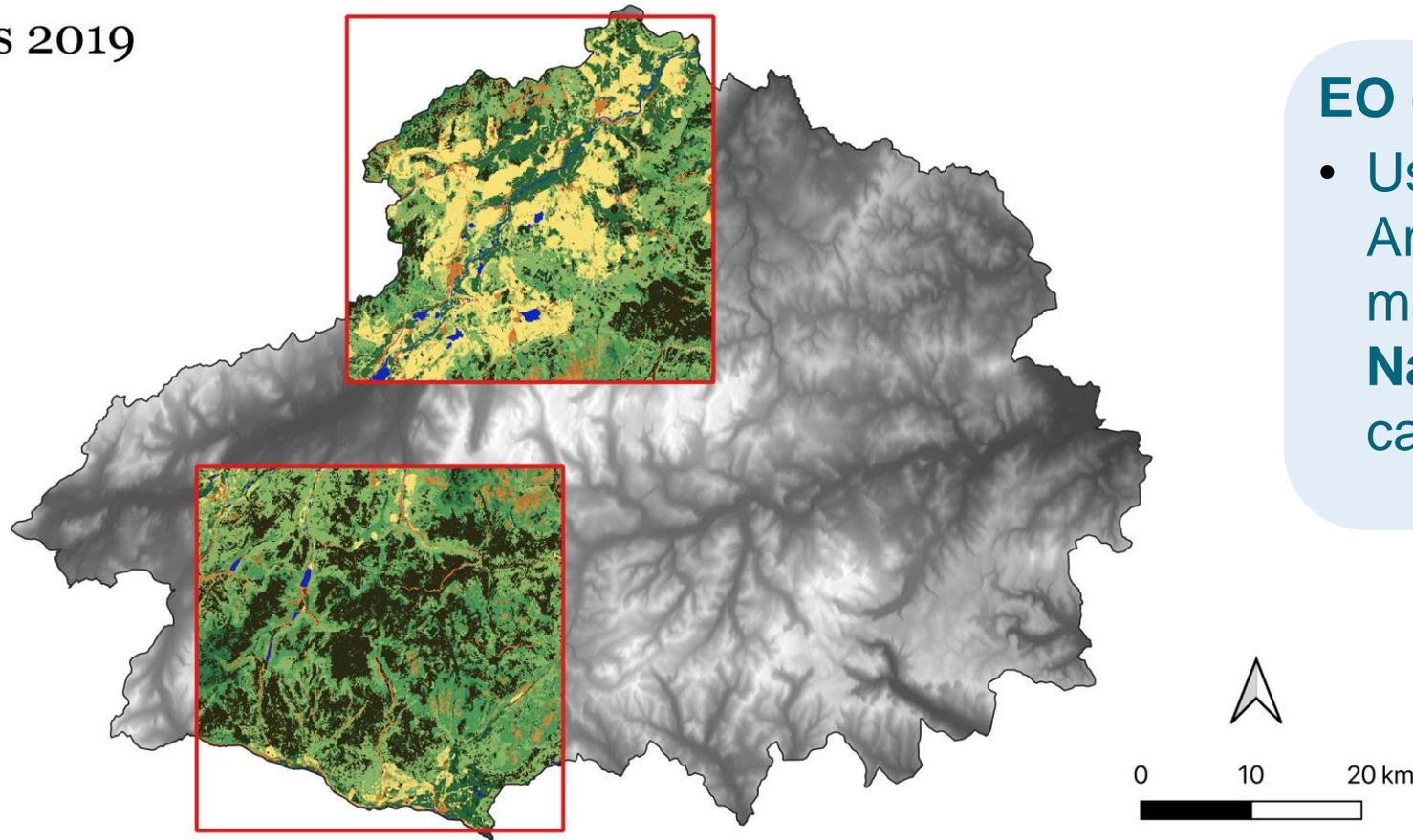
Technical and Operational Infrastructure Archive

- **Coverage**
 - Scotland and Northern Ireland: Feb 2019 to present
 - England (EODS): Oct 2018 to present
 - Reviewing existing sources to extend data further back
- **Open data** publicly available



Environmental Applications - Habitat Mapping

Cairngorms 2019



EO data use

- Used Sentinel-2 ARD and Artificial Intelligence (AI) to map habitats as input for **Natural Capital Asset Index** calculations.

EUNIS Habitat Classification

Surface waters	Alpine and subalpine grasslands	Mixed deciduous and coniferous woodland
Raised and blanket bogs	Woodland fringes and clearings and tall forb stands	Lines of trees
Valley mires poor fens and transition mires	Arctic alpine and subalpine scrub	small anthropogenic woodlands
Base-rich fens and calcareous spring mires	Temperate and mediterranean-montane scrub	recently felled woodlands
Dry grasslands	Temperate shrub heathland	early-stage woodland and coppice
Mesic grasslands	Riverine and fen scrubs	Screens
	Broadleaved deciduous woodland	Inland cliffs rock pavements and outcrops
	Coniferous woodland	Manmade surface (buildings and roads)
		Other bare surface



NatureScot

Scotland's Nature Agency
Buidheann Nàdair na h-Alba

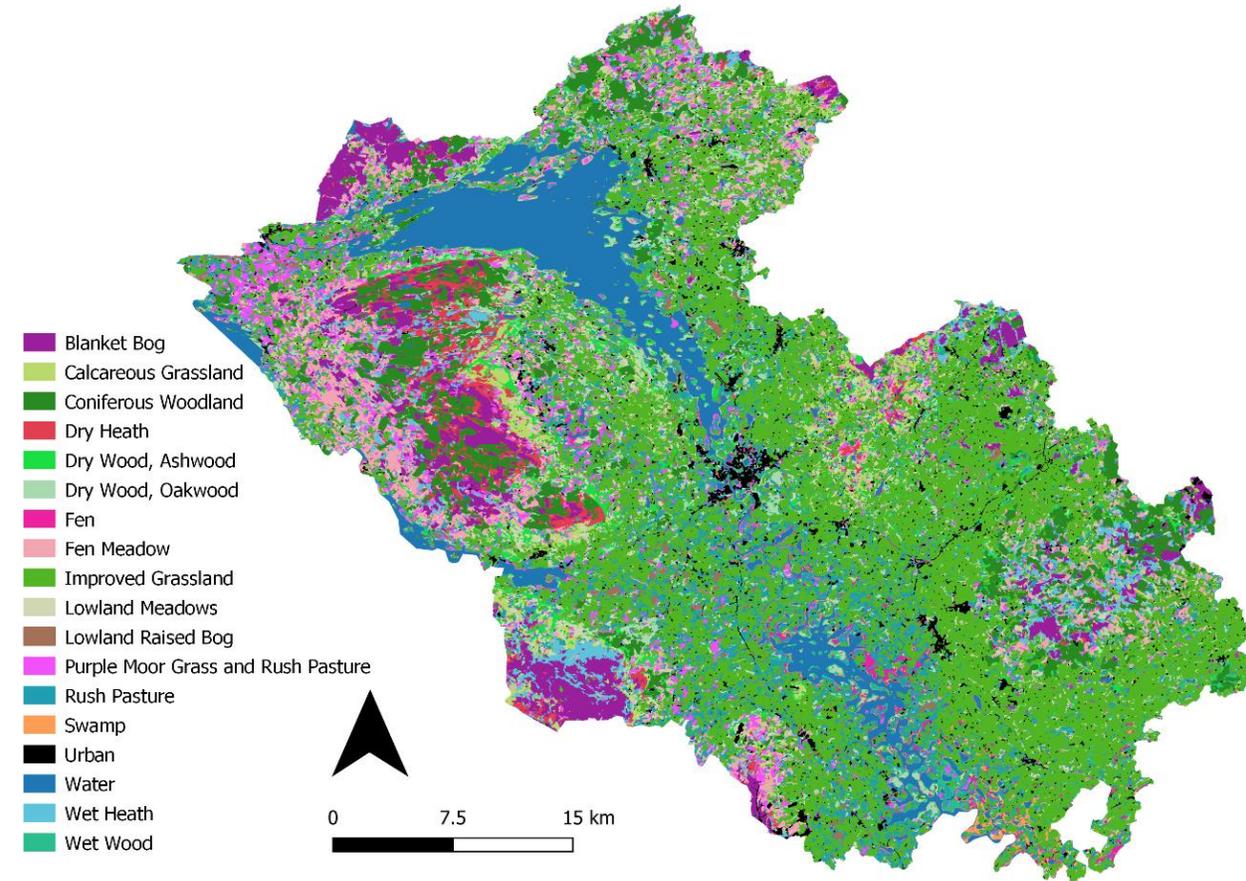
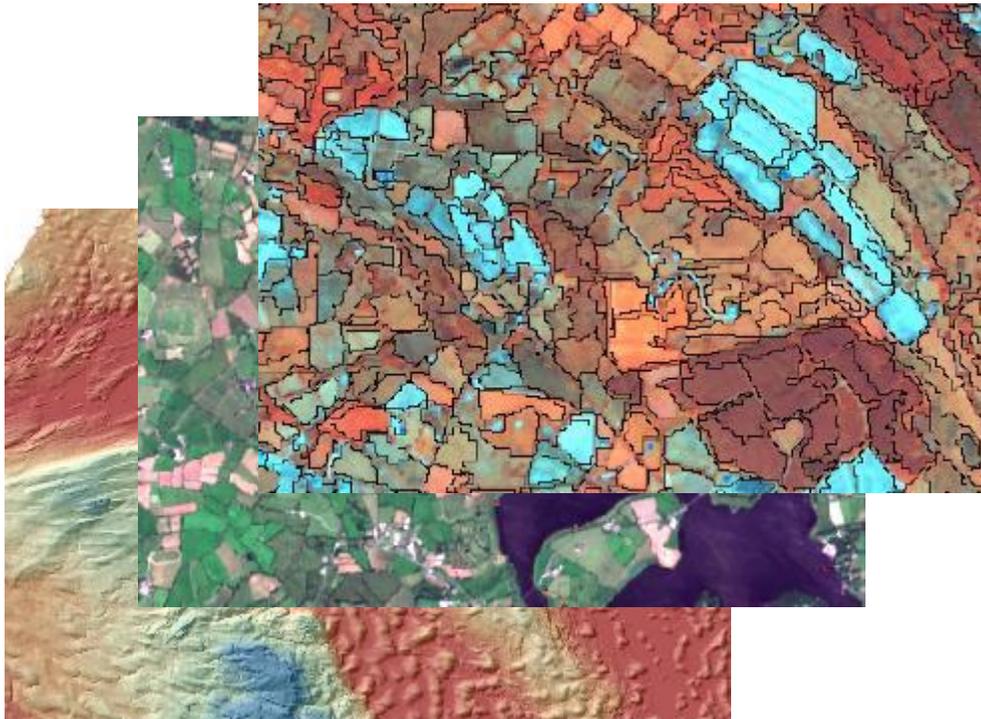


JNCC

Environmental Applications - Habitat Mapping

EO data use

- Used Sentinel-1 & Sentinel-2 ARD as inputs into the Living Maps Method (LMM).
- Large scale analytical use moving towards a **national habitat map** for Northern Ireland.



