August 29, Monday

	PERİSSİA A Main Hall	ÜRGÜP Hall	SiNASOS Hall	SOBESOS Hall	NİSSA Hall
08:30-09:15	Opening Ceremony Chair :Eda Freitas de Quadros				
09:15-09:25	Introduction to Rocha Medal				
09:25-10:05	**The 2016 ISRM Rocha Medal Lecture** The secrets of jointed rock masses as told by distinct element models: Jointed roof beams, ground support design and the 1963 Vajont rock slide *C.W. Boon*				
10:05-10:45	**The 2016 ISRM Franklin Lecture** Micromechanical rock models *H. Konietzky*				
10:45-11:15	**Break**				
	Chair : Luis Lamas				
11:15-12:00	**Keynote Lecture** Seismic vulnerability of historic monuments: A rock mechanics perspective *Y.H. Hatzor*				
12:00-12:45	**Keynote Lecture** Applications of numerical methods in tunnelling and underground excavations: Recent trends *G. Barla*				
12:45-14:00	**Lunch**				
	Session - 1	*Session - 2*	*Session - 3*	*Session - 4*	*Session - 5*
Theme	**Rock mass characterization - 1**	**Analytical and numerical methods in rock mechanics and rock engineering - 1**	**Rock properties, experimental rock mechanics and physical modelling - 1**	**Stability of slopes in civil and mining engineering - 1**	**Rock dynamics**
Chair	Manchao He	Heinz Konietzky	Stuart Read	Suseno Kramadibrata	Yingxin Zhou
14:00-14:15	Cerro Vanguardia open pit mining: Database management for stability analyses *I.G. Mendive, G. Rellán, U. Sterin, A.O. Sfriso, G. Erz*	Hertzian contact damage in a hollow circular cylinder *M. Serati, D. J. Williams, N. Erarslan*	Estimating the rock strength from a crushability index *S. Kahraman, O.Y. Toraman*	An approach for determining vertical displacements using inclinometer on unstable slopes *İ. Özkan*	A field study on monitoring of blasting-induced vibrations of tunnels and its possible use for in-situ stress interferences *M. Geniş, Ö. Aydan, Z. Derin*
14:15-14:30	A conceptual geotechnical model for Kao Kimberlite Mine, Lesotho, Southern Africa *S.A. Coetsee*	Numerical simulation of the stress-strain behavior of intact granite specimens with Particle Flow Code *U. Castro-Filgueira, L.R. Alejano, J. Arzúa, D. Mas Ivars*	Full-scale linear cutting experiments with a conical cutter for simulating different cutting patterns *H. Copur, N. Bilgin, C. Balcı, D. Tumaç, E. Avunduk, A.S. Mamaghani*	Geomechanics characterization and stability of a large open pit slope in complex rock-mass (Italy) *M. Coli, E. Livi, N. Coli*	Dynamic characterization of Himalayan quartzite subjected to intermediate and high strain rates *H. Meena, S. Mishra, T. Chakraborty, V. Matsagar, P. Chandel, V. Mangla, M. Singh*
14:30-14:45	Analysis of discontinuity data obtained with remote sensing tools to generate input for EC7 design *A.M. Ferrero, G. Umili , F. Vagnon*	An elastoplastic and viscoplastic model for porous geomaterials *M. Souley, N. Lafrance, C. Auvray, V. Labiouse, T. Belem*	Strain localisation characteristics in sandstone during uniaxial compression by 3D digital image correlation *H. Munoz, A. Taheri , E. Chanda*	A modeling study of intersection lines and points as an assessing instability of rock mass *A.Turanboy, E. Ülker, C. B. Küçüksütçü*	The development of a servo-control testing machine for dynamic shear testing of rock discontinuities and soft rocks *Ö. Aydan, N. Tokashiki , J. Tomiyama, N. Iwata, K. Adachi, Y. Takahashi*
14:45-15:00	Extraction of discontinuity orientations in point clouds *A. Buyer, W. Schubert*	Modeling of dynamic behavior of drillstring taking rock-bit interaction into consideration *X. Song, M. Tijani , H. Sellami*	Analyzing drilling machine in aid to improve open pit mining operations *O.F. Uğurlu, M. Kumral*	Coupled stability analyses of a road cut slope and a railway tunnel in use *E.N. Tanrıseven, H.A. Bilgin, L. Tutluoğlu, B. Ünlütürk*	Fault rupture simulation of the 2014 Kamishiro Fault Nagano prefecture earthquake using 2D and 3D-FEM *N. Iwata, K. Adachi , Y. Takahashi, Ö. Aydan, N. Tokashiki, F. Miura*
