



SCIENTIFIC PROGRAMME

15th IAMG Conference, Madrid 2-5 September 2013



Spanish Geological Survey main hall

Monday, September 2th

Rey Pastor Room

Plenary Session

OPENING IAMG Madrid 2013

8:30 – 9:00 OPENING ACT

Dr. Jorge Civis Llovera (Director of the Spanish Geological Survey)

Dr. Francisco Javier Montero de Juan (Dean of the Faculty of Mathematics,
UCM)

Dr. Quiming Cheng (President IAMG)

Dr. Eulogio Pardo Igúzquiza (IAMG Madrid 2013 chairman)

CHAYES PRIZE

9:00 – 10:00 KEYNOTE SPEECH

COMPOSITIONAL DATA ANALYSIS, CHEMICAL EQUILIBRIA AND
THERMODYNAMICS

Raimon Tolosana Delgado (Helmholtz Institute Freiberg for Resource
Technology Helmholtz-Zentrum Dresden Rossendorf, Germany)

Monday, September 2th

Rey Pastor Room

Parallel Session

SESSION 14: HYDROGEOLOGY: FROM PROCESS UNDERSTANDING TO IMPROVED PREDICTIONS

Convener: Harrie-Jan Hendricks Franssen

10:00 – 11:15

CHALLENGES AND ADVANCES IN OPTIMIZING FIELD CAMPAIGNS: BAYESIAN CONCEPTS, DECISION PROBLEMS AND REAL-TIME INTERACTION (**invited**)

Wolfgang Nowak, Andreas Geiges, Felipe de Barros and Yoram Rubin

WHEN STEADY-STATE IS NOT ENOUGH

J. Jaime Gómez-Hernández, Teng Xu, Haiyan Zhou and Liangping Li

MULTIPOINT FLUX DOMAIN DECOMPOSITION METHODS FOR TRANSIENT FLOW MODELING IN HETEROGENEOUS POROUS MEDIA

Andrés Arrarás, Laura Portero and Ivan Yotov

ENSEMBLE KALMAN FILTER ASSIMILATION OF TRANSIENT GROUNDWATER FLOW DATA: STOCHASTIC MOMENT SOLUTION VERSUS TRADITIONAL MONTE CARLO APPROACH

Marco Panzeri, Monica Riva, Alberto Guadagnini and Shlomo P. Neuman

11:15 – 12:00 Coffee Break

12:00 – 13:00

HOW TO QUANTIFY THE UNCERTAINTY RELATED TO KARST AQUIFERS? 3D MODELING OF A KARST AQUIFER INCLUDING REALISTIC CONDUITS, FLOW AND TRANSPORT SIMULATION

Andrea Borghi and Philippe Renard

COUPLED HYDROGEOPHYSICAL SIMULATION OF WATER EXTRACTION IN AN UNCONFINED AQUIFER AND ITS ASSOCIATED GRAVIMETRIC ANOMALY

Andrés González Quirós and José Paulino Fernández Álvarez

BUILDING CONFIDENCE IN CONTAMINANT TRANSPORT MODELLING THROUGH THE INTEGRATION OF MULTIPLE DATA SOURCES AND EXPLICIT REPRESENTATION OF GEOLOGICAL HETEROGENEITY

Bart Rogiers, Matej Gedeon, Dirk Mallants, Okke Batelaan, Marijke Huysmans and Alain Dassargues

EFFECT OF ENTRAPPED GAS BELOW THE PHREATIC SURFACE ON PRESSURE PROPAGATION AND SOIL DEFORMATION

Héctor Montenegro, Oliver Stelzer and Bernhard Odenwald

13:15 – 15:00 Lunch Break

15:00 – 16:00

STOCHASTIC AQUIFER MODELING USING PATTERNS AND LOCAL FLOW SOLUTIONS

Laureline Josset, Ivan Lunati, Julien Straubhaar and Philippe Renard

HYDRAULIC CONDUCTIVITY IDENTIFICATION BY ENKF AND TRAVEL TIME MODELING OF TRANSPORT

Elena Crestani, Matteo Camporese and Paolo Salandin

FLOW DIVERSION INDUCED BY BIOMASS AND EXTRA POLYMERIC SUBSTANCES (EPS) IN INFILTRATION

A. Carles Brangarí, Daniel Fernàndez-Garcia, Xavier Sánchez-Vila and Anna Freixa, Anna M. Romaní and Simonetta Rubol

OPTIMAL RECONSTRUCTION OF 3D FRACTURE NETWORKS (FEBEX FIELD TEST, GRIMSEL SITE, SWISS ALPS)

Israel Cañamón, F. Javier Elorza and Rachid Ababou

16:15 – 16:45 Coffee Break

Monday, September 2th

Room1 (Aula S109)

Parallel Session

SESSION 1: ADVANCES IN CLASSICAL STATISTICS RELEVANT TO THE GEOSCIENCES

Conveners: Jack Schuenemeyer and Ricardo A. Olea

10:00 – 11:15

EVALUATING PREDICTIVE PERFORMANCE

Michael Scheuerer and Tilmann Gneiting

SPATIAL TEMPORAL MODELLING OF COMPLEX WIND FIELD SURFACES IN SPAIN

Joe Guinness and Montserrat Fuentes

MAXIMUM LIKELIHOOD INFERENCE FOR LARGE SPATIAL DATA SETS IN GEOSCIENCES

Kanti V. Mardia and Eulogio Pardo-Igúzquiza

PERFORMANCE EVALUATION OF SWANSON'S RULE FOR LOG-NORMAL DISTRIBUTIONS

Maryam Moghadasi and Jerry L. Jensen

ESTIMATING THE NUMBER AND LOCATIONS OF EULER POLES

Florian Bachmann, Peter E. Jupp and Helmut Schaeben

11:15 – 12:00 Coffee Break

12:00 – 13:00

AT THE INTERFACE BETWEEN MATHEMATICAL GEOSCIENCES AND CLASSICAL STATISTICS

Frits Agterberg

STATISTICAL MODELING OF A FORMER ARCTIC OCEAN ICE SHELF COMPLEX USING ANTARCTIC ANALOGIES

Reinhard Furrer, Nina Kirchner, Martin Jakobsson, H. Jay Zwally and John W. Robbins

MODELLING ORE BODIES OF HIGH-NUGGET GOLD USING CONDITIONAL PROBABILITY

June Hill, Nick Oliver, James Cleverley and Michael Nugus

TESTING FOR MICROHOMOGENEITY IN REFERENCE MATERIALS FOR MICROANALYTICAL METHODS

Raimon Tolosana-Delgado , Axel D. Renno, Przemlaw P. Michalak and K. Gerald van den Boogaart

