

THE NEW CENTENNIAL SNOW INITIATIVE FOR THE GREATER ALPINE REGION (GAR). STATUS REPORT AND FIRST RESULTS

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Abstract: Snow is a significant element in the climate system and has great impact on ecosystem and economy in the Alps, too. Astonishingly there is still a strong gap between the data potential and the data availability. Caused by the existing deficits we started a digitising, quality evaluation, homogenising and analysing initiative for the Alpine region. For the first time we can present a 21-year (1895-1915) daily, high density dataset that was electronically scanned from historic hydro-yearbooks for recent Austria and additional some surrounding regions in Italy, Slovenia, Croatia and Czech Republic. We hope that our snow initiative will grow to a pan-alpine effort to fill the existing lack of information.

Keywords - snow initiative, daily data, greater alpine region, high density dataset

1. INTRODUCTION

The widespread public opinion is “If temperature increases, snow will decrease”, but in fact it is much more complicated and needs further sophisticated investigation. The data needs for an adequate treating of snow variability research at high resolution in space and time afford a new approach which we want to describe here.

It was a first attempt to collect data and overcome the existing deficits simultaneously. We electronically scanned 878 stations (265 without existing data gap) of 7 river basins: Adige, Danube, Drave, Mura, Morava, Rhine and Sava. The high number of stations is essential for homogenising and analysing, particularly for a spatially highly variable climate element like snow in a complicated topography as given in the Alps.

2. METADATA

The first step of this Austrian contribution was to create a metadata file. Variability of altitude, longitude, latitude and the correct spelling of the station turned out to be problematic. The number of stations taken was quite vast.

Lots of stations had another nomenclature from 1895 to 1916. Within this timeframe many stations had belonged to Austria, caused by the two World Wars country borders and for this reason station's names have changed. For example three mountains historically called Schneeberg now are named Schneeberg in Austria, Monteneve in Italy and Snježnik in Slovenia.

3. SNOW INITIATIVE

To exemplify this snow initiative the following figures demonstrate the high data quality and quantity. It depicts the applicability of the dataset in the river basin Adige above and lower than 1000 m.

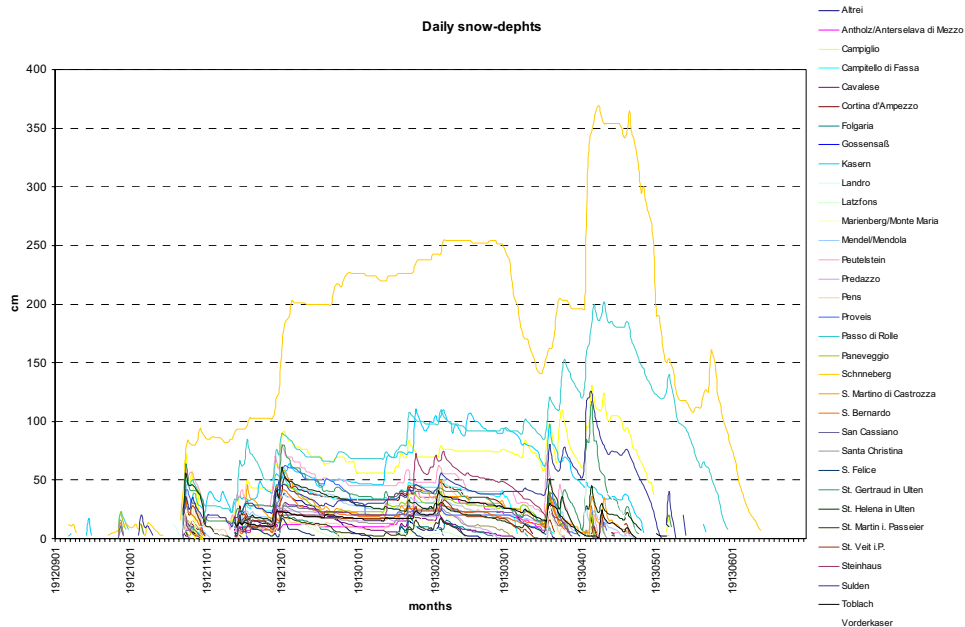


Figure 1. Daily snow depths [cm], winter 1912/13, river basin: Adige, stations above 1000 m

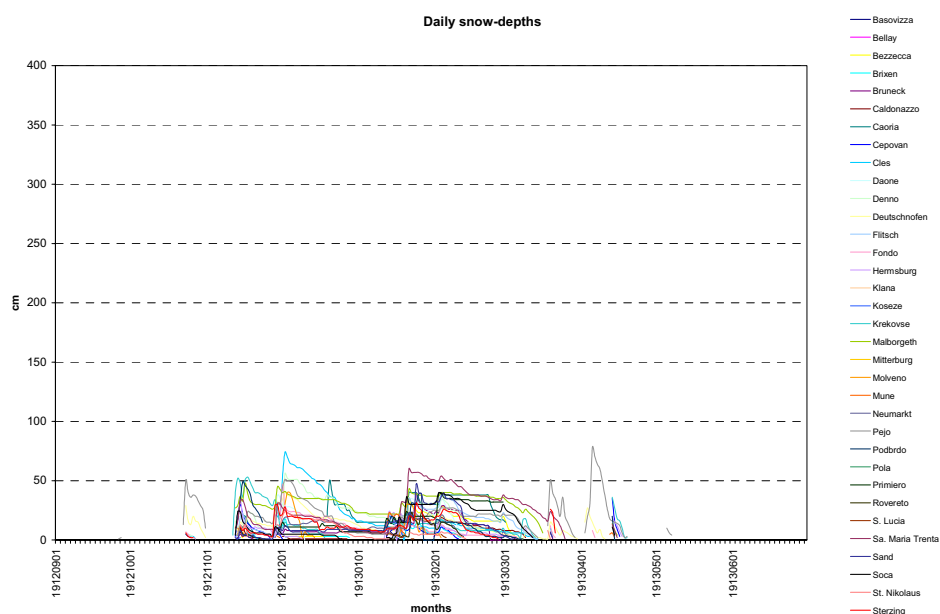


Figure 2. Daily snow depths[cm],winter 1912/13, river basin: Adige, stations lower then 1000 m

4. OUTLOOK

We hope that we can soon present some first results comparing the early period (1895-1915) with a recent one (1983-2003), we chose these two time slices because one is before and the other one after the main warming event of the 20th century. This work is in progress. The two time slices at high spatial resolution will be used to show examples, how snow has generally reacted to the (Alpine-wide highly

similar) temperature increase in selected sub-regions and different altitudes. Our aim is to fill the 1916-1982 data gap for Austria and maybe for other countries within the year 2005. Also we want to homogenize the long-term daily snow series for Austria within the project ALP-IMP, which runs till May 2006.

5. CONCLUSION:

In a nutshell: Our statistical analysis is vast and has means and probability of enormous output. For any further statistical evaluation everybody is invited to cooperate.

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