

Supporting Information for ”Quantifying the value of stakeholder elicited information in models of coupled human-water systems”

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Contents of this file

1. Text S1
2. Figures S1 to S3
3. Tables S1 to S2

Text S1. Interview Questionnaire

1. What is the major source of domestic water in your area?
 2. What is the major source of irrigation in your area?
 3. What is the present cropping pattern in the study area?
 4. How does the cropping pattern generally change in case of year to year variation in water supply?
 5. How often does water supply falls short of projected demands in the area served by your Organization?
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6. What steps are taken to bridge the gap between water demand and water availability?
7. What are the main challenges of water management in your region?
8. When supply falls short of demand, specify the order in which the following demands are given preference?
9. When you think about a week/month/year with a shortage of water (demand is more than supply), do you consider any minimum requirements in your decisions?
10. In case of shortage of water, do you propose less intensive crop so that water need not be taken from anyone?
11. Assume that the river that supplies water to your region is also chosen to donate water for uses in another basin. Let us say that in a certain year, the demand of water is greater than supply in your region as well as the region to which water is being donated. What would be your approach to manage the demands of the two regions? How would you prioritize the demands between donor and recipient basins?
12. If you proposed to suggest sharing of deficit between donor and recipient, what would be your approach to quantify this?
13. Would your response change if you are located in the region that receives the diverted water instead of the region that donates the water? How?
14. If construction of additional reservoir capacity helps in managing shortages in both regions, would you recommend it?
15. How do you think cropping patterns will change in your region?

16. If the volume of water to be transferred in or out of your region is prescribed by higher authorities, do you think they should be fixed every year or change based on year to year variation in supply and demand?

17. What do you think are the positive and negative consequences of such type of transferring of water?

18. In your opinion, how groundwater withdrawal in regions donating or receiving the water will be impacted?

19. If the above questions do not cover your opinion on sharing of water between regions, please describe it briefly.

This interview questionnaire was approved by the ethics committee at Indian Institute of technology Bombay and consent was taken from all the participants. Personal information (name, age, affiliation) is not included as mentioned in the consent form. The questionnaire and the consent form were designed in two languages (Telugu and English). Telugu is the native language of two states Telangana and Andhra Pradesh.

