Neues und Unbekanntes in OpenLayers

Marc Jansen Andreas Hocevar

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Gliederung

- Über / Meta 👈
- Live Demo 🤩
- Ausblick 👀

Über / Meta

Marc Jansen

jansen@terrestris.de
@marcjansen
@selectoid

- Geschäftsführer @terrestris & @mundialis
- Kernentwickler & PSC OpenLayers
- GeoExt, SHOGun, GeoStyler
- Sprecher & Trainer national & international
- OSGeo Foundation Charter Member

terrestris

info@terrestris.de
@terrestris
@terrestrisde

- terrestris.de
- OpenSource GIS aus Bonn
- Entwicklung, Projekte & Support/Schulung
- Beratung, Planung, Implementierung & Wartung

Teil des Teams werden?

mundialis & terrestris suchen Verstärkung

👉 Kontaktiert uns 🚀

Andreas Hocevar

ahocevar geospatial

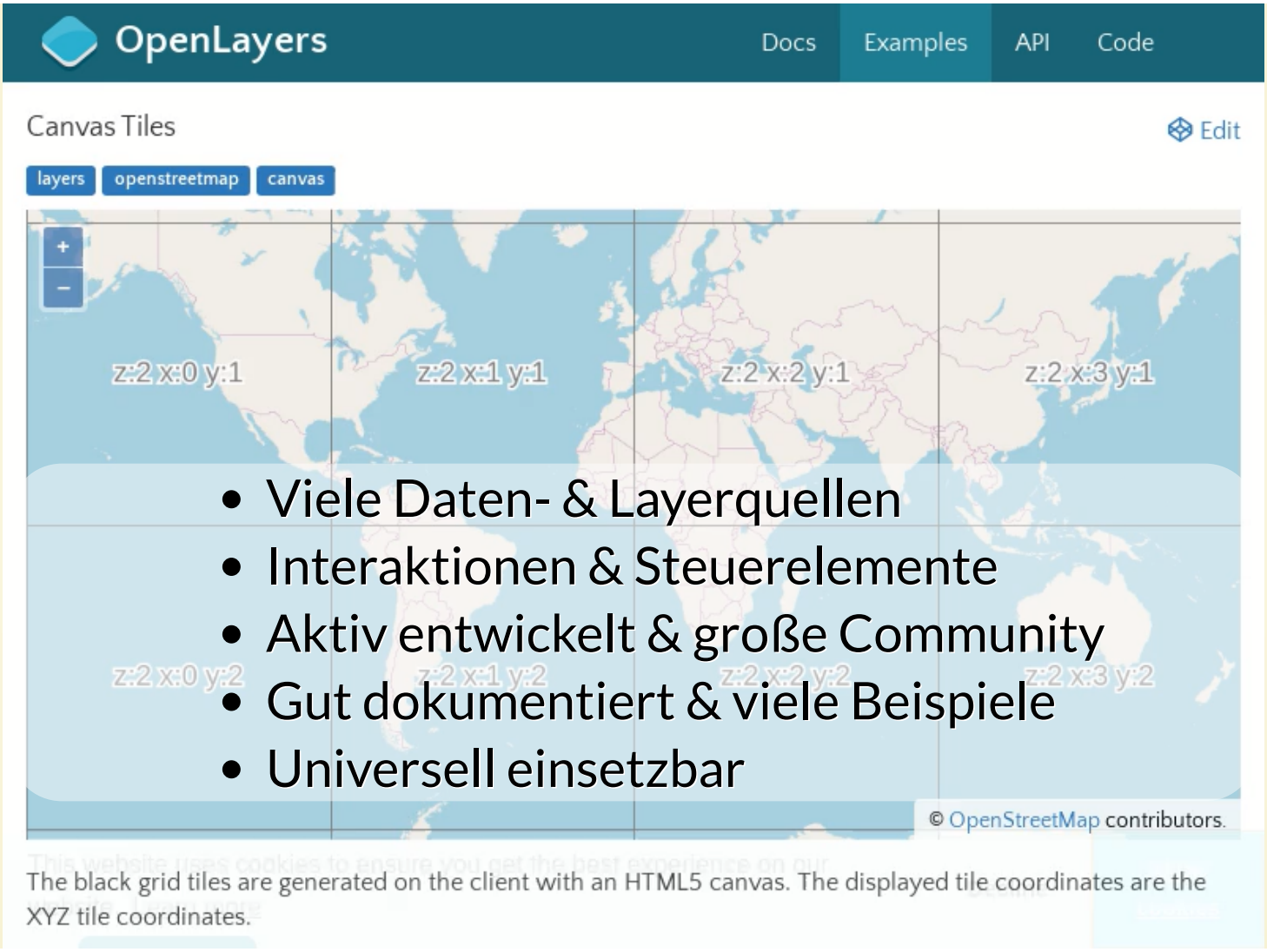
mail@ahocevar.com
@ahocevar
@ahoce

- OpenLayers Kernentwickler und im Steering Committee
- Proj4js Maintainer und Entwickler
- ol-mapbox-style Maintainer und Entwickler
- Professioneller OpenLayers Support

Was ist OpenLayers?

> *A high-performance, feature-packed library for all your mapping needs.*
>
> — *openlayers.org, 28. Mai 2021*

- OpenSource (BSD)
- JavaScript
- OSGeo Projekt



