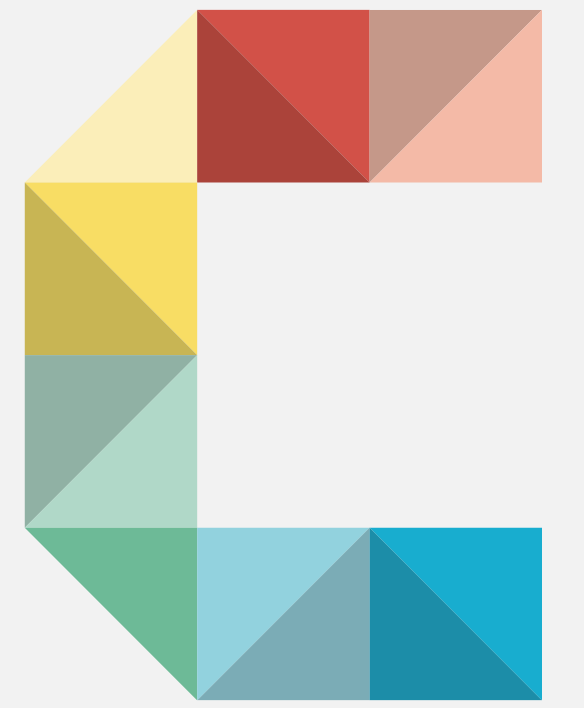


Visualizing Glacier Loss

Case of study: Rhone Glacier

A Journey Through Time and Climate Change



by LESLY BAUTISTA BUENDIA and PAULA MARTÍN CASTILLO

This project is an interactive storytelling that highlights the impact of climate change on the Rhone Glacier, designed to be easily understood by both experts and the general public. We used various visual elements, including satellite images, historical images, maps, and a 3D model, to simplify the information and enhance accessibility. The goal is to effectively convey the message and create an emotional impact on users, fostering a deeper connection to the issue.

DATA COLLECTION

The vector data used originates from GLAMOS (Glacier Monitoring Switzerland) [1] and the Swiss Geoportal [2]. Additionally, we downloaded Sentinel-2 images from July and August [3] and created composites to mitigate gaps caused by cloud masking. Historical photographs were also incorporated to provide additional context.

IMPLEMENTATION

After compiling the results gathered from different sources during data collection, the 3D model creation took place using Blender, an open-source software for 3D modeling and rendering. The model was built using a combination of vector data and the DEM of the local area. The webpage was coded with JavaScript, HTML, and CSS. GitKraken and GitHub were used for

