

PLENUM
GLOBE

Plenum Globe

User Manual

Interactive 3D globe data visualisation
Turn your CSV data into rotating, exportable worlds

Version 1.0 - 2026
pixelpenum.com

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1 Introduction

Plenum Globe turns CSV data into an interactive 3D Earth. Countries can be coloured as solid regions, raised as bars, marked as points on specific coordinates, or connected by arcs. Everything runs locally in the app - no cloud, no upload, no backend. Your data stays on your device.

Plenum Globe is the 3D sibling of Plenum Atlas. Where Atlas offers flat maps in any projection, Globe takes the three-dimensional route: a rotating sphere, true camera perspective, 3D bars with real height.

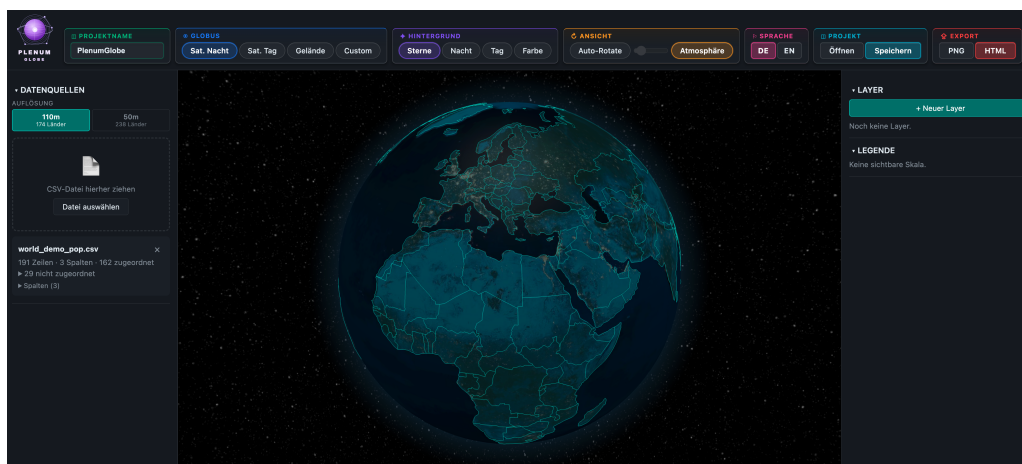
What you can do with Plenum Globe

- Project CSV data onto a rotating 3D Earth
- Colour countries as solid regions (choropleth) or raise them as 3D bars
- Place individual locations as points using Lat/Lng from your CSV
- Show connections between countries as elegant arcs (flights, trade, migration)
- Style the globe with satellite or custom-coloured textures
- Export results as PNG images or standalone interactive HTML files
- Save projects and resume them later

Tip: Plenum Globe works fully offline. After launch no internet connection is required - ideal for confidential business data, presentations on a plane, or conferences without reliable Wi-Fi.

2 The User Interface

The interface consists of three columns plus a toolbar. The layout is fixed - there are no floating windows - but every panel can be resized with its divider.

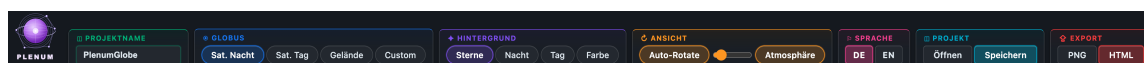


Overview: Data panel on the left, globe in the middle, layer panel on the right.

Toolbar (top)

The toolbar has a fixed height and is organised into four box groups with icon headers. The Plenum Globe title logo sits on the far left.

- **Globe** - texture selector for the Earth
- **Background** - stars, night, day, or custom colour
- **View** - auto-rotate on/off, speed, atmosphere
- **Export** - PNG and HTML export
- **Project** - name field plus save / open
- **DE/EN** - language switcher



The toolbar in detail.

Left sidebar - data sources

This is where CSV files are imported and managed. At the top sits the country-border resolution (110m / 50m / 10m), below it the drag-and-drop zone and the list of loaded datasets with their column editor.

