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Discussions
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Interactive comment on "Fresh groundwater resources in a large sand replenishment" *by* S. Huizer et al.

Anonymous Referee #2

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General comments The authors state that the volume of replenished sand in their case is "large". Without a comparison to previous nourishments, the reader cannot judge if the volume 21.5 Mill. m^3 is indeed large. Please give some figures for previous measures for comparison. The potential negative effects of a mega-nourishment should at least be mentioned briefly. Where does the sand come from? How does the extraction affect currents and wildlife there? What about sandbanks forming downstream which may obstruct shipping? Not sure whether your model cell size is appropriate for the initial steps of freshwater generation in the sand engine, when the freshwater body is still small Why would a wetter winter lead to a lower volume of fresh groundwater (P10, L21-24). Should a wetter winter not lead to more recharge in NW European climate? List references by year of publication, oldest go first (e.g. in Line 20) The manuscript would be a better read after a liberal sprinkling of commas! Not sure about HESS

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Discussion paper

policy but should non-English sources in the references come with a translation? e.g. Buma (2013), P 14, L5 and others

Specific comments Page 1, Line 20: use spelling “deltas” not”delta‘s” P. 1, Line 21: usual spelling in English is “Vietnam” P2, L6: not the whole of the Netherlands is a delta, right? People in Friesland and Limburg would probably not agree P2, L10-12: sand nourishment is not only done in the NL, the Germans do it, too, and probably other countries as well P2, L11-12: how often is sand nourishment usually done? Every year, every five, ten, twenty years? P2, L15; replace “must rise” by “rises” P2, L23: Weren′t their some presentations on the sand engine at the latest SWIM in Husum? Please cite references if appropriate P2, L28: replace “determined” by “investigated” P2, L31: please replace “shape” by a more appropriate term describing the geometry P3, L1: replace “in” by “into” (twice!) P3, L12: “displacements in seawater intrusion” sounds awkward please rephrase P3, L13: no need to define SGD, delete text inparentheses P3, L17/18: does variable density gw flow not include salt transport? (same for P5, L27) P3, L23 and 24: replace “scenario′s” by “scenarios” P4, L5: probably “rainbowing” is the correct spelling?! P4, L10: delete “clean,” P4, L13-15: how much groundwater is infiltrated, how much is extracted, how much is locally formed? P4, L24: replace “are” by “were” (same in Line 28) P4, L25-26: an aquifer made up of clay? are you sure? P5, L1: delete comma P5, L10: replace “observed” by “read off” P5, L12-14: these were on-shore in the dunes, right? P5, L15-19: the purpose of these wells remains unclear, are they pumping saline/brackish water as interceptor wells? Are they running continuously? Please specify! P6; L15′: add “the” after the second “and” P6; L27/28: here you use m/d while above (L19) you use SI standards (m, s) P6; L29-34: the values chosen for these data should be stated somewhere, maybe in a table P7, L32-33: but HOW were they incorporated? and which ones? in what timescale? P8, L25: why not use “every three months”? P9, L17: add “and” instead of comma P10, L12: add “the” before “situation” P11, L3: replace “with” by “by” P11, L14-19: not sure whether a comparison to island lenses is appropriate here. This is also no conclusion but a introductory note. Maybe better deleted! P11, L31: since you raise the issue: how

many times was the sand engine flooded? Fig. 1: add north arrow Fig. 1: legend for gray scales? Fig. 3: explain formation names, maybe ages or so? Fig. 4: values for general head boundaries? give legend to identify aquitards and aquifers Fig. 5: modified after Vos 2013? Fig. 8: which year is shown? Fig. 10: explain in caption that the labels refer to (climate) scenarios

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