Seasonal Sentinel-1 and Sentinel-2 derived habitat map of Fermanagh

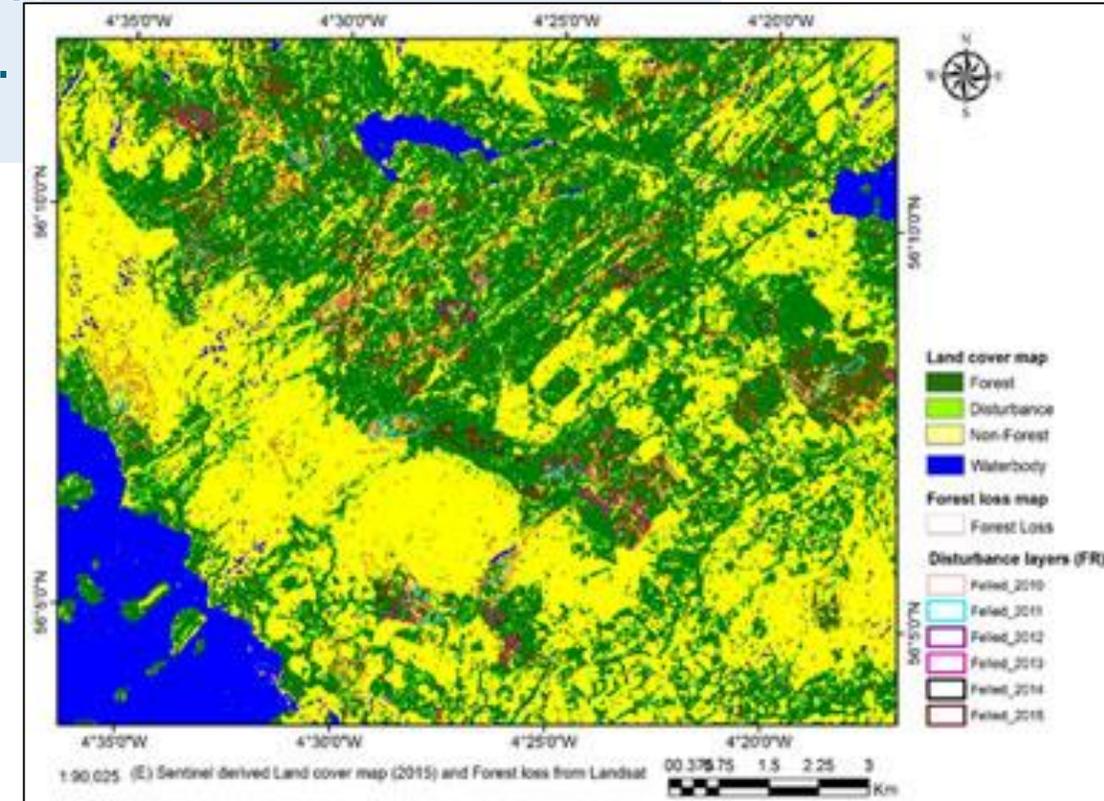
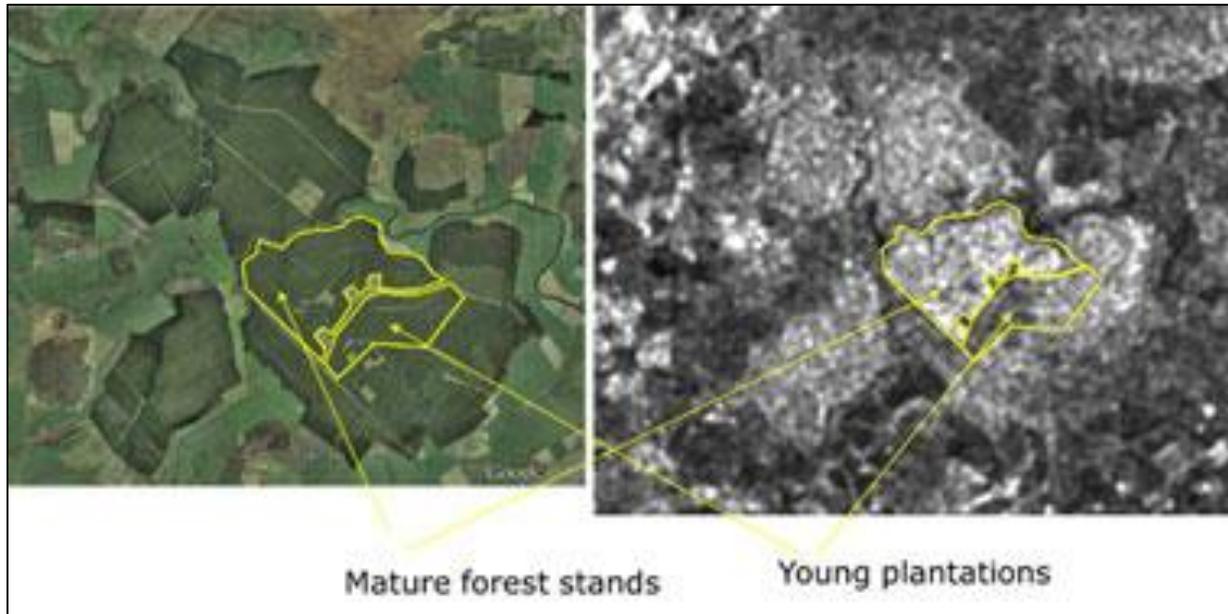
Environmental Applications - Forest change detection



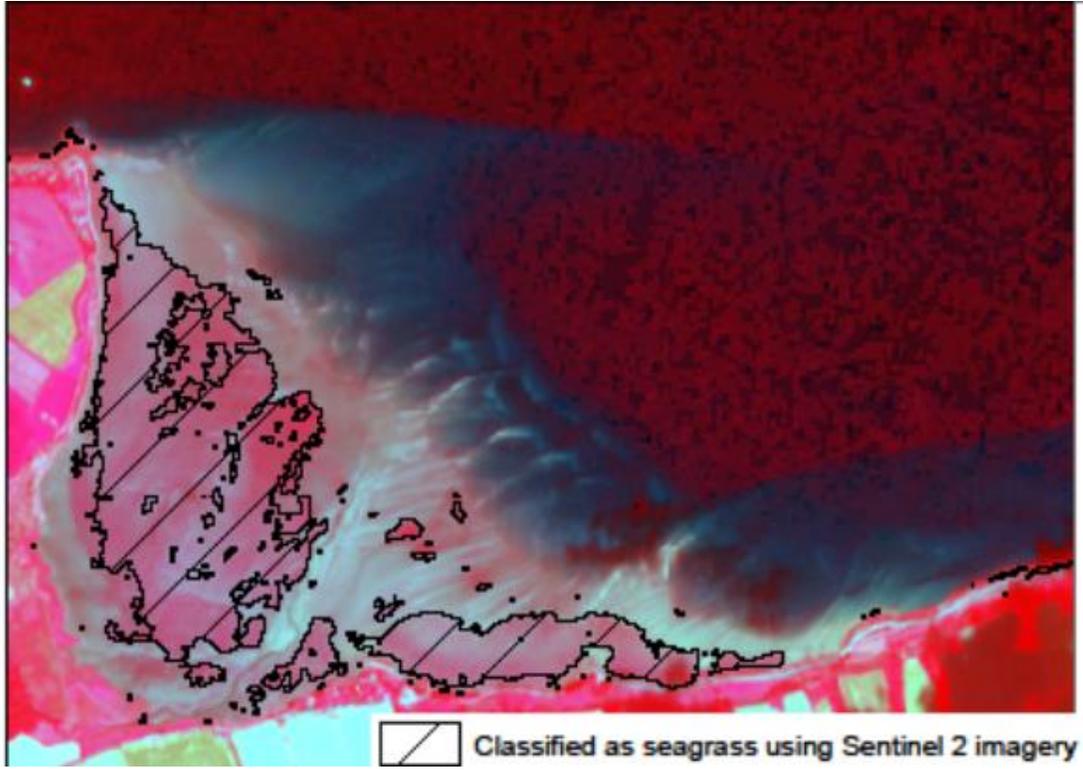
Forest Research

EO data use

- Automated analysis of Sentinel-1 and Sentinel-2 ARD to detect forest change, e.g. loss due to wind blow or illegal logging.
- Targeting site visits – more efficient use of resources.
- Near real-time updates to National Forest Inventory.