13:15 – 15:00 Lunch Break

15:00 – 15:45

TOWARDS A STATISTICAL TREATMENT OF MINERAL LIBERATION ANALYSIS
IMAGE

Sandra Birtel, Raimon Tolosana-Delgado, Stephan Matos-Camacho, Jens
Gützmer and K.Gerald van den Boogaart

DISTRIBUTIONAL ASSUMPTIONS AND PARAMETRIC UNCERTAINTIES IN THE
AGGREGATION OF GEOLOGIC RESOURCES

John H. Schuenemeyer and Ricardo A. Olea

MODELING EXTREMAL DEPENDENCE USING COPULAS. APPLICATION TO
RAINFALL DATA

Maria I. Ortego, Juan J. Egozcue and Raimon Tolosana-Delgado

SESSION 8: FRACTALS, CHAOS AND COMPLEXITY IN THE EARTH SYSTEM

Convener: Carlos Paredes and Eulogio Pardo Igúzquiza

15:45 – 16:15

EVALUATION OF FRACTAL DIMENSION IN KARST AQUIFERS FROM THE
ANALYSIS OF THE DISCHARGE. THE CASE OF SPAIN

Pedro A. Robledo Ardila, Juan J. Durán Valsero and Eulogio Pardo Igúzquiza

FRACTAL MODELING OF KARST CONDUIT

Eulogio Pardo-Igúzquiza, Juan J. Durán, Pedro A. Robledo , Carolina Guardiola-
Albert, Juan A. Luque and Sergio Martos

16:15 – 16:45 Coffee Break

16:45 – 17:45

COMPLEX NETWORK APPROACH FOR EARTHQUAKE SCIENCE

Norikazu Suzuki

ANALYZING THE CONDITIONS IN WHICH FRACTAL INTERPOLATION FUNCTION
PRESERVE THE CONVEXITY OF INTERPOLATED DATA ON THOSE CONDITIONS

Tahereh Farbiz, Masud Sabaghan and Ahmad Kazemlou Sheikhi

FREQUENCY–AREA DISTRIBUTION OF HISTORICAL LANDSLIDES IN THE SANNIO
APENNINE (SOUTHERN ITALY)

Angelo Donnarumma, Paola Revellino and Francesco M. Guadagno

Monday, September 2th

Room 2 (Aula S108)

Parallel Session

**SESSION 20: GEOSTATISTICAL PRIORS IN INVERSION OF GEOPHYSICAL AND
ENGINEERING DATA**

Conveners: Klaus Mosegaard and Thomas Mejer Hansen

10:00 – 11:15

ASSESSING THE PROBABILITY OF TRAINING IMAGE-BASED GEOLOGICAL
SCENARIOS USING GEOPHYSICAL DATA

Hermans Thomas, Caers Jef and Nguyen Frédéric

HISTORY MATCHING OF CHANNELIZED RESERVOIR USING ENSEMBLE
SMOOTHER WITH CLUSTERED COVARIANCE

Kyungbook Lee and Jonggeun Choe

GEOSTATISTICAL INVERSION OF 3D POST-STACK SEISMIC AND WELL DATA FOR
THE CHARACTERIZATION OF ACOUSTIC IMPEDANCE IN OIL FIELDS

Fernando Alves and José A. Almeida

BAYESIAN INVERSION OF TIME-LAPSE SEISMIC DATA FOR CHANGES IN
RESERVOIR PROPERTIES

Dario Grana and Tapan Mukerji

MODELING GEOLOGICAL SCENARIO UNCERTAINTY FROM SEISMIC DATA USING
PATTERN SIMILARITY

Cheolkyun Jeong, Céline Scheidt, Jef Caers and Tapan Mukerji

11:15 – 12:00 Coffee Break

12:00 – 13:15

THE EFFECT OF THE NOISE AND THE REGULARIZATION IN INVERSE PROBLEMS.
GEOPHYSICAL IMPLICATIONS

José L. García Pallero, Juan L. Fernández-Martínez, Zulima Fernández-Muñiz and
L. Mariano Pedruelo-González

MARKOV CHAIN PRIORS IN SEISMIC AVO INVERSION

Henning Omre and Kjartan Rimstad

A GENERALIZED LOCAL GRADUAL DEFORMATION METHOD FOR HISTORY
MATCHING

Benjamin Marteau, Didier Y. Ding and Laurent Dumas

CONSTRAINING STOCHASTIC GEOPHYSICAL INVERSIONS WITH SUMMARY STATISTICS FROM TRAINING DATA

Tobias Lochbühler, Jasper A. Vrugt and Niklas Linde

RESERVOIR MODELING COMBINING GEOSTATISTICS WITH MARKOV CHAIN MONTE CARLO INVERSION

Andrea Zunino, Katrine Lange, Yulia Melnikova, Thomas M. Hansen and Klaus Mosegaard

13:15 – 15:00 Lunch Break

15:00 – 15:45

QUANTIFYING MODELIZATION ERROR USING GEOSTATISTICAL PRIORS

Thomas Mejer Hansen, Knud Skou Cordua, Bo Holm Jacobsen and Klaus Mosegaard

HISTORY MATCHING WITH GEOSTATISTICAL PRIOR: A SMOOTH FORMULATION

Yulia Melnikova, Katrine Lange, Andrea Zunino, Knud S. Cordua and Klaus Mosegaard

BAYESIAN FIRST ARRIVAL TRAVEL TIME TOMOGRAPHY BY INTERACTING MCMC

Thomas Romary, Alexis Bottero, Alexandrine Gesret, Nicolas Desassis and Mark Noble

SESSION 19: OPEN SESSION ON MATHEMATICS OF OIL RECOVERY (OSMOR)

Conveners: Sid-Ali Ouadfeul and Leila Aliouane

15:45 – 16:15

UPSCALING OF ANELASTIC VERTICALLY HETEROGENEOUS RESERVOIRS

Alexey Stovas

STOCHASTIC SIMULATION OF THE MORPHOLOGY OF FLUVIAL SAND CHANNEL RESERVOIRS

Alexandra Kuznetsova, José A. Almeida and Paulo Legoinha

16:15 – 16:45 Coffee Break

16:45 – 17:30

SORTING RESERVOIR MODELS ACCORDING TO FLOW CRITERIA: A NEW METHODOLOGY, USING FAST MARCHING METHODS AND MULTI-DIMENSIONAL SCALING

Gaëtan Bardy and Pierre Biver

INTEGRATE SPATIAL FACIES CLUSTERING INFORMATION IN RESERVOIR
MODELLING

Yupeng Li and Lihui Geng

PREDICTING AND MAPPING OF TIGHT OIL DISTRIBUTION OF YC FORMATION IN
ERDOS BASIN, CHINA

Hongbing Xie, Qiulin Guo, Rili Gao and Ningsheng Chen

Monday, September 2th

Room 3 (Aula S107a)

