

Interactive comment on “Global warming causes sinkhole collapse – Case study in Florida, USA”

by Yan Meng and Long Jia

Anonymous Referee #2

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This paper presents a study of the statistical correlation between drought periods and sinkhole occurrences in Florida over several decades. Overall, the topic is of interest and relevant to the field, but the study itself is lacking greatly in coherency, detail, and robust results to support the authors' claims; therefore, I suggest rejecting this manuscript until more data are supplied, along with a more detailed account of the data sources (e.g., the drought index) and statistical manipulations done to achieve the high correlation value presented herein.

Primarily, Figure 3 is difficult to interpret and it is difficult to tell how the authors achieved this high statistical correlation given the suggested lag, even using the methods presented, without doing more to adjust for frequency variability and potential errors in the data reporting (as well as other potential correlative causes, such as population

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growth, reporting ability, and similar non-hydrologic or geologic influences).

The study lacks a thorough discussion and has overlooked or is missing several pertinent references on recent sinkhole studies in FL and elsewhere looking at their causes and prevalence. Drought alone doesn't account for increased overpumping, as population growth also plays a significant role in FL, especially in the past several decades in areas where sinkholes are most prevalent. The authors need to provide a more thorough discussion with additional data considerations to rule out other causes. It would be possible to include hydrologic data as well, such as water table fluctuations in certain regions and PET (i.e. effective recharge), as these also could play a role and either support or contradict the findings of this study.

It is also unclear how a period is defined with respect to sinkhole occurrence, on which much of this study's outcomes are based and needs to be explained.

Overall, this paper has merit in its focus, but lacks in execution and in presenting a fully defendable dataset that lends insight to the true connection between climate change and sinkhole occurrences in FL without much more rigorous results and discussion sections.

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