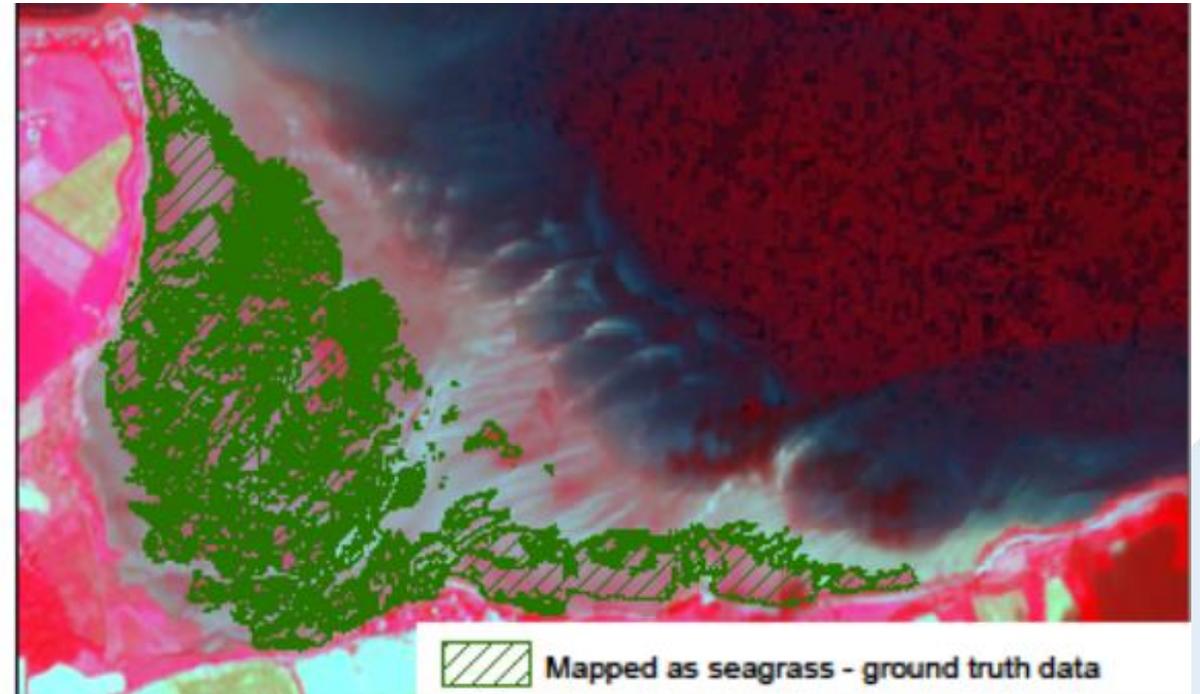


Environmental Applications – Seagrass Mapping



EO data use

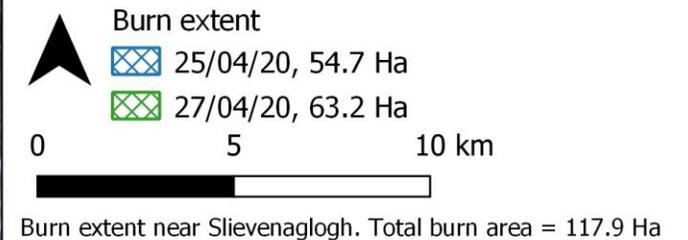
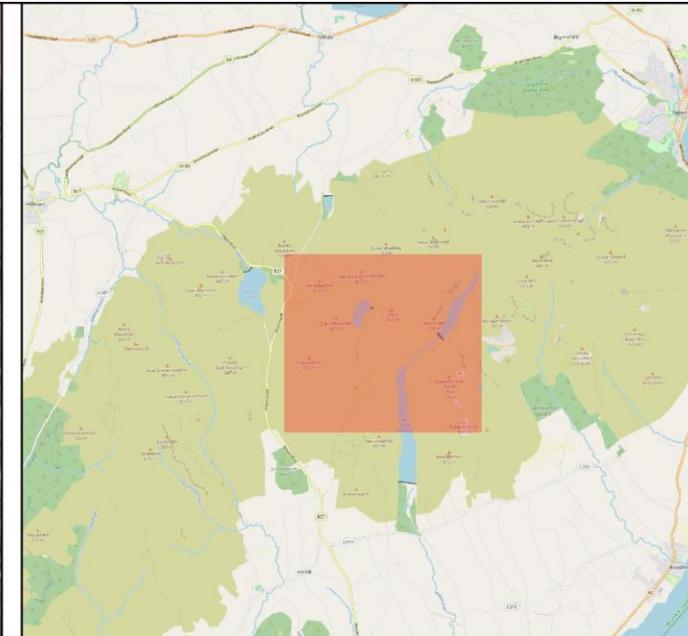
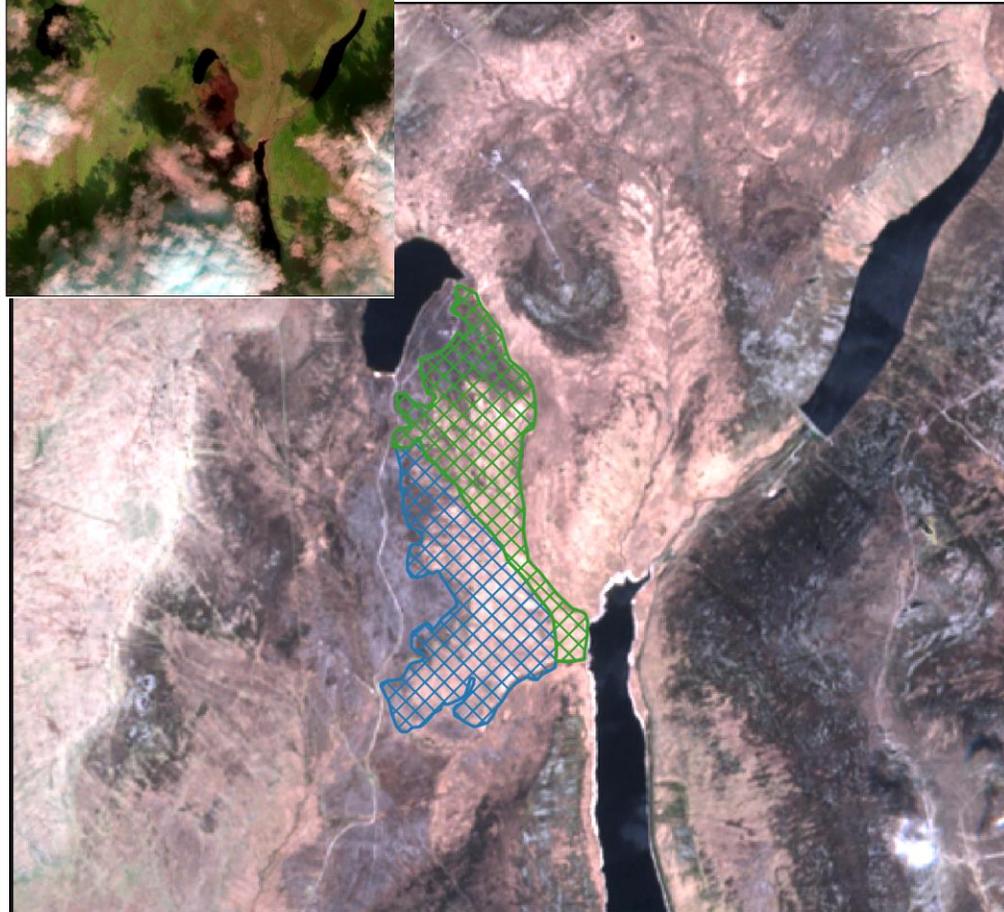
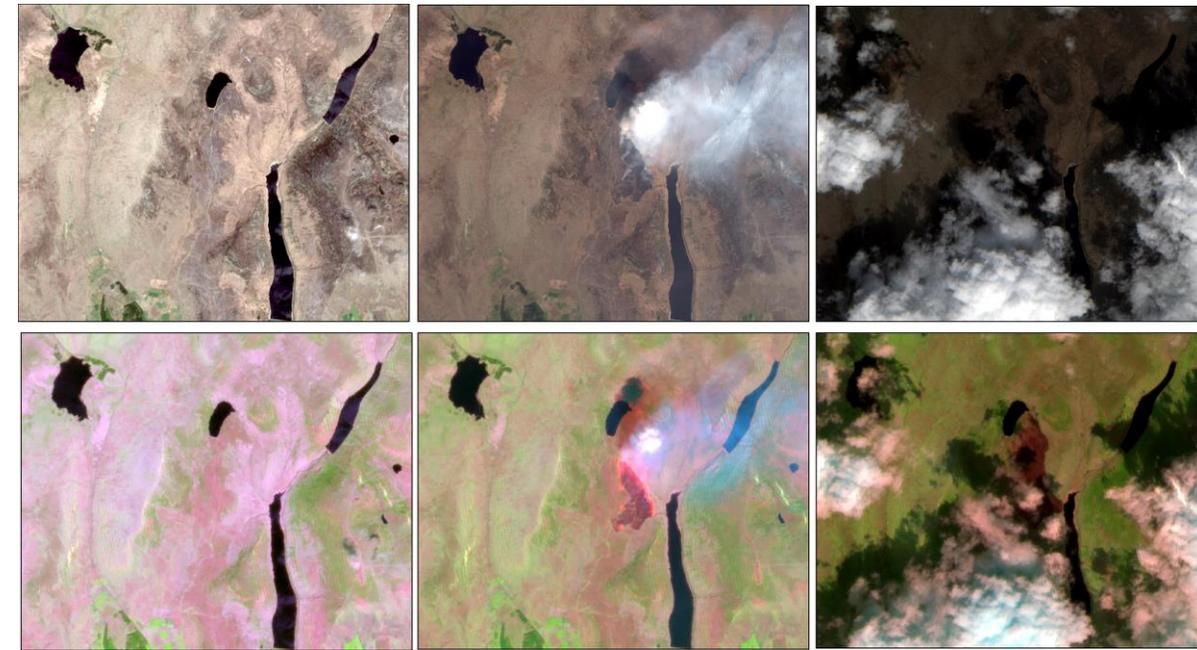
- Used Sentinel-2 ARD and ancillary datasets to map extent of seagrass.



Environmental Applications – Burn Area Detection

EO data use

- Using Sentinel-2 ARD time-series to detect fires and map burn area extent.



Environmental Applications – Crop Map

EO data use

- Using Sentinel-1 and Sentinel-2 ARD with ancillary datasets to produce an up-to-date crop map of Scotland.
- Valuable tool for agricultural and environmental policy makers and regulatory bodies.



EDINA



THE UNIVERSITY of EDINBURGH



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RESAS

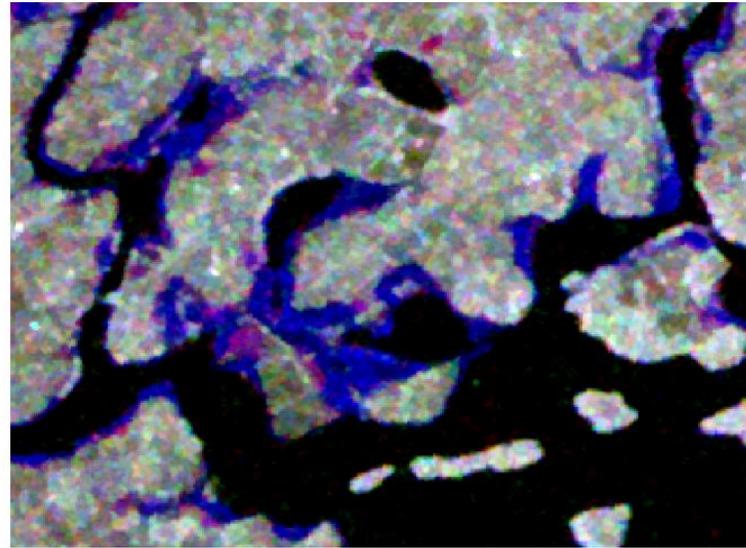
Rural & Environmental Science
and Analytical Services



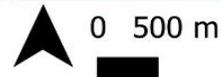
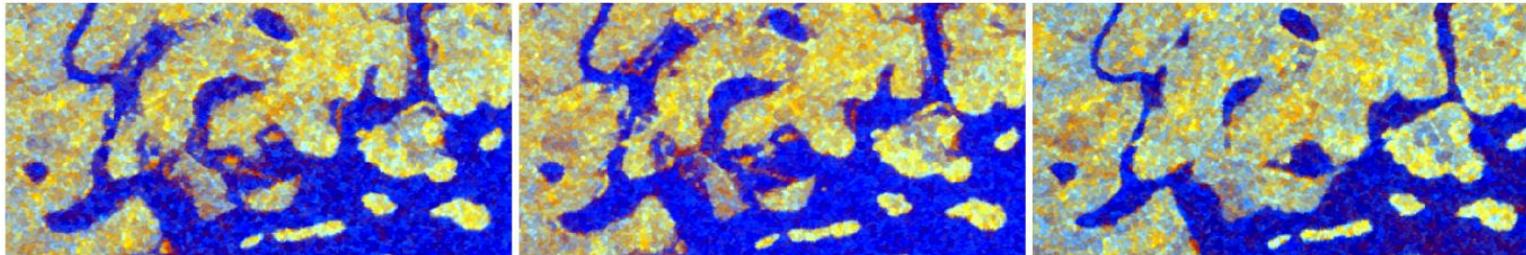
Environmental Applications – Water Level Monitoring



Sentinel-2 true colour image, 25/03/2017



Sentinel-1 RGB image, red channel 05/01/2018, green channel 04/02/2018 and blue channel 12/03/2018



Sentinel-1 RGB images for a) 05/01/2018 b) 04/02/2018 and c) 12/03/2018, R = VV, G = VH, B = VV/VH

EO data use

- Using Sentinel-1 ARD time series to detect water inundation levels in Fermanagh.
- Radar can 'see' through clouds and monitor water levels as they change throughout the year.