15:00-15:15	Characterization and mechanical properties of a conglomeratic rock from Costa Rica, Central America *D.A. Jiménez, S.A.B. da Fontoura*	Can we predict the collapse of tunnels and shafts by elasto-plastic numerical analyses? *S. Sakurai*	Effect of elastic and strength properties of rocks during blasthole drilling *O. Su, U. Sakız, N.A. Akçın*	Modified slope mass rating for slope design in open-pit mining *Z. Zakaria, A.W. Oscar, Z.S. Sabila L.H. Jihadi*	Seismic response of numerical analysis and field measurement in Oya tuff underground quarry *T. Seiki, T. Ishii , K. Takahashi, S. Noguchi, T.Ohmura*
15:15-15:30	Fast or slow progress with TBM in ideal or faulted conditions *N. Barton, N. Bilgin*	Modelling of the mechanical behaviour of an opened rock joint *Y. Li, J. Oh, R. Mitra, B. Hebblewhite*	Evaluation of microscopic fracture toughness of grains within granite using a new mechanical testing machine for micro-sized specimen *S.S. Jeong, Y. Obara, M. Kataoka*	Determining distribution function of geotechnical data for single slope stability analyses at Kungkilang Block, South Sumatera *S. Muhamad, R. I. Sophian, D. Muslim, N. Hamid , T.K. Saad*	An experimental study of shear deformation behavior of rockbolt under dynamic loading *L. Li, P.C. Hagan, S. Saydam, B. Hebblewhite*

August 29, Monday

	PERISSIA A Main Hall	URGUP Hall	SINASOS Hall	SOBESOS Hall	NISSA Hall
15:30-16:00	**Break**				
	Session - 6	*Session - 7*	*Session - 8*	*Session - 9*	*Session - 10*
Theme	**Instrumentation-monitoring in rock engineering and back analysis - 1**	**Rock mechanics and rock engineering at historical sites and monuments - 1**	**Design methodologies and analysis - 1**	**Underground excavations in civil and mining engineering - 1**	**Fundamental rock mechanics**
Chair	Mostafa Sharifzadeh	Akos Török	M.Uğur Özbay	Giovanni Barla	Yuri Popov
16:00-16:15	Evaluation of underground coal mining induced surface subsidence using pre and post mining field observations *T. Zvarivadza*	Rock engineering evaluation of antique rock structures in Cappadocia Region of Turkey *Ö. Aydan, R. Ulusay*	Feedback of the empirical approach to design the room and pillar mines – Application on chalk mines (France) *M. Al Heib*	Impact of weathering on macro-mechanical properties of chalks *C. Auvray, N. Lafrance, M. Souley, V. Labiouse*	The relationship between pore structure and permeability under confining pressure *D.S. Cheon, E.S. Park, M. Takahashi*
16:15-16:30	In situ stress determination from excavation-induced stress by the compact conical-ended borehole overcoring method *A. Hastikova, A. Kolcun, L. Stas, P. Konicek*	Prevention effect of material flow in the porous rocks by aquo-siloxane method *A. Sato, K. Ikeda, T. Yatsunami, K. Tsuda, T. Fukumitsu, K. Habu*	Lessons from compared design of underground power houses and storage rock caverns *C. Vibert, P. Vaskou*	Airtightness technologies for the Kurashiki LPG storage cavern *T. Mori, T. Maejima, H. Kurose*	Modeling yield propagation of jointed synthetic rock *A.K. Alzo'ubi*
16:30-16:45	Applications of rock strength borehole probe (RSBP) in underground openings *A. Naeimipour, J. Rostami , E.E. Keller, I.S. Büyüksağış*	A geoengineering evaluation of antique underground rock settlements in Frig (Phrygian) Valley in the Afyon-Kütahya region of Turkey *Ö. Aydan, H. Kumsar*	The behaviour of Merensky crush pillars as measured at a trial mining site *M. du Plessis, D.F. Malan*	Rock mechanical design of gas storage caverns *S. Yıldırım, D. Zapf, K. Staudtmeister*	Tensor variate normal distribution for stress variability analysis *Ke Gao , John P. Harrison*