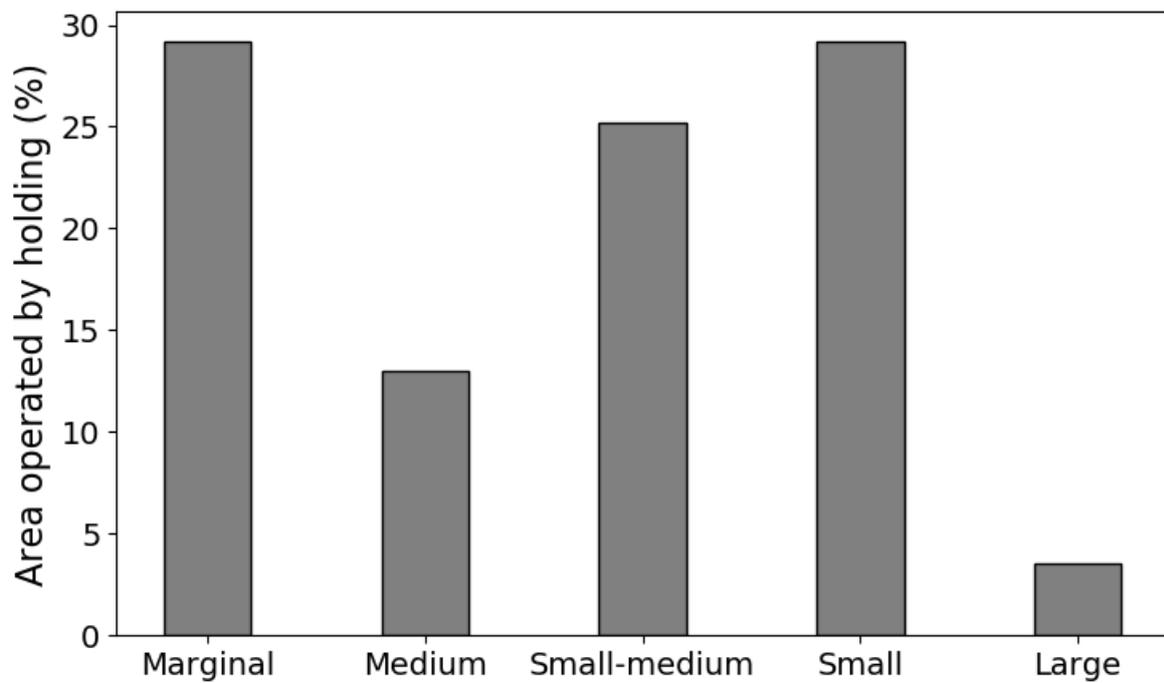


Figure S1. Operational land holdings by farmers in the command area of the Nagarjuna Sagar reservoir.

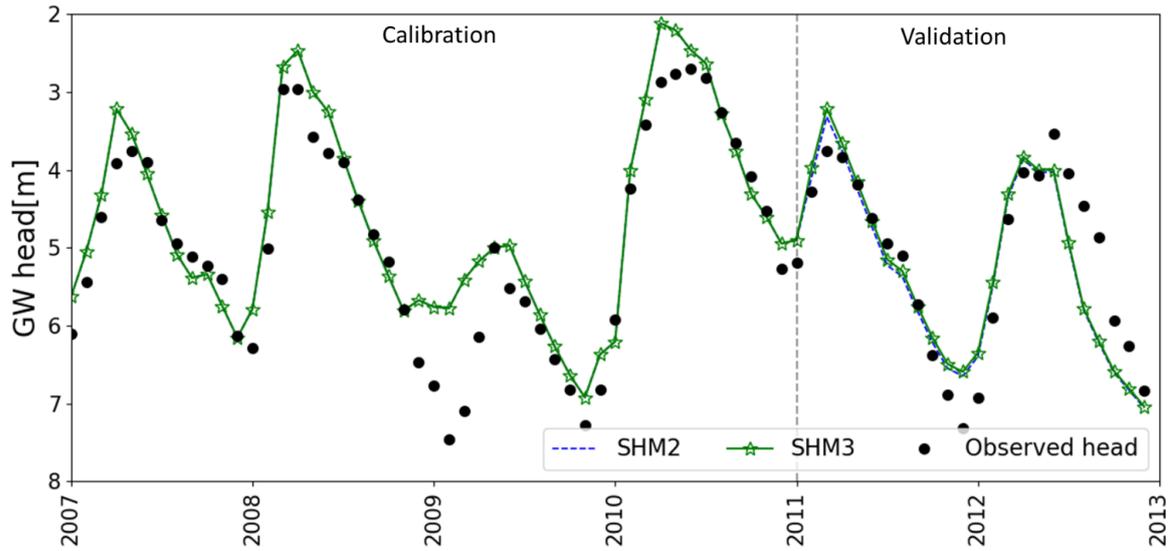


Figure S2. Calibration and validation of GW head for SHM2 and SHM3.