Parallel Session

SESSION 5: MACHINE LEARNING IN GEOSCIENCE APPLICATIONS

Converners: Vasily Demyanov and Mikhail Kanevski

10:00 – 11:15

LEARNING NEEDED COMPLEXITY IN STRUCTURAL MODELING USING PROCRASTES ANALYSIS

Orhun Aydin and Jef Caers

COMPARISON OF MICRO X-RAY COMPUTER TOMOGRAPHY IMAGE SEGMENTATION METHODS - ARTIFICIAL NEURAL NETWORKS VS. SUPPORT VECTOR MACHINE

Swarup Chauhan, Wolfram Rühaak, Frieder Enzmann, Faisal Khan, Philipp Mielke, Michael Kersten and Ingo Sass

FUZZY PARAMETERIZATION OF A FILTRATION MODEL FOR A NON-HOMOGENEOUS SEDIMENTARY ROCK

Elena Savelyeva and Aleksander Rastorguyev

PERMAFROST IN A RANDOM FOREST

Michael Leuenberger, Mikhail Kanevski and Nicola Deluigi

KERNEL PRINCIPAL COMPONENT ANALYSIS USING DYNAMIC SIMILARITY KERNEL TO INTERPRET SEISMIC SIGNATURES OF THIN SHALY-SAND RESERVOIRS

Piyapa Dejtrakulwong, Tapan Mukerji and Gary Mavko

11:15 – 12:00 Coffee Break

12:00 – 13:00

A PARTICLE SWARM OPTIMIZATION FOR PARAMETER ESTIMATION OF A RAINFALL-RUNOFF MODEL

Frédéric Bardolle, Frédéric Delay, Francis Bichot, Nathalie Dorfliger and Gilles Porel

SEQUENTIAL WEIGHTS OF EVIDENCE MODELLING AS MACHINE LEARNING PROCESSES FOR PREDICTIVE PURPOSES IN NATURAL RESOURCE PREDICTION AND ENVIRONMENTAL ASSESSMENT

Qiuming Cheng

FUNCTIONAL DATA ANALYSIS FOR UNCERTAINTY QUANTIFICATION

Laureline Josset, David Ginsbourger and Ivan Lunati

LEARNING UNCERTAINTY FROM TRAINING IMAGES FOR RESERVOIR
PREDICTIONS

Temitocles Rojas, Vasily Demyanov, Mike Christie and Darn Arnold

13:00 – 15:00 Lunch Break

SESSION 26: GEOSCIENCE DATA MODELS FOR PRACTICAL INTEROPERABILITY

Conveners: Helmut Schaeben, Santiago Martín Alfageme and Fernando Pérez Cerdan

15:00 – 16:15

TOWARDS PRACTICAL INTEROPERABILITY WITH GST

Paul Gabriel, Jan Gietzel, Hai Ha Le and Helmut Schaeben

GMML: AN APPLICATION OF 3D GEOLOGICAL MODEL DATA EXCHANGE

Zixing Wu, Honggang Qu, Zhangang Wang, Hui Chen, Jingchao Li, Mao Pan,
Yongbo Zhang and Xiaohong Wu

CONTROL THE SYSTEM, FREE THE DATA, FEED THE SCIENCE

Carl Watson

SWISS DATA MODELS FOR GEOLOGY – FROM 2D DATA TOWARDS GEOLOGICAL
3D MODELS

Cristina Salomè Michael, Nils Oesterling, Stefan Strasky and Roland Baumberger

GROUNDWATER FLOW MODEL "SAARLAND" – DATA EXCHANGE STRATEGY FOR
A REGIONAL MODEL

Thomas Walter

16:15 – 16:45 Coffee Break

16:45 – 17:30

VIRTUAL RESEARCH ENVIRONMENT FOR COLLABORATION OF
GEOGRAPHICALLY DISTRIBUTED GEOSCIENTISTS OF RUSSIAN ACADEMY OF
SCIENCES IN THE FAR EAST OF RUSSIA

Vera V.Naumova

GEOLOGICAL 3D MODELING (PROCESSES) AND FUTURE NEEDS FOR 3D DATA
AND MODEL STORAGE AT GEOLOGICAL SURVEY OF FINLAND

Eevaliisa Laine

REGISTRATION OF GEOLOGICAL DATA IN THE FIELD: THE OPEN SOLUTION
MO2GEO FIELDMODULE

Lars Schimpf and Wolfgang Gossel

Monday, September 2th

Rey Pastor Hall

Plenary Session

POSTER SESSION I

11:15 - 12:00

SESSION 1: ADVANCES IN CLASSICAL STATISTICS RELEVANT TO THE GEOSCIENCES

NEW TECHNIQUES IN UNIVARIATE AND MULTIVARIATE STATISTICS APPLIED TO GOLD EXPLORATION IN THE AMAPARI AREA, AMAZON REGION, BRAZIL

Luis P. Braga, F. José da Silva and Claudio Gerhiem Porto

THE EXTRACTION OF LONG-TERM DISTRIBUTION TRENDS OF ORE-SOURCED GEOCHEMICAL ELEMENTS FROM AN DRILL CORE IN THE LOESS COVERED AREA

Xu De-yi, Pei Hong-wei, Liu Ning-qiang, Yuan Zhao-xian, Yang Jie, Xie Shu-yun and Cheng Qiu-ming

NEW TECHNOLOGIES AND APPLICATION OF LARGE-SCALE THREE-DIMENSIONAL MINERAL PREDICTION AND EVALUATION RESEARCH

Xiao Ke-yan, Li Nan, Zou Wei, Sun Li and Li Ying

SESSION 5: MACHINE LEARNING IN GEOSCIENCE APPLICATIONS

BLIND SOURCE SEPARATION: THEORY AND APPLICATION IN GEOSCIENCES

Xianchuan Yu

ALPINE PERMAFROST MAPPING WITH SUPPORT VECTOR MACHINES

Nicola Deluigi, Mikhaïl Kanevski, Christophe Lambiel and Michael Leuenberger

ANALYSIS OF THE PARAMETRIZATION NEEDS OF DIFFERENT LAND COVER CLASSIFIERS: THE CASE STUDY OF GRANADA PROVINCE (SPAIN)

Víctor Rodríguez Galiano and Mario Chica-Olmo

AUTOMATIC RAMAN SPECTRA PROCESSING

Isaac Hermosilla Rodriguez and Guillermo López-Reyes and Fernando Rull Perez

IDENTIFICATION OF SPATIAL MODELS OF THE SEASONAL VARIABILITY OF 18O IN RAINFALL OVER SPAIN USING GENETIC ALGORITHMS

Javier Heredia, Eulogio Pardo-Igúzquiza, Javier Rodríguez-Arévalo, Silvino Castaño, M.Fe Díaz-Teijeiro, José E. Capilla, Antonio Prado and Lara Bardasano