Right sidebar - layers

This is where you build your visualisation. Each layer is one overlay on the globe. Per layer you choose type (choropleth / bars / points / arcs), data source, value column, colour scale, and opacity.

Map area - the globe

In the middle you see the 3D Earth. With your mouse you can:

- **Drag** to rotate the sphere

- **Scroll** to zoom
- **Right-click + drag** to tilt the camera
- **Hover** over countries to see tooltips with name and value

3 Importing Data

Plenum Globe reads **CSV files**. Parsing detects delimiters (comma, semicolon, tab) and decimal format (dot or comma) automatically - there is nothing to configure.

How to import data

1. Drop the CSV file onto the drop zone in the left sidebar or click **Choose file**.
2. The import wizard opens and shows the first eight rows as a preview table.
3. Plenum Globe suggests a **role** for every column: Text, Number, ISO Alpha-2 / Alpha-3 / Numeric, Country Name, Latitude, Longitude, or Date/Time.
4. Review the mapping. Use the dropdown to change a role; use the →**Key** button to mark the column used for country matching.
5. The live match preview shows how many rows matched. If Lat/Lng columns are present, “**Lat/Lng detected**” appears.
6. Click **Import** and the data lands in the dataset list.

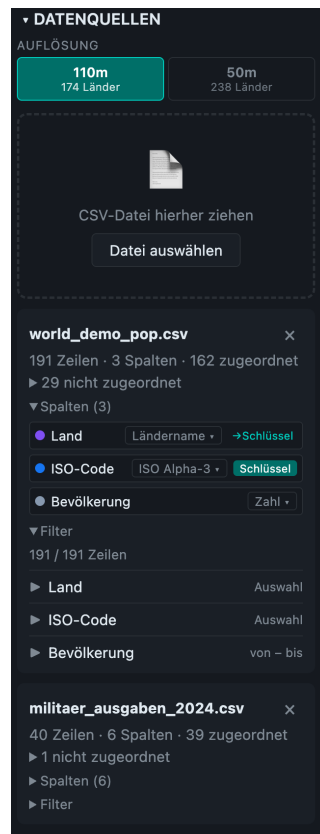
The screenshot shows the 'CSV-IMPORT' wizard for a file named 'militaer_ausgaben_2024.csv'. It displays a preview table with 40 rows and 6 columns. The columns are mapped to roles: 'Land' (Country Name), 'ISO2' (ISO Alpha-2), 'Ausgaben_Mrd_USD' (Number), 'BIP_Anteil_Prozent' (Number), 'NATO_Mitglied' (Text), and 'Region' (Text). A 'Key' button is next to the 'Land' column. A status message indicates that 39 out of 40 rows are mapped to the ISO2 role, and 1 row is not. A live match preview shows 2.3 matches for the 'BIP_Anteil_Prozent' column. The interface includes 'Abbrechen' and 'Importieren' buttons.

Land	ISO2	Ausgaben_Mrd_USD	BIP_Anteil_Prozent	NATO_Mitglied	Region
Ländername	ISO Alpha-2	Zahl	Zahl	Text	Text
USA	US	997.0	3.4	Ja	Amerika
China	CN	314.0	1.7	Nein	Asien
Russland	RU	149.0	7.1	Nein	Europa
Deutschland	DE	88.5	1.9	Ja	Europa
Indien	IN	86.1	2.3	Nein	Asien
Vereinigtes Königreich	GB	81.8	2.3	Ja	Europa
Saudi-Arabien	SA	80.3	7.4	Nein	Naher Osten
Ukraine	UA	64.7	34.0	Nein	Europa

Import wizard: preview table with role mapping and live match preview.

Changing roles later

Roles can be changed *after* the import as well. Click the **Columns** section inside the dataset card - the column editor opens. Changing a role or the key triggers automatic re-matching; you do not need to re-upload the file.