List of other examples of uses

I want to access Sentinel-1 and/or Sentinel-2 ARD so that I can:

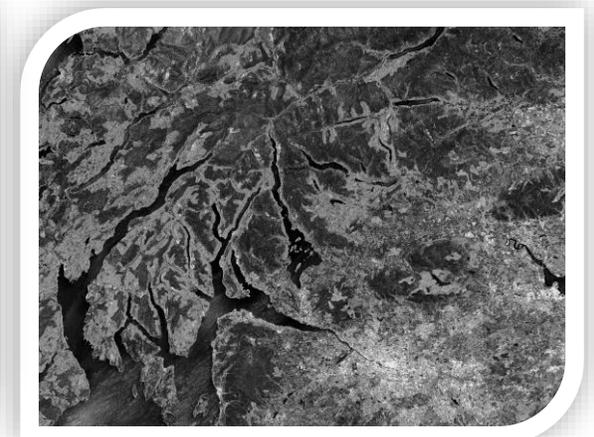
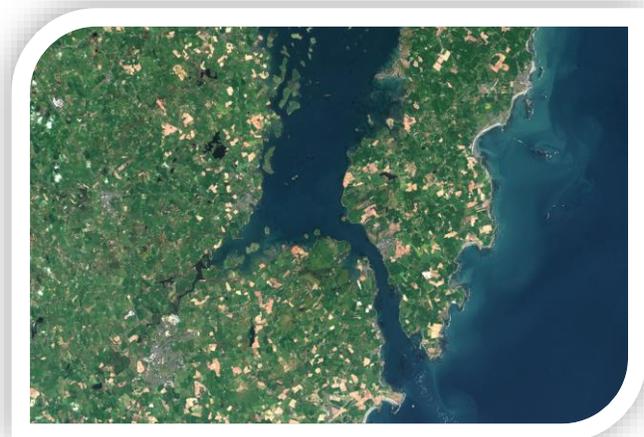
- Create productivity and wetness products to **detect changes in designated sites**.
- Identify **woodland change** and update the FC's National Forest Inventory dataset.
- Measure **natural capital metrics**: extent, quality and change.
- Undertake risk based management.
- Plan site visits, identify any **access issues** and likely routes and trails.
- Map extent of macroalgae on mudflats in large estuaries during peak opportunistic growing season.
- Identify areas of bare/exposed ground.
- Detect changes over time in land holdings indicating where **compliance checks** may be advised.
- Monitor urban fringe and link to **ground deformation** causes.
- Detect coastal changes to inform about climate change.
- Identify exact location of **felling activity** to be more accurate about timings and save time on site visits.
- Detect potential areas of diseased trees to help direct field visits.
- Assess stock and change in habitats across Scotland / Northern Ireland to meet reporting requirements.
- Provide local authorities with most recent information on the ground to assist with planning.
- Overlay images with **incident locations** to identify areas at risk.
- Monitor peatland **restoration**.
- Identify winter born water ways to identify areas at risk and **improve flood defences**.

Accessing the Data



- All datasets are available under an Open Government Licence
- This means that you can:
 - ✓ Use the data commercially and non-commercially
 - ✓ Copy, publish, distribute and transmit the data
 - ✓ Adapt the data or combine it with other information
 - ✓ Include it in your own product or application

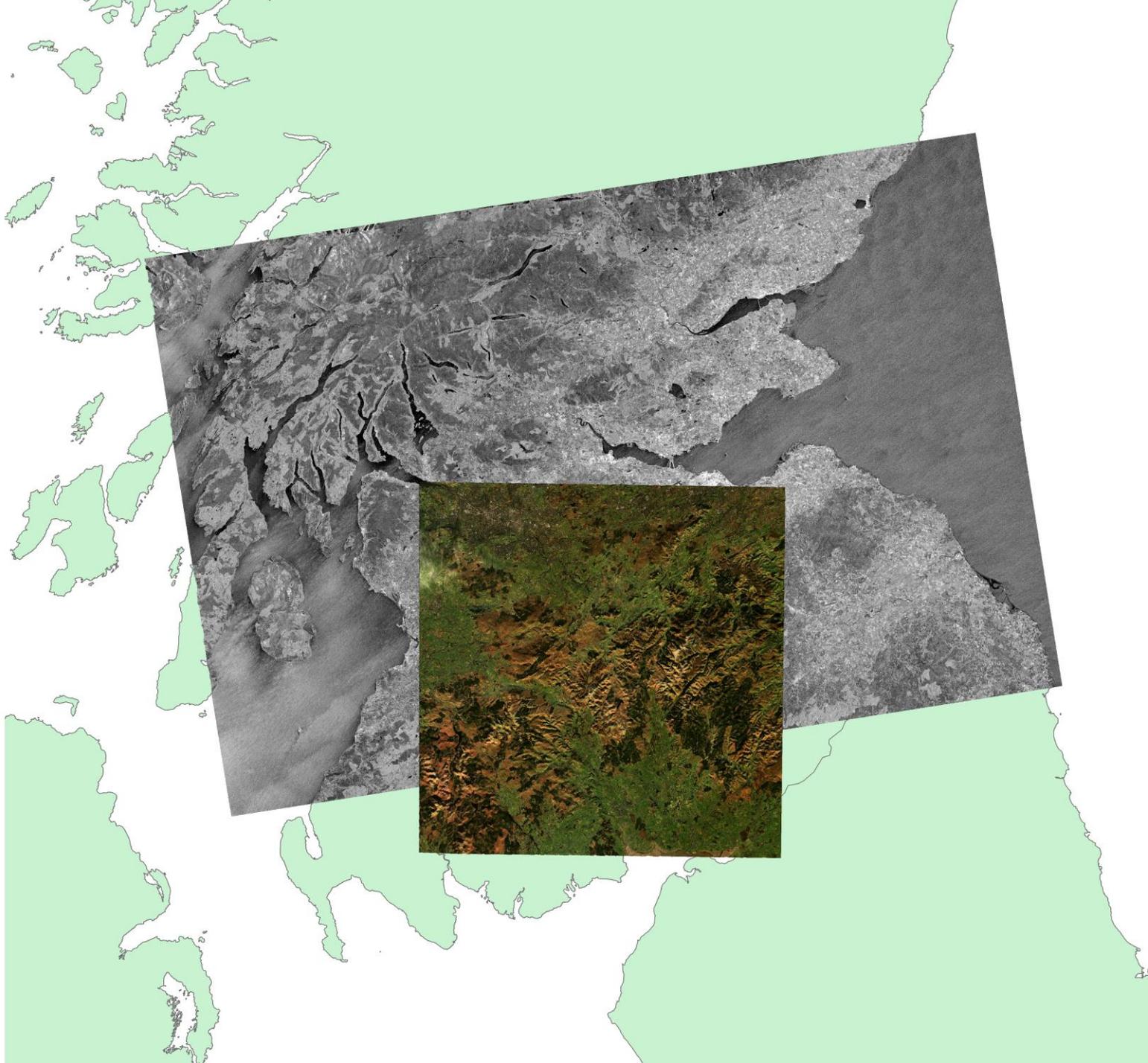
- You must acknowledge the data: *“Contains Sentinel-1 / Sentinel-2 analysis-ready data processed by JNCC and supplied under the Open Government Licence v3 via the CEDA Archive [archive.ceda.ac.uk].”*



Accessing the Data

Imagery is supplied as:

- Sentinel-1 'scenes'
 - ~250 km x 170 km
 - ~4 GB
- Sentinel-2 'granules'
 - 100 km x 100 km
 - ~1.2 to 1.8 GB

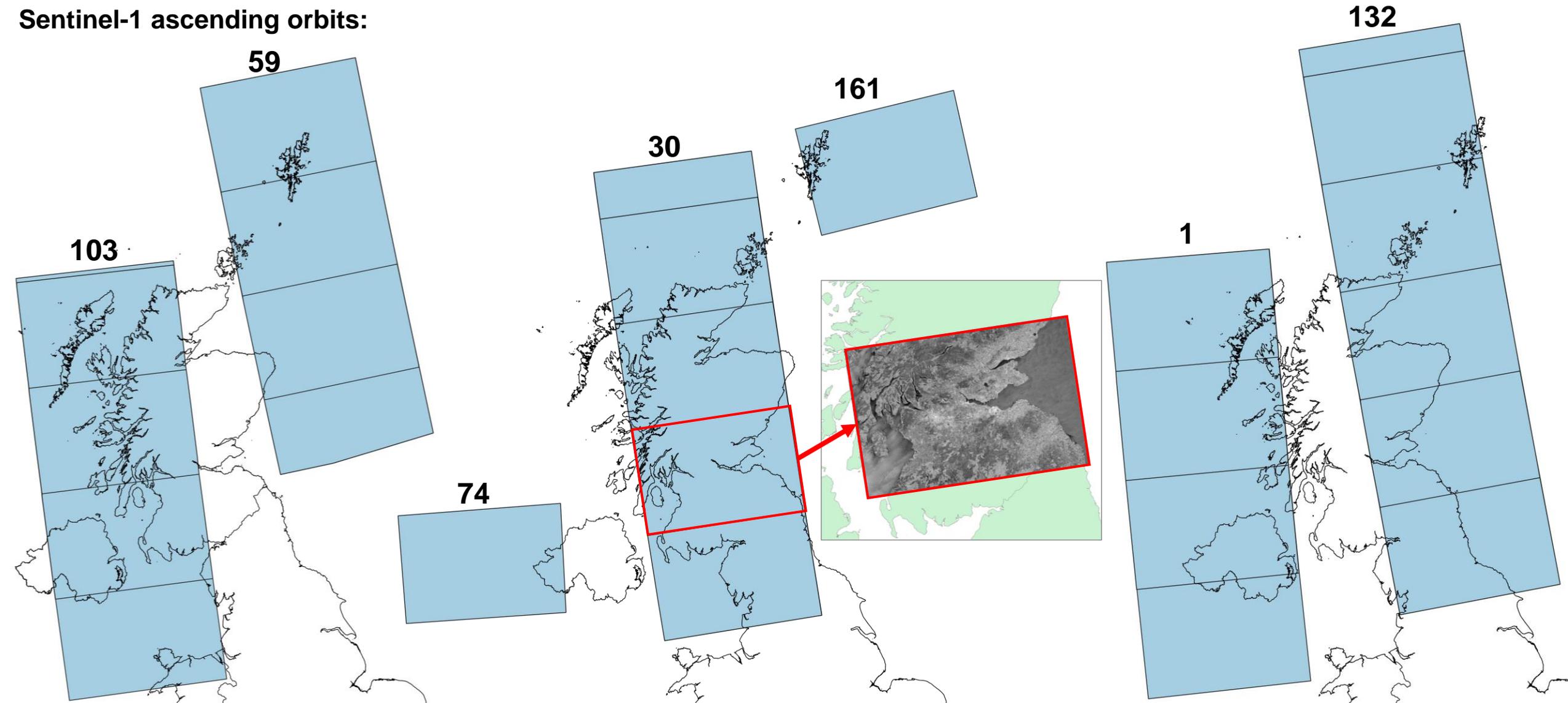


Accessing the Data

Simple ARD Service Sentinel-1 coverage

- The service provides data from 7 ascending orbits and 5 descending orbits

Sentinel-1 ascending orbits:

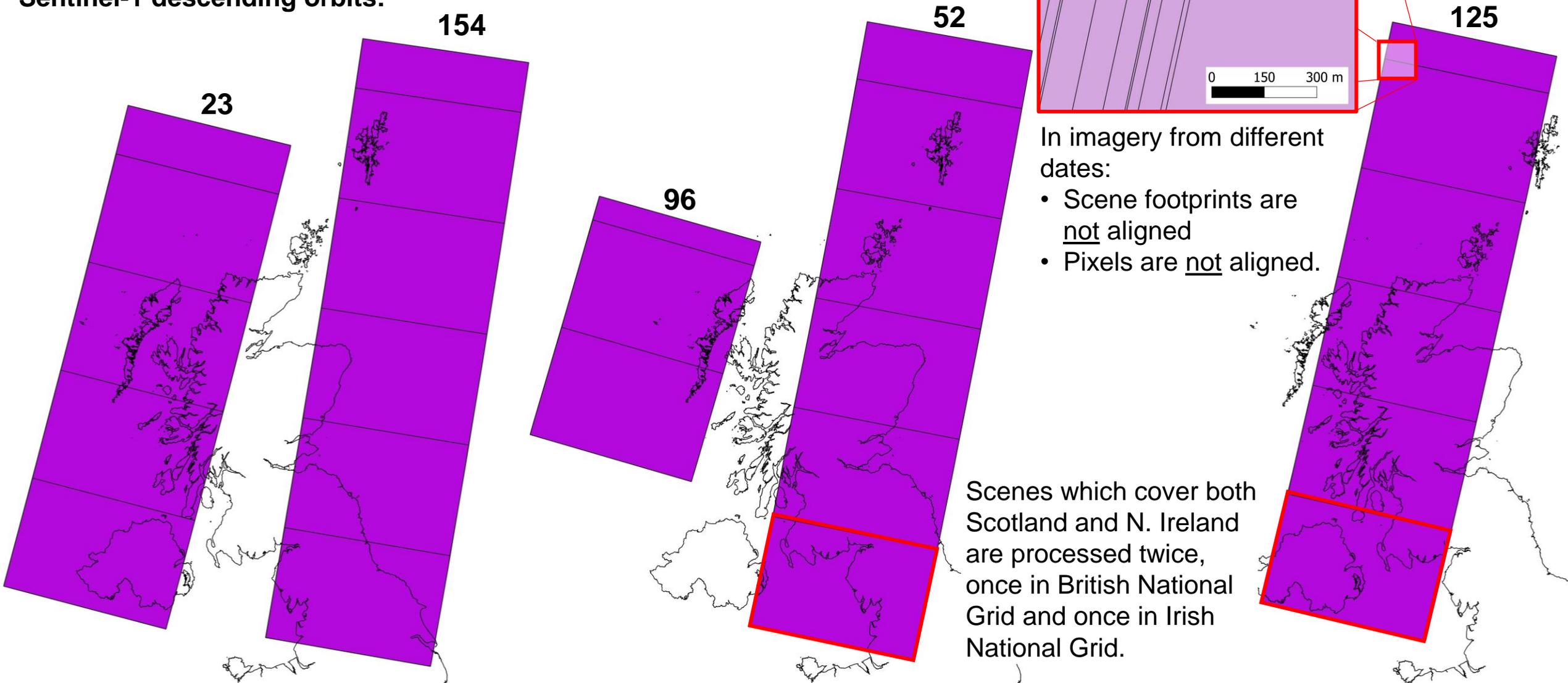


Accessing the Data

Simple ARD Service Sentinel-1 coverage

- The service provides data from 7 ascending orbits and 5 descending orbits

Sentinel-1 descending orbits:

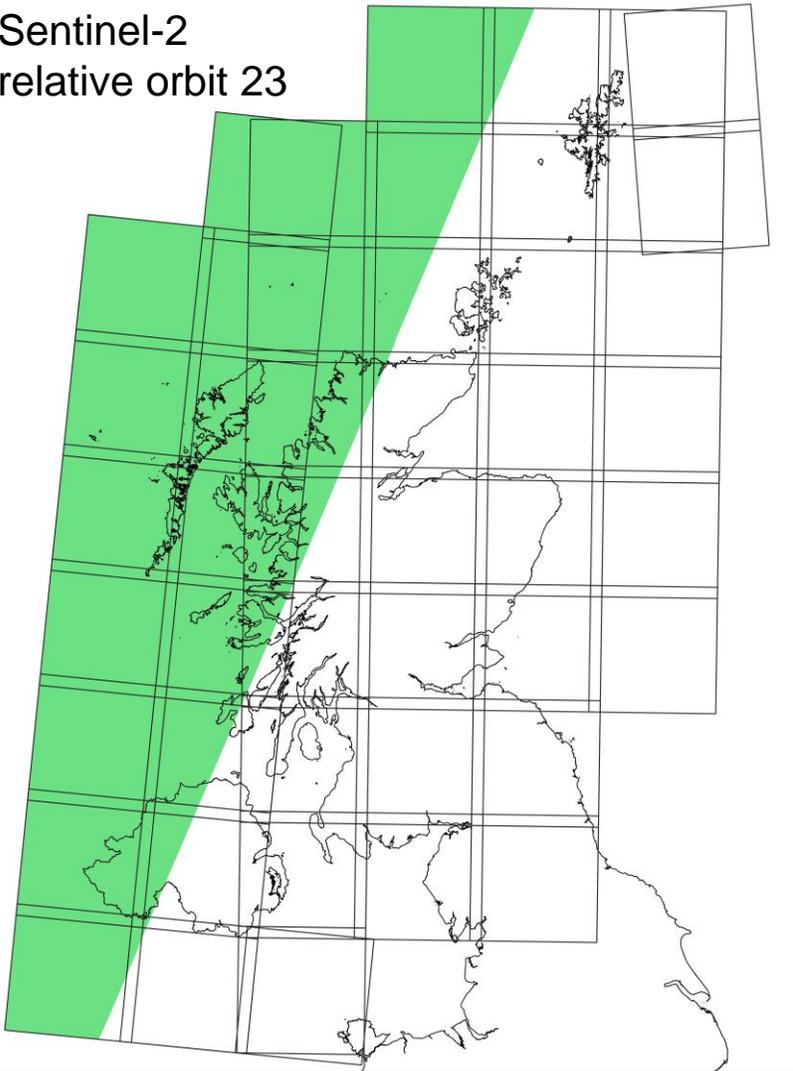


Accessing the Data

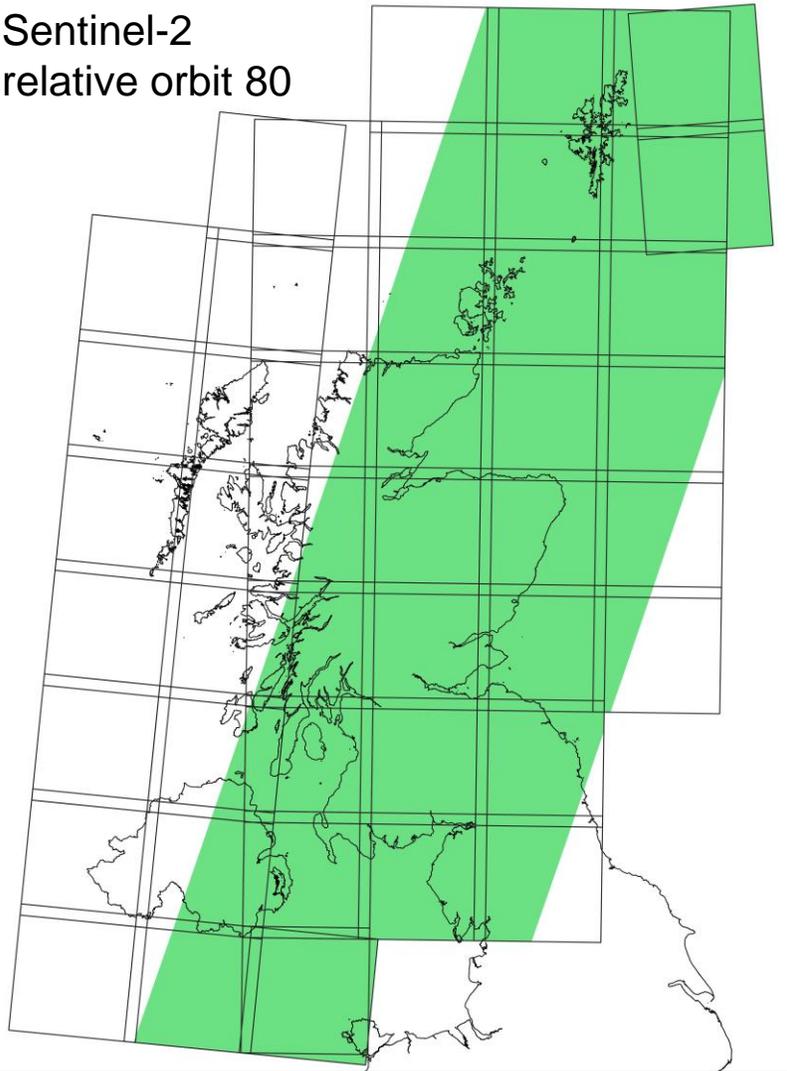
Simple ARD Service Sentinel-2 coverage

- Three orbits cover Scotland and Northern Ireland: 23, 80 and 123

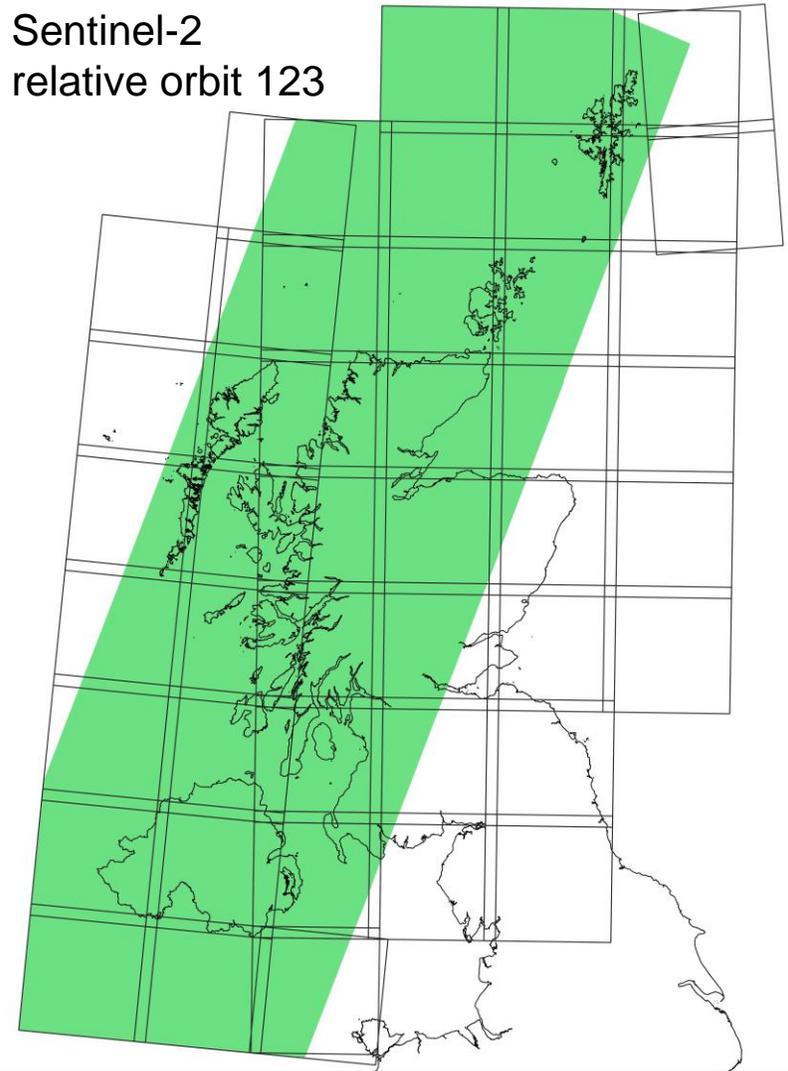
Sentinel-2
relative orbit 23



Sentinel-2
relative orbit 80



Sentinel-2
relative orbit 123

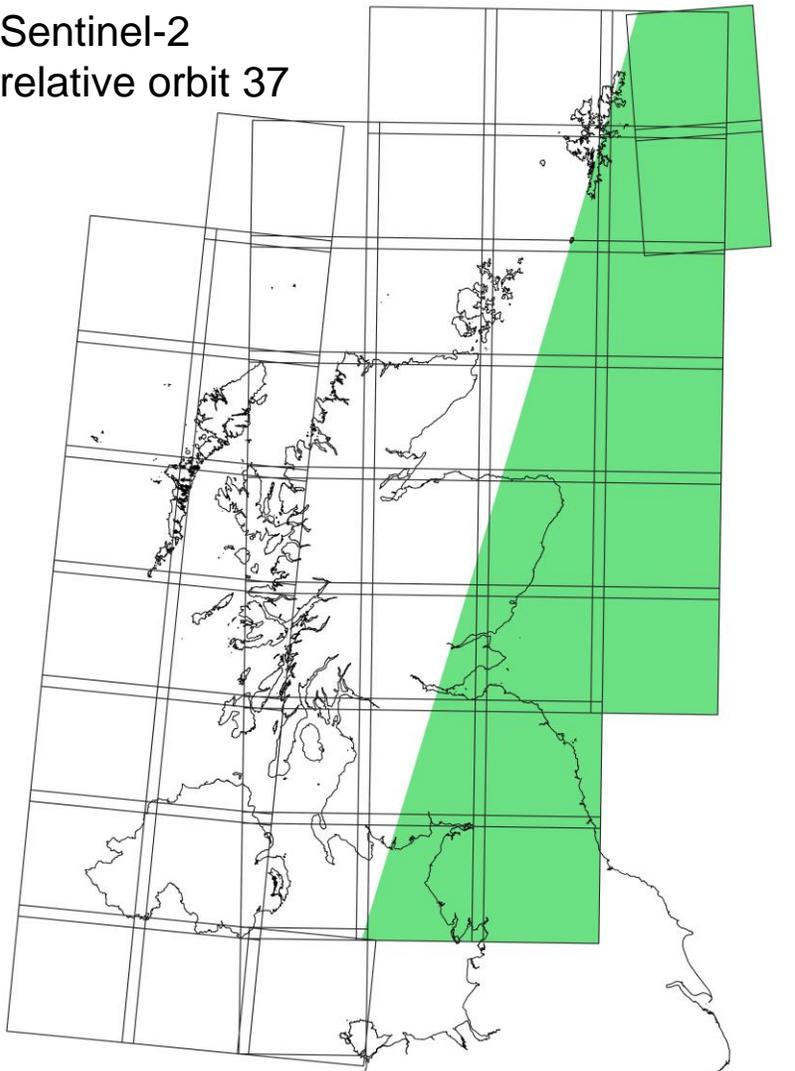


Accessing the Data

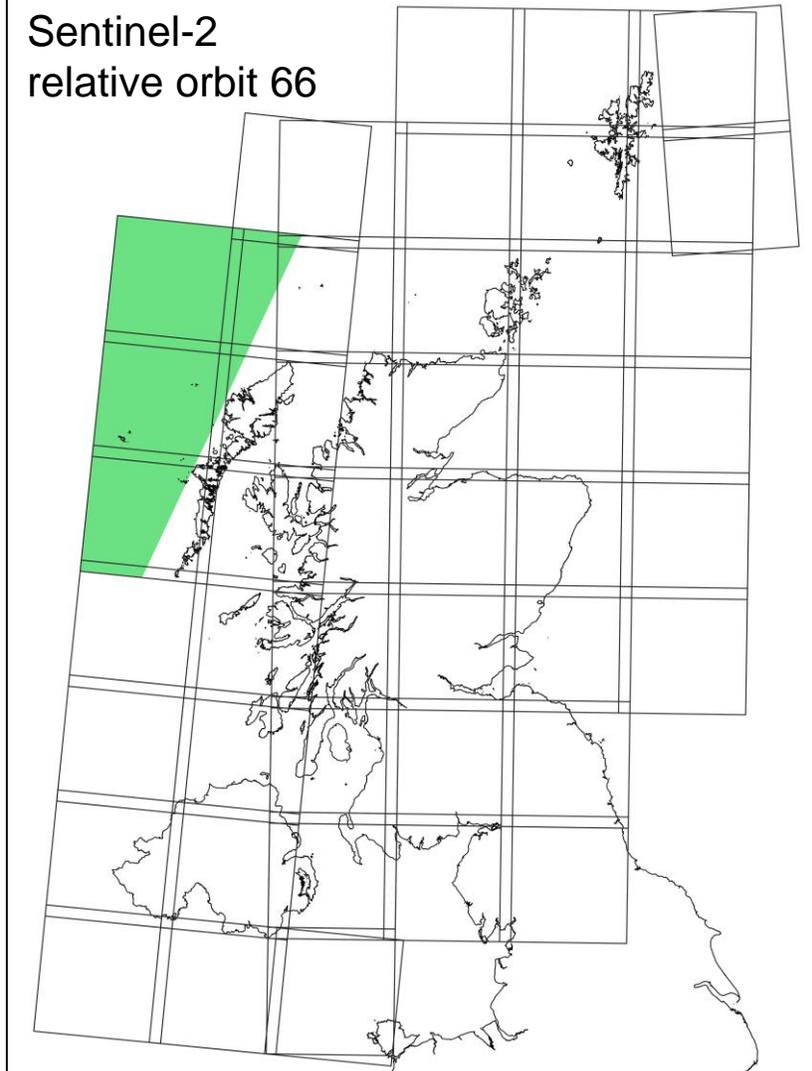
Simple ARD Service Sentinel-2 coverage

- A further two orbits cover only Scotland: 37 and 66

Sentinel-2
relative orbit 37



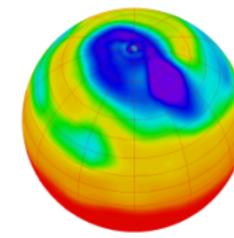
Sentinel-2
relative orbit 66



When comparing imagery
from multiple dates:

- Granule boundaries are aligned
- Pixel edges are aligned

Accessing the Data



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NATURAL ENVIRONMENT RESEARCH COUNCIL

- Data are stored and made publicly accessible via the Centre for Environmental Data Analysis (CEDA) Archive.
- ARD from Defra's Earth Observation Data Service is also available here.
- CEDA services are provided on behalf of the Natural Environment Research Council via the National Centre for Atmospheric Science and the National Centre for Earth Observation.
- CEDA is based within the RAL Space department of the Science and Technology Facilities Council (STFC), Harwell Campus, near Oxford.

Useful Links

<http://data.ceda.ac.uk/neodc>

NERC Earth Observation Data Centre – all EO datasets

http://data.ceda.ac.uk/neodc/sentinel_ard/data

Defra and JNCC Sentinel analysis-ready data index pages

<http://geo-search.ceda.ac.uk/>

CEDA Satellite Data Finder – interactive map with filters

<https://catalogue.ceda.ac.uk/>

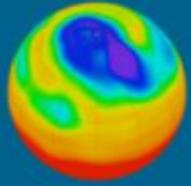
CEDA Catalogue Search

“JNCC” returns links to Defra and JNCC ARD and metadata

<https://help.ceda.ac.uk/>

CEDA Help pages including “Using CEDA Data Archive”

Accessing the Data



CEDA
Archive

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[Sign in](#) ▾

[archive](#) / [neodc](#) / [sentinel_ard](#) / [data](#)

The ARD is archived by sensor / year / month / day



2 dirs 0 files

Description

Size

Actions

 [sentinel_1](#)



Click to select Sentinel-1

 [sentinel_2](#)



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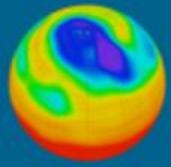
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http://data.ceda.ac.uk/neodc/sentinel_ard/data

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[archive](#) / [neodc](#) / [sentinel_ard](#) / [data](#) / [sentinel_1](#)



3 dirs 1 files

Description

Size

Actions

2018

2019



Click to select 2019

2020

00README_catalogue_and_licence.txt

851 bytes



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http://data.ceda.ac.uk/neodc/sentinel_ard/data/sentinel_1

Accessing the Data

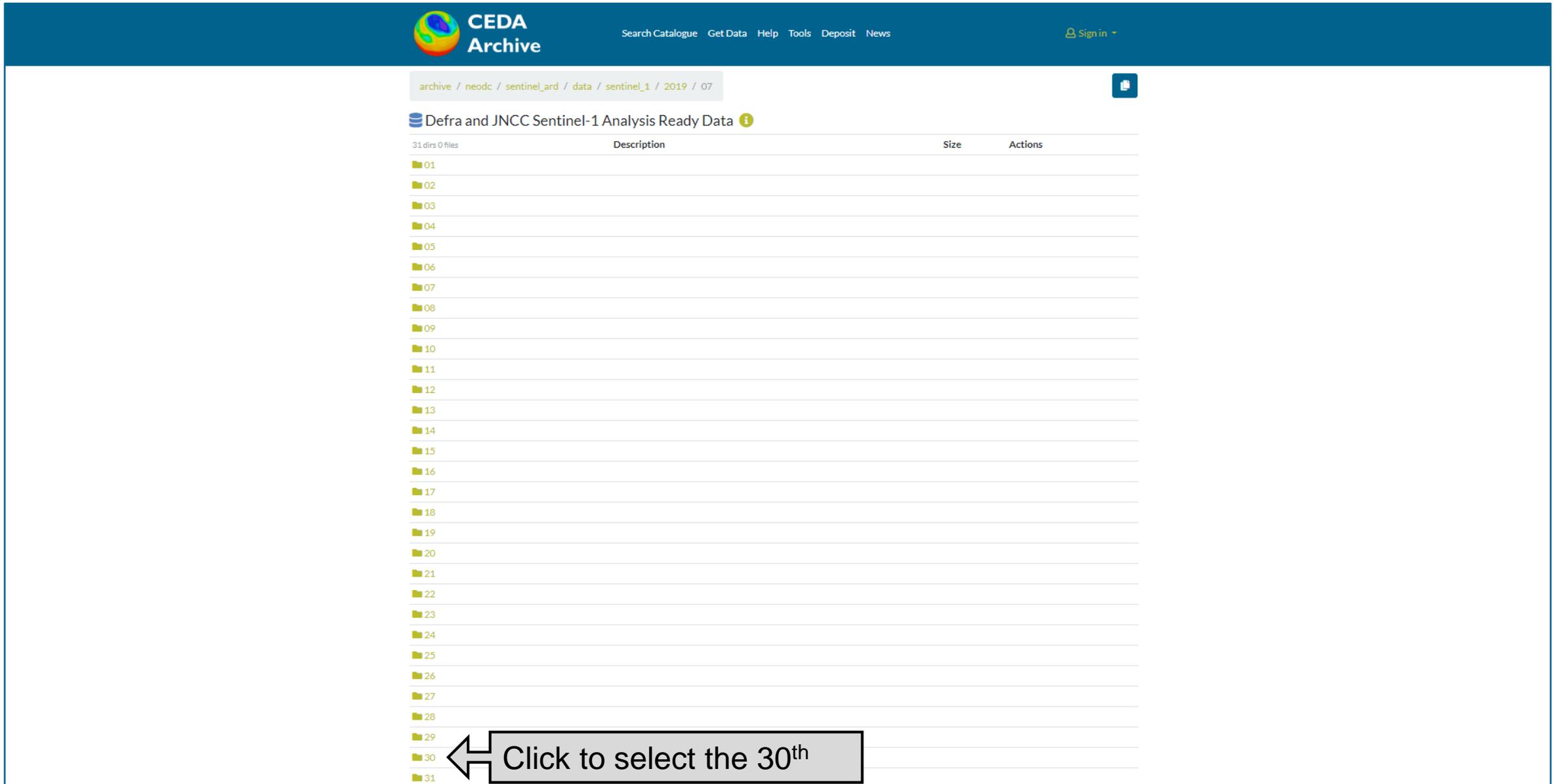
archive / neodc / sentinel_ard / data / sentinel_1 / 2019

