CWFIS 2.0 — How to Access CWFIS Data Services

Canadian Wildland Fire Information System (CWFIS 2.0)
Updated February 23, 2026

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1. Overview

The Canadian Wildland Fire Information System (CWFIS 2.0) provides national wildland fire information through **open geospatial web services** and **downloadable datasets**. Most of the information, data and map layers available on the CWFIS website are served via **OGC-compliant services** hosted on the CWFIS GeoServer platform:

- **WMS** — Web Map Service (rendered map images)
- **WFS** — Web Feature Service (vector features & attributes)
- **WCS** — Web Coverage Service (raster coverages)

These services can be used in GIS applications (QGIS, ArcGIS, etc.), web applications, and automated workflows.

2. CWFIS 2.0 Resources

CWFIS map layers, data products and services can be viewed and accessed from the following resources:

- **CWFIS 2.0 Home:** The CWFIS landing page provides an overview of current conditions and a portal into all other content available
- **Interactive Map:** Allows users to view, explore and access many of the CWFIS data layers through an online mapping interface
- **Static Map Viewer:** Provides static map images representing most of the CWFIS data layers for quick viewing, reference and comparison
- **National Wildland Fire Summary:** Provides static map images and fire statistics summarizing current wildland fire conditions
- **Forecast Conditions**: Maps displaying short- and long-term wildland fire conditions as well as monthly forecasts
- **Fire History Data Explorer**: Provides fire history maps and statistics derived from national fire history data products
- **Data Catalogue:** Provides detailed information on all public data products and services available through the CWFIS
- **Downloads Directory:** Contains a collection of core datasets and resources available as downloadable files
- **Data Services Placemat:** Offers a summary of key map layers delivered as public CWFIS services, along with information on recent changes and updates.

3. Downloadable Core Datasets

A set of core datasets and resources are available as downloadable files from the CWFIS 2.0 Downloads Directory. Here is a list of some of the most requested datasets:

- Current active fires (reported by agencies)
- Current satellite-detected hotspots (**CSV** or **SHP**)
- Current fire perimeter estimates (derived from satellite hotspots)
- Current national CFFDRS grids (FWI/FBP)
- Current fire danger (using agency classifications)
- Current fire weather observations at station locations
- National Fire Database and summary statistics
- National Burned Area Composite and summary statistics
- Canadian Wildland Fire Evacuation Database summary statistics

Note: Most of the downloadable files in the CWFIS Downloads Directory are generated from the same data sources as served through the CWFIS GeoServer data services described below. However, some of the downloadable files are produced through other processing workflows. As a result, the information contained may differ slightly from the GeoServer services due to processing schedules or update times.

To explore the full set of available data products, refer to the **CWFIS Data Services Placemat** and/or the **CWFIS Data Catalogue**. Guidance on how to access and connect to these GeoServer services is provided later in this resource.

4. CWFIS GeoServer Data Services

Most CWFIS 2.0 data layers, including those shown in all CWFIS map products, are served through **CWFIS GeoServer** using OGC web services.

Base GeoServer Endpoints

Note: CWFIS currently uses two GeoServer instances to provide data services—our legacy CWFIS GeoServer and the newer Canadian Wildland Fire Information Framework (CWFIF) GeoServer. All services will be migrated to the new CWFIF GeoServer to ensure a unified, single service endpoint.

WMS (Web Map Service)

https://cwfis.cfs.nrcan.gc.ca/geoserver/wms?
https://geoserver.cwfif.nrcan.gc.ca/geoserver/wms?

WFS (Web Feature Service)

https://cwfis.cfs.nrcan.gc.ca/geoserver/wfs?
https://geoserver.cwfif.nrcan.gc.ca/geoserver/wfs?

WCS (Web Coverage Service)

https://cwfis.cfs.nrcan.gc.ca/geoserver/wcs?
https://geoserver.cwfif.nrcan.gc.ca/geoserver/wcs?

5. GetCapabilities Requests

To view the list of map layers available from the CWFIS GeoServer, use the GeoServer OWS endpoint with a **GetCapabilities** request. This request returns all layers offered through the **WMS**, **WFS**, and **WCS** services.

