<Author's response>

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Referee #1

We appreciate the thoughtful comments from the reviewer, which have helped us to improve the original manuscript significantly. We explain in detail how we responded to the reviewer's comments, with line numbers referring to the revised manuscript unless otherwise noted.

Index		Comments
1	Referee review	Lines 83-84: you mention in the introduction that analyses of hydrologic impacts at a catchment scale relying on a limited number of GCM projections are overly influenced by the choice of projection (Line 72) but drive your results with only 8 GCMs selected based on their provision of evapotranspiration parameters; how have you accounted for any bias in your study results from using this small subset of GCMs?
	Author's response	We agree that using only 8 GCMs poses limitations on our study's findings. However the 8 GCMs chosen, in addition to providing the climate variables need to estimate Penman-Monteith reference ET (as originally stated in the manuscript), also span the range of cool to warm bias and wet to dry bias exhibited by 41 CMIP5 GCMs retrospective simulations for the southeastern United States (Rupp, 2016). See the following figure from the Rupp (2016) report in which our selected GCMs are highlighted in orange.

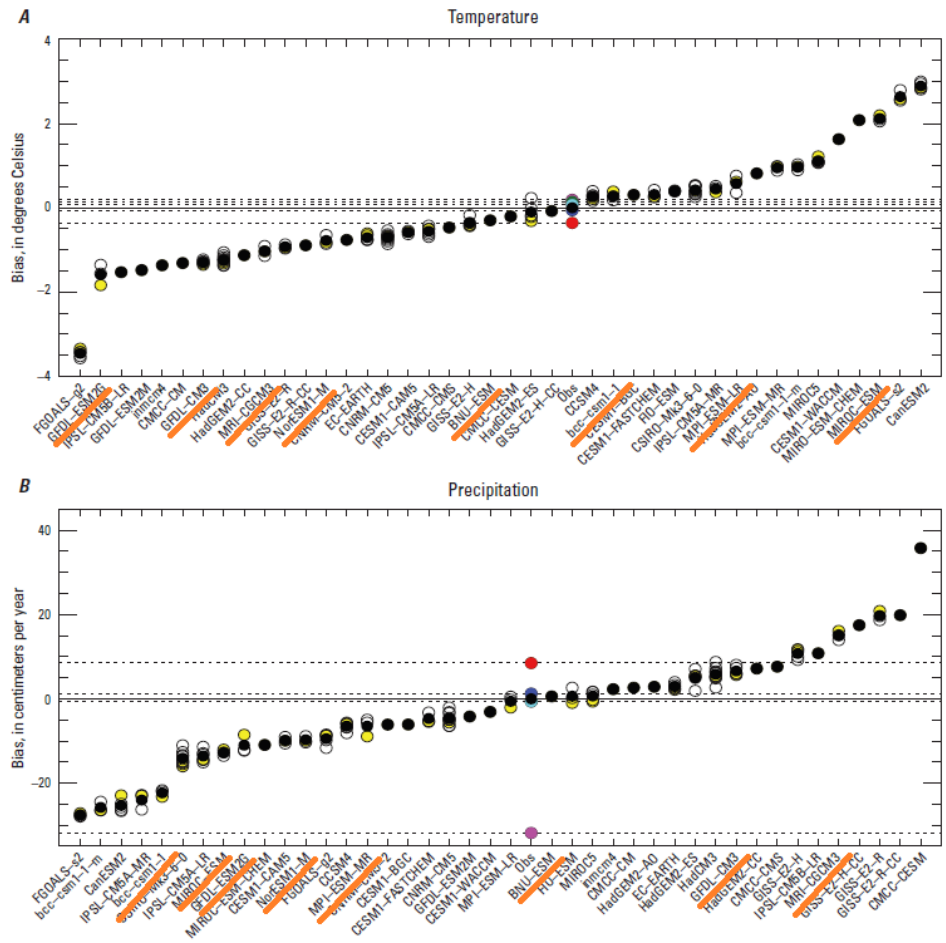

Figure 5. Mean annual *A*, temperature and *B*, precipitation bias for 41 CMIP5 GCMs averaged over the Southeastern United States. For each GCM, black-filled circles show the ensemble average, yellow-filled circles show the first ensemble member, and the open circles show the remaining ensemble members. Observed (Obs) values are from NCEP (red), ERA40 (magenta), CRU (dark green), PRISM (blue), UDelaware (cyan), and average of observations (black). For precipitation, only CRU, PRISM and UDelaware are calculated in the average.