16:45-17:00	Monitoring deformation of ground surface over extensive area by Multi-Temporal DInSAR *P. E. Yastika, N. Shimizu*	Analysis of potential rockfalls for Sumela Monastery, Turkey *N. Dadashzadeh, N. Yeşiloglu-Gültekin, H.S.B. Düzgün*	Investigation into the viability of mining Merensky stopes using tensioned cable bolt support system: South African platinum mine case study *L. Sekhokoane , T. Zvarivadza*	Design, construction and operation experience of water curtain system for the hydraulic containment type LPG storage cavern *H. Kurose, T. Maejima, K. Aoki, C.S. Chang*	On a possible mechanism of transforming discontinuity deformation regime *A.A. Ostapchuk, D.V. Pavlov, I.A. Batuhtin*
17:00-17:15	Examination of a granitic host rock behaviour around underground radwaste repository chambers based on acoustic emission datasets *F. Deák, I. Szűcs*	The effect of biological degradation of tuffs of Cappadocia, Turkey *H. Matsubara, Ö. Aydan*	The design of rock pillars in underground mines by considering discontinuities *L. A. Ayres da Silva, A. L. M. Ayres da Silva*	Arenal deeps: Application of numerical methods to 2D and 3D stability analyses of underground excavations *I. García Mendive, U. Sterin, G. Rellán, A.O. Sfriso, M. Fuentealba*	Estimating strength of rock masses using fuzzy inference system *M. Sarı*
17:15-17:30	Deep shaft excavation – geotechnical monitoring and back analysis *A. Poisel, T. Schachinger, O.K. Wagner, R. Wahlen, A. Steindorfer*		An assessment on energy absorption capacity of fiber reinforced shotcrete slabs *H. Tunçdemir, E. Güçlü , M. Başyiğit*	Empirical and numerical approach to stability analysis of pumped storage cavern in Rudbar, Loresan, Iran *N. Houshmand, K. Shahriar , S.E. Khezri*	Tensile strength anisotropy of Pocheon granite and roughness evaluation of its failure planes *M.B. Diaz , S.G. Jung, L. Zhuang, K.Y. Kim, J.H. Jung , H.S. Shin*

August 30, Tuesday

	PERİSSİA A Main Hall	ÜRGÜP Hall	SİNASOS Hall	SOBESOS Hall	NİSSA Hall
	Chair : W.Wittke				
09:00-09:45	**Keynote Lecture** Some aspects of stress, strain, strength, structure and tunnel support : Q and beyond *N. Barton*				
09:45-10:30	**Keynote Lecture** Hydromechanical behavior of fault zones in petroleum reservoirs *S.A.B. da Fontoura*				
10:30-11:00	**Break**				
	Session - 11	*Session - 12*	*Session - 13*	*Session - 14*	*Session - 15*
Theme	**Petroleum geomechanics & New frontiers**	**Underground excavations in civil and mining engineering - 2**	**Analytical and numerical methods in rock mechanics and rock engineering - 2**	**Rock properties, experimental rock mechanics and physical modelling - 2**	**Instrumentation-monitoring in rock engineering and back analysis - 2**
Chair	Sergio Fontoura	William Joughin	Leandro R.Alejano	Jose Muralha	Norikazu Shimizu
11:00-11:15	Analysis of geometrical parameters of hydraulic fracturing in horizontal oil wells stimulation *M. Fatehi-Marji, A. Abdollahipour, A. Yarhamadi-Bafghi, J. Gholamnejad*	An innovative and effective approach to hard rock cutting *N. Erarslan, M. Ghamgosar*	Numerical simulation on pillar failure patterns *T.H. Ma, F.T. Suorineni, C.A. Tang, L. Wang*	Kimachi sandstone does not have to fail under larger stress *Y. Wang, Y. Fujii, D. Fukuda, J. Kodama*	Managing landslide risks associated with erosion-driven slope instabilities using near real-time deformation monitoring systems *N. Bar, R. Parker, S.J. Thomas*