APPLICATION OF MULTIVARIATE ANALYSIS TECHNIQUES FOR THE IDENTIFICATION OF SULFATES FROM RAMAN SPECTRA

Guillermo Lopez-Reyes, Pablo Sobron, Catherine Lefevbre and Fernando Rull

SPACE MINERAL DATA PROCESSING BASED ON SENSITIVITY ANALYSIS METHODS OF HIERARCHICAL HYBRID FUZZY-NEURAL NETWORK

Xianchuan Yu, Yali Ren, Sha Dai, Dan Hu, Libao Zhang and Guian Wang

SESSION 8: FRACTALS, CHAOS AND COMPLEXITY IN THE EARTH SYSTEM

EXPERIMENTAL MODELS OF WETTING FRONTS IN SOILS: THE FRACTAL BEHAVIOUR OF WETTING FRONTS IN HETEROGENEOUS POROUS MEDIA

Pilar López González-Nieto, Ana Maria Tarquis and José Manuel Redondo

SESSION 14: HYDROGEOLOGY: FROM PROCESS UNDERSTANDING TO IMPROVED PREDICTIONS

NEW ANALYTICAL SOLUTIONS FOR PHREATIC DARCIAN FLOWS OVER NON-PLANAR BEDROCKS

Anvar R. Kacimov, Yurii Obnosov and Osman Abdalla

APPLICATION OF DATA-DRIVEN EVIDENTIAL BELIEF FUNCTION FOR SPATIAL GROUNDWATER-PRODUCTIVITY-POTENTIAL MAPPING

Saro Lee and Inhye Park

GROUNDWATER RECHARGE RATES FOR REGIONAL GROUNDWATER MODELING IN THE MANCHA ORIENTAL AQUIFER SYSTEM (SE SPAIN)

David Sanz, Santiago Castaño, Eduardo Cassiraga, Juan J. Gómez-Alday, Maria M. Odi-Lara and Andrés Sahuquillo

ANALYSIS OF GROUNDWATER MODEL RESULTS ASSOCIATED WITH SPATIAL DISCRETIZATION AND MODEL LAYER SIMPLIFICATION

J. Oriol Navarro, David Sanz, Eduardo Cassiraga, Santiago Castaño and Juan J. Gómez-Alday

HYDROGEOLOGICAL AND THERMAL MODELING OF AN UNDERGROUND MINING RESERVOIR

Clara Andrés, Almudena Ordóñez and Rodrigo Álvarez

GROUNDWATER FLOW MODEL "SAARLAND" – DATA EXCHANGE STRATEGY FOR A REGIONAL MODEL

Thomas Walter

RATIONAL LANCZOS REDUCTION OF GROUNDWATER FLOW MODELS TO PERFORM EFFICIENT SIMULATIONS OF SURFACE-GROUND WATER RELATIONSHIPS IN SYSTEMS OF CONJUNCTIVE USE

Oscar D. Álvarez-Villa, Eduardo Cassiraga and Sahuquillo

EFFICIENT GENERATION OF EFFECTIVE MODES AND SPECTRAL MASKS TO BUILD A REDUCED GROUNDWATER FLOW MODEL USING THE EIGENVALUE METHOD WITH SELECTIVE COMPRESSION AND MODAL MASKING

Oscar D. Álvarez-Villa, Eduardo Cassiraga and Andrés Sahuquillo

TIME SERIES ANALYSIS OF GROUNDWATER HYDROGRAPHS - CASE STUDY FROM A HARDROCK AREA

Wolfgang Gossel and Ronny Laehne

ANALYSIS OF MINE GROUNDWATER REBOUND AT THE DONGWON COAL MINE IN KOREA USING GRAM MODEL

Sebeom Park, Yosoon Choi, Hwanjo Baek and Seung-Han Shin

THE USE OF REGRESSION ANALYSIS TO FIND THE EQUATIONS OF SORPTION OF HEAVY METALS FOR MIGRATION MODELLING

Irina Galitskaya and Gleb Batrak

IMPACT OF SEASONALITY AND LONG-TERM FLUCTUATIONS IN GROUNDWATER LEVELS ON ACCURACY OF HYDROGEOLOGICAL FORECASTS MADE BY THE NUMERICAL METHOD

Gleb Batrak, Stanislav Semenov, Stanislav Seleznev and Irina Galitskaya

A STUDY ON THE MONITORING AND PREDICTION OF WATER-ERODED DESERTIFICATION WITH REMOTE SENSING AND GEO-CA MODEL IN XIAOJIANG RIVER BASIN, CHINA

Zhifang Zhao, Wenchun Wu and Yujing Mao

MULTIVARIATE GEOSTATISTICAL SIMULATION FOR CHARACTERIZATION OF A QUATERNARY AQUIFER IN THE UPPER SALZACH VALLEY, AUSTRIA

Carmen Jandrisevits

APPLICATION OF STATE-OF-THE-ART GEOMATHEMATICAL METHODS - CASE STUDY SEEWINKEL, BURGENLAND AU

Istvan Gabor Hatvani, Norbert Magyar, Mathias Zessner, Jozsef Kovacs, Judit Madl-Szonyi and Alfred P. Blaschke

SESSION 19: OPEN SESSION ON MATHEMATICS OF OIL RECOVERY (OSMOR)

LITHOFACIES CLASSIFICATION FROM WELL-LOGS DATA USING THE MULTILAYER PERCEPTRON AND THE SELF-ORGANIZING MAP NEURAL NETWORKS

Sid-Ali Ouadfeul and Leila Aliouane

PERMEABILITY PREDICTION FROM WELL-LOGS DATA USING THE ARTIFICIAL NEURAL NETWORK

Leila Aliouane, Sid-Ali Ouadfeul and Amar Boudella

A COMPARATIVE STUDY OF SOME WELL-LOGS DATA FILTERS. APPLICATION TO ALGERIAN SAHARA

Leila Aliouane, Sid-Ali Ouadfeul and Amar Boudella

FRACTAL ANALYSIS OF AVO SEISMIC ATTRIBUTES FOR OIL/WATER CONTACT IDENTIFICATION

Sid-Ali Ouadfeul and Leila Aliouane

SEISMIC DATA INTERPRETATION IMPROVEMENT BY THE MULTISCALE ANALYSIS OF GRAVITY DATA USING THE WAVELET TRANSFORM. APPLICATION TO ALGERIAN SAHARA

