

*Retention basins as a new dynamic water system*



Country /City .....

University / School .....

Academic year .....

Title of the project .....

Authors .....

Switzerland / Zurich

ETH Zurich

2022 - 2023

AcquaAlpina

Laura Elsener, Arianna Lurati



## TECHNICAL DOSSIER

<b>Title of the project</b>	AcquaAlpina
<b>Authors</b>	Laura Elsener, Arianna Lurati
<b>Title of the course</b>	al di là, climate-change adaptation of infrastructural landscape
<b>Academic year</b>	2022 - 2023
<b>Teaching Staff</b>	Martina Voser, Coralie Berchtold, Yann Junod, Sofia Prifti
<b>Department / Section / Program of belonging</b>	D-ARCH Department of Architecture / Landscape Architecture / Studio Voser
<b>University / School</b>	ETH Zurich



### " Retention basins as a new dynamic water system "

Climate change is affecting the Gotthard Massif, leading to an increase in heavy rainfall events and raising the risk of natural disasters such as debris flows and floods. Simultaneously, prolonged periods of drought are occurring. These two extremes result into water either flowing too fast, without being absorbed by the soil or a lack of water altogether. Considering these new circumstances, "AcquaAlpina" seeks to address the following question: " How can we shape our landscape - from the mountain peaks to the lowest points of the Airolo valley - so that natural extremes can be reinvented, tackled as potential and reintroduced as beneficial? " By implementing two systems—control and retention—we can alter the water dynamic. In the alpine area, retention basins are strategically designed to regulate the flow of the Vallascia and Dragone creeks, thus preventing debris flows. Within the cultivated landscape above Airolo, rainwater is stored in basins, slowing down runoff and facilitating passive infiltration for irrigation purposes. These water basins also serve as spaces where the presence of water can be celebrated and new spatial opportunities are emerging.

For further information

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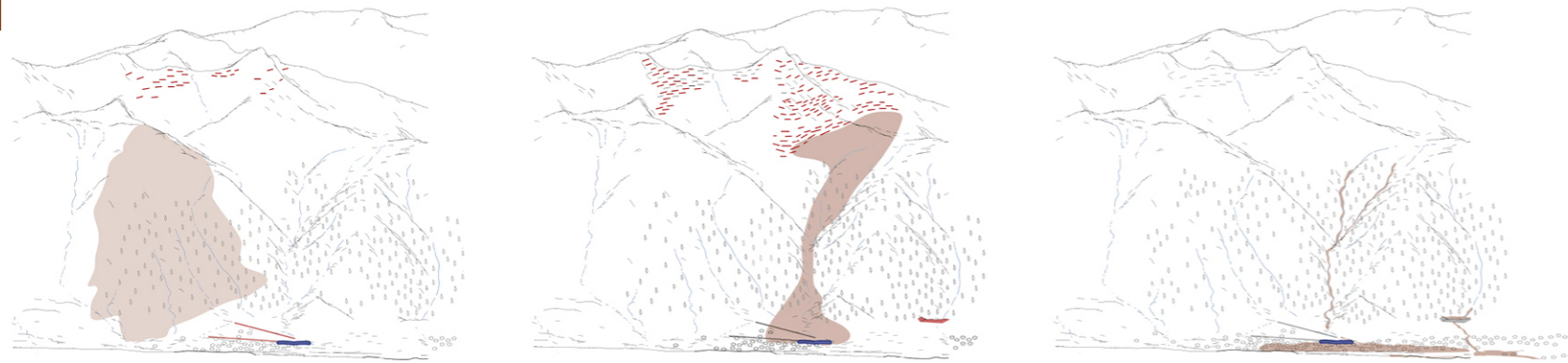
COAC - Colegi oficial d'Arquitectes de Catalunya