This figure shows the mean annual temperature and precipitation bias of all 41 retrospective CMIP5 GCMs over Southeast U.S. The 8 GCMs highlighted (orange highlighted in x-axis) span cold to warm and dry to wet bias. Even after bias correction the observed wet tendencies of GFDL-CM3 and MIR-CGCM3 propagate into a wet future change. Similarly the dry tendencies of BCC-CSM propagates into a dry future change. Therefore we believe that these 8 GMCs provide a satisfactory representation of the full suite of CMIP5 GCMs.

We added expanded the justification of our GCM selection in Section 2.3 to read:

"These GCMs were chosen because they spanned the range of cool to warm bias and wet to dry bias exhibited by 41 CMIP5 GCMs for the southeastern United States (Rupp, 2016), and they had daily values available for all the parameters needed to estimate Penman-Monteith reference evapotranspiration. Mean changes in precipitation projected by these GCMs ranged from -68 mm/year to 293 mm/year over the 2030-2060 period, and from 154 mm/year to 400 mm/year over the 2070-2100 period. Mean changes in ET_0 ranged from 24 mm/year to 137 mm/year over the 2030-2060 period and from 122 mm/year to 351 mm/year over the 2070-2100 period. Mean changes in P-ET_0 ranged from -162 mm/year to 220

		mm/year over the 2030-2060 period and from -420 mm/year to 159 mm/year over the 2070-2100 period (Table 1)." We also added the range of future change in temperature and future change in precipitation across the 8 GCMs to Table 1 in the paper. In addition we noted these limitations in the Conclusions section, i.e. "It should be noted that the findings of this study are limited by a few major assumptions. For example this study used only 8 GCMs to project future climate which is a relatively small number. However these 8 GCMs spanned the range of cool to warm bias and wet to dry bias exhibited by 41 CMIP5 GCMs for the southeastern United States (Rupp, 2016)."
2	Referee review	Lines 99-100: can you elaborate here? In what manner do surface waters and groundwater interact?
	Author's response	In general, surface water and groundwater interact very dynamically in the study region due to the flat topography, sandy soils, shallow water table and very permeable aquifer. For example, when the groundwater table is lower than surface water level, surface water infiltrates to groundwater (aquifer) as recharge. When groundwater table is higher than surface water level, groundwater moves to surface water as discharge. When the groundwater table approaches the land surface overland flow results. We added the following explanation in Section 2.1 : "Dynamic interacting surface-water and groundwater systems (in which groundwater from in the aquifer used for agricultural irrigation and public water supply also feeds the surface springs and rivers) characterize the region and must be considered in the management of water resources (Tihansky, 1999). For example the SWFWMD regulates groundwater pumping for water supply to maintain groundwater levels that promote environmental protection of lakes and wetlands near well-fields. Similarly they regulate the daily volume of flow permitted for extraction from rivers based on maintaining sufficient in-stream flows and spring flows to protect aquatic ecosystems."
3	Referee review	Lines 118-119: do you anticipate significant land use/landcover change in the Northern Tampa Bay domain relative to 1989-2006 conditions used to calibrate and validate the INTB model? Do the hydrologic responses presented in this work reflect expectations of future landcover change or a maintenance of current landcover? If the answer is the latter, as explained in lines 211-213, how do you think your results would differ if future landcover change projections were included?
	Author's response	We agree that not simulating potential changes in future land use is a limitation of our study and should be included in future studies. In this study we assumed that future land use remained unchanged from the retrospective land use, but that future water use changed through either land use intensification or de-intensification. We added the following at the end of section 2.7 describing the future water use scenarios:

		"It should be noted that land use change was not considered in this study. This assumption is consistent with a regional planning strategy that promotes agricultural and urban intensification on existing lands, along with protection of existing conservation lands, wetlands and water supplies (Barnett et al., 2007). This assumption is also consistent with the *Florida Statewide Agricultural Irrigation Demand Estimated Agricultural Water Demand, 2015-2040.* (2017) that projects a 2% decline in agricultural land area between 2015-2040, but an 8.5% increase in agricultural water use as a net result of agricultural intensification and increased conservation. Future work will build on this study to evaluate land use change scenarios." And the following was added at the end of the conclusions section that discusses limitations of the study: "In addition land use change was not considered in this study. Instead we assumed that increases in agricultural and urban water demand were the result of intensification of water use on existing land uses. This assumption is consistent with a regional planning strategy that promotes agricultural and urban intensification on existing lands, along with protection of existing conservation lands, wetlands and water supplies (An Alternative Future: Florida in the 21st Century, 2007). However future work should build on this study to evaluate the additional impacts of potential land use change scenarios (Gupta et al., 2015; Lin et al., 2015; Matheussen et al., 2000; Yan et al., 2013)."
4	Referee review	Lines 154-156, Table 1: aside from citations and resolution, this table has very little information about each GCM used. Perhaps you could include the statistics on lines 157-161 in this table rather than the body of the manuscript? Are there other relevant factors that differentiate each GCM, some that may help explain the wide ranges in precipitation and evapotranspiration?
	Author's response	We edited Table 1 by adding information regarding the change in future precipitation and change in reference evapotranspiration that is cited in the text for each GCM.
5	Referee review	Line 163: a paragraph of the introduction was devoted to the limitations of using GCMs to drive regional hydrologic models, and various downscaling techniques have been developed to address this. How does the downscaling and bias correction approach used here compare with other methods?
	Author's response	The BCSA method used in this paper was developed by Hwang & Graham (2013). Hwang & Graham (2013) showed that BCSA performed better than BCCA, BCSD, or SDBC in reproducing the mean, variance and spatial correlation structure of precipitation over the state of Florida. Hwang and Graham (2014) showed that BCSA showed better performance than BCSD or SDBC in predicting retrospective streamflow and groundwater levels streamflow in the Tampa Bay Region when using the same INTB model used in this study. Section 2.4 of the paper was modified to include the following: "Hwang & Graham (2014) showed that BCSA showed better performance than other statistical downscaling methods (i.e .BCSD (Maurer et al, 2012) or SDBC (Abatzoglou & Brown, 2012)) in reproducing spatiotemporal statistics of both precipitation and daily streamflow in the Tampa Bay region. In particular, the INTB model, when driven by GCMs downscaled using the BCSA method,

		accurately reproduced frequencies of extreme high and extreme low retrospective streamflows as well as 7Q2 and 7Q10 retrospective streamflows in the Tampa Bay region." In addition the description of the BCSA method in Section 2.4 was improved.
6	Referee review	Lines 227-229: I am confused between this statement and the demand scenarios laid out on the following page. Do these lines mean that 2003-2009 historical averages of reservoir withdrawal rate for Tampa and TB Water use are consistent through each simulation period? Should these vary with demand scenario as demand increases or decreases? Is the daily average rate referenced here sensitive to seasonal trends, or a flat average year-round?
	Author's response	We realize this was confusing and clarified the discussion in the revised manuscript. Tampa Bay Water withdraws water for surface water supply from the Hillsborough and Alafia Rivers according to site-specific regulations set to maintain sufficient instream flows. Diversion rates from the Hillsborough River reservoir and the Tampa Bypass Canal occur by other water management entities downstream of the withdrawal points of the Hillsborough and Alafia Rivers so do not affect the water availability at the Tampa Bay water withdrawal locations. Similarly diversion rates for the Withlacoochee-Hillsborough overflow do not impact flows at the Tampa Bay water locations. Since this paper was focused water available to Tampa Bay Water from surface supplies in the Hillsborough and Alafia Rivers, the withdrawal rates from the Hillsborough River reservoir and the Tampa Bypass Canal were set to historical averages from 2003-2009, and diversion rates for the Withlacoochee-Hillsborough overflow was set to zero for simplicity. These assumption do not affect the streamflows or groundwater levels for the locations evaluated in this study. The following was discussion was included in the revised paper section 2.6: "Maximum available surface water available to Tampa Bay Water for public supply was calculated on a daily basis from retrospective streamflow predictions for both the Hillsborough River and the Alafia River according to site-specific regulations set to maintain sufficient in-stream flows and spring flows to protect aquatic ecosystems. Diversion rates for pumping from the Hillsborough river reservoir by the City of Tampa and from the Tampa Bypass Canal by SWFWMD were set at the historical average daily rate spanning 2003 to 2009 for all retrospective simulations. All other diversion rates were set to zero including the Withlacoochee-Hillsborough overflow. These diversion locations are located either downstream or outside of the watersheds contributing to the surface water gages, and outside the zone of influence of the monitoring wells, evaluated in this study, so these assumptions do not impact on the results."
7	Referee review	Line 248: what is the basis for this ratio assumption?
	Author's response	In the INTB model region, drip and spray irrigation are used (Geurink & Basso, 2013). In general these types of irrigation have 85-95% efficiencies (Irmak et al., 2011; Jacobs & Dukes, 2007). We added the references in section 2.6 of the revised paper:

		"Groundwater pumping for irrigation assumed 85% irrigation efficiency based on Irmak et al. (2011) and Jacobs & Dukes (2007),""
8	Referee review	Lines 253-259: are scenarios 1-3 included to isolate regional factors of water availability besides pumping? Otherwise, these scenarios do not seem plausible/necessary. Some justification for their inclusion or utility in this paragraph would be helpful.
	Author's response	In response to comments from all three reviewers we have significantly revised the justification and explanation of the future water use scenarios and added an analysis of each one's ability to meet future water demand and maintain or improve compliance with current water resource regulations. In short, the future scenarios were based on discussions with Tampa Bay Water staff, projected increases in public water demand (Tampa Bay Water Water Demand Management Plan Final Report; 2013), projected changes in agricultural land use and agricultural irrigation demand (Florida Statewide Agricultural Irrigation Demand Report, 2017), potential agricultural adaption behaviors, and potential changes in groundwater regulations. To more clearly separate the impact of human water use versus climate change on the hydrologic system, three extreme groundwater use reduction scenarios (the ones referred to in the comment above) were developed. As discussed in the revised manuscript, and shown in the new Figure 6, climate scenarios that project that future precipitation will be approximately equal to retrospective rainfall can only meet both 2045 public water demand and maintain existing compliance with groundwater level regulations -for these extreme scenarios that completely eliminate groundwater pumping for public water supply purposes. The full improved justification and explanation of the future water use scenarios is included in Section 2.7 of the revised manuscript. The full analysis of the scenarios' ability to meet future water demand is included in Section 3.6 of the revised manuscript.
9	Referee review	Lines 260-271, Table 2: for scenarios with changes in pumping, where do these increases/decreases come from? Are these tied to regional planning reports or other projections of regional use? It would be good to have a citation or explanation of each.
	Author's response	As discussed above an improved justification and explanation of the future water use scenarios is included in Section 2.7 of the revised manuscript. Citations of reports now have been included.
10	Referee review	Lines 312-314, Table 4: why is there such a large difference in sensitivity to water use scenario between NWH-RMP-13s and NWH-RMP-08s? You say here that the 13s monitoring well is furthest from well fields, but it appears from Figure 1 the two NWHRMP stations are relatively close together and both far from the nearest consolidated well field.
	Author's response	Groundwater pumping causes a lowering of the water table near the pumping location. In general, the closer the pumps, the more impact on the groundwater level. The region of influence depends on the pumping rate and aquifer characteristics. NWH-RMP-08s is located between Consolidated Wellfield (CWF) production wells in the NW Hillsborough Regional wellfield. NWH-RMP-13s is located south of NW Hillsborough Regional wellfield which is the southern-most wellfield within the CWF system. NWH-RMP-13s experiences the minimal drawdown from CWF pumping due to its distance from the wellfields