Sid-Ali Ouadfeul and Leila Aliouane

AVO SEISMIC DATA INVERSION USING GLOBAL SIMULTANEOUS TECHNIQUE

Said Eladj, Sid-Ali Ouadfeul, Leila Aliouane, and Nouredine Djarfour

ACOUSTIC IMPEDANCE INVERSION OF SEISMIC DATA USING GENETIC ALGORITHM

Said Eladj, Nouredine Djarfour, Djalal Ferahtia and Sid-Ali Ouadfeul

SESSION 26: GEOSCIENCE DATA MODELS FOR PRACTICAL INTEROPERABILITY

INSPIRED GEODATA CLOUD SERVICES – GEOHAZARD USE CASE

Martin Podboj and Jasna Sinigoj

Tuesday, September 3th

Rey Pastor Room

Plenary Session

MATHERON LECTURE

9:00 – 10:00 KEYNOTE SPEECH

QUANTIFYING UNCERTAINTY FOR MINERAL AND ENERGY RESOURCE
EXPLOITATION – SOURCES, RANDOMNESS, SCALE AND STRUCTURE
Professor Peter Dowd (Univeristy of Adelaide, Australia)

Tuesday, September 3th

Rey Pastor Room

Parallel Session

SESSION 17: MODELING OF ENERGY RESOURCES

Conveners: Ricardo A. Olea and Jef Caers

10:00 – 11:15

MOVING AWAY FROM RESOURCE CLASSIFICATION AS A MEASURE OF UNCERTAINTY

Ricardo A. Olea, James A. Luppens and Susan J. Tewalt

CBM PRODUCTION ANALYSIS AND FILTER SIMULATION FOR QUANTIFYING GAS DRAINAGE FROM COAL SEAMS

C. Özgen Karacan and Ricardo A. Olea

USE OF TANK EXPERIMENT DATA IN SURFACE-BASED MODELING

Siyao Xu, Andre Jung, Tapan Mukerji and Jef Caers

A DISTANCE-BASED GENERALIZED SENSITIVITY ANALYSIS FOR ENERGY RESOURCES MODELLING

Céline Scheidt, Darryl Fenwick and Jef Caers

COAL QUALITY ESTIMATION USING DATA FROM BLAST HOLES GEOPHYSICAL LOGGING WITH NON-RADIOACTIVE SOURCES

George Olufunmilayo Gasper, Vlória Cristina G. de Souza, Paulo Salvadorette, João F. Coimbra Leite Costa

11:15 – 12:00 Coffee Break

12:00 – 13:15

THE RELATIONSHIP BETWEEN SKIN AND APPARENT WELLBORE RADIUS IN FRACTAL DRAINAGE AREAS

Tom Aage Jelmert

MODELING SEDIMENTARY STRUCTURES USING A BOUNDARY REPRESENTATION BASED ON NON UNIFORM RATIONAL B-SPLINES

Jeremy Ruiu, Guillaume Caumon, Sophie Viseur and Christophe Antoine

OPTIMIZED HISTORY MATCHING WITH STOCHASTIC IMAGE TRANSFORMING OF A DELTAIC RESERVOIR

M. Helena Caeiro, Amilcar Soares, Vasily Demyanov and Mike Christie

ES-MDA FOR ASSISTED HISTORY MATCHING AND UNCERTAINTY QUANTIFICATION

Duc Le and Albert C. Reynolds

PARETO-OPTIMALITY WITH APPLICATION TO UNCERTAINTY ASSESSMENT OF INDIVIDUAL WELL PERFORMANCE

Baehyun Min, Changhyup Park, Joe M. Kang, Sunghoon Chung, and Ilsik Jang

13:15 – 15:00 Lunch Break

15:00 – 16:00

PROBABILISTIC MODELING OF A DEEPWATER RESERVOIR

Yuhong Liu, Lianshuang Qi, Bill Keyser, Julio de la Colina, Robert Scamman and Victor Pusca

CONDITIONING 3D OBJECT BASED MODELS

Jeff B. Boisvert and Michael Pyrcz

VALUE OF INFORMATION ANALYSIS FOR DEPENDENT PROSPECTS

Jo Eidsvik

QUANTIFYING UNCERTAINTIES IN BASIN SIMULATION IN CASE OF PRUDHOE BAY FIELD

Dinara Shapabaeva

16:15 – 16:45 Coffee Break

SESSION 27: ADVANCES ON STOCHASTIC NON LINEAR METHODS AND INVERSE PROBLEMS FOR DYNAMIC MODELS

Convener: José A. Vargas-Guzmán

16:45 – 17:15

ESTIMATION OF PARAMETERS IN RANDOM DYNAMICAL SYSTEMS

Silke Konsulke, K. Gerald van den Boogaart, Felix Ballani Markus Franke and Martin Sauke

A FIVE-PARAMETER NON-LINEAR MODEL FOR DESCRIBING ELEMENT CONCENTRATION BEHAVIOR IN VERTICAL REGOLITH PROFILE OVER MINERAL DEPOSITS CAUSED BY MULTIPLICATIVE CASCADE MIGRATION PROCESSES

Qiuming Cheng

PREDICTION OF THE LOCALIZATION OF GOLD MINERALIZATION BASED ON THE ANALYSIS OF MULTIDIMENSIONAL STRUCTURES OF DIVERSE SEARCH CRITERIA IN THE POLAR URALS

Julia Ivanova

Tuesday, September 3th

Room1 (Aula S109)

Parallel Session

SESSION 7: PARAMETERIZATION OF SOIL SYSTEMS AT DIFFERENT SCALES

Conveners: Yakov Pachepsky, Fernando San José Martínez, Miguel Ángel Martín and
Dai Yongjiu

10:00 – 11:15

FREQUENCY DISTRIBUTIONS AND SCALING OF SOIL TEXTURE AND HYDRAULIC PROPERTIES IN A STRATIFIED DEEP VADOSE ZONE NEAR MARICOPA, ARIZONA
Alberto Guadagnini, Shlomo P. Neuman, Marcel G. Schaap and Monica Riva

THE TERRESTRIAL MODELING SYSTEM
Yongjiu Dai, Duoying Ji, Wei Shangguan, Qian Zhang and Lili Wang

PARAMETERIZATION OF SOIL THERMAL DIFFUSIVITY VS MOISTURE CONTENT DEPENDENCIES AND MODELING SPATIAL HETEROGENEITY OF SOIL TEMPERATURE
Tatiana Arkhangelskaya

GEOMETRICAL QUANTIFICATION OF SOIL MACROPOROSITY WITH MORPHOLOGICAL FUNCTIONS FOR CT IMAGES OF INTACT SOIL COLUMNS
Fernando San José Martínez, Francisco J. Muñoz, Francisco J. Caniego and Fernando Peregrina

ESTIMATION OF MULTILAYERED SOIL PROPERTIES BY INVERSION OF A CROP MODEL USING SURFACE SOIL MOISTURE AND LAI: EVALUATION ON EXPERIMENTAL DATASETS
Samuel Buis, Sreelash K., Martine Guérif, Muddu Sekhar, Laurent Ruiz, Sat Kumar Tomer, Amit Sharma and Françoise Ruget