11:15-11:30	Ensemble smoothing of land displacements and deep compaction for the geomechanical characterization of hydrocarbon reservoirs *C. Zoccarato, M. Ferronato, G. Gambolati, P. Teatini, D. Baù*	Stability analysis of LDBH stopes below an open pit mine due to blast load *D. Deb, S. Mohanto, Y.K. Patanwar, R. Shrimali*	Understanding the influence of pre-tensioned tendons on the hanging wall stability of a shallow bord and pillar mines in South Africa *P.M. Couto, J. Maritz*	Experimental determination of crack initiation and crack damage in sedimentary rocks under low confinement *K. Bartmann, M. Alber*	Relationships between degradation quantities revealed by in-situ monitored displacements and cracks of a highway tunnel *Y.C. Chiu, T.T. Wang, C.H. Lee, T.H. Huang*
11:30-11:45	Analysis of self-propped fractures during SRV fracturing *Z. Zhou, G.Q. Zhang, B. Zhao, Z. Zhang, Y. Wang*	TBM performance prediction in basalt and pyroclastic rocks of Deccan traps, a case study of Maroshi-Ruparel water supply tunnel *A. Salimi, J. Rostami, C. Moormann*	Study on ground behavior considering temporary plastic zone around tunnel face *T. Kaneko, T. Ichida, N. Ohara*	Water effects on rocks *L.N.Y. Wong, V. Maruvanchery*	Passive seismic monitoring of potentially unstable rock masses *C. Colombero, C. Comina, S. Vinciguerra, D. Jongmans, L. Baillet, A. Helmstetter, E. Larose, J. Valentin*
11:45-12:00	Geomechanical interpretation for micro-seismic potential at CO2 storage pilot on Svalbard, Norway *B. Bohloli, J.C. Choi, E. Skurtveit, A. Pluymakers*	Evaluation of discontinuity and opening geometry effects on roof beam deflection *N. Moussaei, M. Sharifzadeh, K. Shahriar, M.H. Khosravi*	Crown pillar behavior study using numerical modeling in Chelopech mine *T.D. Georgieva, D. Anastasov, I. Gyrkov*	New facilities in rock thermal property measurements in application to geomechanics *Y. Popov, E. Popov, E. Chekhonin*	The use of underground laser mapping for numerical model calibration *E. Jones, D. Beck, F. Reusch*
12:00-12:15	Pore-confining pressure cycling test for supercritical CO2 permeability of sandstone: Implication for the nonlinear effective pressure law *C. S. Choi, J. J. Song*	Stability assessment of a pillar-supported basalt mine in Mendig (Germany) *B. Bock, M. Alber,M. Rogall , A. Wehinger, J. Scherschel , V. Sachtleben*	Failure mechanism of a gypsum pillar by 2D and 3D FEM/DEM numerical analyses *S. Grisi, R. Castellanza, F. Agliardi , G. Crosta, D.Elmo*	Importance of temperature control during permeability test for measuring hydraulic constants of rock *M. Kato, Y. Nara, M. Kohno, T. Sato, D. Fukuda, T. Sato, M. Takahashi*	Monitoring of vertical cuts in soft rock mass, defining erosion rates and modelling time-dependent geometrical development of the slope *G. Vlastelica, P. Miščević, H. Fukuoka*
12:15-12:30	An equivalent continuum approach for the assessment of geological fault reactivation in hydrocarbon reservoirs *E. C. Mejia Sanchez, D. Roehl*	Investigation of coal mine roof guttering at Magdalena Colliery-South Africa *H. Yılmaz, C.K.A. Khumalo*	Study on caving mechanism in longwall top coal mining using discontinuous modelling *T. D. Le, R. Mitra, J. Oh, B. Hebblewhite*	Investigation of thermal parameter changes of filled and unfilled travertine exposed to physical weathering conditions *H. Özer Toklu, I. Ugur, M. Karaabat Varol*	Monitoring of the dynamic response of the surrounding rock mass at the excavation face of Tarutoge Tunnel, Japan *Ö. Aydan, H. Tano, H. Ideura, A. Asano, H. Takaoka , M. Soya, M. Imazu*