		and aquifer properties in the region. To avoid confusion this monitoring well is eliminated from analysis on the revised paper.
11	Referee review	Lines 178-180: based on my understanding each of the eight water use scenarios projections, based on fixed historic pumping rates, and the three evapotranspiration methods, calculated for each GCM used but are not downscaled, are deterministic and limited in number, while the downscaled GCM precipitation is randomly sampled monthly from thousands of realizations with more spatial and temporal variation than either water use or ET. As a result, I would assume that the variation contributed to streamflow and groundwater levels from precipitation (GCMs) is much greater than that from evapotranspiration (ET0) or water use scenarios. Given that your method for assessing water availability sensitivity to each of these factors is based on what amounts to a normalized summation of total variance, how much variance is inherent in the GCM precipitation, ET, and water use scenarios used? Will your sensitivity calculation be biased toward identifying GCMs/precipitation as the largest contributor of variance in water availability because of the relatively large variance within the downscaled data? If this study was driven using randomly-sampled monthly water demands and fixed precipitation projections, would GCMs still be the largest driver of uncertainty?
	Author's response	Because GCMs are too coarse to directly use in regional hydrologic studies, we downscaled GCM precipitation for the Tampa Bay region using the BCSA (Bias Correction and Stochastic Analog) that has been shown to work well in the region (see response to comment 5 above). BCSA downscaling consists of two separate steps for bias-correction and stochastic analog spatial downscaling. In the first step, a cumulative distribution function (CDF) mapping approach is used to reduce the biases in raw GCM output at the GCM scale. In the second step a synthetic downscaled precipitation field is produced which preserves the GCM-scale daily precipitation amount and the month-specific local-scale spatial correlation structure of daily rainfall. This procedure maintains the deterministic temporal daily rainfall sequence produced by the GCM, but generates a more realistic spatial distribution of the rainfall at the local scale. It is correct that precipitation is more spatiotemporally variable than either ET or groundwater pumping, but this is due to the current climate and water demand/water management regime in the study region, not the methods used to reproduce these patterns for retrospective and future scenarios. One of the goals of this paper was to quantitatively attribute variability in projections of future change in average monthly streamflow and groundwater level to GCM selection, ET method and plausible water use scenario using variance-based sensitivity analysis. Indeed the variance-based sensitivity analysis showed that differences among GCM projections drive the results presented in this study. However differences arise from differences in long term changes in the daily P and ET sequences generated by the GCMs themselves, not the downscaling method that disaggregates these daily sequences over space. In other words, while it is important to represent the spatial correlation structure of daily precipitation accurately to reproduce daily streamflow, long term changes in monthly average streamflow and groundwater level are driven by changes in long term monthly averaged precipitation and evapotranspiration parameters that come directly from the GCMs.

