

HENRY

Hydraulic Engineering Repository

Ein Service der Bundesanstalt für Wasserbau

Conference Paper, Published Version

Wu, H. L.; Chen, C. M.; Yeh, C. L.; Kuo, C. L.; Cheng, Y. K.

An Assessment of Bedrock Bench Mark on Monitoring Land Subsidence in Tuku, Taiwan

Zur Verfügung gestellt in Kooperation mit/Provided in Cooperation with:
Kuratorium für Forschung im Küsteningenieurwesen (KFKI)

Verfügbar unter/Available at: <https://hdl.handle.net/20.500.11970/108507>

Vorgeschlagene Zitierweise/Suggested citation:

Wu, H. L.; Chen, C. M.; Yeh, C. L.; Kuo, C. L.; Cheng, Y. K. (2016): An Assessment of Bedrock Bench Mark on Monitoring Land Subsidence in Tuku, Taiwan. In: Yu, Pao-Shan; Lo, Wie-Cheng (Hg.): ICHE 2016. Proceedings of the 12th International Conference on Hydroscience & Engineering, November 6-10, 2016, Tainan, Taiwan. Tainan: NCKU.

Standardnutzungsbedingungen/Terms of Use:

Die Dokumente in HENRY stehen unter der Creative Commons Lizenz CC BY 4.0, sofern keine abweichenden Nutzungsbedingungen getroffen wurden. Damit ist sowohl die kommerzielle Nutzung als auch das Teilen, die Weiterbearbeitung und Speicherung erlaubt. Das Verwenden und das Bearbeiten stehen unter der Bedingung der Namensnennung. Im Einzelfall kann eine restriktivere Lizenz gelten; dann gelten abweichend von den obigen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Documents in HENRY are made available under the Creative Commons License CC BY 4.0, if no other license is applicable. Under CC BY 4.0 commercial use and sharing, remixing, transforming, and building upon the material of the work is permitted. In some cases a different, more restrictive license may apply; if applicable the terms of the restrictive license will be binding.

Verwertungsrechte: Alle Rechte vorbehalten



An Assessment of Bedrock Bench Mark on Monitoring Land Subsidence in Tuku, Taiwan

H. L. Wu, C. M. Chen, C. L. Yeh, C. L. Kuo, Y. K. Cheng
Tainan Hydraulics Laboratory, National Cheng Kung University
Tainan, Taiwan

ABSTRACT

Land subsidence is a worldwide geological hazard which is often caused by human activities (i.e. groundwater extraction and load of construction). Groundwater in Western Taiwan has been extracted for over 40 years because of the industrial, residential, agricultural, and aquacultural uses. The groundwater pumping causes the decline of groundwater, and further gives rise to land subsidence. Therefore, it is important to monitor the groundwater level and the deformation of underground soil. In this study, an auto-monitoring system (bedrock bench mark, 300m depth) is applied to monitor the land subsidence for evaluating the monitoring capability. Tuku, Taiwan is considered as the study area because of its serious land subsidence. To estimate the monitoring efficiency of the bedrock bench mark, the measuring data by the bedrock bench mark are compared with the multiple monitoring systems in Tuku, including groundwater well, multi-level compaction monitoring well, and dual-frequency GPS stations. According to the higher time-resolution subsidence distribution resolved from the higher-frequency measuring data of the bedrock bench mark, we can easily understand the relation between groundwater level and subsidence changing with times. Additionally, the high time-resolution data is also employed to improve the interpretation of the measuring data from the monitoring well and the dual-frequency GPS stations.