

NEW WAYS IN THE MANAGEMENT OF FLOOD EVENTS

LOCAL SOLUTION-ORIENTED EVENT ANALYSIS AFTER THE FLOOD DISASTER IN AUGUST 2005 IN THE BERNESE OBERLAND

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The storm disaster in August 2005 was the largest event in the canton of Berne for the last 150 years relative to the spatial extent, the variety and intensity of the processes observed and the damage. Large parts of the Bernese Oberland were affected, with effects down to the lower part of the canton along the large rivers (Fig 1). The three day precipitation period with high lying snow line, caused a broad spectrum of processes. Within the three days period debris flows as high up as the permafrost area were released, similarly to the disaster in summer 1987; in mountain rivers a “never seen before” bed load transport occurred, and as in the flood event in 1999 riparian areas around the lakes and along the big valley rivers where flooded – all this happened in a single event.

ORGANISATION OF THE EVENT ANALYSIS

After this event it became clear very fast that it would be useless to proceed with the same management- and planning-procedures as before. The partially new process patterns and the extent of process areas had to be considered while coping with the event. This meant that before definitive protective measures could be taken, the event not only had to be documented, but also analysed. On the other hand the people in the affected regions expected immediate acting. Together with the Federal Agencies the following allocation of tasks was specified:

- The canton immediately accomplishes event documentation and analyses in the main damage areas as far as it is necessary for planning emergency and rebuilding security measures (so called local solution-oriented event analyses or LLE). The canton thereby supports the municipalities which usually are responsible for hydraulic engineering by law.
- The federation accomplishes a thematically comprehensive and nation wide analysis and considers the results of the LLE where it makes sense. For this analysis approximately two years are intended.

The cantonal authorities immediately mandated six teams composed of experts in geology, geomorphology, hydraulics and engineering to carry out the LLE's in the six main damaged areas. Where possible, persons were mandated who already had a good knowledge of the area for instance from hazard mapping.

The management of the whole project was done by the cantonal water management authority, supported by an external technical coordinator (Fig. 2). The individual LLE's were under the direction of of the regional water management authority.

In context of the LLE, statistical analyses of precipitation and discharge were carried out. Furthermore, the key processes which significantly influenced the course of those events were

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documented (map scale 1:10'000), analysed and quantitative process parameters were derived, for example using sediment transport models. The results of these analyses have supported the decision whether measures have to be dimensioned for this event and supplied the general conditions and quantitative parameters for the elaboration of the concept for protective measures. The results of the LLE constantly flowed into the planning of emergency and rebuilding protective measures.

EXPERIENCES WITH THE LLE'S

Already one week after the event, the first analysis teams were in service and a few weeks later the first rough concepts for protective measures were presented to the engineering teams and the local authorities. Some concepts contained also radical decisions such as resettlements and building prohibitions in existing settlement areas. Such measures could only be achieved because the analyses provided well supported arguments for the discussion with the local authorities and the population. Thus a solid basis for objective discussions was created. Further also new ideas and concepts could be integrated into the measure plans due to those analyses.

This method brought a heavy burden for the collaborators in the LLE teams, since only little time was available to work out the documents, on the other hand very important and far-reaching decisions had to be made. However the experiences with this method are very good. The main advantages are:

- Rapid availability of important information. Findings from the actual event can be taken into consideration for the planning of protecting measures.
- Local Authorities are provided with up to date information right from the start of the investigations. This affords confidence.
- Documenting and analysing events are recognised as useful and important contributions to the solution and not as a theoretical product.

Therefore the method will again be used for future events.

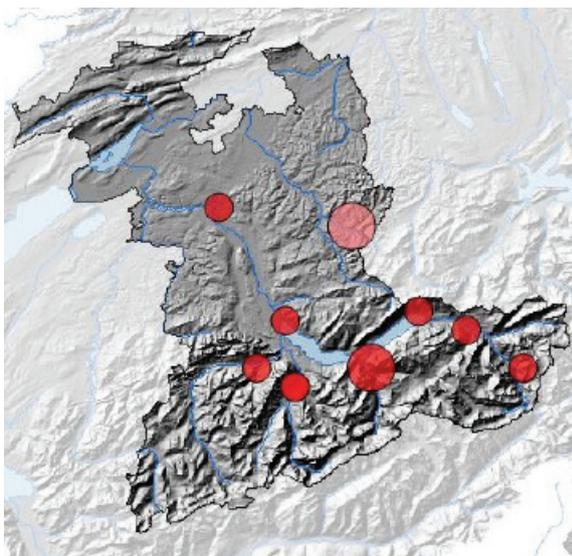


Fig. 1: Main damage areas in the canton of Berne

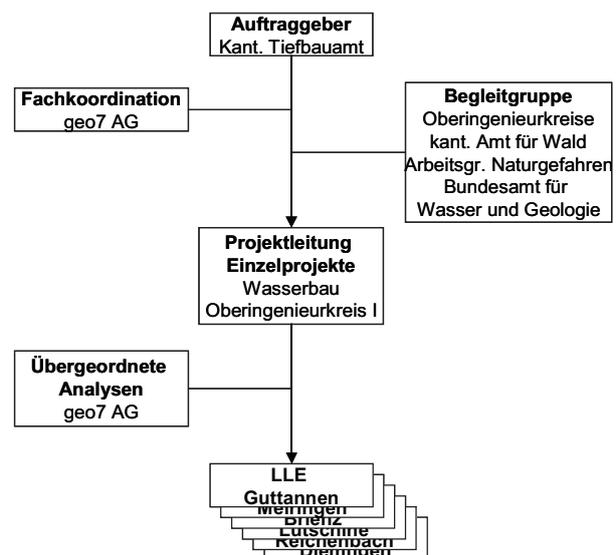


Fig. 2: Organisation of the LLE's