- Viele Daten- & Layerquellen
- Interaktionen & Steuerelemente
- Aktiv entwickelt & große Community
- Gut dokumentiert & viele Beispiele
- Universell einsetzbar

Live Demo

Immediate Rendering

- Zugriff auf den Render Context des Layers
- Zeichnen mit OpenLayers Geometrien und Styles
- Koordinatensystem der View

```
import toContext from 'ol/render';
layer.on('postrender', event => {
  const immediate = getVectorContext(event);
  immediate.setImageStyle(myCircleStyle);
  immediate.drawPoint(myPointGeometry);
});
```

Immediate Rendering

- Zugriff auf den Canvas Context des Layers
- Zeichnen mit dem Canvas 2D API
- Pixel-Koordinatensystem des Canvas

```
layer.on('postrender', event => {
  const context = event.context;
  const canvas = context.canvas;
  const center = [canvas.width / 2, canvas.height / 2];
  context.beginPath();
  context.moveTo(center[0] + 50, center[1] - 50);
  context.lineTo(center[0] - 50, center[1] - 50);
  context.lineTo(center[0] - 50, center[1] + 50);
  context.lineTo(center[0] + 50, center[1] + 50);
  context.closePath();
  context.fillStyle = 'rgba(50,170,50,0.5)';
  context.fill();
});
```

Immediate Rendering

Vector Tiles etc.

