

This paper documents an important flood event that was caused (as the reader finds out by himself step by step reading the paper and then explicitly finds explained at line 243) by the superposition of two floods, one of which was caused by the Niedów dam-breach.

I reviewed the first version of this paper at the beginning of the year and its readability has been definitely improved but however I am sorry to come to the conclusion that I still believe that it is unsuitable for publication in its current form. Apart from a set of typos, naïve statements (e.g., in the Abstract, “The flood event occurred downstream from the dam “), uncorrect use of technical terms (e.g., water table, that is a term used in groundwater terminology, in place of water surface; velocity coefficient for Strickler’s coefficient) and undocumented statements, there is a fundamental bias that has not been solved yet.

At the core of the simulation and of all the reasonings there is the use of equation 1 (that is still written in a wrong way) to compute the outflow hydrograph from the Niedov dam. The point is that, even disregarding the time distribution of the outflow to the Berzdorf lake (only the overall volume spilled in the lake is documented in the paper but not its time distribution) and the variation of the stored volume in the floodplain (that does not appear in eq. 1 – and that is the reason for which eq. 1 is wrong -but that that must be calculated by MIKE21), there are two unknowns functions in the equation: the discharge hydrograph QND from the Niedov dam and the discharge hydrograph from the Lusatian river QNL: this is explicitly said: “This enables the inflows QNL,in(t) and QND(t), ..., to be found”.

With a single constraint (equation 1) there are an infinite possibility to find different sets of QNL,in(t) and QND(t) to match QNL,Z (t), i.e., the discharge hydrograph for the Zgorzelec gauge station.

It si true that a contradictory and mysterious phrase at line 208 writes: “QNL,in (t), ...preliminarily interpolated from the two neighbouring gauge stations (uncertain, to be verified)” but this piece of information, if present (what is the meaning of uncertain, to be verified), does not show up in any other part of the paper.

Accordingly, failing to detail this fundamental point, as well other informations partly listed in the following, in my opinion the colored maps of Fig. 11 and 12, have no particular relevance because the overall procedure looks flawed.

Follow a list of more particular but important details that show that the paper has not yet been carefully reviewed by the Authors

Line	text	Observation
16	cauese	cause
82	Maximum yield of the weir	?
118	The return period of the flood..	On the basis of what ? Analysis of Rainfall, maximum discharge ? Measured where ?
120	On the 7th of August at the Ostróżno gauge station, the highest water level of the flash flood occurred at 16:40. The Ręczyn gauge station was recording the water level until the time of 15:20, and thus until it was destroyed due t	Here, as in many following points, you mention to the existence of gauge stations, but without showing the available data. A graph should be added with all the available measured level or discharge hydrographs at the relevant stations during the flood. On the some graph the timing of the most important events listed
129	On the 7th of August, the estimated	Delete. Already said at line above

	flood rate was 615 m <sup>3</sup> s/1	
134	The water level ...	Is there any recording of the water level as a function of time ? It would be important to show the elevation as a function of time and in correspondence the operation of the gates
138	After the water level exceeded the edge of the repaired gate,	What do you mean ? Explain better
142	which is documented in Sup. 1	No, in the supplementary materials there are some pictures (where ?) and two maps. No other material is available on the dam breach
167	Radomierzycy through the Mill channel.	Every place that is mentioned in the paper must be retracable on the map. I don't see this place neither in Figure 1 nor 6 which are the ones mentioned so far in the paper. At the same time, regarding the name of the rivers, you must use always the same name (Nysa Łużycka River and e Lusatian Neisse River are probably the same river) and it must be the one that appears on the map
170	destruction (disintegration) of the buildings	Do you mean collapse ?
173	it flooded the Hagenwerder estate	As at line 167
175	city of Zgorzelec on the Polish side (the peak of the wave in Zgorzelec was at 6:40 UTC)	Here one starts realising that a second flood is superimposed to the dam breach wave but considering that you do not clearly explain this point in advance one is left puzzled at how it is possible that the dam breach wave takes so long to get to this town.
203	To restore	?
207	Equation 1	This equation is wrong because it does not include the dV/dt term. In the following text you list dV, that does not appear in the equation but this is another error because dV is a volume and is not dimensionally coherent with discharge Q.
213	dV	dV does not appear in the equation but this is another error because dV is a volume and is not dimensionally coherent with discharge Q.
215	Measured discharge	Did somebody actually measure the discharge during the flood ? This is a complex task: how did they do it ?
218	This enables the inflows QNL,in(t) and QND(t), while taking into account the additional inputs of the Pliessnitz and Czerwona Woda rivers (which were relatively	In my opinion there are a lot of ways to match the measured discharge with different input hydrographs. You do not discuss this point in sufficient detail.

	insignificant), to be found.	
231	Velocity coefficient 1/n	This is what everybody call Strickler's coefficient. By the way in the map in the supplementary file you show Strickler's coefficient as low as below 2.5. This is actually an unbelievable value: which type of ground cover did you model with this low value ?
245	Fig 11	Why ?
258	the flooding at 10:00 on August 8, 2010, when the flood peak reached the city of Zgorzelec	From figure 12 one would say between 6 and 9 AM
264	based on the water level increase in the lake	Having the variation as a function of time would be another important calibration point. But nothing is shown in the paper about this important point
266	The total volume of released water due to the dam's failure was equal to 22 million m <sup>3</sup>	No, this is false. Due to the dam failure only the volume stored in the reservoir was released,
275	the travel time of the first flood peak from the outflow from the Niedów reservoir to the Zgorzelec gauge station took about seven hours	This is really strange, considering that the two cross section are probably 10 kms apart. It would imply an average velocity of about 0.4 m/s that is really low for a dam breach flood. This point should be discussed better...
285	A particular feature of the Niedów dam ....  was the fact that the homogenous embankments made of sand and gravel had a concrete facing, which acted as an impermeable barrier.	To be honest I was surprised to hear than an earth dam was totally made with sand with a permeability coefficient of $2.8 \times 10^{-3} \text{ ms}^{-1}$ , that is huge, without any impermeable core. Accordingly, the waterproof coating on the inner side of the embankments was totally mandatory and is certainly not a "particular feature" but a must. Rather, I would have concentrated my discussion on two considerations: 1) the 1/100 year return time for the design discharge of the dam was clearly inadequate. 2) the maintenance of the hydropower station that apparently led to the cut-off of the power supply and so contributed to the disaster, was scheduled without the needed attention to the possible occurrence of a flood in that period of the year.

Table 1	Apparently the dynamic of the gates opening is in contradiction with the text where you write that "The crew still tried to open more gates manually from the dam's crest, but were unsuccessful." Accordingly, one would expect that after
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	15:36 the gates stay fixed in their position. Moreover, if a leve recording is available at Ostrozno it should be plotted as a function of tme
Table 2	The peak discharge is a result of your model ? You must specify it
Figure 2	Add ruler for distances
Figure 6	You show the state borders (which are pretty unrelevant and should be dropped) but not the border of the catchments
Figure 10	Gauge ZgorZelec appears twice. Which is the right one ? Moreover in the paper all the level/discharge recording at the different gauge stations must be shown as a function of time during the event.