12:30-14:00	**Lunch**				

August 30, Tuesday

	PERİSSİA A Main Hall	ÜRGÜP Hall	SİNASOS Hall	SOBESOS Hall	NİSSA Hall
	Chair : Shunsuke Sakurai				
14:00-14:45	**Keynote Lecture** Reservoir geomechanics helps improve carbondioxide storage performance and risk assessment *S. Durucan*				
14:45-15:30	**Keynote Lecture** Monitoring, warning and dynamic mitigation of rock burst development process in underground hard rock engineering *X.-T. Feng*				
15:30-16:00	**Break**				
	Session - 16	*Session - 17*	*Session - 18*	*Session - 19*	*Session - 20*
Theme	**Stability of slopes in civil and mining engineering - 2**	**Analytical and numerical methods in rock mechanics and rock engineering - 3**	**Rock mechanics and rock engineering at historical sites and monuments - 2**	**Rock properties, experimental rock mechanics and physical modelling - 3**	**Rock mass characterization - 2**
Chair	Phillipe Vaskou	Kourosh Shahriar	Yossef Hatzor	Akira Sato	Jose Antonio Samaniego Alcántara
16:00-16:15	Critical real time radar monitoring of sub-bench failures at Yara Suomi Oy Siilinjärvi open pit mine (Finland) *S. Mononen, M. Suikkanen, N. Coli, G. Funaioli , F. Meloni*	The past revisited: the giants behind the elastic solutions for stresses around underground openings *H. Gerçek*	Stability assessment of the stopes and crown pillar of the S'Argentera abandoned mines using empirical approach, focused on a possible tourist exploitation, Ibiza, Spain *L. Jordá-Bordehore, P.L. Romero-Crespo , R. Jordá-Bordehore*	Time-dependent properties of tuffs of Cappadocia, Turkey *T. Ito, T. Akagi, Ö. Aydan, R. Ulusay, T. Seiki*	Determining the Geological Strength Index (GSI) using different methods *B. Vásárhelyi, G. Somodi, Á. Krupa, L. Kovács*
16:15-16:30	Model experiment on seismic stability of discontinuous rock slope and numerical simulation *K. Adachi , N. Iwata, R. Kiyota, O. Aydan, N. Tokashiki*	Bearing capacity of shallow foundations in anisotropic geomaterials *A. Azami , T. Yacoub, J. Curran*	Stability assessment of volcanic natural caves – lava tunnels - using both empirical and numerical approach, case studies of Galapagos Islands (Ecuador) and Lanzarote Island (Canary- Spain) *L. Jordá-Bordehore, T. Toulkeridis*	Laboratory investigations of fracture toughness and tensile strength for various rock types *M. Ghamgosar, N. Erarslan, K. Tehrani*	Further verification of seismic survey results ahead of the tunnel face using drilling vibration data of ultra-long controlled boring *M. Yamagami, T. Ichiki, T. Aoki,Y. Yamanaka, T. Takahashi, K. Nanba*
16:30-16:45	Improving slope stability at Kışladağ Gold Mine *S. Ergun, E. Güngör, B. Özdemir, S. Esen*	Modeling permeability evolution under triaxial compression deformation of Shirahama sandstone *D. Asahina, M. Takahashi, M. Takeda , H. Tsukamoto*	Geological-geomechanical setting for the stability analysis of the rock hewn churches of Lalibela (Ethiopia) *M. Coli, F. Sani, E. Livi, N. Coli, G. Moratti*	Strength, deformation and cracking characteristics of limestones *Ö. Ündül, N. Aysal, B.C. Çobanoğlu, F. Amann, M. Perras*	Effect of shape and size of sampling window on the determination of average length, intensity and density of trace discontinuity *A. Kamali , K. Shahriar, M. Sharifzadeh, A. Aalianvari,A. Esmaeilzadeh*