Carrer Arcs, 1-3  
08002 Barcelona - Spain

12th International Biennial Landscape Barcelona

Barcelona October 2023

**SCHOOL PRIZE**



1898  
Rockslide - Sasso Rosso

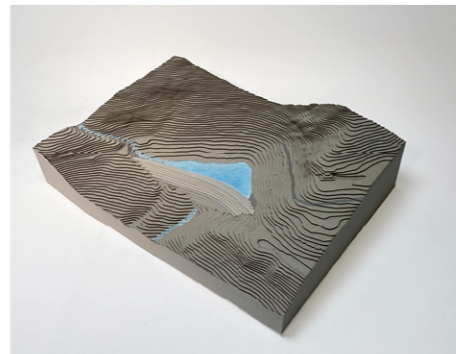
1951  
Avalanche - Grande Valanga

Today / Future

Construction of a protection stone wall

Construction of the first snow-protection, steel structures

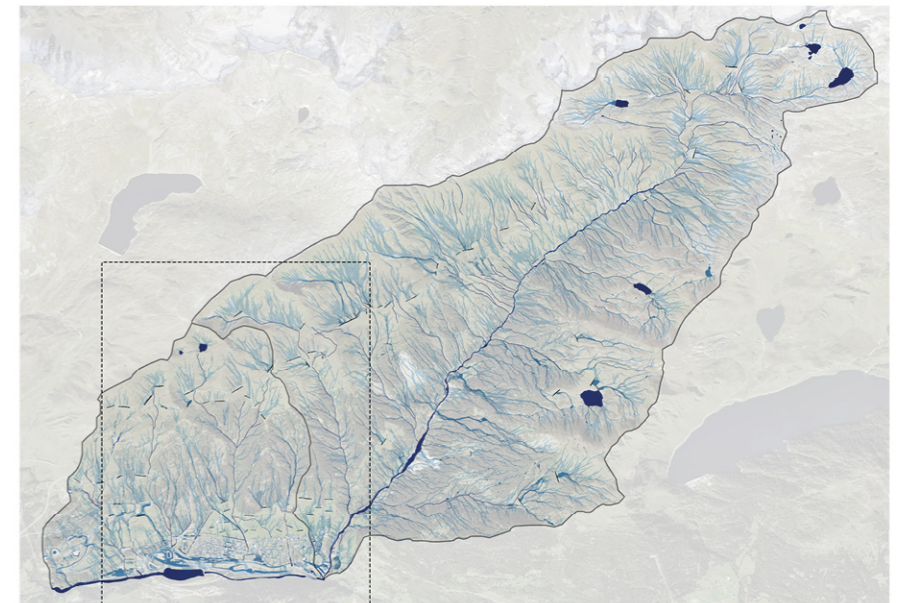
Project AcquAlpina



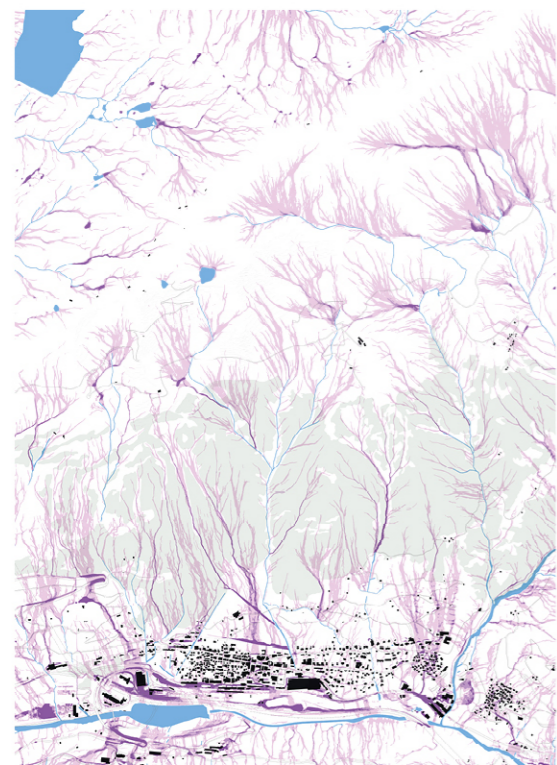
Natural hazards / infrastructural projects timeline