12 dirs 0 files	Description	Size	Actions
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10			
11			
12			

Click to select July

http://data.ceda.ac.uk/neodc/sentinel_ard/data/sentinel_1/2019

Accessing the Data



The screenshot shows the CEDA Archive website interface. At the top, there is a navigation bar with the CEDA Archive logo, a search bar, and links for 'Search Catalogue', 'Get Data', 'Help', 'Tools', 'Deposit', 'News', and a 'Sign in' button. Below the navigation bar, a breadcrumb trail indicates the current location: 'archive / neodc / sentinel_ard / data / sentinel_1 / 2019 / 07'. The main content area displays the title 'Defra and JNCC Sentinel-1 Analysis Ready Data' with an information icon. Below the title, it shows '31 dirs 0 files'. A table with columns 'Description', 'Size', and 'Actions' lists 31 sub-directories numbered 01 through 31. A callout box with a left-pointing arrow highlights the entry for '30' and contains the text 'Click to select the 30th'.

Description	Size	Actions
01		
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http://data.ceda.ac.uk/neodc/sentinel_ard/data/sentinel_1/2019/07

Accessing the Data

Each Sentinel-1 dataset consists of two files: the data (.tif) and the metadata (.xml)



CEDA
Archive

[Search Catalogue](#) [Get Data](#) [Help](#) [Tools](#) [Deposit](#) [News](#)

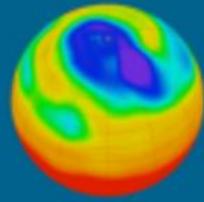
[Sign in](#)

archive / neodc / sentinel_ard / data / sentinel_1 / 2019 / 07 / 30

0 dirs 24 files	Description	Size	Actions
	S1A_20190730_103_asc_180542_180611_VVH_G0_GB_OSGB_RTCK_SpkRL.tif	4.3 GB	
	S1A_20190730_103_asc_180542_180611_VVH_G0_GB_OSGB_RTCK_SpkRL_meta.xml	16.4 KB	
	S1A_20190730_103_asc_180611_180636_VVH_G0_GB_OSGB_RTCK_SpkRL.tif	3.9 GB	
	S1A_20190730_103_asc_180611_180636_VVH_G0_GB_OSGB_RTCK_SpkRL_meta.xml	16.4 KB	
	S1A_20190730_103_asc_180636_180701_VVH_G0_GB_OSGB_RTCK_SpkRL.tif	3.8 GB	
	S1A_20190730_103_asc_180636_180701_VVH_G0_GB_OSGB_RTCK_SpkRL_meta.xml	16.4 KB	
	S1A_20190730_103_asc_180636_180701_VVH_G0_NI_TM65_RTCK_SpkRL.tif	3.9 GB	
	S1A_20190730_103_asc_180636_180701_VVH_G0_NI_TM65_RTCK_SpkRL_meta.xml	16.1 KB	
	S1A_20190730_103_asc_180701_180726_VVH_G0_GB_OSGB_RTCK_SpkRL.tif	3.9 GB	
	S1A_20190730_103_asc_180701_180726_VVH_G0_GB_OSGB_RTCK_SpkRL_meta.xml	16.4 KB	
	S1A_20190730_103_asc_180701_180726_VVH_G0_NI_TM65_RTCK_SpkRL.tif	3.9 GB	
	S1A_20190730_103_asc_180701_180726_VVH_G0_NI_TM65_RTCK_SpkRL_meta.xml	16.1 KB	
	S1A_20190730_96_desc_065501_065526_VVH_G0_NI_TM65_RTCK_SpkRL.tif	4 GB	
	S1A_20190730_96_desc_065501_065526_VVH_G0_NI_TM65_RTCK_SpkRL_meta.xml	16.1 KB	
	S1A_20190730_96_desc_065526_065551_VVH_G0_NI_TM65_RTCK_SpkRL.tif	3.9 GB	
	S1A_20190730_96_desc_065526_065551_VVH_G0_NI_TM65_RTCK_SpkRL_meta.xml	16.1 KB	
	S1B_20190730_8_desc_060521_060546_VVH_G0_GB_OSGB_RTCK_SpkRL.tif	3.8 GB	
	S1B_20190730_8_desc_060521_060546_VVH_G0_GB_OSGB_RTCK_SpkRL_meta.xml	16.4 KB	
	S1B_20190730_8_desc_060546_060611_VVH_G0_GB_OSGB_RTCK_SpkRL.tif	3.8 GB	
	S1B_20190730_8_desc_060546_060611_VVH_G0_GB_OSGB_RTCK_SpkRL_meta.xml	16.4 KB	
	S1B_20190730_8_desc_060611_060636_VVH_G0_GB_OSGB_RTCK_SpkRL.tif	3.9 GB	
	S1B_20190730_8_desc_060611_060636_VVH_G0_GB_OSGB_RTCK_SpkRL_meta.xml	16.4 KB	

http://data.ceda.ac.uk/neodc/sentinel_ard/data/sentinel_1/2019/07/30

Accessing the Data



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	S1A_20190730_103_asc_180636_180701_VVVH_G0_NI_TM65_RTCK_SpkRL.tif	3.9 GB	
	1 2 3 4 5 6 7 8 9 10 11 12 13		

	S1A_20190730_103_asc_180636_180701_VVVH_G0_NI_TM65_RTCK_SpkRL_meta.xml	16.1 KB	
--	--	------------	--

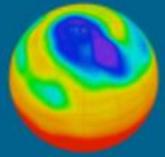
Click to view metadata

Sentinel-1 ARD file name convention

1	2	3	4	5	6	7	8	9	10	11	12	13
Sensor Sentinel 1A or 1B	Date of capture yyyymmdd	Relative orbit	Orbit asc/desc ascending or descending	Start time hhmmss	Stop time hhmmss	Dual polarisation VV and VH V = vertical H = horizontal	Radiometric calibration Gamma-0	Elevation data used in processing	CRS for terrain corrected outputs	Radiometric normalisation method	Speckle reduction (refined Lee)	GeoTiff format (cloud optimised)

http://data.ceda.ac.uk/neodc/sentinel_ard/data/sentinel_1/2019/07/30

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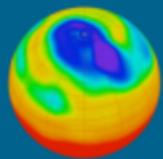
[Sign in](#) ▾

 S2B_20200420_lat55lon524_T30UUF_ORB123_utm30n_osgb_clouds.tif	Cloud mask	659.3 KB	
 S2B_20200420_lat55lon524_T30UUF_ORB123_utm30n_osgb_sat.tif	Saturated pixel mask	1.7 MB	
 S2B_20200420_lat55lon524_T30UUF_ORB123_utm30n_osgb_toposhad.tif	Topographic shadow mask	218.5 KB	
 S2B_20200420_lat55lon524_T30UUF_ORB123_utm30n_osgb_valid.tif	Valid pixel mask	295.9 KB	
 S2B_20200420_lat55lon524_T30UUF_ORB123_utm30n_osgb_vmsk_sharp_rad_srefdem_stdsref.tif	Imagery data file	1.1 GB	
 S2B_20200420_lat55lon524_T30UUF_ORB123_utm30n_osgb_vmsk_sharp_rad_srefdem_stdsref_meta.xml	Metadata	15.7 KB	
 S2B_20200420_lat55lon524_T30UUF_ORB123_utm30n_osgb_vmsk_sharp_rad_srefdem_stdsref_thumbnail.jpg	Thumbnail	44 KB	

Sentinel-2 ARD consists of 6 or 7 files; not all datasets have a thumbnail image file

http://data.ceda.ac.uk/neodc/sentinel_ard/data/sentinel_2/2020/04/20

Accessing the Data



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 S2B_20200420_lat55lon524_T30UUF_ORB123_utm30n_osgb_clouds.tif	659.3 KB	
 S2B_20200420_lat55lon524_T30UUF_ORB123_utm30n_osgb_sat.tif	1.7 MB	
 S2B_20200420_lat55lon524_T30UUF_ORB123_utm30n_osgb_toposhad.tif	218.5 KB	
 S2B_20200420_lat55lon524_T30UUF_ORB123_utm30n_osgb_valid.tif	295.9 KB	
 S2B_20200420_lat55lon524_T30UUF_ORB123_utm30n_osgb_vmsk_sharp_rad_srefdem_stdref.tif	1.1 GB	
 S2B_20200420_lat55lon524_T30UUF_ORB123_utm30n_osgb_vmsk_sharp_rad_srefdem_stdref_meta.xml	15.7 KB	