16:45-17:00	Dynamic numerical analysis of a stepped-planar rock slide in central Chile - Preliminary results *M. Garcia, S. Sepulveda, S. Moya, C. Pasten, G. Montalva*	Tunnel excavation in low permeability ground: effect of anisotropy on excess pore pressure *L.M. Guayacán-Carrillo, D. Seyedi, J. Sulem, S. Ghabezloo, A. Noiret, G. Armand*	The numerical analysis of response and stability of stone masonry bridges in Azan (Aizanoi) antique city in Kütahya province of Turkey *J. Tomiyama, Ö. Aydan, H. Kumsar, E. Özer*	Experimental study on cracking behavior of a transversely isotropic material *S. Choi, S. Lee , S. Jeon*	Statistical investigation of geometrical properties of discontinuities Case study: cavern of Rodbar Lorestan Pumped storage power plant *A. Kamali, K. Shahriar, M. Sharifzadeh, M.A. Gholami, N. Mossaei*
17:00-17:15	Rehabilitation of a sliding slope and supporting measures for rock slopes in the abutments of the 130 m high Zapotillo dam in Mexico *W. Wittke, B. Wittke-Schmitt*	Numerical investigations on pea gravel using a nonlinear constitutive model *M. Lagger, M.R. Henzinger , W. Schubert*	Terrestrial laser scanner aided survey and stability analyses of rhyolite tuff cliff faces with potential rock-fall hazards, an example from Hungary *Á. Török, G. Bögöly, B. Czinder, P. Görög, B. Kleb, B.Vásárhelyi, T. Lovas, Á. Barsi, B. Molnár, Z. Koppányi , J. Á. Somogyi*	Study on hydraulic fracturing in transversely isotropic media *J. Jung, S. Jeon*	Using open-source software for extracting geomechanical parameters of a rock mass from 3D point clouds: Discontinuity set extractor and SMRTool *A. Riquelme, R. Tom´as , M.Cano, A. Abell´an*
17:15-17:30	The evaluation of stability of overhanging Ryukyu limestone cliffs utilizing rock mass characteristics inferred from RMQR and intact rock *Ö. Aydan, N. Tokashiki*	Numerical Investigation on the implementation of a reinforced segmental lining considering an inhomogeneous loading and bedding situation *M.R. Henzinger, W. Schubert*		Engineering behavior of Indian oil shales *K. S. Rao, A. Kumar*	The estimation of rock mass strength properties using probabilistic approaches and quantified GSI chart *H. Basarir, S. Akdag, A. Karrech, M. Özyurt*

August 31, Wednesday

	PERİSSİA Main Hall	ÜRGÜP Hall	SİNASOS Hall	SOBESOS Hall	NİSSA Hall
	Chair : H. Aydın Bilgin				
09:00-09:45	**Keynote Lecture** Rock engineering problems related to mechanical excavation in complex geology, solutions and examples from Turkey *N. Bilgin*				
09:45-10:30	**Keynote Lecture** Structural characterization of faults and fractures in underground works *P. Vaskou*				
10:30-11:00	**Break**				
	Session - 21	*Session - 22*	*Session - 23*	*Session - 24*	*Session - 25*
Theme	**Underground excavations in civil and mining engineering - 3**	**Analytical and numerical methods in rock mechanics and rock engineering - 4**	**Coupled processes in rock mass for underground storage and waste disposal**	**Rock properties, experimental rock mechanics and physical modelling - 4**	**Rock mass characterization - 3**
Chair	Wulf Schubert	Seokwon Jeon	Frederic Pellet	Ivan Vrkljan	Petr Konicek
11:00-11:15	Total load-bearing capacity of yielding steel arch supports *P. Horyl, P. Maršálek, R. Šňupárek, K. Pacześniowski*	Analytical study on the performance of inflatable rock bolts *C.C. Li*	Geological and rock mechanical modelling of stress induced excavation zone, EDZSI, in ONKALO western Finland *N. Koittola, J. Suikkanen, P. Kantia*	The role of tilting rate and wear of surfaces on basic friction angle testing *I. Pérez–Rey, L.R. Alejano , J. Arzúa, J. Muralha*	Investigations, in-situ tests and stress measurements for the powerhouse complex of the Lagobianco pumped storage project *K. Thermann, B. Stabel, R. Ferrari*