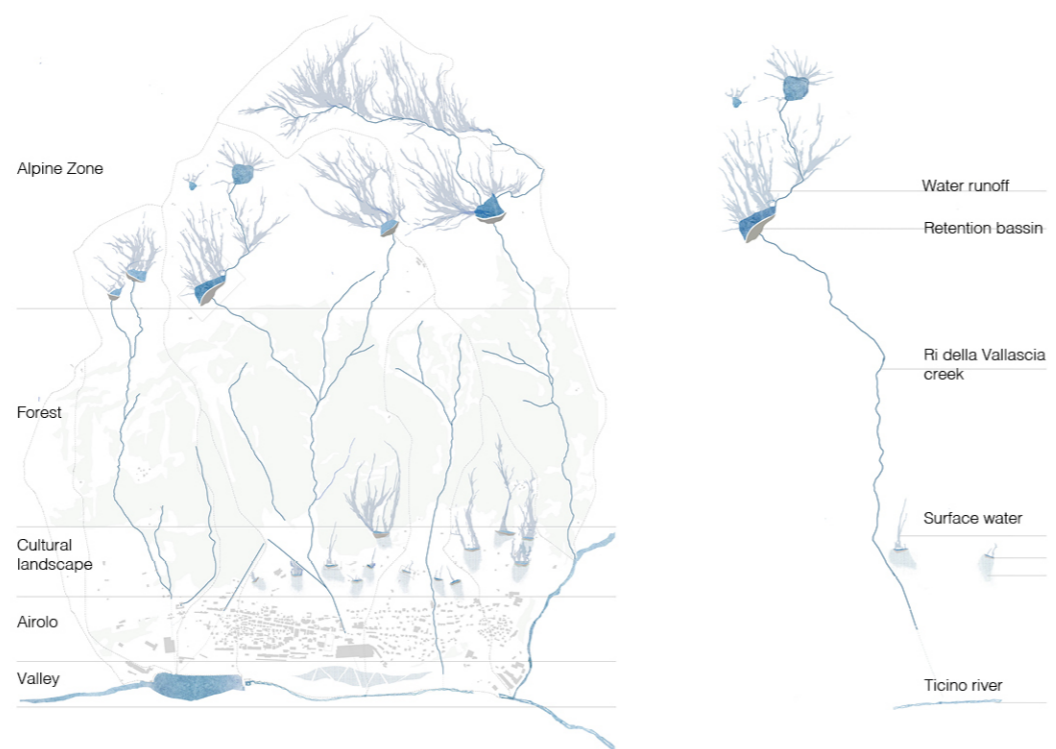
Esprit du lieu



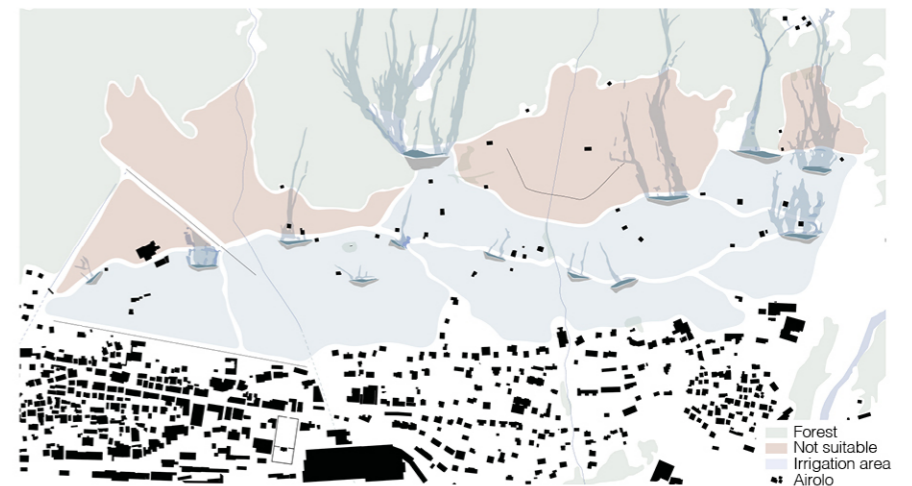
Surface water map \_ research on potential locations for water basins