11:15 – 12:00 Coffee Break

12:00 – 13:15

DRAINAGE NETWORKS, SOIL LAYERING AND PARTICLE SIZE DISTRIBUTION: OUTCOMES OF THE BEDROCK LITHOLOGY
Joaquín Cámara, G. Hernando, Vicente Gómez-Miguel and, Miguel A. Martín

ENTROPIC ANALYSIS OF THE PEDOTAXA SPATIAL DISTRIBUTION IN EUROPE
Javier Caniego Monreal, Fernando San José Martínez, Juan J. Ibáñez Martí and Raúl Pérez-Gómez

A PACKING COMPUTATIONAL METHOD RELATING PARTICLE SIZE DISTRIBUTION AND VOID FRACTION IN GRANULAR MEDIA
Carlos García-Gutiérrez, Miguel A. Martín, Miguel Reyes and Francisco J. Taguas

CASCADE OF PROPPANT-SANDWICHED SILT BLOCKS AS A DOUBLE-CONTINUUM: FROM DISCOVERY TO MATHEMATICAL MODELING

Anvar R. Kacimov, Said Al-Ismaïly, Ali Al-Maktoumi, Hamed Al-Busaidi and Said Al-Saqri

QUALITATIVE AND QUANTITATIVE INVESTIGATION OF MICROSTRUCTURES WITHIN POROUS ROCKS BY USING VERY HIGH RESOLUTION X-RAY MICRO-CT IMAGING

Gerhard Zacher, Matthias Halisch, Thomas Mayer and Peter Westenberger

13:15 – 15:00 Lunch Break

15:00 – 15:15

SOIL HYDROLOGICAL PROPERTIES FOR FORECASTING MATHEMATICAL MODELS: SIGNIFICANCE OF THE SAMPLE DIMENSIONS

Evgey V. Shein, Aminat B.Umarova, Evgeny Y. Milanovskiy and A. V. Dembovetsky

SESSION 22: RECENT ADVANCES IN QUANTITATIVE METHODS APPLIED TO STRATIGRAPHY AND PALEONTOLOGY'

Conveners: Andrea Baucon and Carlos Neto de Carvalho

15:15 – 16:15

A NEW MATHEMATICAL APPROACH TO MODEL TROPHIC DYNAMICS OF MAMMALIAN PALAEOCOMMUNITIES. THE CASE OF ATAPUERCA-TD6

Guillermo Rodríguez-Gómez, Jesús Ángel Martín-González, Idoia Goikoetxea, Ana Mateos and Jesús Rodríguez

BASIN ANALYSIS OF LATE QUATERNARY BALTIC SEA SEDIMENTS

Jan Harff, Rudolf Endler, Sergey Kotov and Ricardo A. Olea

ICHNONETWORK ANALYSIS: NEW TOPOLOGIES OF BIOLOGIC BEHAVIOUR

Andrea Baucon and Fabrizio Felletti

COMMUNITY-ANALYSIS BASED ON SOCIAL NETWORK APPLICATIONS IN CANELAS FOSSIL SITE (MIDDLE ORDOVICIAN, PORTUGAL): RESOURCES PARTITIONING IN THE GIANT TRILOBITES ECOSPACE

Carlos Neto de Carvalho, Andrea Baucon, Manuel Valério and Helena Couto

16:15 – 16:45 Coffee Break

Tuesday, September 3th

Room 2 (Aula S108)

Parallel Session

SESSION 13: DEFORMATION MODELING, GEODYNAMICS AND NATURAL HAZARDS

Conveners: José Fernández and Pablo J. González

10:00 – 11:15

AN UPDATE GPS VELOCITY AND STRAIN RATE FIELDS FOR THE IBERIAN REGION

Mimmo Palano, Pablo J. González and José Fernández

3D COUPLED GEOPHYSICAL-PETROLOGICAL MODELLING OF THE CANARY ISLANDS AND NORTH-WESTERN AFRICAN MARGIN LITHOSPHERE

Javier Fullea, Antonio G. Camacho and José Fernández

INVESTIGATION OF ASEISMIC CREEP ON THE HAYWARD FAULT, CA, USING ADVANCED POLARIZED DINSAR METHODS

Kristy F. Tiampo, Pablo J. González, Sergey V. Samsonov and Samira Alipour

ON THE MATHEMATICAL TREATMENT OF SOME ELASTIC-GRAVITATIONAL MODELS

Jesús I. Díaz

11:15 – 12:00 Coffee Break

12:00 – 13:15

SOME INSIGHTS ABOUT VOLCANO DEFORMATION INTERPRETATION BASED ON FEM

María Charco and Pedro Galán del Sastre

MODELING OF THE GROUND DEFORMATION FIELD OF RESURGENT CALDERAS DETECTED VIA SPACEBORNE SAR INTERFEROMETRY

Pietro Tizzani, Maurizio Battaglia, Raffaele Castaldo, Francesco Casu, Riccardo Lanari, Andrea Manconi, Mariarosaria Manzo, Antonio Pepe, Susi Pepe, Eugenio Sansosti and Giovanni Zeni

SURFACE DISPLACEMENTS, DEFORMATIONS AND GRAVITY CHANGES DUE TO UNDERGROUND HEAT SOURCE

Ladislav Brimich and Igor Kohút

REINTERPRETATION OF TEIDE 2004–2005 GRAVITY CHANGES BY 3D LINE SEGMENTS APPROXIMATION

Peter Vajda, Ilya Prutkin and Jo Gottsmann

13:15 – 15:00 Lunch Break

**SESSION 15: QUANTITATIVE HYDROLOGY: WORKING ACROSS SCIENTIFIC DISCIPLINES
AND TIME-SPACE SCALES**

Conveners: Leticia Rodríguez and Allen Batteman Pinzón

15:00 – 16:15

NUMERICAL ANALYSIS OF STREAM-GROUNDWATER INTERACTIONS IN A
FLOODPLAIN FOLLOWING AN EMBANKMENT OPENING

Héctor Montenegro

MODELS OF PARALLEL LINEAR RESERVOIRS (PLR) WITH WATERSHED
TRAVERSAL ALGORITHM (WTA) IN BEHAVIOUR RESEARCH OF HYDROLOGICAL
PROCESSES IN CATCHMENTS

Jesús Mateo Lázaro, José Ángel Sánchez Navarro, Alejandro García Gil and
Vanesa Edo Romero