Note: CWFIS currently uses two GeoServer instances to provide data services—our legacy CWFIS GeoServer and the newer Canadian Wildland Fire Information Framework (CWFIF) GeoServer. All services will be migrated to the new CWFIF GeoServer to ensure a unified, single service endpoint.

WMS — GetCapabilities

Lists layers available as **map images (pixel-based)**.

https://cwfis.cfs.nrcan.gc.ca/geoserver/ows?service=WMS&version=1.3.0&request=GetCapabilities

https://geoserver.cwfif.nrcan.gc.ca/geoserver/ows?service=WMS&version=1.3.0&request=GetCapabilities

WFS — GetCapabilities

Lists layers available as **feature types (vector data with geometry and attributes)**.

https://cwfis.cfs.nrcan.gc.ca/geoserver/ows?service=WFS&version=2.0.0&request=GetCapabilities

https://geoserver.cwfif.nrcan.gc.ca/geoserver/ows?service=WFS&version=2.0.0&request=GetCapabilities

WCS — GetCapabilities

Lists layers available as **coverages (raster data)**
https://cwfis.cfs.nrcan.gc.ca/geoserver/ows?service=WCS&version=1.1.1&request=GetCapabilities

https://geoserver.cwfif.nrcan.gc.ca/geoserver/ows?service=WCS&version=1.1.1&request=GetCapabilities

6. Data Access Formats

- **WMS** → rendered map images (PNG, JPEG, GIF, KMZ, GeoTIFF, PDF, OpenLayers output)
- **WFS** → vector data (CSV, GeoJSON, GML, SHAPE-ZIP, KML)
- **WCS** → raster data (GeoTIFF, ArcGrid, GTopo30, compressed formats)

Users can connect these endpoints directly in GIS tools such as QGIS, ArcGIS Pro, or web mapping clients.

7. WMS — GetMap Requests

Retrieve map images by specifying a WMS layer and bounding box.

WMS format options: PNG, JPEG, GIF, KMZ, GeoTIFF, PDF, OpenLayers output

Example: Last 24-Hour Hotspots (PNG)
https://cwfis.cfs.nrcan.gc.ca/geoserver/public/wms?service=WMS&version=1.3.0&request=GetMap&layers=public:hotspots_24h&styles=&bbox=-2378164,-707617,3039835,3854382&width=768&height=646&crs=EPSG:3978&format=image/png

Example: Fire Danger (KMZ)
https://cwfis.cfs.nrcan.gc.ca/geoserver/public/wms?service=WMS&version=1.3.0&request=GetMap&layers=public:fdr&styles=&bbox=-2378164,-

707617,3039835,3854382&width=768&height=646&crs=EPSG:3978&format=kmz

Example: National Burned Area Composite (OpenLayers)

https://cwfis.cfs.nrcan.gc.ca/geoserver/public/wms?service=WMS&version=1.3.0&request=GetMap&layers=public:nbac&styles=&bbox=-2378164,-707617,3039835,3854382&width=768&height=646&crs=EPSG:3978&format=openlayers

Example: Multiple Layers – Fire Weather Index + Last 24-Hour Hotspots (PNG)

Display multiple layers together by listing them in the `layers=` parameter, separated by commas. Layers render in order, with the last layer drawn on top.

https://cwfis.cfs.nrcan.gc.ca/geoserver/public/wms?service=WMS&version=1.3.0&request=GetMap&layers=public:fwi,public:hotspots_24h&styles=&bbox=-2378164,-707617,3039835,3854382&width=768&height=646&crs=EPSG:3978&format=image/png

For full details on available parameters and formats, refer to the GeoServer WMS documentation: WMS Reference — GeoServer 2.28.0 User Manual

8. WFS — GetFeature Requests

Retrieve vector features with geometry and attributes.