Column editor inside a dataset card.

Tip: You can load multiple CSV files at once and distribute them across layers. That lets you combine, for example, population numbers as a choropleth and flight routes as arcs - all in a single scene.

4 Country Matching & GeoJSON

For Plenum Globe to know *which country* a row refers to, each row is matched against an entry in the GeoJSON. Plenum Globe indexes every country by five fields:

- **ISO Alpha-2** - DE, FR, US, JP
- **ISO Alpha-3** - DEU, FRA, USA, JPN (*recommended*)
- **ISO Numeric** - 276, 250, 840, 392
- **Country Name** - “Germany”, “France”, “United States” (fuzzy matching)
- **Admin name** - fallback for alternative spellings

Country names are matched regardless of diacritics, case, or prefixes like “The” or “Republic of”. The most robust option, however, is **ISO Alpha-3** - unambiguous and language-independent.

Border resolution

The world GeoJSON ships in three resolutions, switchable at the top of the left sidebar:

110m	174 countries	Quick overview, no microstates
50m	238 countries	Good compromise, includes island nations
10m	244 countries	Maximum coverage, detailed borders

Switching resolution automatically re-matches all loaded datasets against the new GeoJSON - no re-import required.

Tip: Start with **110m**. Only switch to **50m** if you need island nations or microstates. **10m** is useful for close-up views only, at a small performance cost.

5 Filtering Data

Sometimes you only want to visualise a slice of your CSV - e.g. only European countries, only NATO members, or only values above a threshold. Plenum Globe supports **per-dataset**, **per-column filters**. Filters apply live to every layer that uses the dataset - choropleth, bars, points and arcs.

Opening filters

Inside each dataset card on the left sidebar you will find a collapsible **Filter** section. When a filter is active, a coloured dot appears next to the heading. The filter header shows live how many of the original rows still pass (e.g. *12 / 27 rows · filter active*).



Expanded filter section with an active multi-select.

Two filter modes

Plenum Globe picks the right filter type for each column automatically:

<p>Set Text, ISO, country name</p>	<p>Multi-select list with every distinct value in the column. Tick or untick individual values - only ticked ones appear on the globe. Quick links "All" / "None" at the top right.</p>
<p>min - max Numeric columns</p>	<p>Two number inputs. Leave one empty for an open bound (e.g. only max = 0.30 EUR/kWh, no min). The displayed <i>data range</i> shows you what the column contains.</p>

Effect on colour scale & legend

Filters do not just change which countries appear on the globe - they also change **the computed value domain**. Example: filter the worldwide electricity-price dataset to Europe only, and the colour scale stretches across exactly the European min/max. The gradient stays meaningful instead of being washed out by a single outlier. The legend updates automatically.

Clearing filters

- **Single column** - re-tick all values in the set, or clear min/max
- **All at once** - the “Clear all” link at the top of the filter section
- **On dataset switch** - filters live with the dataset and stay intact even if a layer is moved to a different CSV

Saved with the project

Filters are written into the **.plenum3d** project file. Anyone opening your file sees the exact same data slice - and can still adjust filters at any time. The underlying CSV stays complete; filtering never deletes rows.

Tip: Filters are non-destructive: load big, generic CSVs (e.g. worldwide population, 200+ countries) and use filters to derive different **views** of the same data - no need to maintain multiple CSVs.

6 Creating Layers

A visualisation in Plenum Globe is composed of one or more **layers**. A layer binds data from a dataset to a visualisation type. Layers stack - you can, for example, put a choropleth layer in the back and overlay points or arcs on top.

Adding a new layer

At the top of the right sidebar there is a **+ New Layer** button. Click it to create a new layer - by default a choropleth. Change the type at any time using the segmented control inside the layer card.



The layer panel with several layers - one card expanded.

