

The World Environment Situation Room

Technical Documentation on API & Interoperability

Aim of this document

This document is a Technical Annex II for document “**Guidelines for Interoperability of the WESR CCA with Regional Knowledge and Data Hubs and other Platforms**”, available at [WESRCCAG.pdf \(unep.org\)](#)

The World Environment Situation Room (WESR) is the UNEP data, information and knowledge platform. It includes more than 1500 statistics datasets, 1700 geospatial datasets and more than 11,000 publications. WESR is still under development, currently the APIs used for WESR were developed by various entities in UNEP, resulting in a complex access. We have planned in 2023 to produce a broker which will provide users with a single interface.

Meanwhile, we are providing this catalogue of APIs. This technical document is intended for data scientists with experience in using APIs. It provides an inventory of current services provided through web services and APIs in the frame of the WESR. It identifies and categorises the typology of those services.

General introduction

API definition

An Application Programming Interface (API) is an intermediary that allows for applications to access the features or data of another application or system. API allows the user to programmatically integrate external data into their own applications.

Keywords: interoperability, centralised/decentralised infrastructure

Benefits:

1. Discover available data.
2. Access data in a standard or customised way.
3. Use functions and services from an external application.

Well-known examples of APIs are the Google Maps API, etc.

Context and needs

Current situation

Different levels of interoperability supported by related web services and APIs exist and function at the level of the different components of the WESR platform.

Although most of them meet the common standards, they are not easily accessible, sometimes poorly documented, and in several cases rather 'generic'. There is currently a need for a shared vision and to know where we are headed.

Case study: API strategy

Broker solution

A possible strategy could be to develop a data broker that would allow discovering data in various formats and from various sources and exposing them in a standard way. There are several options.

- A data broker can be developed into any organisation to federate its sources.
- An external data broker can be developed for navigating into different organisations.

WESR specific context

Geospatial datasets

Introduction

Most of the services provided under the WESR are compliant with the Open Geospatial Consortium standards ([OGC API](#)). It is a multi-part standard that offers the capability to create, modify, and query spatial data on the web and specifies requirements and recommendations for APIs that want to follow a standard way of sharing geospatial data.

Catalogue Services

Catalogue services support the ability to publish and search collections of descriptive information (metadata) for data, services, and related information objects. Metadata in catalogues can be queried and presented for evaluation and further processing by both humans and software.

Service name	GRID Datacore Catalogue
Description	Main engine of GRID-Geneva for geospatial data.
Standard or typology	OGC-CSW (catalogue service for the web)
URL	https://datacore-gn.unepgrid.ch/geonetwork/srv/eng/csw
WESR sections	Geospatial
Provider	UNEP/GRID-Geneva
Notes	Swagger page for built custom API: https://datacore-gn.unepgrid.ch/geonetwork/doc/api/index.html

Service name	MapX search tool API
Description	Search tool API (full-text search on the MapX public catalogue)
Standard or typology	MeiliSearch¹
URL	https://github.com/unep-grid/map-x-mgl/wiki/Search-tool-API
WESR sections	Geospatial
Provider	UNEP/GRID-Geneva

¹ Meilisearch is a RESTful search API. It aims to be a ready-to-go solution for everyone who wants a fast and relevant search experience for their end-users. Meilisearch works out-of-the-box with default settings that meet the needs of most projects. However, searching is still highly customizable.

Notes	Provides access to 1'700 geospatial public datasets (as of October 2022). Fully interoperable with the WESR Search Engine from where it is possible to search geospatial datasets by keyword, location and date.
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Visualisation Standard

The “Map Service” Interface Standard defines a set of interfaces for requesting map images over the Internet. They make it easy for a client to request images on demand defining parameters such as size and coordinate reference systems. A map service server provides information about which maps are provided by the service, it returns a list of maps (or one specified map) and responds to specific queries about the content and properties of a map.

Service name	GRID-Geneva Datacore Catalogue
Description	Main GeoServer at GRID-Geneva
Standard or typology	OGC-WMS
URL	https://datacore.unepgrid.ch/geoserver/wms
WESR sections	Geospatial
Provider	UNEP-GRID/Geneva
Notes	Provide a list of all geospatial layers hosted at GRID Geneva. Not all are included in the WESR platform.

