AlpConv Atlas: The Geospatial Content Management System of the Alpine Convention

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Abstract

Background

The Alpine Convention (AC) promotes research, cooperation and monitoring activities in the Alpine Region. In this framework, the AC Atlas is the official content management system for geographical data published by the Alpine Convention. The AC Atlas' final goal is to promote, collect, organise and disseminate the results of research activities carried out by the Alpine Convention, its Working Groups and by European projects in the Alpine Region.

New information

The system is based on the open-source GeoNode platform supporting standard OGC services. Hence, the AlpConv Atlas allows for browsing, searching, editing documents, layers, maps, and related metadata by an intuitive web-based graphical user interface. The AC Atlas is finally a collaborative platform for managing various geographical data and the related documentation, which can be of great interest to several stakeholders.

Keywords

Geonode; Alpine Convention; Spatial Data Infrastructure; Alps; Atlas; GIS;

Introduction

The Alps are one of the largest continuous natural areas in Europe, with outstandingly unique and diverse landscapes, habitats, culture and history. The Alpine Convention entails the guiding principles towards a sustainable life in the Alps, now and in the future.

Article 3 and 4 of the [Alpine framework Convention](#) invites the contracting parties to promote research, cooperation, monitoring activities and knowledge dissemination. Within this framework, the [Alpine Convention Atlas](#) is the operative tool of the System for the Observation and Information on the Alps ([SOIA](#)), providing seamless accessibility and usability of the AC datasets for several stakeholders. The AC Atlas is based on [GeoNode](#) Corti et al. (2019), an open-source web framework to deploy geospatial content management systems (GeoCMS) and spatial data infrastructure (SDI) (Kralidis (2007), Nebert (2004). GeoNode allows data providers and users to share geographical data and combine them in thematic maps allowing interoperability by adopting Open Geospatial Consortium ([OGC](#)) standards, such as Web Map Service ([WMS](#)), Web Feature Service ([WFS](#)), Web Coverage Service ([WCS](#)) and Catalog Service for the Web ([CSW](#)). GeoNode distinguishes different entities: documents, layers and thematic maps. Every single entity is linked with a comprehensive metadata description. Document definition is generic; in fact, several documents types are allowed: for example, "*.doc, .pdf .jpeg, .ppt, .xls, .txt etc.*". A Layer is a spatial dataset, vector or raster type. Each layer can be associated with different styles (which describes the legend) and in the case of the vector layer with a data attribute table. A thematic map is a composition of different layers where each layer can be internal or from remote services using OGC standards. Additional tools to filter features, create graphs and to visualise time-series, are provided in the map interface. A comprehensive GeoNode description can be found in the [GeoNode documentation](#) and in Corti et al. (2019).

The Alpine Convention spatial data infrastructure

The Alpine Convention spatial data infrastructure (SDI) is based on GeoNode 3.0 installed in a dedicated Virtual Machine (VM) at the front end. It uses [GeoServer](#) 2.16.2 as its internal spatial data server. Data are stored in a spatial database, based on [PostgreSQL](#) 11. The GeoNode, the Database and the Geosever are installed on a distributed system and run on the private cloud platform of [Eurac Research](#).

Usage

The Alpine Convention Atlas Fig. 1 distinguishes between two kind of users (Public and registered users). The public viewers (not authenticated user) can freely browse the AC Atlas to discover the dataset. The catalogues of documents, layers and maps allow searching the available data by simple text search or predefined filters, such as by keyword, data type (i.e. vector, raster, time-series), categories (i.e. agriculture, climate etc.), responsible, groups, groups categories, date, region and extent. In the layer preview pages, the user can view the layer and its summarised metadata. Finally, public users can view the full extent layer or map, changing opacity and add further layers from the catalogue. Registered users can fully exploit the GeoNode features of uploading and sharing datasets, editing styles and metadata, assigning several tags and properties, creating maps and setting specific permissions. The Atlas home page elements are *Data, Maps, People, About, Registration and Sign-in* sections. For simplicity, this paper briefly illustrates the page elements visible when a registered user is signed in. Under *data,* users

can access the catalogue of the available *Layers* and *Documents.* It is, moreover, possible to *Upload Layer* or *Upload Document.* Finally, it is possible to add remote layers or view existing registered remote layers by clicking *Remote services.* Under *Maps,* the users can *Explore Thematic Maps* existing in the catalogue or *Create Thematic Map*. Under the *People* section, all the registered users are listed, as well as all the existing *Groups* and *Group Categories,* while the *Invite users* function allows inviting external people by sending an email. In the *About* section, users can find further *Info*, read the *Terms of use and* find *Contacts* details. Finally, in *Get Started,* users can find useful tips and tricks. Once the user *Registers* and *Signs in*, the username dropdown menu appears, through which the users can access and edit their *Profile,* check their *Recent Activity* and view their *Favorites* layers, maps and documents. In *Inbox,* the user finds all the messages sent and received within the AC Atlas user community.

Project description

Title: Alpine Convention Atlas

Study area description: The Alpine Convention Atlas stores and disseminates information within the European Alpine Region.

Design description: The Alpine Convention Atlas is the operative tool for the Observation and Information on the European Alps ([SOIA](#)) of the Alpine Convention.

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Web location (URIs)

Homepage: http://www.atlas.alpconv.org/

Wiki: http://www.atlas.alpconv.org/getstarted/

Technical specification

Platform: Cross-Platform

Interface language: English

Repository

Type: Git

Browse URI: https://github.com/euracresearch/Geonode-Atlas-Alpconv

Usage licence

Usage licence: Creative Commons Public Domain Waiver (CC-Zero)

Additional information

The authors have no conflicts of interest to declare. All co-authors have seen and agree with the contents of the manuscript and there is no financial interest to report.

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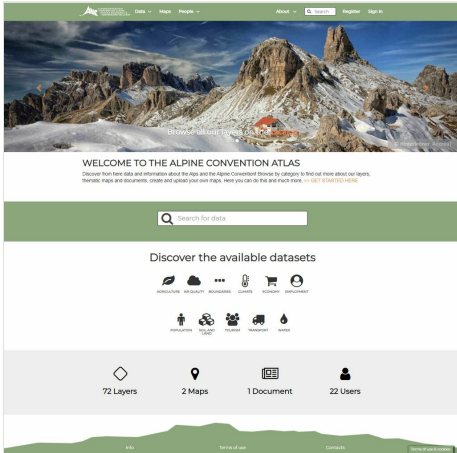
Figure 1.

Homepage of the Alpine Convention Atlas.