Map of the existing surface water runoff



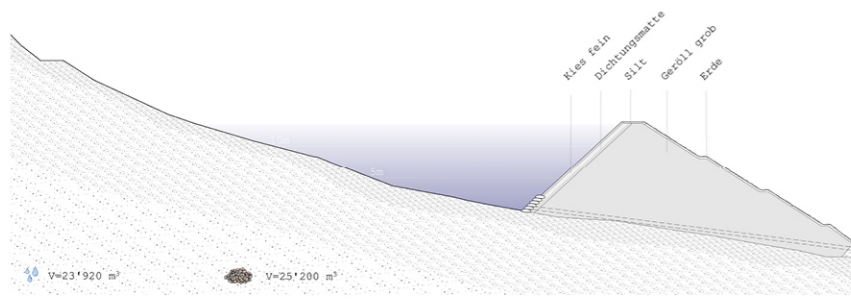
New water system and distribution



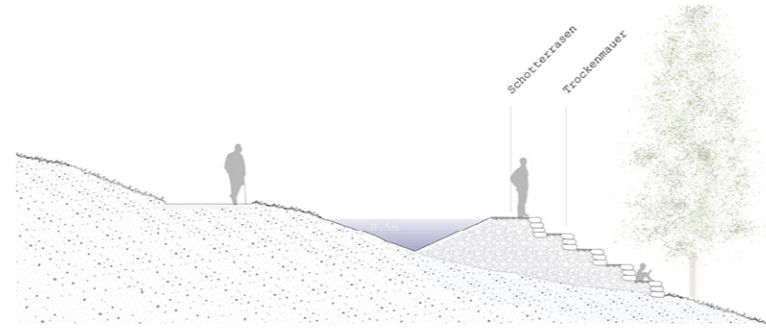
Suitability map



Gotthard Massiv \_ climate-change adaptation of infrastructural landscape



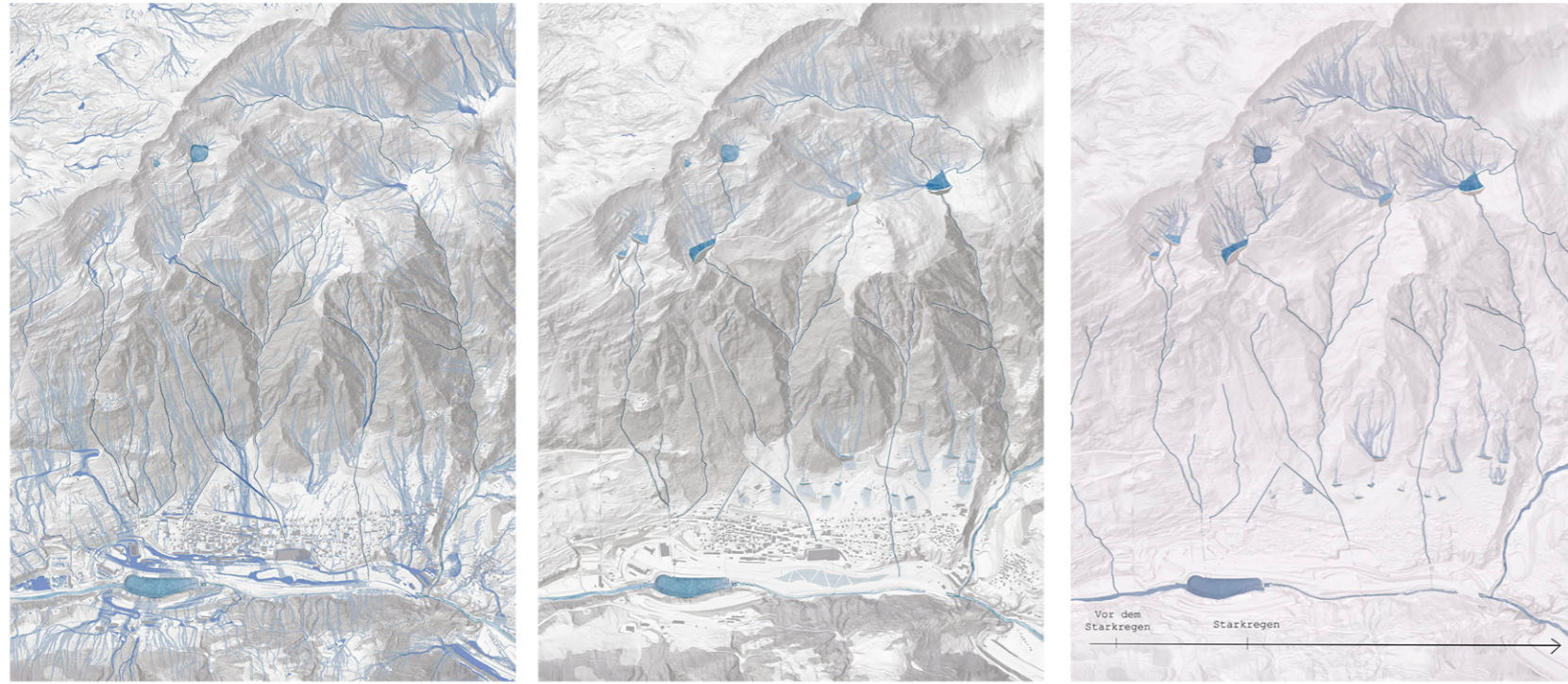
Retention basin in the alpine zone