Service name	MapX Data Sharing Manager
Description	Enables users to create and customise links to MapX features (i.e., geospatial data layers, story maps, workspaces containing a series of data layers of the same environmental topic); and to share them as simple URLs or on social media.
Standard or typology	iFrames/social networks
URL	https://github.com/unep-grid/map-x-mgl/wiki/Sharing-Manager
WESR sections	Geospatial, Climate Change, WESR-CCA, EC-country fiches
Provider	UNEP-GRID/Geneva
Notes	Each data layer or group of data layers can be embedded into an external web page.

Service name	MapX OGC Services (WMS, WFS, WCS)
Description	1. Makes any MapX geospatial layer discoverable and accessible from external applications that are able to integrate WMS (web map service - data display), WFS (web feature service - vector download) and WCS (web coverage service - raster download). 2. Inversely, makes any WMS/WMTS layer exploitable from MapX.
Standard or typology	OGC-WMS, OGC-WFS, OGC-WCS
URL	https://github.com/unep-grid/map-x-mgl/wiki/Sources#managing-sources
WESR sections	Climate change, WESR-CCA, Geospatial, EC-country fiches
Provider	UNEP/GRID-Geneva

Notes	WMS-WFS-WCS can be activated on demand, e.g., if the data licence authorises data to be downloaded.
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Service name	MapX Software Development Kit (SDK)
Description	The MapX SDK package facilitates the integration of MapX into external systems. It features a simple way to interact with MapX data and functions within a static web page or from a full featured application.
Standard or typology	
URL	https://github.com/unesp-grid/map-x-mgl/tree/master/app/src/js/sdk/
WESR sections	Climate change, WESR-CCA, Geospatial, EC-country fiches
Provider	UNEP/GRID-Geneva
Notes	---

Per country statistics and SDG

This section includes so-called statistical data, which generally refer to a specific country or group of countries (regional aggregations). The time connotation (time series) is generally an important element. SDG indicators, but not only are part of this category. It must be noticed that for these categories the set of standards is more heterogeneous than in the case of geospatial data where the OGC has been able to prevail as a globally accepted and used standard.

Catalogue services

As for geospatial data, this section presents the web services that give an overall information of the data set collection.

Service name	GRID BI dashboards and charts (Superset) catalogue
Description	Lists dashboards and charts available at UNEP/GRID-Geneva.
Standard or typology	REST API Following OpenAPI specification
URL	https://dash.unepgrid.ch/dashboard/api/read https://dash.unepgrid.ch/chart/api/read
WESR sections	Climate change, WESR-CCA, Geospatial, EC-country fiches
Provider	UNEP/GRID-Geneva
Notes	Swagger page for built custom API: https://dash.unepgrid.ch/swagger/v1

Service name	UNEP SDGs
Description	the API provides data for SDG indicators under UNEP custodianship
Standard or typology	REST API, Web based
URL	https://unepliveservices.unep.org/nsiws/rest/categoryscheme/unep/unep/1.10?references=dataflow
WESR sections	SDG Indicators
Provider	Science Division, CDIB, SDG and Environment Statistics Unit
Notes	To be replaced by SDG Data Catalogue API based on .STAT Suite

Visualisation Standard

In this section, we would like to group services that allow the reproduction / integration of visualisation (charts, dashboards) within an external website.

Service name	GRID BI dashboard (Superset) embedded
Description	Dashboards include a set of dynamic visualisations (charts, maps, text) organised by theme (e.g. climate change, emissions by countries).
Standard or typology	iFrames
URL	https://dash.unepgrid.ch/superset/dashboard/59/?standalone=2
WESR sections	Climate change, WESR-CCA, Geospatial, EC-country fiches
Provider	UNEP-GRID/Geneva
Notes	---

Data access standards

Allows access to the raw data (grouped or not).

