Data Rescue for precipitation station network in Slovak Republic

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ABSTRACT

Transparency of archive catalogues presents very important task for the data saving. It helps to the further activities e.g. digitalization and homogenization. For the time being visualization of time series combination in precipitation stations (approximately 1250 stations) is under way in Slovak Republic since the beginning of observation (meteorological stations gradually began to operate during the second half of the 19th century in Slovakia). Visualization is joined with the activities like verification and accessibility of the data mentioned in the archive catalogues, station localization according to the historical annual books, conversion of coordinates into UTM, WGS and hydrological catchment assignment. Clustering of precipitation stations at the specific hydrological catchment in the map and visualization of the data duration (line graph) will lead to the effective assignment of corresponding precipitation stations for the prolongation of time series. This process should be followed by the process of sum or trend detection and homogenization. The risks and problems of verification of records from archive catalogues, their digitalization, repairs and the way of visualization will be seen in poster. During the searching process of the historical and often short time series, we realized the importance of many those stations, located in the middle and higher altitudes. They might be used as replacement for up to now quoted follow-up points used at the construction of precipitation maps. Supplementing and enhancing the time series of individual stations will enable to follow changes in precipitation totals during the certain period as well as area totals for individual catchments in various time periods appreciated mainly by hydrologists and agro-climatologists.

Fig. 1 Time series – hypothetical series

Accessibility of data from precipitation station network (first 250 from 1213) for 1871-2014

Fig. 2 Station Frequency

Accessibility of data from precipitation station network (251-500 from 1213) for 1871-2014

Fig. 3 Catchments

Accessibility of data from precipitation station network (501-750 from 1213) for 1871-2014

Fig. 4 Precipitation station network 1871-2014 in catchments

Accessibility of data from precipitation station network (751-1000 from 1213) for 1871-2014

Fig. 5 West River Catchments

Accessibility of data from precipitation station network (1001-1213 from 1213) for 1871-2014

Fig. 6 Data processing

Fig. 7 Data assembly

Fig. 8 Data integration (homogenization)

Fig. 9 Mountain stations (not digitalized) – altitude occurrence

Fig. 10 Mountain stations (not digitalized) – precipitation station network

CONCLUSION

Development of the data rescue knowledge base – Data Rescue is the ongoing process of preserving all data at risk of being lost due to deterioration of the medium and digitizing current and past data into computer compatible form for easy access. The establishment of the data rescue team plays important role and its activities have a high priority within WMO. Programs that are national activities have been encouraged to start. In poster the basic steps during the data rescue process have been mentioned. Many problems dealing with station names consisting of more words, or having been written down twice or more times in the catalogue under the identical time of observation concerning place and position of the station in annual books had to be solved where assigning code for line graph (F. 1) describing the time series. Most of the precipitation data have not been digitized yet (Fig. 2). Professional staff is shrinking (retiring) and students cannot substitute this kind of work. Daily or monthly data have to be decided for digitizing. Project for data rescue should be supplied and managed internationally. Precipitation data dropping in certain catchment (e.g. there is depicted the catchment of the Horn River) play significant role for the assessment of river flow rate and runoff downstream (especially for hydology, Fig. 3, 4 and 5), snow loading and water source cover, preparation of standards and, determination of areas from the point of avalanche alert as well as tourist. These knowledge lead us to the future solution of mountain stations operated often by foresters (Fig. 6 and 7) and situated in very interesting and significant altitudes in such a way as to include the data from these stations into the future data processing. Homogenization of precipitation data of individual catchments will result in possibility to compare precipitation relations in the respective seasons in connection with hydrological relations of the same season and catchment for surface as well as ground water.

REFERENCES

http://www.wmo.int/pages/prog/wpp/precipitation.php