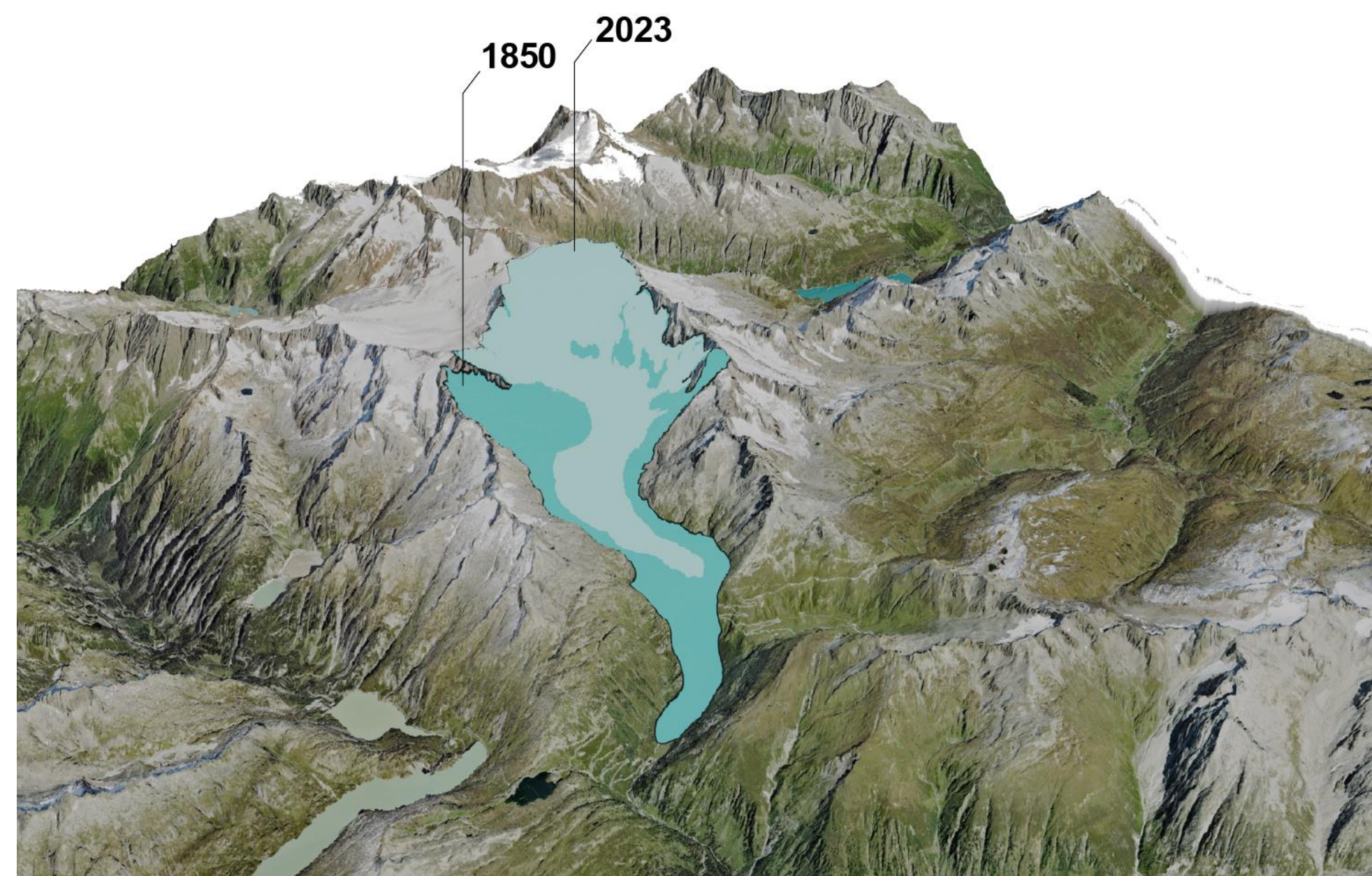


Fig. 2: 3D model from 1850 to 2023 the glacier's journey through time

version control and hosting. The focus during the creation of the interface was on maintaining a clear structure and appealing design to capture the user's attention. Additionally, the products generated after data collection were integrated, with a strong emphasis on visual animations to effectively convey the main message of the project.

ANALYSIS AND DISCUSSION

Sentinel-2 satellite images reveal that changes in the ice cover are variable and depend on the climatic conditions of each year. Glacier inventories suggest that the Rhone glacier still covers a larger area than what is visible in the

satellite images. This discrepancy occurs because the southern segment of the glacier consists of a thin layer of ice mixed with rock, as shown in the images collected from the Rhonequelle Area [4], where meltwater flows from the glacier's source.

PERCEPTION STUDY RESULT

Experts and the general public find the webpage effective in conveying its message and easy to understand. Users appreciate its clear structure, compelling visuals, and scientific relevance, which raise awareness about glacier retreats. Additionally, the design is visually appealing, emphasizing scientific relevance and raising awareness about glacier retreats. What is important to notice is that it also serves as a **call to action**, encouraging users to take steps toward addressing the issue.

CONCLUSION & LIMITATIONS

The main idea of this project—glacier loss—was effectively conveyed and well-received by users. According to the perception study results, the webpage is clear, engaging, and successfully maintains the user's focus, with some calls to action included. However, as the team is still learning web design, there are limitations in developing more complex functions and making the webpage more interactive..

IMPRINT

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KEYWORDS

Rhone Glacier, climate change, glacier retreat, 3D model, climate awareness.