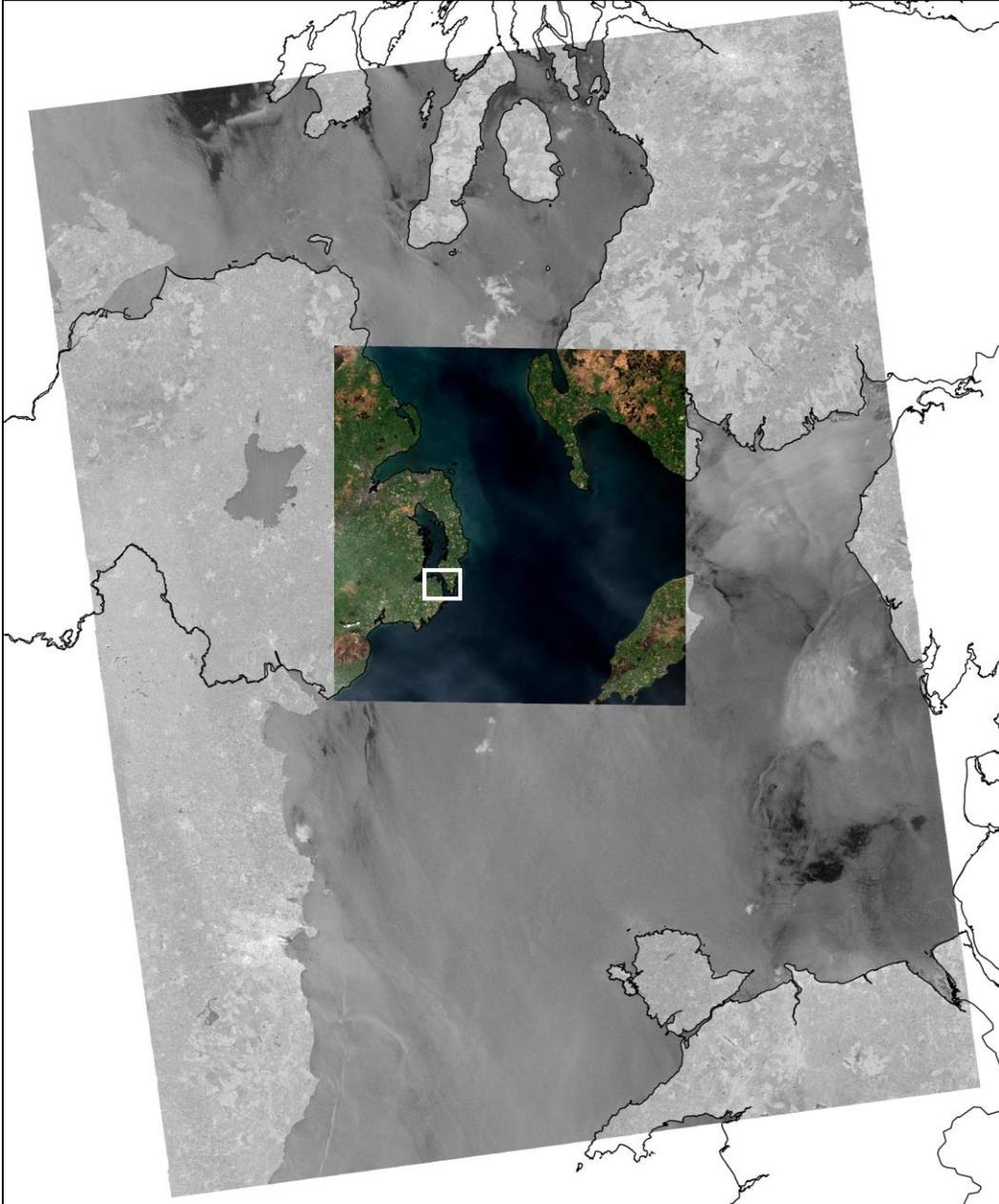
Click to download data

Click to view metadata

Sentinel-2 ARD file name convention

1	2	3	4	5	6	7	8	9	10	11	12	13
Sensor Sentinel 2A or 2B	Date of capture yyyymmdd	Lat. & Long.	Tile number	Orbit number	Original projection	CRS of output	Valid pixel mask	Band sharpened	Radiance	Surface reflectance	Topographically corrected reflectance	GeoTiff format (cloud optimised)

Accessing the Data



False colour composite using near infrared, red and green bands

Downloaded data can be viewed and analysed in GIS

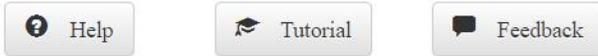
Accessing the Data



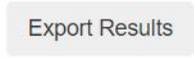
CEDA Satellite Data Finder

[Collapse Header](#)

Only the first 1000 results will be plotted on the map with most recent on top.



Click an item to expand the panel.

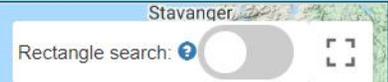


0 hits with current selection.

0 milliseconds for response.

Mouse: Lat: 59.06, Lng: 5.75

Map Satellite



CEDA Satellite Data Finder lets you search for data by area of interest and date range



Map data ©2020 GeoBasis-DE/BKG (©2009), Google, Inst. Geogr. Nacional Terms of Use

<http://geo-search.ceda.ac.uk/>

Accessing the Data



CEDA Satellite Data Finder

[Collapse Header](#)

Only the first 1000 results will be plotted on the map with most recent on top.

- [Help](#)
- [Tutorial](#)
- [Feedback](#)

Click an item to expand the panel.

- [Temporal Filter](#)
- [Change Map Centre](#)
- [Rectangle Search](#)
- [Satellite Filter](#)

[Apply Filters](#) [Clear Filters](#)

[Export Results](#)

0 hits with current selection.
0 milliseconds for response.
Mouse: Lat: 59.25, Lng: -3.55

Map Satellite

Rectangle search:

Zoom to area of interest on interactive map or draw a rectangle around your area of interest

- Key:**
- Sentinel 1
 - Sentinel 2
 - Sentinel 3
 - Landsat
 - Other



<http://geo-search.ceda.ac.uk/>

Accessing the Data



CEDA Satellite Data Finder

[Collapse Header](#)

Only the first 1000 results will be plotted on the map with most recent on top.



Help



Tutorial



Feedback

Click an item to expand the panel.

Temporal Filter

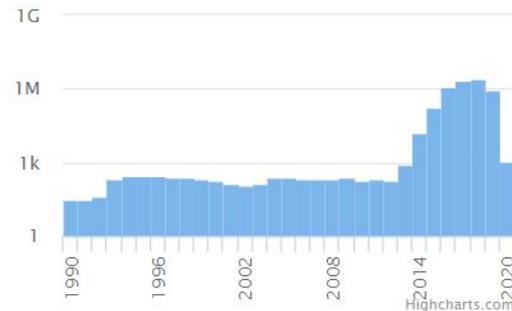
Refine Search via Time Range ?

2019-06-01

to

2019-06-30

Histogram displays temporal coverage for the global dataset. The histogram does not redraw when filters are applied.



Change Map Centre

Map

Satellite

Rectangle search:



Select date range

Key:

- Sentinel 1
- Sentinel 2
- Sentinel 3
- Landsat
- Other

Google

Map data ©2020 Terms of Use Report a map error

<http://geo-search.ceda.ac.uk/>

Accessing the Data

Rectangle Search

Satellite Filter

- Satellites

- LANDSAT-5 🌐
- LANDSAT-7 🌐
- LANDSAT-8 🌐
- Sentinel-1A 🌐
- Sentinel-1A ARD 🌐
- Sentinel-1B 🌐
- Sentinel-1B ARD 🌐
- Sentinel-2A 🌐
- Sentinel-2A ARD 🌐
- Sentinel-2B 🌐
- Sentinel-2B ARD 🌐
- Sentinel-3A 🌐
- Sentinel-3B 🌐
- Sentinel-TMPDEPOSIT 🌐

Apply Filters Clear Filters

Map Satellite

Rectangle search:

Select sensor(s)

Key:

- Sentinel 1
- Sentinel 2
- Sentinel 3
- Landsat
- Other

Map data ©2020 | Terms of Use | Report a map error

<http://geo-search.ceda.ac.uk/>

Accessing the Data

The screenshot displays the 'Satellite Filter' panel on the left, which lists various satellite options with their respective counts. The main map area shows a satellite view of a coastal region. A 'Scene Details' popup window is open, providing information about a specific satellite image. A callout box points to the 'Export Results' button, and another callout box points to the map area.

Satellite Filter

- Satellites
- LANDSAT-5 0
- LANDSAT-7 0
- LANDSAT-8 0
- Sentinel-1A 0
- Sentinel-1A ARD 0
- Sentinel-1B 0
- Sentinel-1B ARD 0
- Sentinel-2A 0
- Sentinel-2A ARD 8
- Sentinel-2B 0
- Sentinel-2B ARD 3
- Sentinel-3A 0
- Sentinel-3B 0
- Sentinel-TMPDEPOSIT 0

Map **Satellite**

Rectangle search:

Scene Details

Filename:
S2A_20200205_lat59lon204_T30VWL_ORB123_utm30n_osgb_vmsk_sharp_rad_srefdem_stdref.tif

Start Time: 2020-02-05T11:43:41Z

End Time: 2020-02-05T11:43:41Z

Mission: Sentinel-2

Satellite: Sentinel-2A ARD

Instrument:

Download

Preview currently unavailable for this dataset

Key:

Click 'Export Results' to get list of files in raw JSON, file paths or download URLs

Click on map for image details and to view or download individual datasets

Apply Filters Clear Filters

Export Results

Map data ©2020 Terms of Use Report a map error

<http://geo-search.ceda.ac.uk/>

Accessing the Data

- Data can also be accessed programmatically via Elasticsearch and OpenDAP API:
 - <https://help.ceda.ac.uk/article/4694-ceda-elasticsearch>
 - <https://help.ceda.ac.uk/article/4431-ceda-archive-web-download-and-services>
- JNCC, CEDA and Defra are running a project to support code sharing and knowledge exchange for ARD users funded by Copernicus Framework Partnership Agreement for Copernicus User Uptake (<https://jncc.gov.uk/our-work/copernicus-project/>).
- Code sharing platform (GitHub repo) and forum to be set up by September 2020.
- Webinar scheduled for 24th September – details will be on JNCC website soon.

Resources for users

Simple ARD Service pages on JNCC website:

- Information on the data and environmental applications
- User guide (coming soon)
- Presentation slides
- Recorded webinar
- FAQs

E-mail support available this year:

- earthobs@jncc.gov.uk

<https://jncc.gov.uk/our-work/simple-ARD-service/>

Supporting the use of satellite data in Scotland and Northern Ireland



Home / Our Work / Simple ARD Service

Increasing availability of high-quality satellite data provides new opportunities to improve environmental decision making and meet evidence needs. JNCC and partners use satellite data for applications including habitat and crop mapping, risk and resilience modelling, natural capital assessment, habitat condition monitoring and change detection.

The **Simple ARD Service** was set up in 2020 to support use of satellite data for public sector environmental applications in Scotland and Northern Ireland. Commissioned by the Scottish Government and Northern Ireland Environment Agency, the service generates and provides access to Sentinel-1 and Sentinel-2 [analysis-ready data](#) (ARD). To promote use of the ARD, we are providing bespoke training and support materials, as well as working with partners in each country to develop analytical and operational applications.

Simple ARD Service

[About the data](#)

[Support for users](#)

[Environmental applications](#)

[FAQs](#)

Acknowledgements

- Scottish Government
- DAERA Northern Ireland Environment Agency
- Centre for Environmental Data Analysis
- JNCC
- Scottish Remote Sensing Working Group
- Defra Earth Observation Centre of Excellence



A satellite-style aerial photograph of a coastal region, likely the Florida Panhandle, showing the Gulf of Mexico coastline. The land is a mix of green and brown, with several large, irregularly shaped bodies of water or bays. Two large white ovals are overlaid on the image. The top-left oval contains the text "Thank you!". The bottom-right oval contains the text "Any questions?".

Thank you!

**Any
questions?**