WFS format options: CSV, GeoJSON, GML, SHAPE-ZIP, KML)

Example: Hotspots (Last 24 Hours) — SHAPE-ZIP

https://cwfis.cfs.nrcan.gc.ca/geoserver/public/ows?service=WFS&version=2.0.0&request=GetFeature&typeName=public:hotspots_24h&maxFeatures=100000&outputFormat=SHAPE-ZIP

Example: Active Fires — CSV

https://geoserver.cwfif.nrcan.gc.ca/geoserver/ows?service=WFS&version=2.0.0&request=GetFeature&typeName=public:cwfif_national_activefires&maxFeatures=100000&outputFormat=CSV

Customized Query using CQL_FILTER

Custom queries can be built by first retrieving the feature schema with a **DescribeFeatureType** request and then applying a **CQL_FILTER** to filter features by attribute values.

Example: Custom query – All Reported fires for year 2025 — CSV

Use DescribeFeatureType to view feature attributes

https://geoserver.cwfif.nrcan.gc.ca/geoserver/ows?service=WFS&version=1.1.0&request=DescribeFeatureType&typeName=public:cwfif_national_reportedfires

Use CQL_FILTER to set desired filter

https://geoserver.cwfif.nrcan.gc.ca/geoserver/wfs?service=WFS&version=2.0.0&request=GetFeature&outputFormat=csv&typeName=public:cwfif_national_reportedfires&CQL_FILTER=fire_year=2025

For full details on available parameters and formats, refer to the GeoServer WFS documentation:

WFS reference — GeoServer 2.28.0 User Manual

9. WCS — GetCoverage Requests

Retrieve raw raster data.

WCS format options: GeoTIFF, GTopo30, ArcGrid, GZIP-compressed ArcGrid, and other formats supported by the GeoServer instance.

Example: FWI Coverage — GeoTIFF

https://cwfis.cfs.nrcan.gc.ca/geoserver/public/wcs?service=WCS&version=1.0.0&request=GetCoverage&coverage=public:fwi&BBOX=-2378164,-707617,3039835,3854382&WIDTH=2709&HEIGHT=2281&CRS=EPSG:3978&FORMAT=geotiff

Mandatory WCS Parameters
- BBOX=
- WIDTH=
- HEIGHT=

For full details on available parameters and formats, refer to the GeoServer WFS documentation:

WCS reference — GeoServer 2.28.0 User Manual

10. Accessing Date/Time-Enabled Layers

Some CWFIS 2.0 layers support a time dimension for historical or forecast data.

Date Format

`time=YYYY-MM-DD`

Timestamp Format (UTC)

`time=YYYY-MM-DDThh:mm:ss.SSSZ`

Examples

`...&layers=public:fwi&time=2025-09-05`

`...&layers=public:hotspots_24h&time=2025-09-05`

Example: FWI for a specific date (PNG)

https://cwfis.cfs.nrcan.gc.ca/geoserver/public/wms?service=WMS&version=1.3.0&request=GetMap&layers=public:fwi&time=2025-09-05&styles=&bbox=-2378164,-707617,3039835,3854382&width=768&height=646&crs=EPSG:3978&format=image/png

Example: Hotspots for a specific date (PNG)

https://cwfis.cfs.nrcan.gc.ca/geoserver/public/wms?service=WMS&version=1.3.0&request=GetMap&layers=public:hotspots&time=2025-09-05&styles=&bbox=-2378164,-707617,3039835,3854382&width=768&height=646&crs=EPSG:3978&format=image/png

Not all services have time enabled; non-time-enabled layers will always return the current state.

To identify which data services support date/time queries, refer to the GetCapabilities, the CWFIS Data Services Placemat, or the CWFIS Data Catalogue

For more info regarding the time dimension see GeoServer docs.

11. Connecting CWFIS Services in QGIS

QGIS fully supports OGC-compliant WMS, WFS, and WCS services. Once connected, layers can be viewed, styled, queried, and saved locally.

Add a WMS Layer (Web Map Service)

1. Open **QGIS**
2. Go to **Layer → Add Layer → Add WMS/WMTS Layer…**
3. Click **New** to create a new connection
4. Enter a connection name (e.g., *CWFIS WMS*)
5. Enter a CWFIS WMS endpoint, for example:
   https://cwfis.cfs.nrcan.gc.ca/geoserver/wms?

Or https://geoserver.cwfif.nrcan.gc.ca/geoserver/wms?