LINKS

<https://leslybautista.github.io/rhone/>

<https://arcg.is/1zbWDv2>



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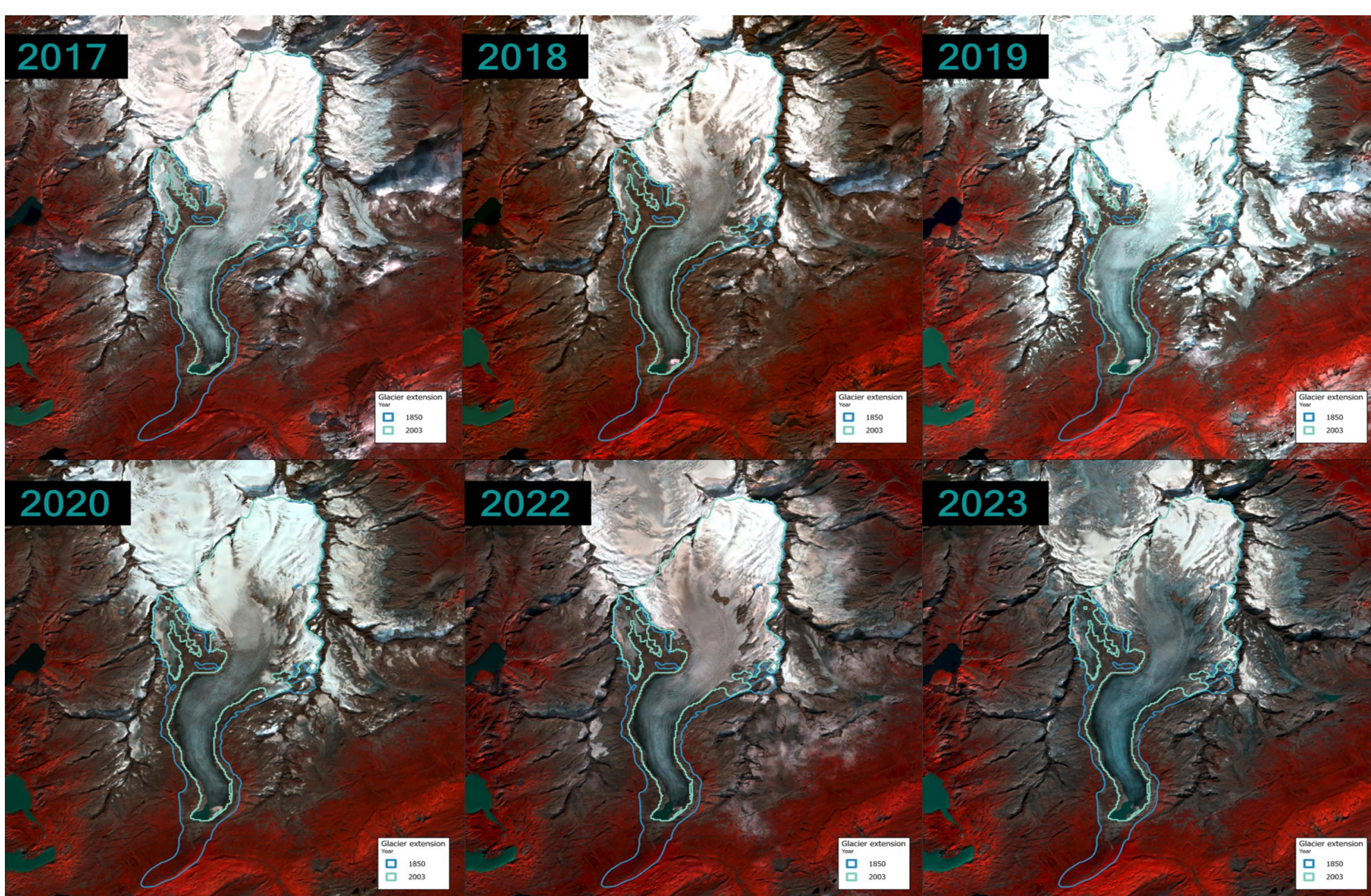


Fig 1: Sentinel-2 Imagery: Glacier Retreat (2017 - 2023)

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