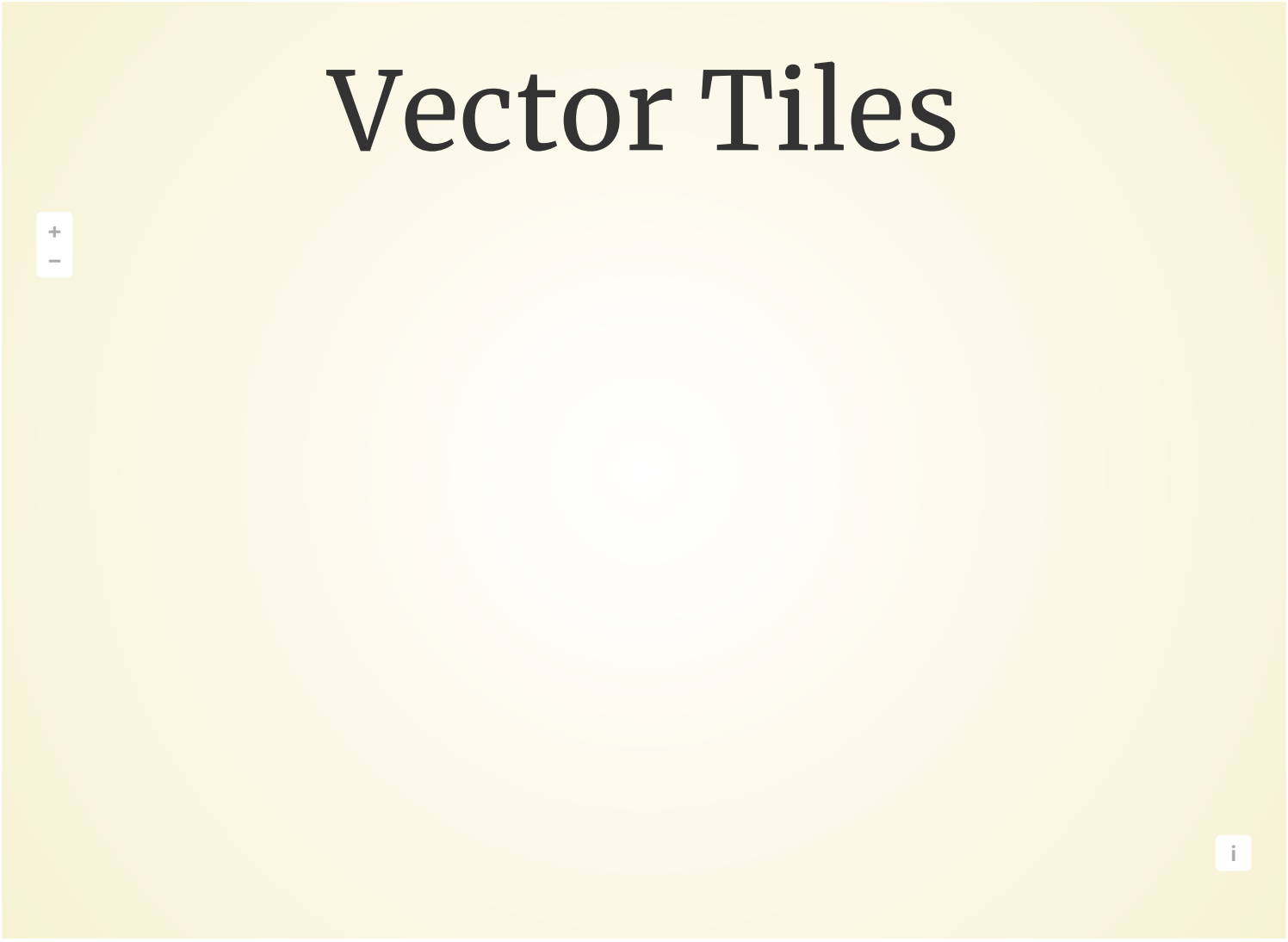
- Ideal für thematische Karten
- Mapbox Vector Tiles und Mapbox Style

```
import MVT from 'ol/format/MVT';
import createStyle from 'ol-mapbox-style/dist/stylefunction';

const bodenkarte = new VectorTileLayer({
  source: new VectorTileSource({
    format: new MVT(),
    url: myVectorTileServiceUrl
  })
});

bodenkarte.setStyle(
  createStyle(bodenkarte, myMapboxStyle, 'bodenkarte-tiles')
);
```