6. Click **OK**, then **Connect**
7. A list of available WMS layers will appear
8. Select a layer (e.g., *public:fdr*, *public:hotspots_24h*)
9. Click **Add Layer**

The layer will load as an **image-only map** (not raw data).

Add a WFS Layer (Web Feature Service)

1. Go to **Layer → Add Layer → Add WFS Layer...**
2. Click **New**
3. Provide a name (e.g., *CWFIS WFS*)
4. Enter a WFS endpoint, for example:
    https://cwfis.cfs.nrcan.gc.ca/geoserver/wfs?
    Or https://geoserver.cwfif.nrcan.gc.ca/geoserver/wfs?
5. Click **OK**, then **Connect**
6. Select a feature type (e.g., *public:cwfif_national_activefires*)
7. Click **Add Layer**

WFS layers provide **full vector data** with attributes, editable and exportable.

Note: If the layer contains many features, consider setting a **maximum feature limit**, or using a **CQL filter** within WFS parameters to improve performance.

Add a WCS Layer (Web Coverage Service)

1. Go to **Layer → Add Layer → Add WCS Layer...**
2. Click **New**
3. Name the connection (e.g., *CWFIS WCS*)
4. Enter a CWFIS WCS endpoint, for example:
    https://cwfis.cfs.nrcan.gc.ca/geoserver/wcs?
    Or https://geoserver.cwfif.nrcan.gc.ca/geoserver/wcs?
5. Click **OK**, then **Connect**
6. Select a coverage (e.g., *public:fwi*)
7. Click **Add Layer**

The WCS layer loads as a **raster grid**, which can be analyzed and exported.

Adding Time-Enabled Layers in QGIS

If a CWFIS layer supports time (as seen in GetCapabilities):

1. Load the WMS or WFS layer
2. Right-click the layer → **Properties**
3. Choose the **Temporal** tab
4. Enable "**Temporal Layer**"
5. Set the time settings (e.g., *Single fixed time*, *Dataset has time values*)
6. Enter or choose a date matching the time dimension

This enables temporal playback and date-specific map rendering.

12. Connecting CWFIS Services in ArcGIS Pro

ArcGIS Pro supports WMS, WFS, and WCS, although functionality varies slightly by service type.

Add a WMS Layer (Web Map Service)

1. Open **ArcGIS Pro**
2. Go to **Insert → Connections → New WMS Server**
3. Enter a WMS URL, for example:
   https://cwfis.cfs.nrcan.gc.ca/geoserver/wms?
   Or https://geoserver.cwfif.nrcan.gc.ca/geoserver/wms?
4. Click **OK**
5. In the **Catalog** pane, expand **Servers**
6. Expand the new WMS connection
7. Drag any WMS layer into your map

WMS layers render as images only.

Add a WFS Layer (Web Feature Service)
1. Go to **Insert → Connections → New WFS Server**
2. Enter a CWFIS WFS endpoint, for example:
   https://cwfis.cfs.nrcan.gc.ca/geoserver/wfs?
   Or https://geoserver.cwfif.nrcan.gc.ca/geoserver/wfs?
3. Click **OK**
4. Locate the WFS connection in the **Catalog → Servers**

5. Open the list of feature types
6. Drag a layer (e.g., *public:hotspots_24h*) into the map

Notes for ArcGIS Pro users:

- Some complex CQL filters may not be supported natively
- WFS performance varies with very large datasets
- If necessary, set feature limits in the WFS connection properties

Add a WCS Layer (Web Coverage Service)

1. Go to **Insert → Connections → New WCS Server**
2. Enter a WCS endpoint, for example:
   `https://cwfis.cfs.nrcan.gc.ca/geoserver/wcs`?
   Or `https://geoserver.cwfif.nrcan.gc.ca/geoserver/wcs`?
3. Click **OK**
4. In **Catalog → Servers**, expand the new WCS connection
5. Drag desired coverage (e.g., *public:fwi*) into your map

ArcGIS Pro will load the raster as a regular analysis-ready dataset.