		Mean changes in precipitation projected by GCMs ranged from -68 mm/year to 293 mm/year over the 2030-2060, and from 154 mm/year to 400 mm/year over the 2070-2100. Mean changes in ET_0 ranged from 24 mm/year to 137 mm/year over the 2030-2060 and from 122 mm/year to 351 mm/year over the 2070-2100. Groundwater pumping scenarios ranged from 0 mm/year to 74 mm/year which is relatively lower than GCMs or ET_0. However this range in future groundwater pumping was based on discussions with Tampa Bay Water staff, projected increases in public water demand (Tampa Bay Water Water Demand Management Plan Final Report; 2013), projected changes in agricultural land use and agricultural irrigation demand (Florida Statewide Agricultural Irrigation Demand Report, 2017), potential agricultural adaption behaviors, and potential changes in groundwater regulations as discussed in response to comment 8 above.
12	Referee review	Lines 321-334: much of this paragraph belongs in the methods section when the evapotranspiration methods are introduced. There are no actual results in this paragraph. I am curious, however, what differences are there between the ET methods this study retained and Chang et al. (2016b) used that would result in such large differences in sensitivity? Furthermore, if you only plan to elaborate on results related to a single ET method (lines 330-334), and future streamflow and groundwater levels are collectively insensitive to the three methods you selected, why is not only one ET method used for the entire work? Perhaps the surface flow/GW sensitivity analysis related to ET methods is best left for an appendix, with a single method used as a focus in the body of the paper.
	Author's response	Much of this paragraph was moved to methods section 2.5 as suggested by the reviewer. The rationale for reducing the number of ET_0 methods is now presented in section 2.5, and reasons for the resulting change in sensitivity are discussed in Section 3.1 of the results. We also added in the revised Section 3.1 that "It should be noted that these results do not indicate that the choice of reference ET estimation method does not affect the change in streamflow or groundwater, only that the choice of reference ET estimation method is less influential than the choice of GCM or choice of human water use scenario." We retained the sensitivity analysis in the body of the paper. For simplicity of presentation monthly averaged hydrographs and groundwater levels, as well as the analysis of ability to meet future water demand, are only shown the Hargreaves ET_0 method, the method used to calibrate the INTB model. Results using the other two methods are not shown but give similar results.
13	Referee review	Lines 349-350, Figure 2: why are future 2 (should consider referring to this as the 2070-2100 future period; were future 1 and future 2 periods explicitly defined in the methods?) streamflows on average lower than future 1 predictions, after future 1 mean daily streamflows in Figure 2 appear to be greater than observed mean flows? It might be more informative to condense the eight sub-plots of Figure 2 in a way that better communicates the differences in monthly flow averages between water use scenarios. Could you, for instance, aggregate these plots seasonally and then have four plots, one per season, that each has eight boxplot ranges, one per scenario. It would be much easier to see the differences, I think.
	Author's response	Future 1 and Future 2 are now specifically defined in the methods section 2.3.

		Figure 2 has been simplified considerably by only showing the business as usual scenario for the Hargreaves ET_0 method. All ET_0 methods and water use scenarios are shown in Figures 3 and 4 that present change in available surface water for public supply and change in percent of time groundwater levels meet environmental standards. The revised discussion of Figure two in Section 3.2 explains the results more clearly: "Retrospective GCMs (blue box plots) reproduced observed mean streamflow and mean streamflow simulated using NLDAS-2 data quite closely for both river gages with relatively small variation among GCMs. In the dry season (October-May) future 1 (red box plots) and future 2 (green box plots) business as usual mean monthly streamflow values over the 8 GCMs (red box plots) also showed relatively small differences with the retrospective predictions, but larger variation across GCMs. However in the wet season (June through September) future mean monthly streamflows for the business as usual scenario were much lower than retrospective, especially in future 2, and showed much larger variability across GCMs."
14	Referee review	Lines 360-364: how does groundwater pumping result in lower streamflows? This relates to my previous comment about lines 99-100.
	Author's response	Groundwater pumping lowers the groundwater table and affects groundwater-streamflow interactions (see response to comment 2). In general, groundwater pumping lowers the groundwater table which increases recharge from surface water to the groundwater, thus lowering streamflows. These groundwater- surface water interactions are better explained in the revised Section 2.1.
15	Referee review	Lines 403-409: I would move these lines into the methods section; I cannot find a substantial mention of this analysis angle before this section.
	Author's response	We moved information from lines 403-409 to the methods in sections 2.1 and 2.6
16	Referee review	Lines 406-409, Figures 6 and 7: an evaluation of water availability under these criteria may not account for the seasonal patterns of demand or timely needs for water supply. Does municipal water demand fluctuate seasonally in this region, and, like other regions in the Southeastern US, do peak months of demand (summer) correspond with times with lower streamflows? Evaluating water availability for urban supply solely based on in-stream water availability and capacity constraints of surface water intakes will tell you that water is constantly available during winter and spring (high flows), but this is also when demand is down and so availability is not as crucial. Aggregating availability without accounting for concurrent demand at an annual scale as done in Figures 6 and 7 will (1) obscure the seasonal differences of availability and (2) not offer a sense of water availability when it is most needed.
	Author's response	Tampa Bay Water's water supply system is composed of 3 sources: desalination (25MGD), groundwater pumping (90 MGD) and surface water supply that includes a 15.5 billion gallon reservoir. The highest demand for water in the Tampa Bay Region comes in May at the end of the dry season when surface water flows and groundwater levels are indeed low. Tampa Bay Water satisfies demand