Vector Tiles



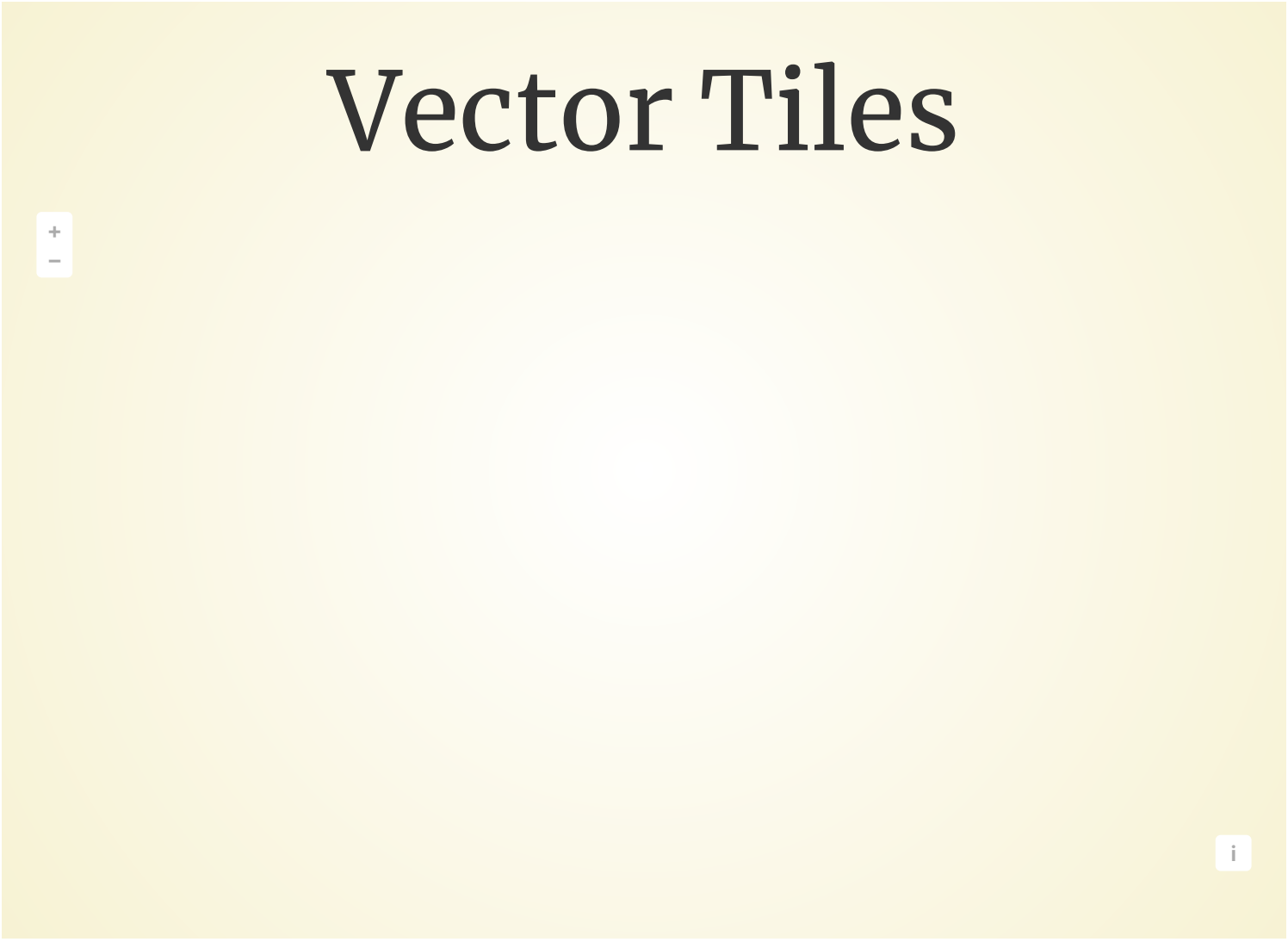
Mapbox Style

- Nicht nur für Vector Tile Layer
- Beschreibt eine komplette Karte (Center, Zoom, Layer, Styles)
- In OpenLayers verfügbar mit ol-mapbox-style

```
import olms from 'ol-mapbox-style';

olms('map', 'https://mymap.com/mystyle.json');
```

