



1. **Editorial Board**

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Research papers

2. **Mapping accumulated mine subsidence using small stack of SAR differential interferograms in the Southern coalfield of New South Wales, Australia**

Pages 1-15

Alex Hay-Man Ng, Linlin Ge, Yueguan Yan, Xiaojing Li, Hsing-Chung Chang, Kui Zhang, Chris Rizos

Graphical Abstract

► DInSAR for mine subsidence mapping in the New South Wales, Australia. ► The DInSAR-measured deformation has been confirmed with the GPS-derived results. ► The DInSAR-derived subsidence agrees well with the modelling subsidence.

3. **The use of soil-flushing to remediate metal contamination in a smelting slag dumping area: Column and pilot-scale experiments**

Pages 16-27

Andrés Navarro, Francisco Martínez

Graphical Abstract

► In situ soil-flushing is an innovative remediation technology that may remove the contaminants and reduces the need of excavation, handling or transportation of hazardous substances. ► Thus, the main theme contributes to the knowledge of metal removal from mine waste by flushing, showing the possible application of this technology to remediation of metal-contaminated areas. ► Also, the study showed the possible treatment of low-permeability or heterogeneous soils, that frequently are difficult to treat.

4. **Evaluation of deformation modulus of cemented sand using CPT and DMT**

Pages 28-35

Moon-Joo Lee, Sung-Jin Hong, Young-Min Choi, Woojin Lee

Graphical Abstract

► CPTs and DMTs on artificially cemented sand specimens using a calibration chamber. ► CPT and DMT do not fully reflect the cementation effect due to the damage induced during the penetration. ► Cementation causes a larger increase in the deformation modulus than the penetration resistance. ► M/ED-qc/pa relation seems to be independent of the cementation degree.

5. **Assessment of ground subsidence using GIS and the weights-of-evidence model**

Pages 36-48

Hyun-Joo Oh, Saro Lee

Graphical Abstract

► In this paper, we have used factors controlling or related to ground subsidence as input to weights-of-evidence (WOE) model for ground subsidence hazard spatial hazard near abandoned underground coal mines (AUCMs) at Magyori area, Samcheok City in Korea using GIS. The weights-of-modeling has not been employed for such purpose. There is not enough research done in these areas which is quite obvious from the less number of articles published in recent years. This paper would significantly add to the existing literature on geospatial data and its use in the model in ground subsidence hazard mapping. ► The weights-of-evidence model, one of the Bayesian probability models was applied in evaluating a ground subsidence spatial hazard. Seven major factors controlling or related to ground subsidence were determined from the probability analysis of the existing ground subsidence area; depth of drift and distance from drift from the mining tunnel map, slope gradient obtained from the topographical map, ground water level and permeability from borehole data, geology and land use. The results of the analysis were validated using receiver operating characteristic (ROC) with the previous ground subsidence locations. In the case of all factor used, the area under the ROC curve (AUC) showed 0.9667, which corresponds to an accuracy of 96.67%. In the case of the combinations, the case of distance from drift, depth of ground water and land use used, showed the 90.71% (AUC: 0.9071) accuracy which is the best result produced in this analysis.

6. **Monitoring rapid head scarp movement in an alpine rockslide**

Pages 49-57

R. Nishii, N. Matsuoka

7. **Effect of air-drying duration on the engineering properties of four clay-bearing rocks in Texas**

Pages 58-67

Heejung Youn, Fulvio Tonon

Graphical Abstract

► The engineering properties of clay-bearing rocks may degrade upon exposure to the air; the engineer needs to know quantitatively the effect of the exposure duration on the rock's strength and deformability. This paper quantifies the effect of air-drying duration on the engineering properties of four clay-bearing rocks in Central Texas, USA, known as: Del Rio Clay, Eagle Ford Shale, Taylor Marl, and Navarro Shale. Their shear strength decreases upon exposure to the air when the liquid limit is greater than 56% and the cation exchange capacity is greater than 29 Meq/100 g (Taylor Marl and Navarro Shale), otherwise it is not affected by exposure to the air (Del Rio Clay, Eagle Ford Shale). After 48 h of air drying, the elastic modulus was approximately 35%, 10%, 15%, and 25% of the maximum value for Del Rio Clay, Eagle Ford Shale, Taylor Marl, and Navarro Shale, respectively (most of the reduction took place within the first 4 h of drying). Expressions are given for the strength and the Young's modulus as a function of air-drying duration. In the jar slake tests, degradation occurred only when the material was first air-dried, and the degradation extent increased with increasing drying duration. Degradation in the jar slake test may not necessarily imply shear strength loss when the material is gradually rewetted. The slake durability index cannot be used to distinguish which material loses strength and does not correlate with loss of stiffness upon exposure to the air.

8. **Total risk rating and stability analysis of embankment dams in the Kachchh Region, Gujarat, India**

Pages 68-79

Amit Srivastava, G.L. Sivakumar Babu

Graphical Abstract

► Total risk analysis procedure considers both the seismic hazard rating of the dam site as well as risk rating of the dam structures. ► The risk class is used to establish the need for more detailed seismic safety evaluations of dams. ► The prediction of seismic response of earth dam is estimated using advanced numerical tools that can handle both cyclic nonlinear soil behavior and pore pressure generation under dynamic loading condition.

9. **Characterizing crack patterns on tunnel linings associated with shear deformation induced by instability of neighboring slopes**

Pages 80-95

Tai-Tien Wang

Graphical Abstract

► Movement of a slope neighboring a tunnel causes various cracks on its lining. ► Slope movement perpendicular to tunnel axis induces longitudinal cracks. ► Slope movement parallel to tunnel axis induces transversely circumferential cracks. ► Slope movement oblique to tunnel axis induces inclined circumferential cracks.

10. **Behavior of rounded granular materials in direct shear: Mechanisms and quantification of fluctuations**

Pages 96-104

Y.R. Li, A. Aydin

Graphical Abstract

► Fluctuations of vertical displacement and shear stress were quantified; the fluctuations' characteristic amplitude and wavelength were linked to the dilation component of shear stress; the friction coefficients were calculated directly from the raw data, making curve smoothing unnecessary. ► Shearing of rounded granular materials takes place in four stages: contraction, dilation, shear-induced packing and residual state. ► Three main factors influences the fluctuations: uniformity coefficient and normal stress increases whereas shearing rate decreases the amplitude and wavelength.

11. **Study of the land subsidence in Orihuela City (SE Spain) using PSI data: Distribution, evolution and correlation with conditioning and triggering factors**

Pages 105-121

R. Tomas, G. Herrera, J.M. Lopez-Sanchez, F. Vicente, A. Cuenca, J.J. Mallorquí

Graphical Abstract

► A spatiotemporal study of land subsidence using PSI-DInSAR data has been performed. ► Several relationships among subsidence and related factors have been demonstrated. ► DInSAR data have allowed improving spatiotemporal characterization of subsidence. ► DInSAR data have allowed to analyze its relationship with the conditioning and triggering factors.

12. **Correlation between groundwater level and altitude variations in land subsidence area of the Choshuichi Alluvial Fan, Taiwan**

Pages 122-131

Chieh-Hung Chen, Chung-Ho Wang, Ya-Ju Hsu, Shui-Beih Yu, Long-Chen Kuo

Technical Note

13. **Estimation of the thermal properties for partially saturated granite**

Pages 132-138

Won-Jin Cho, Sangki Kwon