		adjusting its expensive but seasonally independent desalinization, inexpensive groundwater and intermediate cost surface water supplies on a weekly basis based on hydrologic conditions relative to environmental regulations and available reservoir storage. We analyzed the change in surface water available for extraction on an annual basis assuming that there would be sufficient storage in the system and sufficient flexibility in source rotation to use all available water regardless of differences in seasonal supply and demand. The description of the study region (section 2.1), description of retrospective simulations (section 2.6) and description of future water use scenarios (section 2.7) were revised to better explain Tampa Bay Water's water supply sources and how they might be operated under future conditions.
17	Referee review	Lines 452-453: to my understanding, your results show that the choice of GCM used to project water availability is the dominant cause of projection uncertainty, much more so than different water use scenarios. This is not the same as saying that climate change will drive water availability more than human use. As mentioned in the following lines (454-457), this work has shown the large uncertainty associated with GCM selection but in doing so has not shown that climate change is clearly more influential than human water demand in determining water availability in rivers, just that it is uncertain. This is especially true given that not all anthropogenic influences on water availability have been projected here (land use change, as an example), and that you have instances within your results (Table 4) where groundwater availability was more sensitive to the use scenario than to the GCM used.
	Author's response	We appreciate the reviewer's comment and have carefully edited the manuscript to discuss differences among projections due to GCM, ET method or water use scenario rather than discussion drivers of future uncertainty. For example the statements in Section 3.4 cited above were edited to read: These results underscore the fact that differences in projections of future availability of water from these rivers for public supply are driven more strongly by differences in climate models than differences in future human water use scenarios. Furthermore manipulating groundwater use to change the amount of available surface water has a very small effect for a given climate. Similar edits were made throughout the manuscript
18	Referee review	Introduction: parse out citations to show which studies emphasize which results, rather than blanket statements with many citations at the end and no citations for more specific findings or contributions
	Author's response	We edited introduction to parse out citations.
19	Referee review	Line 78: consider adding "Furthermore, the effects of climate change: : :" to help the connectivity of this paragraph
	Author's response	We added (now line 90): "Furthermore,"
20	Referee review	Figure 1: it is difficult to read the well and gage labels. Can they be called out more effectively? Also, you mentioned this region contained multiple large

		municipalities – can you include municipal extents to illuminate what fraction of the region is more likely urban cover?
	Author's response	Figure 1 was edited to make it easier to read the well and gage labels. We do not think that municipalities can be added to this figure without making it difficult to read.
21	Referee review	Line 185: add a comma and remove "and" from "Warming temperatures and reduce precipitation: : :" ("warming temps, reduced precip: : :")
	Author's response	We have edited this sentence. (now line 311)
22	Referee review	Line 186: remove the comma
	Author's response	The sentence has been edited (now line 311)
23	Referee review	Lines 195 and 196: use of "lumped" is colloquial, replace with "included" or "combined"
	Author's response	We replaced "lumped" with combined (now lines 322 and 323)
24	Referee review	Line 227: diversion not diversions
	Author's response	Edited as suggested (now line 268)
25	Referee review	Tables 3 and 4: replace "Fut1" and "Fut2" with the time periods of each future simulation.
	Author's response	We replaced "Fut1" and "Fut2" with "2030-2060" and "2070-2100". We clarified the definitions of Future 1 and Future 2 in the manuscript and included the time periods of each where feasible.
26	Referee review	Figure 2: differences on each sub-plot are so small I had to zoom in several levels before it was noticeable. It may be more effective to convert this graph so that it fits an entire page, and remove the top portion of each graph window (y-axis values of 35-45)
	Author's response	Figure 2 has been significantly changed as discussed in response to comment 13 above
27	Referee review	Figures 6-8: increase fonts and boxplot sizes
	Author's response	All figures were edited to increase fonts and boxplot sizes.
28	Referee review	Line 395: what streamflow projections? Is this a reference to GCM projections of streamflow in futures 1 and 2?
	Author's response	This sentence no longer exists in the revised manuscript
29	Referee review	Lines 419-420: Abstract says 6 of 8 GCMs project less water availability, here it says 5 of 8 and Figures 6 and 8 appear to confirm that. Adjust as necessary. After reading further I understand these ratios change between groundwater and surface water availability, but this was still confusing to read to me.
	Author's response	We edited the abstract to read : "Five of eight GCMs projected a decrease in streamflow and groundwater availability in the future …"
30	Referee review	Lines 445-446: The sentence "For both gages more GCMs in future period 2 were significantly different from the retrospective period than future period 1" is confusing. Consider adjusting.

