[IAH2018] Notification of Acceptance_ FP-524

IAH2018 <scientific@iah2018.org>

Tue 5/15/2018, 4:09 PM

To: Yueqing Xie <yueqing.xie@hotmail.com>

Dear Dr. Yueqing Xie,

Thanks for your contributions toward the 45th International Association of Hydrogeologists, which will be held in Daejeon, Republic of Korea from September 9 to 14, 2018.

We are pleased to inform you that the abstract listed below has been accepted for **Oral Presentation** at the IAH 2018 Congress.

Apply No.	FP-524
Topic	T2.6 Innovation in regional groundwater flow understanding (IAH-RGF special session) ** Scientific committee can adjust the topic you applied. The topic mentioned above is the final and it may be changed from the original one.*
Abstract Title	Transience in groundwater flow systems due to changes in hydrologic regimes
Authors	**Yueqing Xie**[1], Andy Love[1], Neville Robinson[1], Craig T. Simmons[1], Adrian Costar[2], Ilka Wallis[1], Lihe Yin[3], Jun Zhang[3], Guangcai Hou[3]
Institution	[1]Department of Science & Engineering, Flinders University, Australia [2]Department of Environment & Water, Government of South Australia, Australia [3]Department of Xi'an Center of Geological Survey, China Geological Survey, China
Abstract Body	Land use change and climate change can lead to substantial changes in hydrologic regimes, including groundwater replenishment. In this study, we examined the variations in local to regional groundwater flow systems in response to a reduction in groundwater recharge to zero. We adapted two classic model cases introduced by Tóth (1963) as baseline cases and performed numerical simulations through variably saturated modelling in FEFLOW. Case 1 (1,000 m thick) only has local flow systems, whereas Case 2 (10,000 m thick) has multiple flow systems (i.e. local, intermediate and regional). The reduction in recharge to zero was represented by replacing spatially varying (constant) hydraulic head to seepage at the top surface. The seepage boundary condition allows groundwater discharge but does not allow groundwater recharge. The

	modelling results show that changes in flow systems in response to recharge decline occur over variable time frames firstly the undulation of the water table declines followed by the regional hydraulic gradient. The water table undulation (initial amplitude of 50 m) decreases with time but can persist for up to 1000 years (amplitude less than 1 m) since the change to zero recharge. Flow systems vary simultaneously with water table change and the most important variations occur to the local flow systems. The changes in Case 1 occur throughout the entire aquifer but mostly in the upper section of the aquifer in Case 2. Our study indicates that flow systems in the base cases may be resilient to short-term environmental changes but will be transformed completely if changes to the hydrologic regime persist for tens of thousands of years. Sensitivity analysis of model geometry and hydraulic parameters suggests that hydraulic conductivity, system characteristic length and porosity seem to be first-order factors of the transience in groundwater flow systems as they relate to system time constants.
Keywords	groundwater flow systems, changes in hydrologic regimes, water table undulation
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[Registration Information]

Acceptance of your abstract carries with it the obligation that presenting author should attend the conference.

Please note that the registration deadline for presenting authors is June 15, 2018.

If you will change the presenting author or if you wish to withdraw your submission, please email the Congress Secretariat at scientific@iah2018.org no later than June 15, 2018.

Thank you once again and looking forward to meeting you soon at Daejeon.

If you have any questions, please do not hesitate to contact us to scientific@iah2018.org.

Best regards,

Seong-Taek Yun, Ph.D.

Chair

IAH2018 Scientific Committee

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