The four layer types

Choropleth	Countries coloured by value. The classic for country-level comparisons.
3D Bars	Countries raised as bars with height proportional to the value - intuitive for rankings.
Points	Marks individual coordinates. Uses Lat/Lng columns directly, or falls back to country centroids.
Arcs	Curved connections between two countries. Perfect for flight routes, trade flows, migration patterns.

Shared settings

- **Name** - inline-editable, shown in the legend
- **Visibility** - eye icon to show/hide
- **Data source** - which dataset supplies values
- **Value column** - which column drives the visualisation
- **Colour scale** - 19 presets or custom colours
- **Opacity** - slider affecting all colours of the layer
- **Delete** - trash icon removes the layer

7 Choropleth - Colouring Countries

The choropleth layer is the entry-level visualisation: each country gets a colour matching its value. Low value = light colour, high value = dark colour (or vice versa, depending on the palette).



Choropleth layer: countries coloured by value.

Required data

- A country column (ISO A2/A3/N3 or name), marked as the **key**
- A numeric value column

Colour tips

- **Sequential** palettes (Blue, Viridis) for values with a natural zero
- **Diverging** palettes (Red-Blue, Spectral) for deviations around a midpoint
- **Viridis** and **Turbo** are colour-blind friendly and high contrast

Legend

Below every layer card a legend appears with a gradient bar and min/max values in number format with thousands separators.

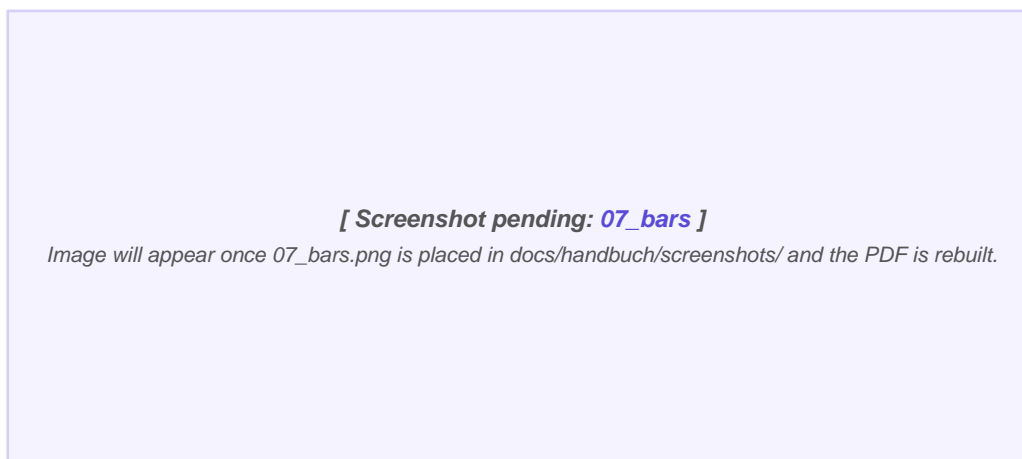


Legend with gradient bar.

Tip: Unmatched countries stay uncoloured. Check the “matched / unmatched” statistic in the data panel - if many rows are unmatched, the cause is usually inconsistent country names. Using ISO Alpha-3 as the key column solves this reliably.

8 3D Bars

Where the choropleth uses area, 3D bars use **height** as the visual dimension. Each country becomes a standing bar whose height is proportional to its value. Especially effective when values span a wide range.



3D bars with varying heights per country.