MATHEMATICAL SIMULATION AND OPTIMIZATION OF PRE-DAMS FOR
EUTROPHICATION CONTROL

Lino J. Alvarez-Vázquez, Francisco J. Fernández and Aurea Martínez

MATHEMATICAL MODELLING OF SEDIMENTATION IN RIVERS AND CANALS: AN
OPTIMIZATION APPROACH

Aurea Martínez, Lino J. Alvarez-Vázquez, Carmen Rodríguez and Miguel E.
Vázquez-Méndez

OPTIMAL DEVELOPMENT OF REGIONAL RAIN NETWORK USING ENTROPY AND
GEOSTATISTICS

Hadi Mahmoudi-Meimand, Sara Nazif and Hasan-Ali Faraji-Sabokbar

16:15 – 16:45 Coffee Break

16:45 – 17:30

AN ANALYTICAL SOLUTION OF TIDE-INDUCED HEAD FLUCTUATIONS IN AN
INHOMOGENEOUS COASTAL AQUIFER

Luis Guarracino and Leonardo B. Monachesi

EFFECT OF SPATIAL HETEROGENEITY ON RATE OF SEDIMENTARY O₂
CONSUMPTION REACTION

Tanushee Dutta and Simonetta Rubol

Tuesday, September 3th

Room 3 (Aula S107a)

Parallel Session

SESSION 3: COMPOSITIONAL DATA ANALYSIS APPLIED TO GEOCHEMISTRY

Conveners: Antonella Buccianti and Eric Grunsky

10:00 – 11:15

COMPOSITIONAL DATA: LAST ADVANCES IN THE ZERO PROBLEM

Josep A. Martín-Fernández and Javier Palarea-Albaladejo

MULTIVARIATE ANALYSIS OF THE UNITED STATES PORTION OF THE NORTH AMERICAN SOIL GEOCHEMICAL LANDSCAPES PROJECT – A COMPOSITIONAL APPROACH

Eric C. Grunsky, Lawrence J. Drew, David B. Smith and David M. Sutphin

COMPOSITIONAL ANALYSIS OF EMERGING CONTAMINANTS PRESENCE IN THE LLOBREGAT AQUIFER

Karim Tamoh, Lucila Candela and Juan J. Egozcue

DISCRIMINANT ANALYSIS OF PALAEOGENE BASALT LAVAS, NORTHERN IRELAND, USING SOIL GEOCHEMISTRY

Jennifer M. McKinley, Sam Roberson and Raimon Tolosana-Delgado

STRUCTURAL ANALYSIS OF THE NATIONAL GEOCHEMICAL SURVEY OF AUSTRALIA DATA

Johnny Lo, Ute Mueller, Patrice de Caritat and Eric Grunsky

11:15 – 12:00 Coffee Break

12:00 – 13:15

ANALYSIS OF TOTAL ABUNDANCES OF PHYTOPLANKTON IN A RIVER

Vera Pawlowsky-Glahn, Juan J. Egozcue and David Lovell

MODELLING WORLD ENERGY APPLYING SIMPLICIAL LINEAR DIFFERENTIAL EQUATIONS

Eusebi Jarauta-Bragulat, Carme Hervada-Sala and Juan J. Egozcue

ROBUST REGRESSION WITH COMPOSITIONAL RESPONSE: APPLICATION TO GEOSCIENCES

Karel Hron, Peter Filzmoser, Matthias Templ, K. Gerald van den Boogaart and Raimon Tolosana-Delgado

13:15 – 15:00 Lunch Break

SESSION 23: GEO-MATHEMATICAL MODELS OF FOLDS AND FOLDING

Conveners: Juan I. Soto, Josep Poblet and Fernando Bastida

15:00 – 16:15

THE GEOMETRY OF GEOLOGICAL FOLDS (invited)

Richard J. Lisle

2D DISCRETE ELEMENT MODELLING OF CONTRACTIONAL FOLDS IN COVER SEQUENCES WITH COMPLEX MECHANICAL STRATIGRAPHIES

Stuart Hardy

NON-EQUILIBRIUM THERMODYNAMICS OF FOLDING IN GEOMATERIALS

Martin K. Paesold, Tim Dodwell, Ali Karrech, Andrew P. Bassom, Alison Ord and Bruce E. Hobbs

MECHANICS OF FOLD DEVELOPMENT IN PURE AND SIMPLE SHEAR

Maria-Gema Llorens, Paul D. Bons, Albert Griera and Enrique Gómez-Rivas

16:15 – 16:45 Coffee Break

16:45 – 17:15

ANALYTICAL AND NUMERICAL INVESTIGATION OF 3D MULTILAYER DETACHMENT FOLDING

Naiara Fernández and Boris J.P. Kaus

3D GEOMETRY OF AN ACTIVE SHALE-CORED ANTICLINE IN THE WESTERN SOUTH CASPIAN BASIN

Idaira Santos Betancor, Juan I. Soto, Lidia Lonergan, Ismael Sánchez-Borrego and Carlos Macellari

Tuesday, September 3th

Rey Pastor Hall

Plenary Session

POSTER SESSION II

11:15 - 12:00

*SESSION 3: COMPOSITIONAL DATA ANALYSIS APPLIED TO
GEOCHEMISTRY*

COMPOSITIONAL ANALYSIS IN THE STUDY OF MINERALIZATION BASED
ON STREAM SEDIMENT DATA

Renguang Zuo

DO CODA PRINCIPLES IMPROVE INTERPRETATION OF GEOCHEMICAL
DATA FOR MINERAL PROSPECTIVITY ANALYSIS?

Patrice de Caritat, Eric Grunsky and Alan Mann

SESSION 7: PARAMETERIZATION OF SOIL SYSTEMS AT DIFFERENT SCALES

INCLUDING THE SELFSIMILARITY OF THE PARTICLE SIZE DISTRIBUTION IN
THE DEVELOPMENT OF PEDOTRANSFER FUNCTIONS

Carlos García-Gutiérrez, Joaquín Cámara and Miguel A. Martín

UPSCALING PEDOTRANSFER RESULTS TO PARAMETERIZE NUMERICAL
MODELS OF FLOW AND TRANSPORT IN FIELD SOILS

Yakov A. Pachepsky, Alexander M. Yakirevich, Andrey K. Guber and
Timothy J. Gish

*SESSION 13: DEFORMATION MODELING, GEODYNAMICS AND NATURAL
HAZARDS*

EARTH MODELS AT THE LOW ANDARAX RIVER VALLEY (SE SPAIN) BY
MEANS OF CROSS-CORRELATION OF AMBIENT NOISE

Abigail Jiménez, Antonio García-Jerez, Enrique Carmona, Francisco
Sánchez-Martos and Francisco Luzón

SPATIOTEMPORAL FILTERING OF CONTINUOUS GPS DATA

Kristy F. Tiampo, Pablo J. González, Sergey V. Samsonov and José
Fernández

SPATIOTEMPORAL ANALYSIS OF GROUND DEFORMATION AT CAMPI
FLEGREI CALDERA, ITALY, OBSERVED BY ENVISAT AND RADARSAT-2
INSAR DURING 2003-2013