Vector Tiles



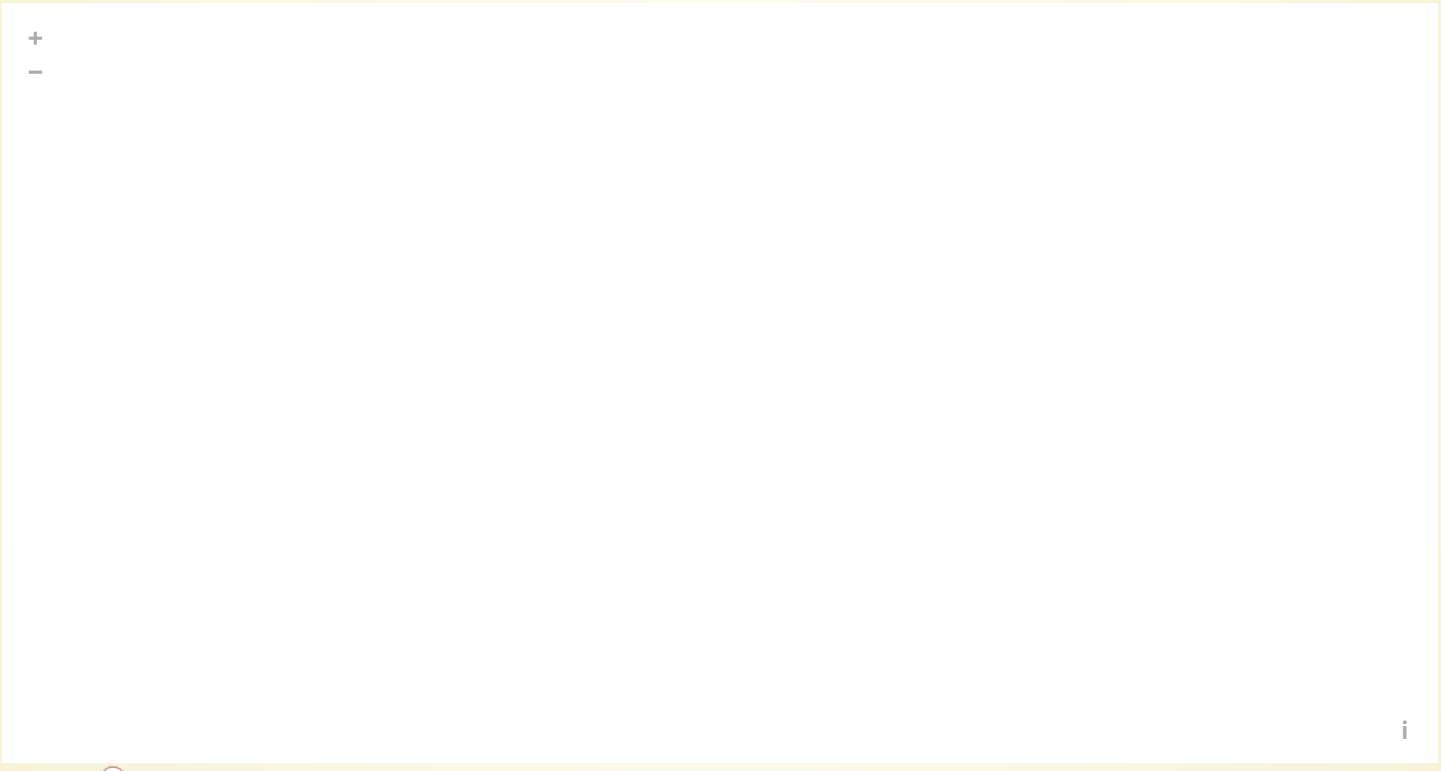
Raster Analyse

- Raster Source mit einer `operation`

```
function flood(pixels, data) {
  const pixel = pixels[0];
  if (pixel[3]) {
    const height =
      -10000 + (pixel[0] * 256 * 256 + pixel[1] * 256 + pixel[2]) * 0.1;
    if (height <= data.level) {
      pixel[0] = 134; pixel[1] = 203; pixel[2] = 249; pixel[3] = 255;
    } else {
      pixel[3] = 0;
    }
  }
  return pixel;
}

const raster = new RasterSource({
  sources: [elevation],
  operation: flood,
});
```