Settings

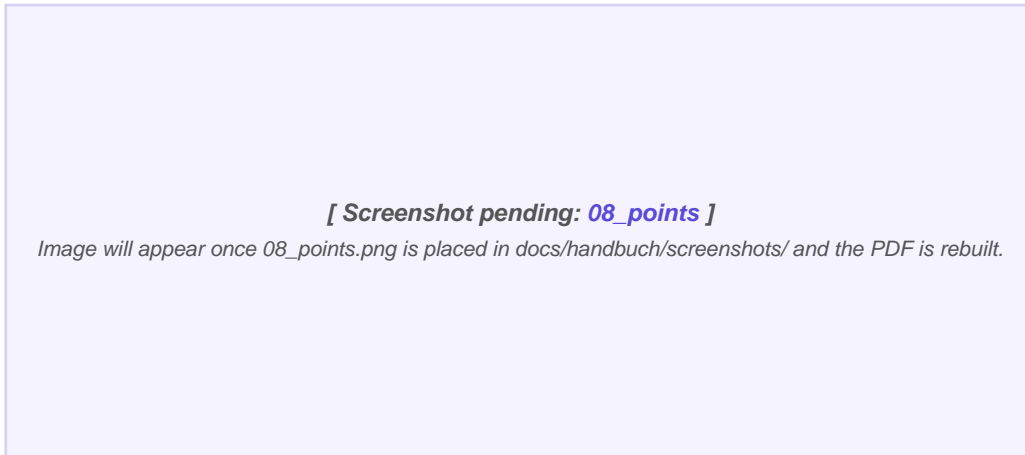
- **Value column** - drives the bar height
- **Colour scale** - can visualise a second dimension simultaneously
- **Height scale** - maximum bar height (if bars become overwhelming)

Tip: 3D bars look best with a slightly tilted camera. Right-click and drag to lower your viewpoint until you reach a near-tangential view - that is where the bars reach full spatial impact.

9 Points

The points layer places markers on the sphere. Plenum Globe picks one of two modes automatically:

- **Lat/Lng mode:** If the dataset contains columns with the roles *Latitude* and *Longitude*, points are placed exactly on those coordinates. Ideal for cities, POIs, sensors, or events.
- **Country mode:** Without Lat/Lng columns, points are placed on country centroids via the matching key.



Points layer with precise Lat/Lng coordinates.

Settings

- **Point radius** - slider controlling size
- **Colour scale** - if a value column is set, points are coloured accordingly
- **Opacity** - works via the shared slider

10 Arcs - Connection Curves

Arcs are elegant curved lines between two points on the sphere. They are ideal for visualising **flows, connections, or relationships** - flight routes, migration, trade, phone traffic.



Arcs between countries, animated and coloured by intensity.

Required data

- A **start** column with countries (ISO or name)
- A **target** column with countries
- Optional: a **value** column for colour and stroke width

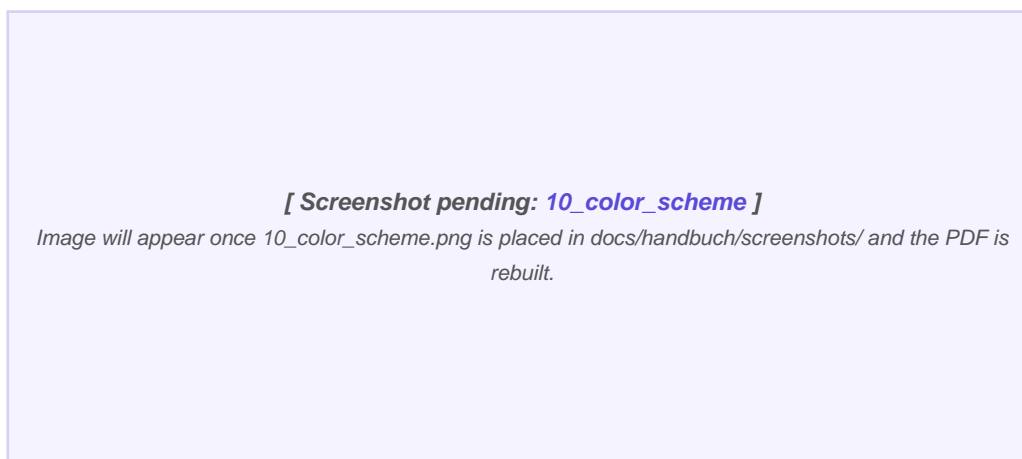
Settings

- **Arc altitude** - how far the arc rises above the sphere
- **Stroke width** - uniform or value-driven
- **Animation** - flowing motion along the arc

Tip: Many arcs can quickly look cluttered. Drop opacity to 40-60% so the arcs can overlap without blocking the view of the sphere.

