

Urban and village fires as semi-meteorological events

The case of inner-Alpine Swiss settlements facing Foehn storms

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11th ESEH Conference
Bristol
4-8 July 2022



- Causes for urban and village fires in the Alps
 - Triggers
 - Fire-promoting factors
 - Early prevention strategies
- Foehn storms in the Alps
- The Grisons, a canton of Foehn valleys
 - Spatial and temporal distribution of village fires
- Meiringen (Canton of Bern): a village hit twice in 12 years
- Reconstruction of the villages
 - Late 19th century: innovative building materials
 - Interwar period: a return to traditional building techniques

Urban and village fires in the Alps

Main causes and contributing factors

- Causes and triggers
 - Lighting strike
 - Arson
 - Earthquakes
 - Spread of forest fires
 - Flying sparks from steam railways
- Fire-promoting factors
 - House fire
 - Shingle roofs, wooden construction of houses in general
 - Fireplaces for crafts
 - Room and street lighting
 - Houses standing close together
 - Strong winds
 - Lack of readily available fire-fighting water

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Urban and village fires in the Alps

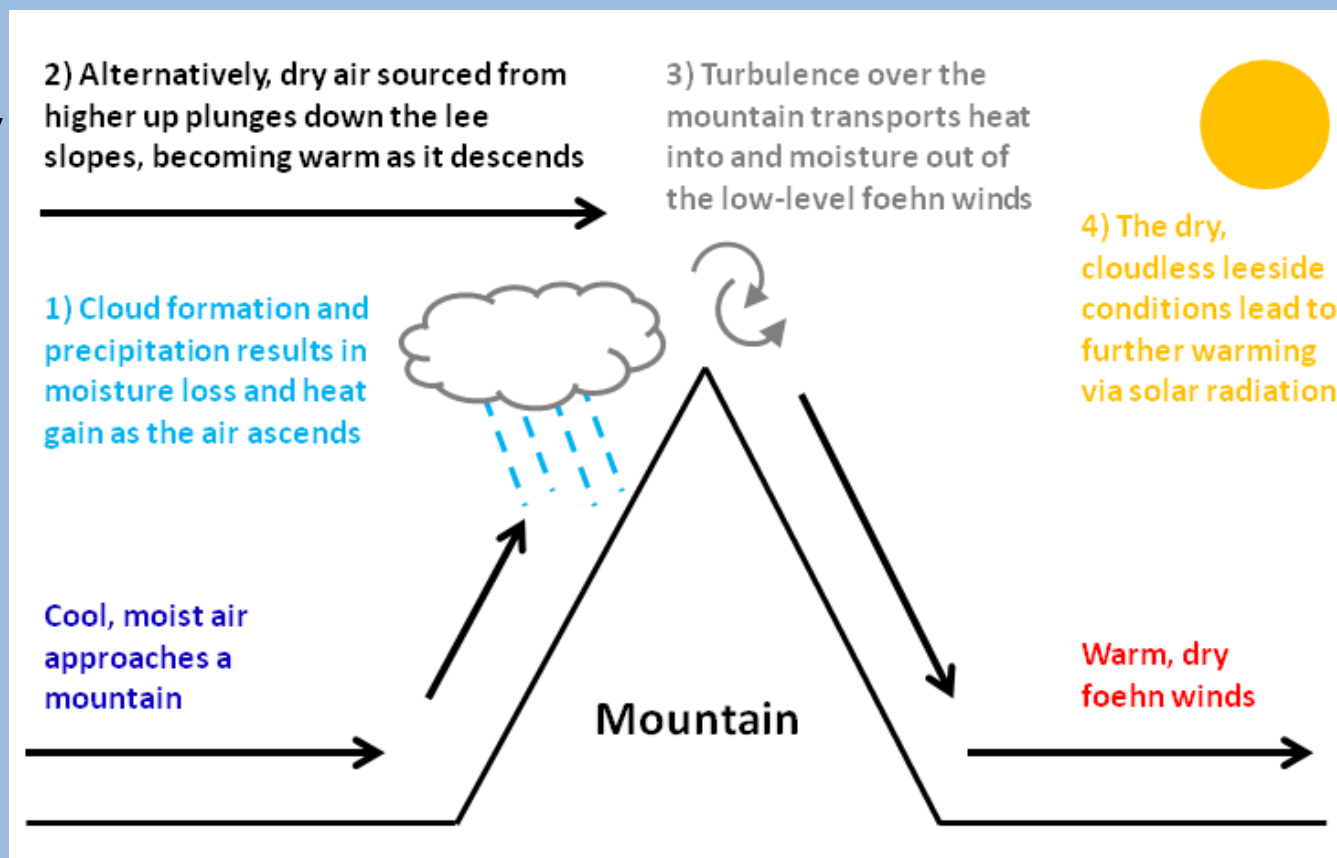
Early risk and prevention strategies

- Roofs
 - Wood, stone and straw as the most important traditional materials for roofs, depending on the region
 - Shingles used mainly north of the main Alpine ridge
 - Decline of shingles in major towns since the Middle Ages (risk of fire)
 - Bern: Fire Ordinances of 1806 and 1818 as well as Cantonal Fire Regulations of 1819 largely prohibit shingles