Service name	GRID BI charts (Superset) data access
Description	Connect and retrieve the data for each chart included in a dashboard.
Standard or typology	Json API
URL	Curl example for a specific chart
WESR sections	Climate change, WESR-CCA, Geospatial, EC-country fiches
Provider	UNEP-GRID/Geneva
Notes	Needs to be customised for easy access.

Documents repository

SCP-HAT

Service name	SCP-HAT API
Description	It provides the data used in SCP-HAT, mainly environmental pressure and impact indicators.
Standard or typology	Rest API
URL	116.203.139.184:3001
WESR sections	Sustainable Consumption and Production, WESR-CCA, Interactive Country Fiches.
Provider	Vienna University of Economics and Business (WU Vienna)
Notes	Right now it just allows retrieving data exactly as stored in the database without any user-friendly join-operations making life easier. A new version in the future will make this API useful.

Catalogue services & data access

Service name	Knowledge Repository
Description	Knowledge products from the UNEP digital library
Standard or typology	REST API, JSON

URL	https://wedocs.unep.org/rest/
WESR sections	Publications
Provider	UNEP Library Unit
Notes	Remapping will need to be done once retagging is done in the Knowledge Repository

Service name	InforMEA
Description	The purpose of the InforMEA API is to establish a communication protocol between InforMEA database and its data providers, the MEAs.
Standard or typology	Rest API, JSON
URL	https://odata.informea.org/
WESR sections	decisions, meetings
Provider	United Nations Information Portal on Multilateral Environmental Agreements
Notes	Pending datasets: treaties, national reports, national action plans

Service name	UNEP GIS Hub
Description	WESR ArcGIS hub datasets
Standard or typology	Rest API, JSON
URL	https://hub.arcgis.com/api/v3/
WESR sections	Geospatial datasets (indicators, themes)
Provider	World Environment Situation Room ArcGIS Hub
Notes	-

Service name	UNEP World Conservation Monitoring Centre
Description	Explore nature action resources by theme from UNEP-WCMC
Standard or typology	Rest API, JSON
URL	https://resources.unep-wcmc.org/products/WCMC_RT235/
WESR sections	Datasets by theme
Provider	UNEP-WCMC
Notes	-

Service name	GPML Digital Platform
Description	Provides technical information on how to query feature layers from feature services and/ or OGC services available in the GPML Data Hub using the available programming interface API
Standard or typology	Rest API, JSON
URL	https://datahub.gpmarinelitter.org/pages/api-explore https://digital.gpmarinelitter.org/api/browse?topic=event&upcoming=true&limit=3 https://digital.gpmarinelitter.org/api/browse?featured=true&limit=3

WESR sections	Indicators, upcoming events, featured initiatives/products
Provider	UNEP Global Partnership on Marine Litter
Notes	Partially implemented, awaiting confirmation to use digital.gpmarinelitter in WESR

Standards description

OGC-CSW

Catalogue Service for the Web (CSW), is a standard for exposing a catalogue of geospatial records on the Internet (over HTTP).

Catalogue services support the ability to publish and search collections of descriptive information (metadata) for data, services, and related information objects. Metadata in catalogues represent resource characteristics that can be queried and presented for evaluation and further processing by both humans and software.

OGC- WMS

One fundamental component of the web map is the map image. The Web Map Service (WMS) is a standard protocol for serving georeferenced map images generated by a map server. In short, WMS is a way for a client to request map tiles from a server. The client sends a request to a map server, then the map server generates an image based on parameters passed to the server in the request and finally returns an image.

It is important to note that the source material from which the image is generated does not need to be an image. The WMS generates an image from whatever source material is requested, which could be vector data, raster data, or a combination of the two.

MeiliSearch

The **MapX Search tool API** was built on top of [MeiliSearch](#), an open source ([MIT License](#)) search-engine.

Meilisearch is a RESTful search API. It aims to be a ready-to-go solution for everyone who wants a fast and relevant search experience for their end-users. Meilisearch works out-of-the-box with default settings that meet the needs of most projects. However, searching is still highly customizable.

References

<https://git.unepgrid.ch/wesr/portal/wiki/API>