11 Colour Scales

Plenum Globe ships **19 presets** plus a custom option. Selection happens via the **gradient picker** with coloured previews per option - not via a text dropdown.



Gradient picker with previews per palette.

Palette groups

- **Sequential, single-hue:** Blue, Green, Red, Orange, Violet, Grey
- **Sequential, multi-hue:** Viridis, Inferno, Plasma, Magma, Cividis, Turbo, Yellow-Red, Yellow-Blue
- **Diverging:** Red-Blue, Red-Green, Spectral, Pink-Green, Brown-Teal
- **Custom:** 2 or 3 colour stops (min, optional middle, max) with colour pickers

Which palette when?

- **Sequential** - when values have a natural direction (low → high)
- **Diverging** - for deviations around a zero point (growth vs. decline)
- **Viridis / Cividis** - best options for accessibility
- **Spectral / Turbo** - when you want the full colour spectrum

Tip: The custom palette lets you match layer colours to a corporate identity. With three stops (e.g. white → blue → dark blue) the gradient stays smoother than with only two stops.

12 Globe Textures

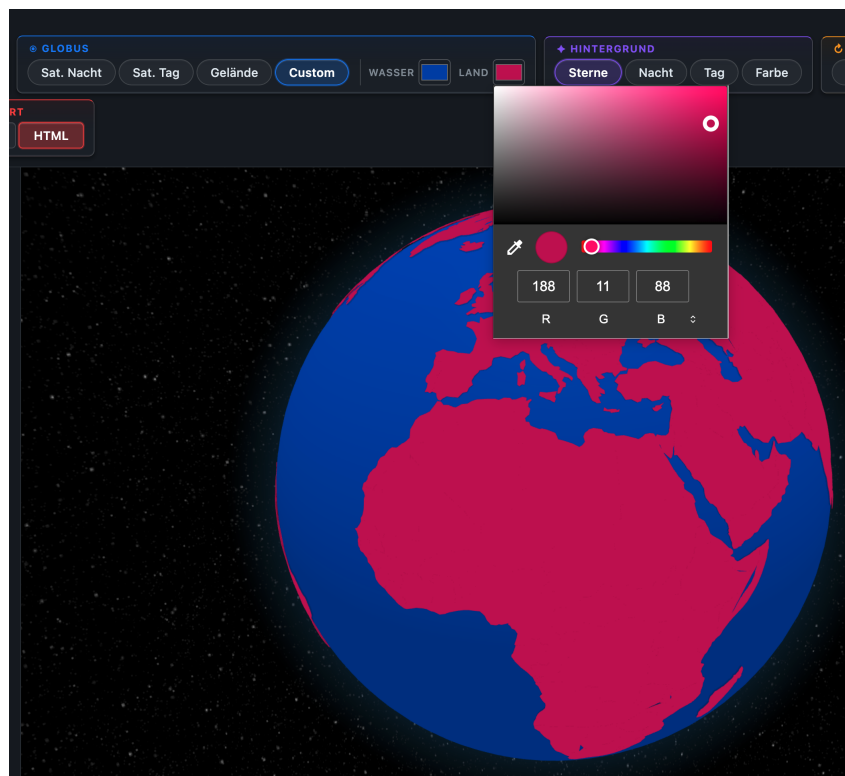
The skin of the Earth is freely configurable. Plenum Globe ships four options that can be combined with any background.

The four textures

Sat. Night	NASA Black Marble - lit-up cities, perfect with a star background
Sat. Day	NASA Blue Marble - realistic daylight Earth with clouds
Terrain	Topographic map - continents, mountains, oceans
Custom	Procedural texture from two colours: water and land freely configurable

The custom texture

When you pick **Custom**, two colour pickers appear next to the button - one for the **water colour** (the entire ocean) and one for the **land colour** (all continents). The globe is restyled in seconds to match your brand, without painting any texture maps.