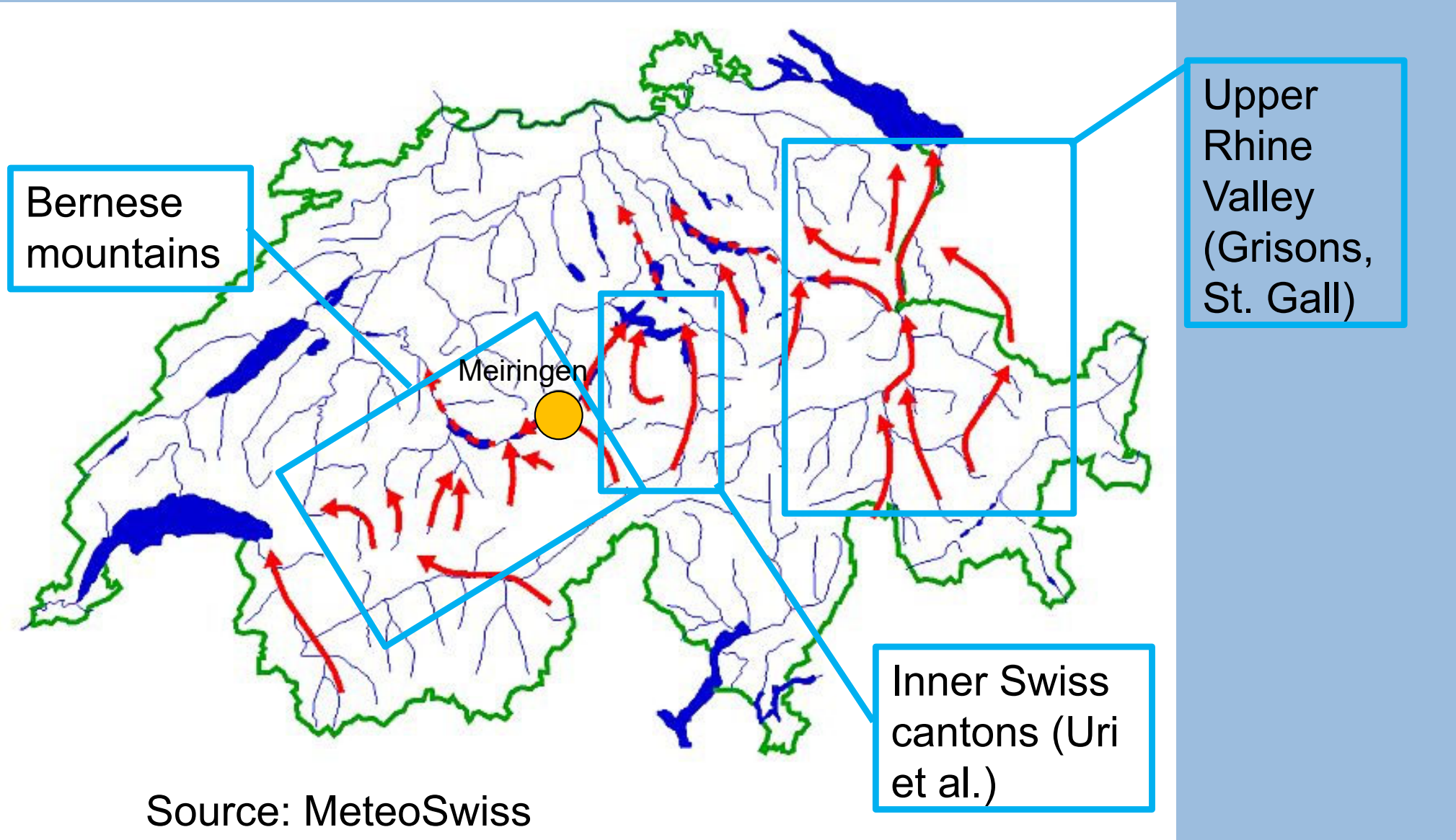
Foehn storms

- Foehn storms
 - Dry and relatively warm downslope wind
 - Lee side of the Alps (northern)
 - Frequent in the winter half-year
 - Speed up to 180 km/h