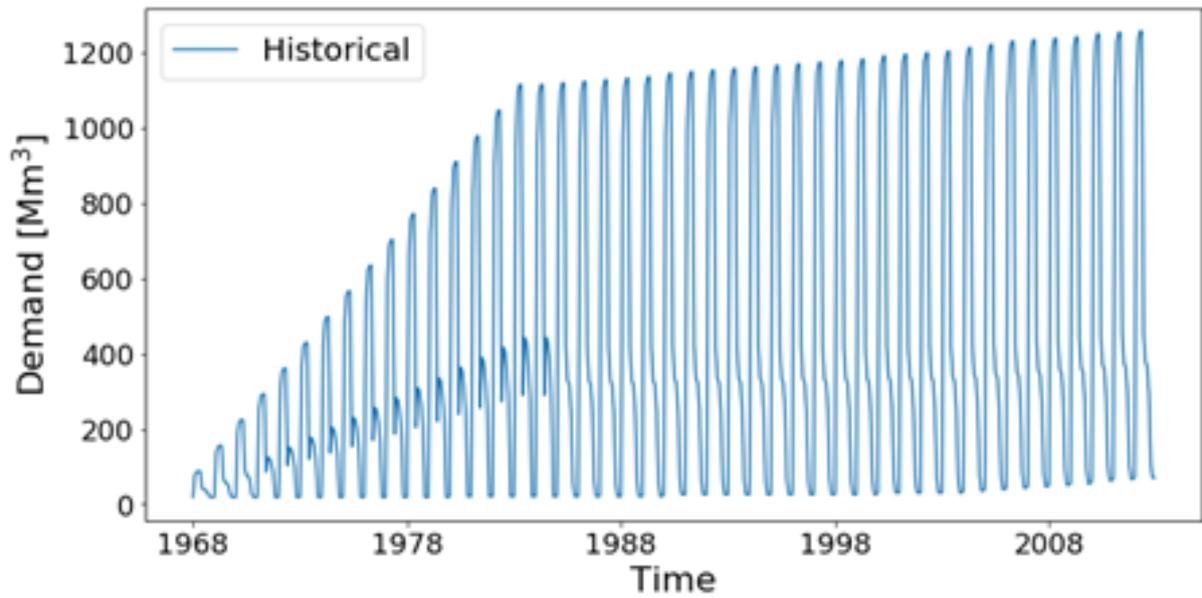


Figure S3. Monthly demands of Nagarjuna Sagar command area for the historical period in blue.