Time-Enabled Layers in ArcGIS Pro

For layers with a `time=` dimension:

1. Add the layer
2. Right-click → **Properties**
3. Go to the **Time** tab
4. Set:
   a. *Layer Time → Each feature has a single time field*, or
   b. *WMS Time Extent* (ArcGIS reads the time dimension if available)
5. Select the desired date/time
6. Enable the **Time Slider**

Tips for Successful Connections

- Ensure your network allows external traffic to GeoServer endpoints
- If performance is slow, limit WFS features or apply filters
- Use EPSG:3978 for Canadian Atlas Lambert (CWFIS native CRS)
- For web applications, prefer **WMS** for performance and **WFS/WCS** for analysis

13. Additional External Resources/References

- Advancing Open Geospatial Standards for Interoperability | OGC - Overview of OGC's work on open geospatial standards.
- WMS reference — GeoServer 2.28.0 User Manual (English only) - Technical documentation for GeoServer's Web Map Service (WMS) implementation.
- WFS reference — GeoServer 2.28.0 User Manual (English only) - Technical documentation for GeoServer's Web Feature Service (WFS) implementation.
- WCS reference — GeoServer 2.28.0 User Manual (English only) - Technical documentation for GeoServer's Web Coverage Service (WCS) implementation.

14. Glossary of Terms

ArcGrid

A raster data format used in GIS applications, often supported by WCS for gridded datasets.

Bounding Box (BBOX)

A spatial extent defined by minimum and maximum X/Y coordinates, used to request a map or data subset from OGC services.

CQL Filter (Common Query Language Filter)

A GeoServer query syntax used to filter features based on attribute values when requesting data from a WFS service.

Coverage (Raster Coverage)

A raster dataset served through a Web Coverage Service (WCS), representing gridded values such as fire weather or burned area.

CSV (Comma-Separated Values)

A simple tabular data format often used for hotspots, fire observations, and attribute-only outputs.

DescribeFeatureType

A WFS request that returns the schema (attributes, data types) of a vector dataset.

EPSG Code

A standardized identifier for a coordinate reference system. CWFIS commonly uses EPSG:3978 (Canada Atlas Lambert).

Feature (Vector Feature)

An individual vector object (point, line, or polygon) representing geographic data such as a hotspot or fire perimeter.

GeoJSON

A widely used JSON-based format for encoding geographic vector features.

GeoServer

An open-source geospatial server used by CWFIS to publish WMS, WFS, and WCS data services.

GeoTIFF

A georeferenced raster format commonly used for WCS outputs and downloadable grid data.

GetCapabilities

An OGC request that returns metadata about all available layers and operations within a WMS, WFS, or WCS service.

GetCoverage

A WCS request that retrieves raster data for a specified coverage layer and spatial extent.

GetFeature

A WFS request that retrieves vector features and their attributes.

GetMap

A WMS request used to retrieve rendered map images for one or more layers.

GML (Geography Markup Language)

XML-based format for representing geographic features, commonly supported through WFS.

KMZ (Keyhole Markup Language – Zipped)

A compressed KML package commonly used in Google Earth and supported by WMS output.

OGC (Open Geospatial Consortium)

The organization that develops open standards for spatial data interoperability, including WMS, WFS, and WCS.

OWS (OGC Web Services)

A unified request endpoint in GeoServer that supports WMS, WFS, and WCS operations.

Raster

A gridded dataset composed of pixels, used to represent continuous spatial information such as fire danger or weather indices.

Shapefile (SHP / SHAPE-ZIP)

A standard vector dataset format packaged as a ZIP file for distribution through WFS or downloads.

Static Map

A pre-rendered map image for reference, typically provided as PNG or JPEG.

Time-Enabled Layer

A dataset that supports querying by date or timestamp (e.g., daily FWI, hotspots for a specific day).

Vector

A data structure representing geographic features using points, lines, and polygons.

Web Coverage Service (WCS)

An OGC service for accessing raster data coverages such as FWI grids or NBAC layers.

Web Feature Service (WFS)

An OGC service for accessing vector data with attribute information.

Web Map Service (WMS)

An OGC service that delivers rendered map images for visualization.

If you have questions or comments, please contact cwfissa-csscifv@nrcan-rncan.gc.ca

Note: Portions of this resource were developed with assistance from AI tools and have been reviewed for accuracy and clarity.