Source: Wikimedia Commons, based on Elvidge & Renfrew 2016

Foehn storms in the Swiss Alps



Source: MeteoSwiss

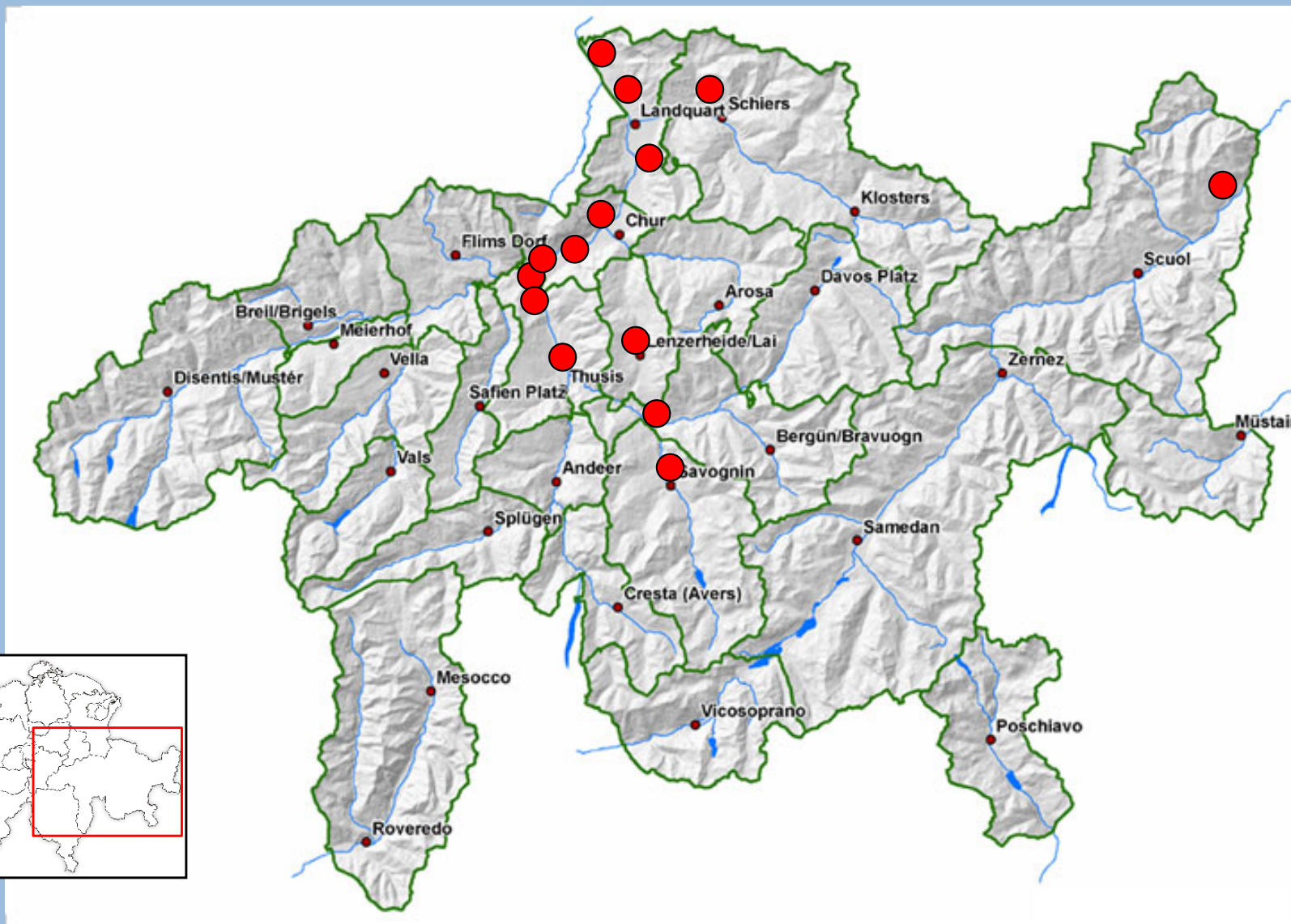
Urban and village fires in the Alps

The situation in the Grisons

- A land of mountains and valleys
 - Upper reaches of the Rhine and its tributaries dominated by Foehn and other storms
 - Prone to water scarcity in dry years
 - Traditional stone-and-timber construction of houses
- High frequency of village fires
 - 13 major fires documented for the 17th century
 - 53 major fires documented for the 18th century
 - 92 major fires documented for the 19th century
- Larger part of the better documented fires of the 19th and early 20th century related to storms and/or very dry conditions
- Decrease of frequency only in the first half of the 20th century
 - More effective firefighting

Urban and village fires in the Alps

Grisons: major village fires explicitly related to storminess (1800-1916)



Urban and village fires in the Alps

Meiringen 1879 and 1891

- Meiringen before the fires of 1879 and 1891
 - Until 1879 mostly wooden houses in Meiringen
 - Only one village well for fire-fighting water
 - Foehn storms quite frequent in the Haslital valley
 - Upcoming international tourism (cf. Sherlock Holmes)
- Village fire of 10 February 1879
 - 110 residential buildings destroyed, 455 homeless
 - Afterwards still wooden houses, but hard roofing
 - Installation of a hydrant network
- Fire of 25 October 1891
 - Large area of destruction again due to Foehn storms
 - One fatality, 183 houses destroyed, 854 homeless
 - Chessboard-like reconstruction of the village

Urban and village fires in the Alps

Meiringen before the fires of 1879 and 1891



Meiringen, Obere Gasse,
Pintenwirtschaft Sternen

Daguerreotype by Baron
Joseph-Philibert Girault
de Prangey, 1849

Source: Haslimuseum
Meiringen

Urban and village fires in the Alps

Meiringen 1891



View towards
the Hotel Du
Sauvage after
the fire of 1891.
Source:
Haslimuseum
Meiringen

Urban and village fires in the Alps

Meiringen 1891



View to the west after the end of the clean-up, probably spring 1892. Source: Haslimuseum Meiringen

Urban and village fires in the Alps

Meiringen 1891 as a media event



Gustav Schopen: The fire of Meiringen, 25 October 1891. Panoramic painting for a “Weltschau”. Source: Bern, Museum of Communication

Urban and village fires in the Alps

New regulations for the (re)construction of villages

- Grisons: Revolutionary ideas for the blueprint of newly erected villages
 - Based on first examples from Western Switzerland (1830s)
 - Richard La Nicca, cantonal engineer, and his team (1840s)
 - Rectangular grid structure of the streets
 - Used for villages destroyed by fire and other hazards (e.g. landslides)
- Amendments to the building regulations in Meiringen and other
 - “Foehn Decree” of 13 January 1892 and new Building Regulations of 3 February 1892
 - Stone construction for exterior walls mandatory
 - Absolute ban on shingle roofs
 - Even wooden frames for windows and doors prohibited
 - Installation of local fire guards (until Postwar Period)
 - Smoking ban during times of Foehn storms