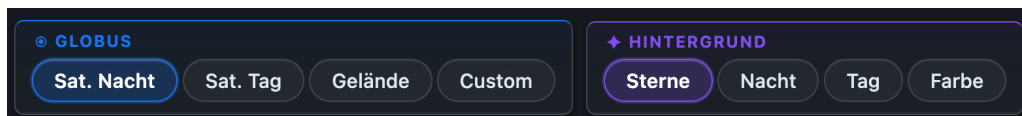


Custom texture with water and land colour pickers.

Tip: The custom texture is not just decorative: it is practical for presentations with strong branding or for screenshots that need a quieter background than the realistic satellite textures.

13 Background

The background is decoupled from the texture - any combination is possible. You can show a realistic satellite Earth over a starfield, or a custom-coloured Earth on clean white for print output.



Toolbar group "Background" with colour picker.

Options

- **Stars** - NASA starfield panorama
- **Night** - solid black, dramatic and neutral
- **Day** - light blue, friendly and calm
- **Colour** - colour picker for any background colour

Tip: For **presentations** "Night" (black) works best - the globe glows and the data pops. For **print material** switch to "Colour" on white or paper-beige.

14 View, Rotation & Atmosphere

The **View** group in the toolbar controls the camera and optics:

Auto-rotation

A toggle starts the automatic rotation of the globe. The adjacent speed slider controls how fast the sphere spins. Perfect for kiosk views or moving screenshots.

Atmosphere

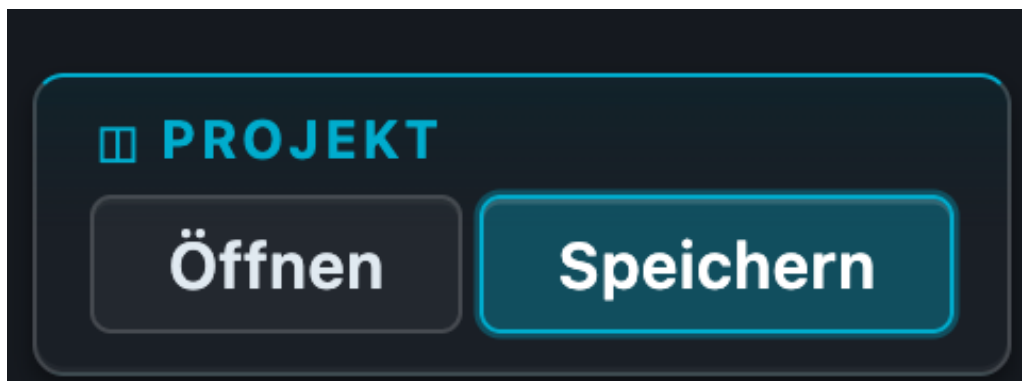
The atmosphere toggle draws a soft glowing halo around the globe. It is purely aesthetic but lends the sphere a lively spatial feel - particularly in combination with the starfield background.

Manual control

- **Drag** - rotate the globe
- **Scroll** - zoom
- **Right-click + drag** - tilt the camera

15 Saving & Loading Projects

Any scene in Plenum Globe can be saved as a **project file**. The project contains all layer settings, texture and background selection, rotation state, and the list of loaded datasets (including the role mapping, but **not the raw CSV data**).



Project group in the toolbar: name, save, open.

Saving

1. Enter a name in the project field.
2. Click **Save**.
3. The save dialog appears - pick a location.

The file uses the extension `.plenumglobe` and is a human-readable JSON document.

