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Geospatial Metadata for Discovery in Scholarly Publishing

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Almost every scientific article that refers to existing regions of the earth, contains “[...] a narrative description of the study area”.

(Karl, 2019 doi 10.1177/0961000618759413)

Potential of Integrating Geospatial Metadata in Scholarly Publishing

Detect **biases** in research coverage

Reveal **correlations**

Filter **search** results for scientific articles

Enhance understanding of **relations** within a study area

Visual representation of the study location

Crucial Aspects of Integrating Geospatial Metadata in Scholarly Publishing

Collection

Standardization

Storage

Validation

GeoOJS

Integration of well-defined geospatial metadata in a scholarly publishing platform to enhance discovery of scientific articles

Authors define geospatial properties of the article by accepting a bounding box or manually create one or more suitable geometric shape(s) on a map

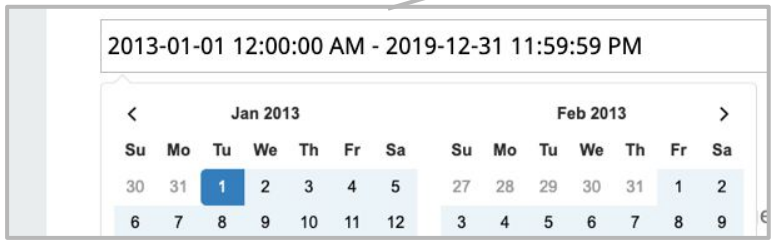
Administrative unit’s are suggested depending on the authors input

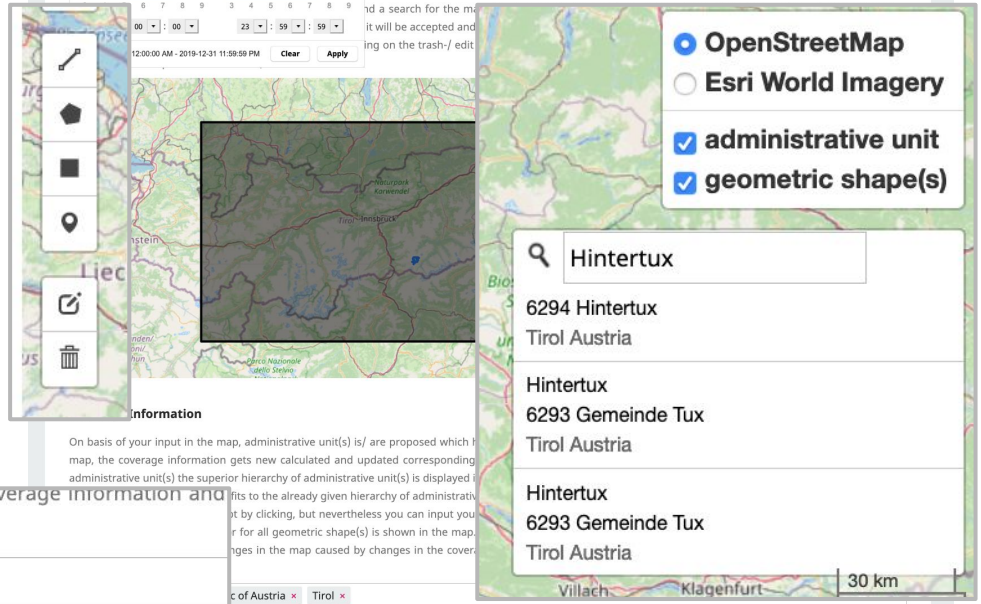
Geospatial data are **stored** both, as text and as geospatial coordinates: coordinates are stored **accurately**, at the same time textual description available and **flexible** for non-map-related usage

Geospatial metadata **published** in HTML source code of article’s landing page

GeoOJS

OJS submission view extended by the GeoOJS Plugin





GeoOJS

OJS submission view extended by the GeoOJS Plugin

Spatial Properties

Define the location of the articles content by one or more geometric shape(s). You can choose in the control on the left side between polyline, polygon, rectangle and point. By the icons below you can edit or delete the created geometric shape(s). With the "-" and "+" in the upper left corner it is possible to zoom in and out. In the upper right corner you can change the layers. You can choose between an "OpenStreetMap" layer and an "Esri World Imagery" layer. You can also set whether the geometric shape(s) and the administrative unit should be displayed or not. For the administrative unit you will find a more detailed description in the next paragraph (Coverage Information). Below the layer control you will find a search for the map. You can search for locations and by hitting "Enter" you will be offered different locations that match your input. By clicking on a suggestion it will be accepted and a matching rectangle, describing the boundaries of the location, will be displayed on the map. This rectangle can also be deleted/ edited by clicking on the trash-/ edit icon on the left side. In the lower right corner there is a scale (upper specification in kilometers/ meters, lower specification in miles/ foot).