Urban and village fires in the Alps

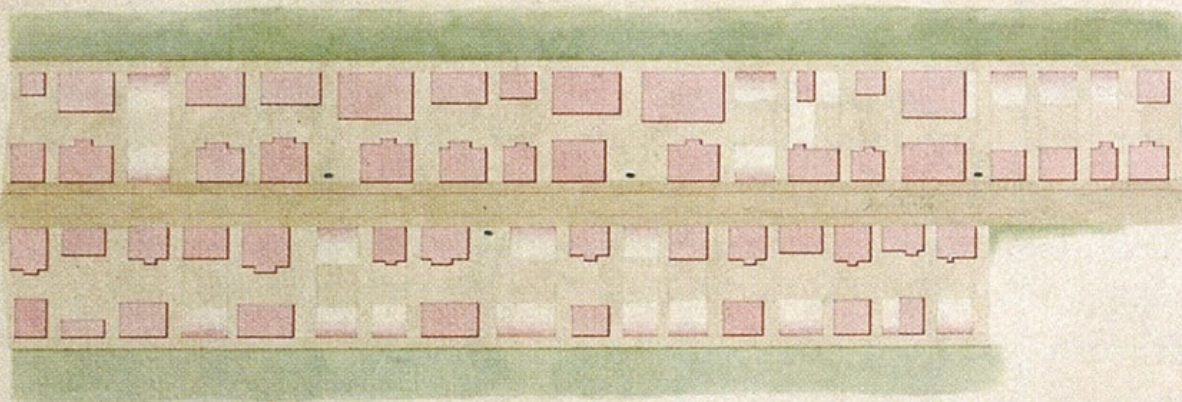
Neu-Thusis (Grisons), after the fire of 1845