Raster Analyse



Sea level +1 m

Reprojektion

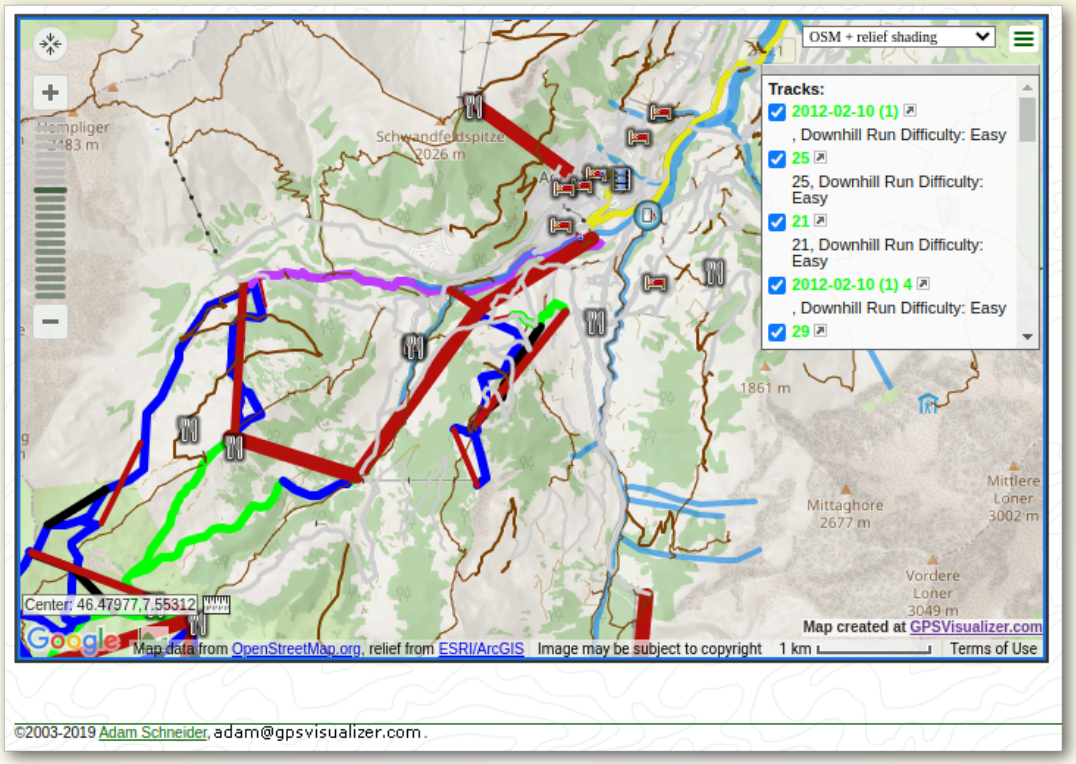
- Raster- und Vektorquellen

Vektordaten

- KML Beispiel

Vektordaten

- Vergleich mit GPS Visualizer Darstellung

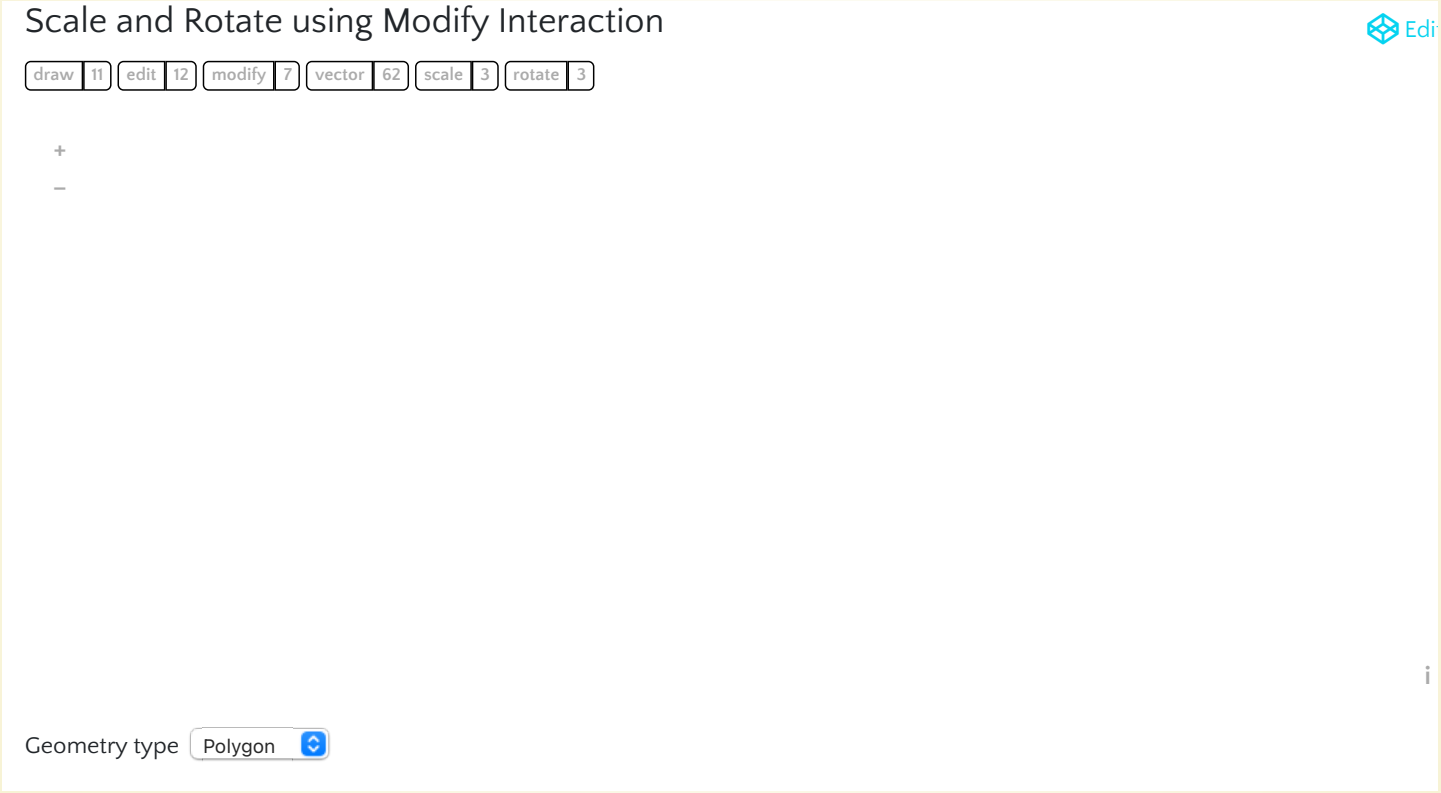


Feature Editierung

- ~60 Zeilen Code

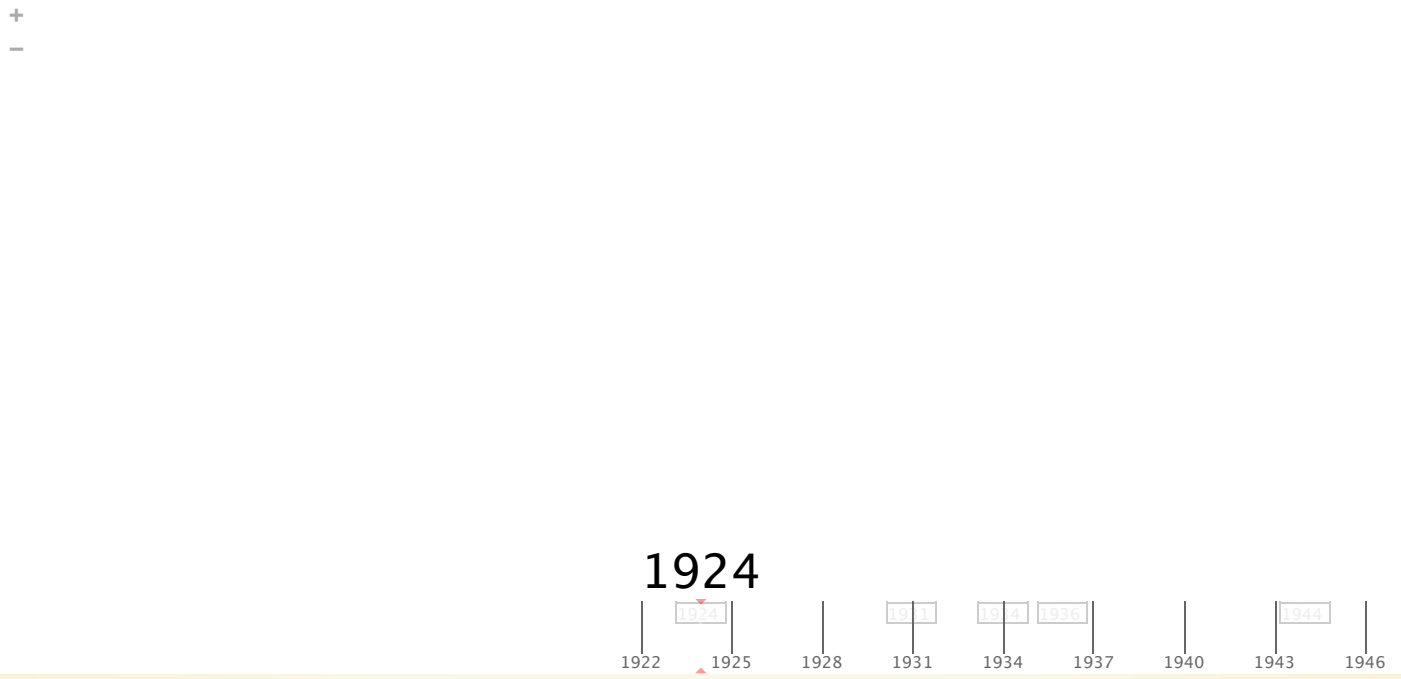
...in Entwicklung

- aktueller PR #12304



3rd party

Historical map



3rd party

ol-ext: print dialog

The **ol/control/PrintDialog** is dialog to format the map for printing or exporting.
It can handle canvas controls and legend control customisation on print.
See internationalization example...