Loading

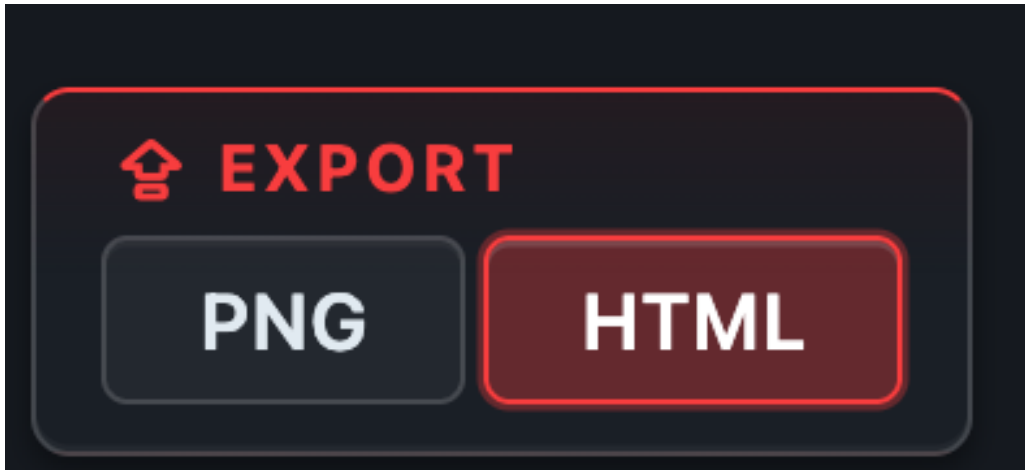
1. Click **Open**.
2. Select the `.plenumglobe` file.
3. The app rebuilds layers, textures, and settings.

The CSV files referenced by the project need to be loaded separately - ideally from the same path as when the project was saved.

Tip: Projects are perfect as **templates**. Create a template project with your preferred texture, background colour, and auto-rotation - and open it every time you start fresh with new data.

16 Export (PNG & HTML)

Two export formats are available - each with its own strength.



Export results: PNG image (left) and interactive HTML file (right).

PNG export

Clicking **PNG** in the toolbar produces a screenshot of the globe in its current state. The default filename is plenum-globe.png; only the sphere is captured, no sidebar, toolbar, or legend. Ideal for presentations or social media.

HTML export

The **HTML export** produces a standalone file containing the interactive globe: rotatable, zoomable, with tooltips. The HTML opens directly in any browser - no server, no npm, no dependencies. The globe library is inlined.

The export includes every layer, the current texture, the background, and the colour schemes - but **not the editor UI**. Perfect for sending results via email or embedding them in a blog.

Tip: The HTML export embeds the CSV data as JSON. The file is therefore self-contained and works fully offline. Showing it on an intranet or within a presentation requires no internet connection.

17 Language & Interface

Plenum Globe speaks **German** and **English**. The switch is at the top right of the toolbar as a **DE / EN** toggle. The language affects all UI elements including dialogs, tooltips, and the legend - the data itself stays unchanged.

The language preference is persisted in browser LocalStorage and restored on the next launch.

18 Licence & Purchase

Plenum Globe is available in three variants:

- **Mac App Store** - standard install like any other app
- **Direct Mac (.dmg)** and **Windows (.msi)** - direct purchase via pixelplenum.com, paid through Paddle
- **Web demo** - free at pixelplenum.com/plenum-globe/demo, with import limits

Licence activation (Direct version)

On first launch of the Direct version, the **licence dialog** appears. Enter the licence key you received by email after purchase and click **Activate**. The key is validated once against the [pixelplenum](https://pixelplenum.com) licence server and then cached locally. The app works offline indefinitely after the first activation.

App Store version

The App Store version runs immediately after download with no licence key required - payment is handled by Apple.

Web demo

The web demo runs directly in the browser, unlimited in use, but with a few restrictions: CSV files up to 1 MB, export as PNG only (no HTML), and a subtle footer hint. For production use the desktop versions are recommended.

Tip: Questions about licensing, purchase, or feature scope? Get in touch at support@pixelplenum.com.