11:15-11:30	The effect of over excavation on the time-dependent convergence of a drift in Callovo-Oxfordian claystone *L.M. Guayacán-Carrillo, D. Seyedi, L.M. Guayacán-Carrillo, D. Seyedi,A. Noiret, G. Armand*	Enriched finite element procedures for analysis of bolt crossing multiple rock joints *D. Deb, Y. K. Gujjala, A.Khan*	Fluid experiments on fractures subjected to normal and shear displacement *N. Hedtmann , M. Alber*	Physical property evaluation of ground improvement piles utilizing borehole wall images taken by borehole televiewers *Y. Hachino, H.Yasutomi, K. Tajima, Y. Ootsuka, T. Wada, Ö . Aydan*	Indexes sifting of rockburst prediction using soft science technology *Y.J. Li , Y.D. Xue, J.Q. Jiao*
11:30-11:45	Effect of different loading conditions on tunnel lining in soft rocks *K. S. Rao, S. Mishra , N. K. Gupta*	Numerical evaluation of rockbolt reinforcement unit in jointed rock mass by DDA method *W. Nie, Z.Y. Zhao , S.Q. Ma*	A study of efficient excavation limiting the extent of an excavation damaged zone in Horonobe URL *K. Aoyagi, T. Tokiwa, T. Fujita*	A new design test apparatus for determining direct tensile strength of rocks *K. Tüfekçi, S. Demirdağ, N. Şengün, R. Altındağ, D. Akbay*	Excavation damaged zone research in Tampere test mine Finland *P. Kantia, S. Mustonen, T. Kouvonen, T. Lehtimäki, M. Olsson*
11:45-12:00	An overview of the stability problems of the tunnels which are parallel to the valley and close to the slope surface - A case study: Çetin HEPP *B. Yılmaz H.K. Çıtıroğlu*	EC7 design approach for debris flow flexible barriers: applicability and limitations *F. Vagnon, A.M. Ferrero, A. Segalini*	Drying- and wetting- induced behavior of Shirahama sandstone under the evaporative condition of tunnel surface *M. Osada, S. Ohtake*	Effect of element surface roughness on brittle failure in hard rocks by DEM simulation *S. Nakashima, T. Sakamoto , N. Shimizu*	Blast wave propagation across jointed rock masses and its influence on the ground motion *S.B. Chai, J.C. Li, H.B. Li, N.N. Li , L.F. Rong*
12:00-12:15	Estimation of bond quality around rock bolts using ultrasonic wave *Y. Yokota, T. Mori , Y. Koizumi, K. Date*	Effects of matrix permeability and fracture density on flow pattern in dual porous rock masses *S. Namdari, A. Baghbanan, M. J. Habibi*	Development of 3D analytical solution of earth pressures using cemented paste backfill for supporting underground stope *S. Panchal, S. Jain , D. Deb,T. Sreenivas*	A numerical modelling study for determining ideal size and geometry of dog bone shaped direct tensile strength test rock specimens *E. Kömürlü , A. Kesimal, A.D. Demir*	Harmonizing rock mass properties through experimental, empirical and intelligent tools *J.A. López-Molina , H.N. Caballero-Ramos, S. García*
12:15-12:30	Structurally-related hangingwall alterations contributing to UG2 stope instabilities at Lonmin *A.G. Hartzenberg, M. du Plessis, A.E.W. Friese*	Hydro power plant Obervermuntwerk II - shotcrete phenomena in the power house cavern - decisions and remediation *C. Dich, F. Tschuchnigg , H.F. Schweiger*		Weathering effects on physical properties and material behaviour of granodiorite rocks *E. Köken, A. Özarslan, G. Bacak*	Characterization of a faulted rock mass for a dam foundation *T. Rotonda, A. Di Giulio, P. Tommasi, A. Graziani*
12:30-14:00	**Lunch**				

August 31, Wednesday

	PERİSSİA A Main Hall	ÜRGÜP Hall	SİNASOS Hall	SOBESOS Hall	NİSSA Hall
	Session - 26	*Session - 27*	*Session - 28*	*Session - 29*	*Session - 30*
Theme	**Risk management**	**Design methodologies and analysis - 2**	**Stability of slopes in civil and mining engineering - 3**	**Analytical and numerical methods in rock mechanics and rock engineering - 5**	**Rock properties, experimental rock mechanics and physical modelling - 5**
Chair	Xia-Ting Feng	Christophe Vibert	Massimo Coli	Charlie Chunlin Li	Michael Alber