Use eligrey/FileSaver or MrRio/jsPDF to save resulting image on print.

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Integrationen

- openlayers.org/3rd-party/
- daneben zahlreiche andere
  - GeoExt
  - react-geo
  - Wegue
  - AnOL, oder c2c
  - masterportal
  - usw. usf.


Ausblick 👀

NDVI mit COG

NDVI from a Sentinel 2 COG

Edi

cog 5 ndvi 2

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The GeoTIFF layer in this example draws from two Sentinel 2 sources: a red band and a near infrared band. The layer style includes a `colo` expression that calculates the Normalized Difference Vegetation Index (NDVI) from values in the two bands. The `interpolate` expression

Zukünftige Features

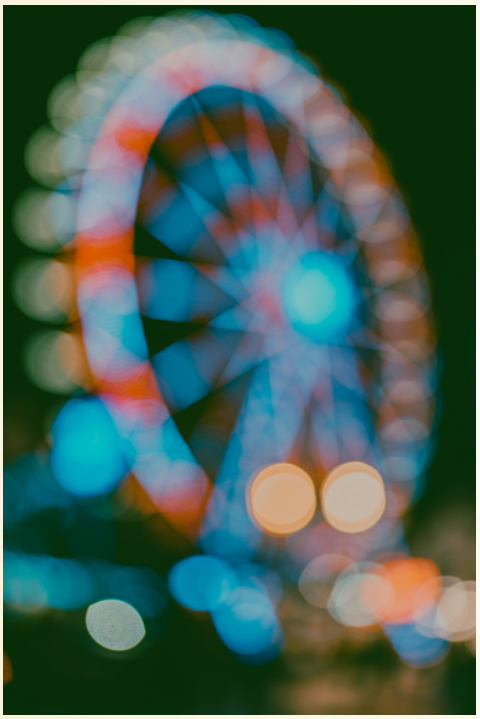

Bild: © Matthias Ripp

- geotiff.js Integration
- mehr WebGL
- ⇒ COG Support, s.o.
- OGC API
- (noch) besseres Typing & API-docs
- Bessere Node.js Integration
- + Eure Beiträge 👼
- …

Vielen Dank

Fragen & Anmerkungen?

Impressum

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Autoren

Marc Jansen

terrestris GmbH & Co. KG

Kölnstraße 99

53111 Bonn, Germany

jansen@terrestris.de

Andreas Hocevar

ahocevar geospatial

Grüne Gasse 21d/25,

8020 Graz, Austria

mail@ahocevar.com

Lizenz

Vortragsfolien, PDF-Version, git repository