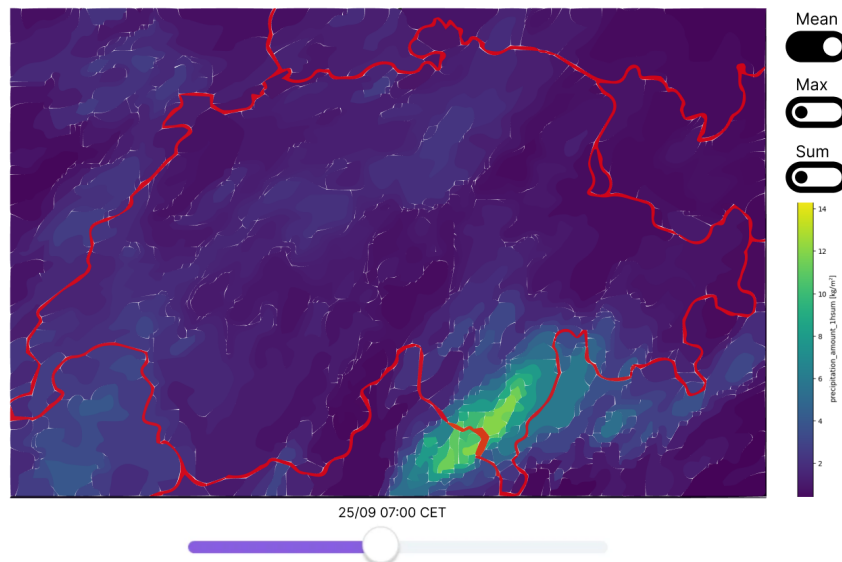


Group Meteo

Introduction

Our project consists of two primary visualizations. The first one aims to enhance the user's understanding of the prediction system used by Meteo Swiss, while also providing insights into how the various ensemble members (possible realisation of how the weather could behave over the next few days) differ and change over time and location within Switzerland, for a period of five days. The second visualization is more akin to a standard weather forecast map, but with added interactivity and a clearer way of presenting the prediction and its uncertainty over the course of a week. For both of our visualizations, we will be using the d3.js library, as we have learned in our course on interactions. Additionally, we used the course on maps to have an idea on how to display the information in a clear and effective manner.

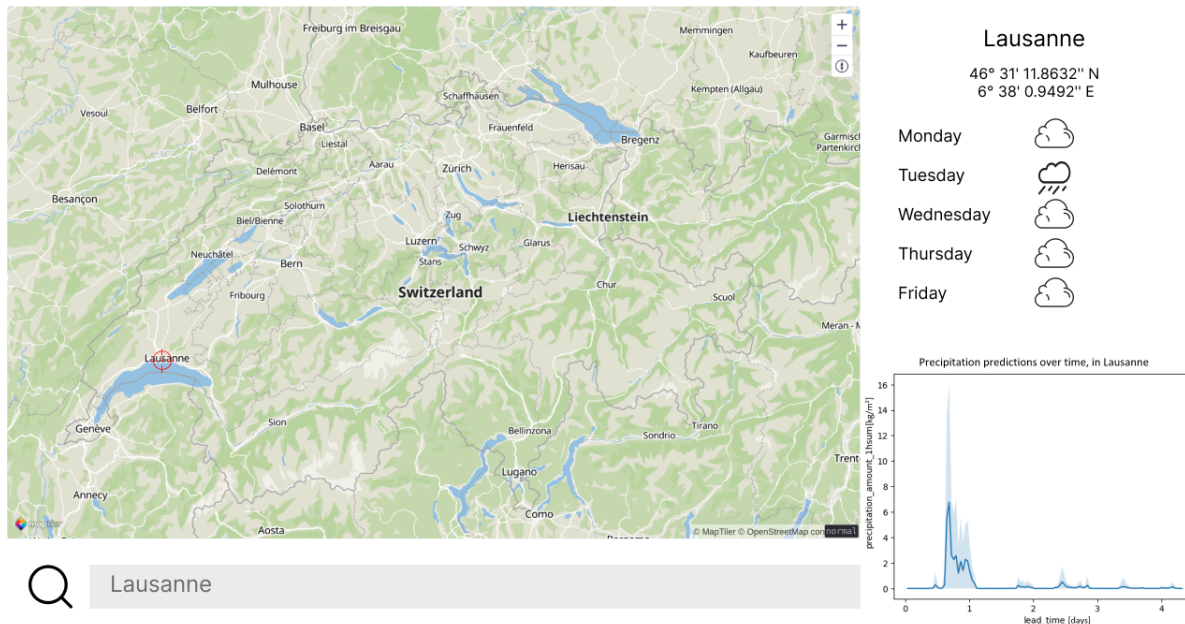
Visualization 1



The aim of this visualization is to help the user understand diverse range of possibilities coming from a numerical forecast model. Each ensemble member represents a potential weather pattern that may emerge over the next few days. Through this map, the users can explore the spatial and temporal variability of the precipitations, with various toggles that allow them to switch between different modes of interpretation.

- The mean: to gain an understanding of the overall forecast trend.
- The max: To view the places with the most rain possible and the ones with no risk of rain at all.
- The sum: can be used to highlight areas with the greatest contrast in weather patterns

Visualization 2



The main objective of the second visualization is the present weather prediction aggregated by location, allowing the user to view predictions for a given point in space over the next five days. To avoid overwhelming the viewer with information, we provide the prediction when a location is clicked on or searched. This interactive feature enables users to explore the dataset for a specific point, thereby adding depth to the visualization compared to what we had seen in the example weather forecast during the third exercise session. We also keep the map in view, which helps to situate the prediction within Switzerland and gain a better sense of the whole. Moreover, the light blue shades on the map highlight the different possibilities of the predictions, providing an intuitive way for users to understand the range of possible precipitations at a glance.

Adding interaction with user

We recognise that our visualizations are more tool-like than story driven, but there is potential to incorporate storytelling into our work by engaging with the user. An extra idea to our project could be to start by explaining how the prediction system works using the first visualization. Then, we could ask the user a series of questions to better understand their preference such as whether they prefer rainy or sunny days, e.g they are looking for a spot to read a book on a rainy day. With this information, we could highlight the location in Switzerland that most likely fits their needs. This would provide a more immersive experience that would blend our weather forecast and some visualizations.

Functional prototype

Our initial website already implements the most critical parts of the first visualization, it displays a map with the precipitations and allows to user to navigate through time, we built it using Maplibre for the map and React for the overall structure, which allows us to make it very interactive despite not using a specialized data visualization library such as D3 which would not have been optimal for our use case of displaying an interactive map, however for future visualization we plan to add another library more oriented on data visualization to provide in-depth graphs. The website is currently published using GitHub Actions and Pages at <https://com-480-data-visualization.github.io/project-2023-meteo/>.