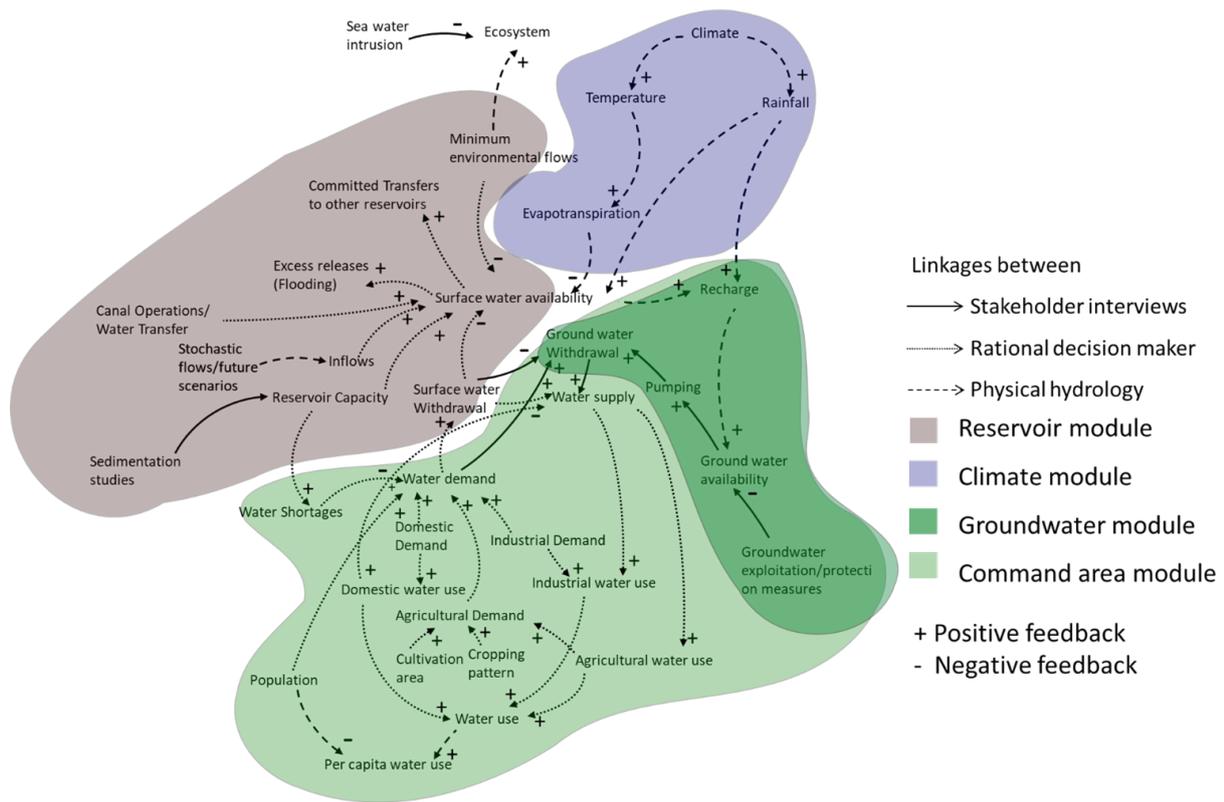


Figure S4. Stakeholder elicited CLD2 for NS reservoir. CLD 2 includes the groundwater module. We depict three types of linkages; derived from physical hydrology (dashed lines), from an assumed rational decision maker (dotted lines), and from stakeholder interviews (solid lines). Colors represent different modules of the system - the reservoir module is shown in purple, climate module is shown in blue, consumer module is shown in pink, command area module is shown in light green, and groundwater module is shown in dark green. Positive feedbacks are shown by the + sign and negative feedbacks by the - sign.

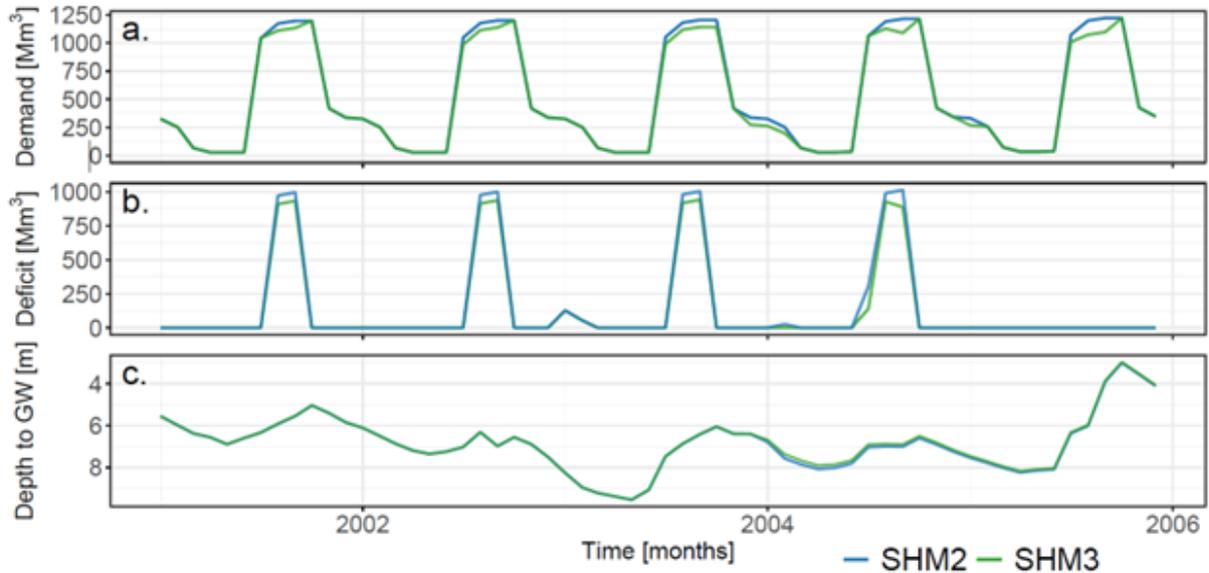


Figure S5. Monthly a) Demand, b) Deficit, and c) Depth to groundwater to understand the role of feedback of consumer water use module in altering the demands and groundwater abstraction for historical time period for SHM2 and SHM3 shown in blue and green respectively.