

Interactive comment on “Canal blocking optimization in restoration of drained peatlands” by Iñaki Urzainki et al.

Anonymous Referee #2

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The authors present an interesting, mathematical optimization solution to re-wetting drained tropical peatlands. In doing this they apply an engineering approach which in itself is interesting while at the same time it may ignore some specific characteristics of tropical peatlands. Since tropical peatlands are vulnerable ecosystems the challenge is to develop a tailor made canal blocking system combining optimization techniques with good knowledge of peatland ecosystems.

In this respect comments are:

Comment 1 In practice, dimensions of drainage canals in tropical peatlands change from narrow and shallow streams close to the centre of the peat dome toward wide and deep canals at the location where the canals enter into a surrounding river. Consequently how do the authors deal with the hydrological consequences of changing

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dimensions of drainage canals?

Comment 2 In relation to comment 1, water head differences over relatively simple dams in the centre of the peat dome could be substantially smaller compared to water head differences over large dams. How do authors take this into consideration?

Comment 3 Normally not the number of dams but rather the amount of money available determines rewetting activities in tropical peatlands. Since small dams are often constructed using locally available material they are much cheaper than large dams often requiring wooden foundation poles and sand bags. Consequently can the authors specify which type of dam they have in mind and what its costs are? Also is constructing smaller and therefore cheaper dams an option?

Comment 4 When blocking drainage canals it is generally advised to start placing simple dams in the upstream part of the catchment. This gradually reduces water pressure in the downstream part and thereby reduces failure of the larger dams placed in the downstream part. Do the authors envisage a similar procedure of dam construction or do they propose an alternative?

Comment 5 When constructing dams do the authors take the peat depth into consideration? Large dams generally require a foundation of wooden poles driven into the mineral subsoil and this is only feasible in shallow peat areas.

Comments 6 Do the authors recommend a cascade of several types dams along a canal ranging from simple and cheap in the upstream part and complex and expensive in the downstream part of the catchment?

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