Coverage Information

On basis of your input in the map, administrative unit(s) is/ are proposed which has/ have been selected according to your input in the map. Each time you update the map, the coverage information gets new calculated and updated correspondingly. You are able to delete administrative unit(s) by the red "x". If you hover over the administrative unit(s) the superior hierarchy of administrative unit(s) is displayed if available. Besides you can add further administrative units. You are only able to insert a further administrative unit if it fits to the already given hierarchy of administrative unit(s), and the given geometric shape(s) in the map. If you begin to insert, there are some suggestions you can accept by clicking, but nevertheless you can input your own administrative unit by hitting "Enter". The administrative unit (in black) which is the lowest common denominator for all geometric shape(s) is shown in the map. The administrative unit is not editable or deletable in the map, but here via the input field. If there are automatic changes in the map caused by changes in the coverage information and vice versa, this is indicated by a blue frame around the coverage element or the map.

https://septentrio.uit.no/media/GeoOJS_Tromsoe.mov.mp4

GeoOJS

OJS article view extended by the GeoOJS Plugin

```
<meta name="geo.placename" content="Tirol">

<meta name="DC.box" content="name=Tirol;
      northlimit=47.7436172019182;southlimit=46.6518080714719;
      westlimit=10.0980887848844;eastlimit=12.9666399491981;
      projection=EPSG3857">

<meta name="ISO 19139" content="<gmd:EX_GeographicBoundingBox>
      <gmd:westBoundLongitude><gco:Decimal>10.0980887848844</gco:Decimal>
      </gmd:westBoundLongitude>
      <gmd:eastBoundLongitude><gco:Decimal>12.9666399491981</gco:Decimal>
      </gmd:eastBoundLongitude>
      <gmd:southBoundLatitude><gco:Decimal>46.6518080714719</gco:Decimal>
      </gmd:southBoundLatitude>
      <gmd:northBoundLatitude><gco:Decimal>47.7436172019182</gco:Decimal>
      </gmd:northBoundLatitude>
      </gmd:EX_GeographicBoundingBox>">

<meta name="ISO 8601"
      content="2013-01-01T12:00:00.000Z/2019-12-31T23:59:59.000Z">
```

of interest, removing disturbing shadows and calculating the NDVI. Subsequently, a supervised classification was carried out with the prepared data, whereby the training sites were created manually, and the random forest model served as a basis. The size of the glacier was then derived from the classification and the corresponding classes for snow and ice.

Finally, it becomes clear that the Hintertux glacier is melting and that the time of its disappearance will be roughly in the period of the years calculated by the models.

Geospatial Metadata

Here the properties of the articles content in terms of place and time are illustrated.

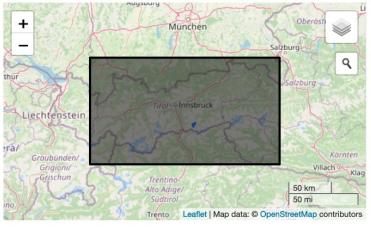
Temporal Properties

Temporal properties of the articles content specified by date and time (time in GMT).

Start: Tue, 01 Jan 2013 12:00:00 GMT
End: Tue, 31 Dec 2019 23:59:59 GMT

Spatial Properties

Properties of the articles content in terms of the location. The geometric shape(s) (blue) represent the location of the articles content as accurately as possible. The administrative unit (black) represents, in the form of a rectangle, the next superior administrative unit for the location the article is dealing with.



Coverage Information

Here the administrative units are listed, which are superior to the location the article is dealing with, with the highest level on the left and the lowest on the right.

Earth, Europe, Republic of Austria, Tirol

Download geospatial metadata as geoJSON

geoJSON

GeoOJS

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future work

- research into usability and usefulness
- search engine across OJS instances
- geospatial and temporal filters in article search
- validation as part of the review process

o2r

https://o2r.info/

Thank you!

Keep your questions in mind for the Q&A!

geoOJS

https://github.com/tnier01/geoOJS

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