	Author's response	This sentence no longer exists in the revised manuscript
References		Abatzoglou, J. T., & Brown, T. J. (2012). A comparison of statistical downscaling methods suited for wildfire applications. *International Journal of Climatology*, *32*(5), 772–780. https://doi.org/10.1002/joc.2312 Barnett, J., Dobshinsky, A., Choi, B., Cunningham, A., Dickens, M., Driver, J., … Ottoson, L. (2007). *An alternative future Florida in the 21st Century 2020 2040 2060*. Orlando, Florida. *Florida Statewide Agricultural Irrigation Demand Estimated Agricultural Water Demand, 2015-2040.* (2017). The Balmoral Group, Winter Park, Florida. Geurink, J. S., & Basso, R. (2013). *Development, calibration, and evaluation of the Integrated Northern Tampa Bay Hydrologic model.* (Vol. 31). Clearwater/Brooksville, Florida. Gupta, S. C., Kessler, A. C., Brown, M. K., & Zvomuya, F. (2015). Climate and agricultural land use change impacts on streamflow in the upper midwestern United States. *Water Resources Research*, *51*(7), 5301–5317. https://doi.org/10.1002/2015WR017323 Hwang, S., & Graham, W. D. (2013). Development and comparative evaluation of a stochastic analog method to downscale daily GCM precipitation. *Hydrology and Earth System Sciences*, *17*(11), 4481–4502. https://doi.org/10.5194/hess-17-4481-2013 Hwang, S., & Graham, W. D. (2014). Assessment of Alternative Methods for Statistically Downscaling Daily GCM Precipitation Outputs to Simulate Regional Streamflow. *JAWRA Journal of the American Water Resources Association*, *50*(4), 1010–1032. https://doi.org/10.1111/jawr.12154 Irmak, S., Odhiambo, L. O., Kranz, W. L., & Eisenhauer, D. E. (2011). *Irrigation Efficiency and Uniformity, and Crop Water Use Efficiency*. *Biological Systems Engineering: Papers and Publication*. https://doi.org/10.13031/trans.59.11331 Jacobs, J., & Dukes, M. (2007). *Revision of AFSIRS crop water simulation model Summary*. Palatka, FL. Lin, B., Chen, X., Yao, H., Chen, Y., Liu, M., Gao, L., & James, A. (2015). Analyses of landuse change impacts on catchment runoff using different time indicators based on SWAT model. *Ecological Indicators*, *58*, 55–63. https://doi.org/10.1016/j.ecolind.2015.05.031 Matheussen, B., Kirschbaum, R. L., Goodman, I. A., O'Donnell, G. M., & Lettenmaier, D. P. (2000). Effects of land cover change on streamflow in the interior Columbia River Basin (USA and Canada). *Hydrological Processes*, *14*(5), 867–885. https://doi.org/10.1002/(SICI)1099-1085(20000415)14:5<867::AID-HYP975>3.0.CO;2-5 Tihansky, A. B. (1999). *Sinkholes, west-central Florida*. Tampa, FL. Yan, B., Fang, N. F., Zhang, P. C., & Shi, Z. H. (2013). Impacts of land use change on watershed streamflow and sediment yield: An assessment using hydrologic modelling and partial least squares regression. *Journal of Hydrology*, *484*, 26–37. https://doi.org/10.1016/j.jhydrol.2013.01.008