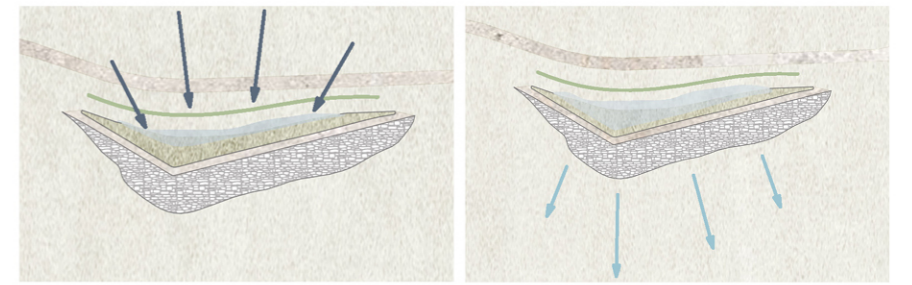
Retention basin above the village of Airolo



The various water basins embedded smoothly in the mountain foot above Airolo



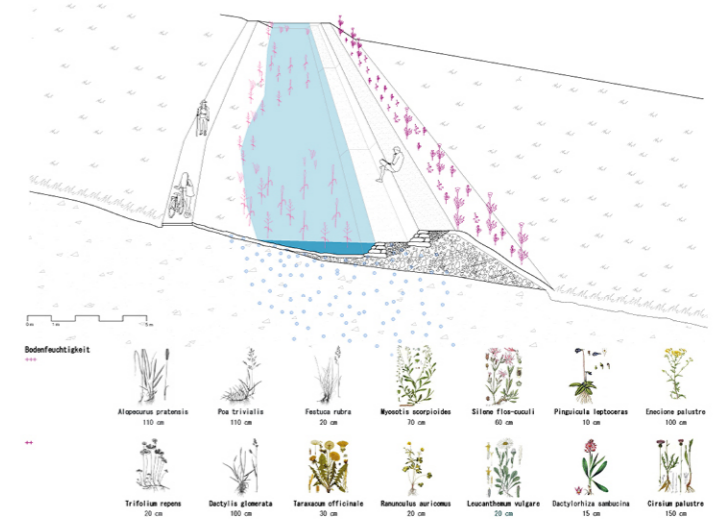
Water dynamics evolution



Water storage, infiltration and distribution



Vision of Airolo \_ before and after the intervention



Establishing new natures