14:00-14:15	Risk management: blasting rock near concrete inside a subway station in a densely populated urban environment *C.M. Nieble, J.A. Penteado*	Critical comparison between the double-convex and flat radial joints features in segmental tunnel lining *R.Osgoui, A.Poli, M.Pescara*	Application of the Q-slope method to highly weathered and saprolitic rocks in Far North Queensland *N. Bar, N.R. Barton, C.A. Ryan*	Stability analysis of raise bored shaft in Balya Mine, Turkey *A. Shaterpour-Mamaghani, T. Erdoğan*	Effect of porosity on uniaxial compressive strength of basaltic rock from Diyarbakır, Turkey *N. Hasancebi*
14:15-14:30	Novel investigation – Ermelo ring road to demarcate risk due to histori-cal coal mining *K.G. Schmid, P.L. Roux, C.J.S. Fourie*	Observational method in the context of rock engineering limit state design *N. Bozorgzadeh, J.P. Harrison*	The effects of strength parameters on slope failure mechanisms in weak rocks *Ö. Dinç, Z. Karaca, N. Işık*	Hard rock TBM performance: preliminary study based on an exploratory tunnel in the Alps *A. Rispoli, A.M. Ferrero, M. Cardu, L. Brino , A. Farinetti*	A geostatistical mapping of schmidt hammer rebound values of carbonate rocks *M. Başyiğit , H. Tunçdemir*
14:30-14:45	Application of three-dimensional rockfall modeling to rock-face engineering *C. Wendeler, Y. Bühler, P. Bartelt, J. Glover, R. Luis*	Design methodology for tunnels *W. Schubert, M. Brandtner, H. F. Schweiger, T. Marcher, N. Radončić*	The Lovers' Lane ("Via dell'Amore") rockfall events: a history of dangerous collapses *E. Raso, F. Faccini, P. Brandolini, M. Firpo*	Modeling unstable rock failures in underground excavations *E.C. Poeck, Z. Khademian, R. Garvey , U. Özbay*	Influences of angles between loading direction and foliation on mechanical characteristics for Takkiri gneiss, Taiwan *P. Y. Shu, S. W. Kao, T. T. Wang, F.Y. Hsiao*
14:45-15:00	Tunneling to safety – case study based risk management of underground facilities *V. Kongubangaram, C.P. Chakravarthy , R. Nair, A. Usmani*	Exploration structure at access adit Umpfental of Boßlertunnel, evaluation and interpretation *W. Wittke, D. Schmitt, P. Wittke-Gattermann*	The sliding surface roughness effect on landslides: A statistical study *M. Avlonitis, G. Efremidis, A. Konstantinidis, E. C. Aifantis*	An estimation of subsidence slope created by mining – A case study of Chahargonbad copper mine *M. Amjadi, K. Shahriar, S.E. Khezri , M.Y. Razavi*	The examination of a recently proposed model solution for shear behaviour of infilled natural rock joints based on multi-scale laboratory investigations *M. Zaré, F. Deák*
15:00-15:15	The Guvano complex landslide in the Cinque Terre National Park, Italy: geomorphological characterization, GNSS monitoring and risk management *E. Raso, P. Brandolini, F. Faccini , M. Firpo*	Methodology of the geotechnical design of the 27.3 km long Semmering Base Tunnel, Austria *Z. Ekici, G. Atzl, T. Schachinger, O. K. Wagner*	Gravity-driven deformation characteristics of consequent slate slopes *M.-C. Weng ,C.-M. Lo*	The effect of intermediate principal stress on the ground reaction curve at the tunnel crown *H. Mohammadi, H. Jalalifar, M.A. Ebrahimi, A.R. Ahmadi*	Ultrasonic wave measurements during uniaxial compression tests *G. Pittino, N. Gegenhuber, F. Reiter, R. Fröhlich*
15:15-15:30		Evaluation of stress corrosion cracking failure for steel anchoring elements *S. Wu, P. Craig, S. Saydam, P. C. Hagan, A. Crosky*		Analysis of coal burst phenomenon in underground coal mines *C. Zhang, I. Canbulat , F. Tahmasebinia*	
15:30-16:00	**Break**				
16:00-17:30	**Closing Ceremony**				