Denografia del nuovo Borgo di Thusis 1784, 1745, 1848

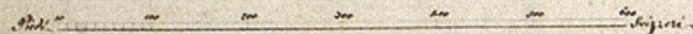
Profilo longitudinale



Denografia



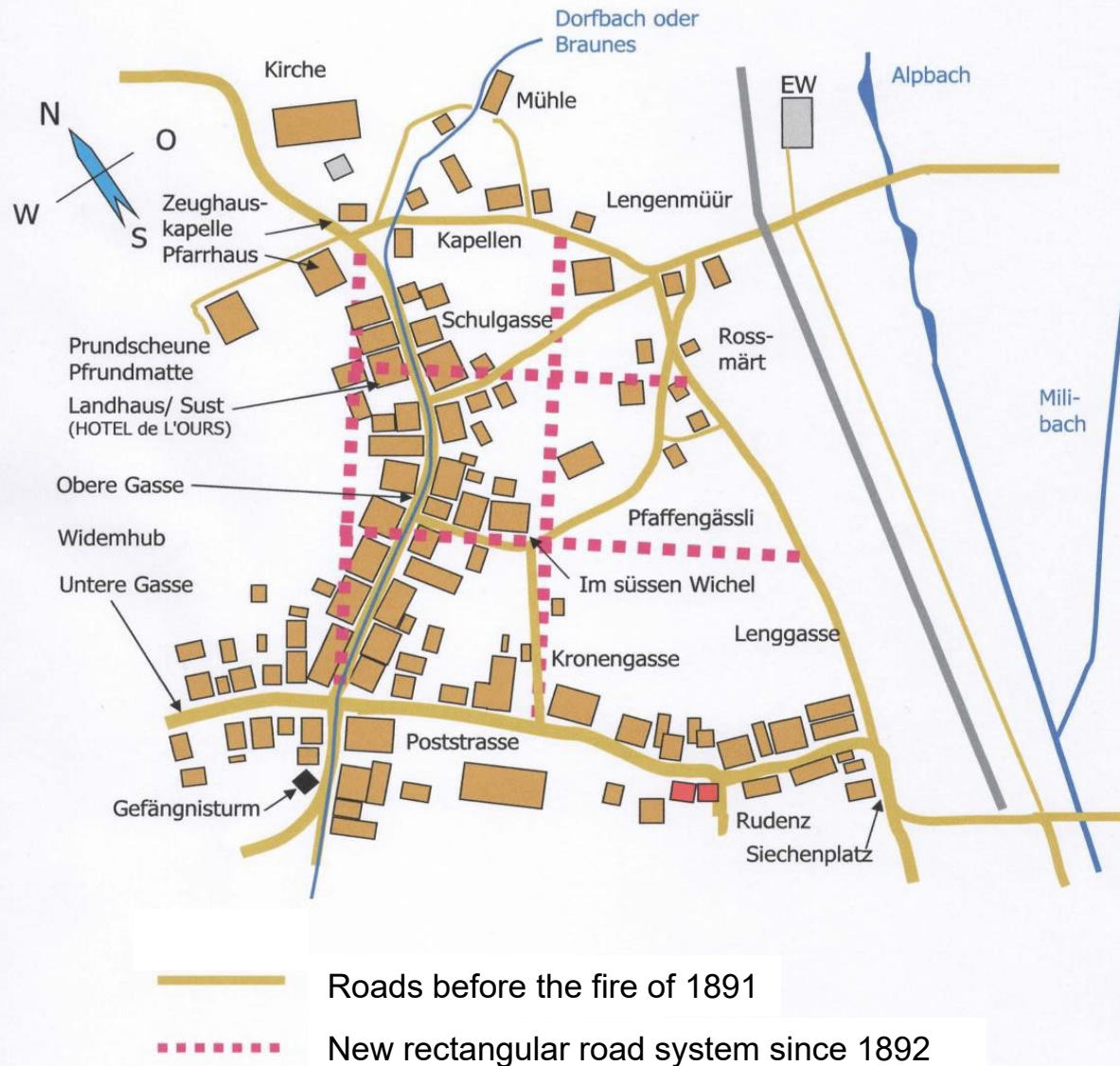
Profilo trasversale



Plans for the reconstruction of the Neudorfstrasse in Neu-Thusis, 1845/48
Source: Chur, Staatsarchiv Graubünden, Pläne "Dorfbrände" Thusis, Sig. 29.90/1

Urban and village fires in the Alps

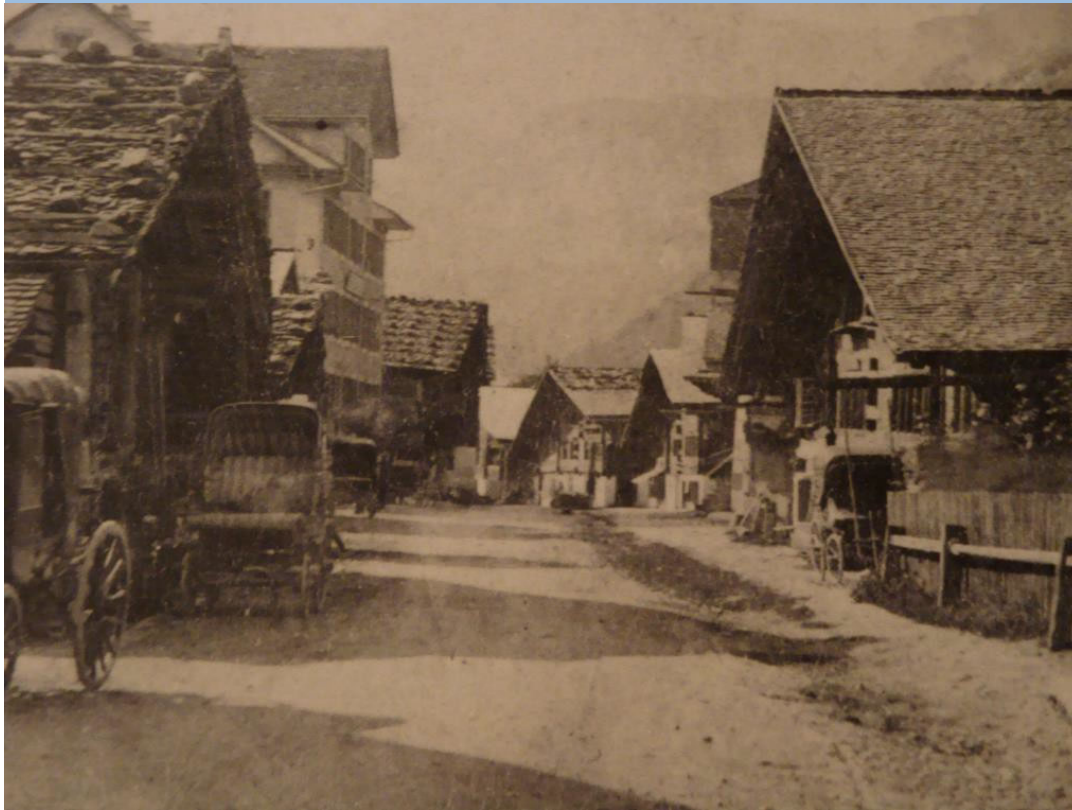
Meiringen after 1891



Alignment plan for Meiringen
Source: Haslimuseum Meiringen

Urban and village fires in the Alps

Meiringen before the fires of 1879/1891 and today



Dorfstrasse before the fires (presumably 1860s) and Kirchgasse today
Source: Haslimuseum Meiringen



Urban and village fires in the Alps

Bonaduz (Grisons), after the fire of 1908



Plans for the reconstruction of Bonaduz, 1910
Source: Chur, Staatsarchiv Graubünden, Dorfpläne, Sig. 29.112/2

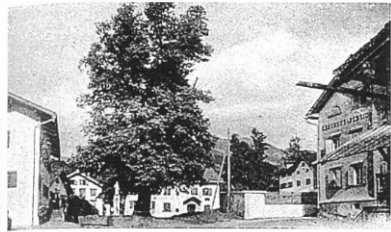
Back to old building traditions?

The *Heimatschutz* after 1900 and in the Interwar Period

- Controversial discussion on the new fire-proof style of houses
 - Changes in the size and position of properties
 - Stone-built houses without tradition in most of the inner-alpine valleys
 - Local topography not always suitable for broad, rectangular streets
- Countermovement from around 1900 onwards
 - *Schweizerische Vereinigung für Heimatschutz* (Swiss Society for Homeland Protection)
 - Critique to adapt urban building techniques for rural settlements
- Return to traditional rural village architecture in the 1920s
 - Partly crooked streets reinvented
 - Return of timber as building material
 - Combination of traditional house styles and modern, fire-proof material

Back to old building traditions? The Heimatschutz after 1900 and in the Interwar Period Good and bad examples (Heimatschutz journal, 1908)

BEISPIELE ≡≡≡≡≡ BON EXEMPLES GEGENBEISPIELE ≡ MAUVAIS EXEMPLES



DORFPLATZ IN FIDERIS, heimelig durch die uralte Linde und die stimmungsvollen Bauten, die ihn umgeben
UNE PLACE A FIDERIS, bien caractéristique par son vieux tilleul et l'encadrement des maisons



NEUER DORFPLATZ IN ZERNEZ, heimatlos durch die Unheimlichkeit
UNE PLACE MODERNE A ZERNEZ

BEISPIELE ≡≡≡≡≡ BON EXEMPLES GEGENBEISPIELE ≡ MAUVAIS EXEMPLES



DORFPLATZ IN FIDERIS, heimelig durch die uralte Linde und die stimmungsvollen Bauten, die ihn umgeben
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NEUER DORFPLATZ IN ZERNEZ von kläglicher, trostloser Nüchternheit
UNE PLACE MODERNE A ZERNEZ



= GUTES, ALTES BAUERNHAUS IN SCHULS =
= MAISON DE PAYSANS A SCHULS =



NEUE, HÄSSLICHE UND UNPRAKTISCHE BAUERNHÄUSER IM UNTER-ENGADIN.
UNE FERME MODERNE, LAIDE ET PEU PRATIQUE, DANS LA BASSE-ENGADINE.



NEUE BAUERNHÄUSER IN TAMINS (nach dem Brande). Erbaut nach den Plänen der Architekten Koch & Seiler und Nik. Hartmann in St. Moritz.
UNE FERME MODERNE A TAMINS. D'après les plans des architectes Koch & Seiler et Hartmann à St-Moritz



NEUE BAUERNHÄUSER IN TAMINS (nach dem Brande). Erbaut nach der beliebten unschönen Schablone
FERME BANALE A TAMINS

The village square of Fideris, made homely by the old lime tree and the atmospheric buildings that surround it

The new village square of Zernez, made of miserable, desolate sobriety

Conclusions

- Inner-alpine valleys exposed to an increased risk of village fires
 - Wooden structure of most buildings
 - Frequent Foehn storms and other strong winds
 - Lack of sufficient fire-fighting water supply
- Adaptation strategies since the mid-19th century
 - Reconstruction of villages with broad, rectangular streets
 - Stone buildings replace wooden structures
 - Cantonal Fire Ordinances and Regulations: introduction in many cases after disastrous events
 - Fire guard systems during Foehn storms
- Controversial discussions
 - Functional fire-proof houses vs. re-introduction of traditional building techniques and townscapes by the *Heimatschutz*

Thank you for your attention!

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