Sergey V. Samsonov, Pablo J. González and Kristy F. Tiampo

THE 2012 KILAUEA VOLCANO, HAWAII, SLOW-SLIP EVENT CAPTURED BY
CGPS AND SATELLITE RADAR INTERFEROMETRY

Pablo J. González, Sergey V. Samsonov and Mimmo Palano

GEOLOGICAL STRUCTURES AND LANDSLIDES MODELING

Valentina B.Svalova

ANTHROPOGENIC AND NATURAL GROUND DEFORMATION OBSERVED
IN BOLOGNA REGION, ITALY

Sergey V. Samsonov, Pablo J. González and Kristy F. Tiampo

3D IMAGE OF THE 1997-99 ACTIVE DISTRIBUTE MAGMA SOURCE AT
LONG VALLEY CALDERA, CA, VIA JOINT INVERSION OF INSAR AND
GRAVITY MEASUREMENTS

Pietro Tizzani, Antonio G. Camacho, José Fernández and Francesco Casu

OBSERVATION AND DETECTION OF UNDERGROUND CELLARS IN THE
DUERO BASIN BY GNSS, LÍDAR AND GROUND PENETRATING RADAR
TECHNIQUES

Miguel A. Conejo-Martín, Tomás R. Herrero-Tejedor, Enrique Pérez-
Martín, Javier Lapazarán-Izargain, Jaime Otero-García, Juan F. Prieto-
Morín and Jesús Velasco Gómez

*SESSION 15: QUANTITATIVE HYDROLOGY: WORKING ACROSS SCIENTIFIC
DISCIPLINES AND TIME-SPACE SCALES*

THE SYSTEM OF CHEMICAL ELEMENTS DISTRIBUTION IN THE
HYDROSPHERE

Vyacheslav D. Korzh

MAPPING OF FLOOD-PLAIN BY PROCESSING OF ELEVATION DATA FROM
REMOTE SENSING

Viviana Aguilar Muñoz

QUANTITATIVE ESTIMATION OF SUBSURFACE RUNOFF IN THE
SOUTHERN AREA OF JAPAN

Tokuo Kishii

INVESTIGATION OF THE RIVERBED CLOGGING WITH MULTIVARIATE
DATA ANALYSIS

Balázs Trásy, József Kovács, Tibor Németh, Csaba Szabó and Péter
Scharek

SESSION 17: MODELING OF ENERGY RESOURCES

PARAMETERIZATION OF CHANNELIZED TRAINING IMAGES: A NOVEL
APPROACH FOR MULTIPLE-POINT SIMULATIONS OF FLUVIAL
RESERVOIRS

Mohamed M. Fadlelmula, Serhat Akin and Sebnem Duzgun

GEOSTATISTICAL AVO DIRECT FACIES INVERSION

Leonardo Azevedo, Pedro Correia, Rubén Nunes and Amílcar Soares

SESSION 22: RECENT ADVANCES IN QUANTITATIVE METHODS APPLIED TO STRATIGRAPHY AND PALEONTOLOGY

ICHNONETWORK ANALYSIS OF DECAPOD RADIATION: THE PERMIAN-TRIASSIC SUCCESSION OF NURRA (SARDINIA, ITALY)

Andrea Baucon, Ausonio Ronchi and Fabrizio Felletti

MULTIFRACTALS AND CAPACITY DIMENSION AS MEASURES OF DISTURBANCE PATCH DYNAMICS IN DAEDALUS ICHNOFABRICS

C. Neto de Carvalho and Andrea Baucon

HOLOCENE SEDIMENTARY PROCESSES AND QUANTITATIVE TEXTURAL ANALYSIS OF THE WEST BENGAL SUNDARBANS

Rory Patrick Flood and Julian David Orford

SESSION 23: GEO-MATHEMATICAL MODELS OF FOLDS AND FOLDING

GRAVITY-INSTABILITY PROCESSES AND MASS-TRANSPORT COMPLEXES DURING FOLDING: THE CASE OF A SHALE-CORED ANTICLINE IN THE WESTERN SOUTH CASPIAN BASIN

Idaira Santos Betancor, Lidia Lonergan, Juan I. Soto and C. Macellari

STOCHASTIC MODELLING OF THE 3D GEOMETRY OF A FAULTED AND FOLDED DEEP CARBONATE AQUIFER: LOMA DE ÚBEDA (SOUTHERN SPAIN)

Javier Heredia, Eulogio Pardo-Igúzquiza and Antonio González-Ramón

Wednesday, September 4th

Rey Pastor Room

Plenary Session

VISTELIUS AWARD

9:00 – 10:00 KEYNOTE SPEECH

FROM COMPUTER GRAPHICS TO MULTIPLE-POINT GEOSTATISTICS
Gregoire Mariethoz (School of Civil and Environmental Engineering, Australia)

Wednesday, September 4th

Rey Pastor Room

Parallel Session

SESSION 2: FRONTIER GEOSTATISTICS

Convener: J. Jaime Gómez-Hernández

10:00 – 11:15

GEOSTATISTICS: A COMMON LINK BETWEEN MEDICAL GEOGRAPHY,
MATHEMATICAL GEOLOGY, AND MEDICAL GEOLOGY

Pierre Goovaerts

A QUANTITATIVE COMPARISON OF MULTIPLE-POINT ALGORITHMS USING AN
ANALYSIS OF DISTANCE METHOD

Xiaojin Tan, Pejman Tahmasebi and Jef Caers

GEOSTATISTICAL HISTORY MATCHING CONDITIONED TO SEISMIC DATA

Amílcar Soares, Leonardo Azevedo, Sara Focaccia and Joao Carneiro

FAST MULTIPLE POINT GEOSTATISTICAL SIMULATION USING A MULTI-SCALE
APPROACH

Pejman Tahmasebi and Jef Caers

HANDLING SOFT PROBABILITIES IN MULTIPLE POINT STATISTICS SIMULATION
WITH DIRECT SAMPLING TECHNIQUE

Pierre Biver, Gregoire Mariethoz, Julien Straubhaar, Tatiana Chugunova and
Philippe Renard

11:15 – 12:00 Coffee Break

12:00 – 13:15

SEMI-VARIOGRAM MODEL INFERENCE USING THE MEDIAN BOOTSTRAP
STATISTICS

Eulogio Pardo-Igúzquiza, Ricardo A. Olea and Peter A. Dowd

PRAGMATIC BAYESIAN KRIGING FOR NON-STATIONARY AND MODERATELY
NON-GAUSSIAN DATA

Konstantin Krivoruchko and Alexander Gribov

ASSESSING UNCERTAINTY FOR CONTAMINATION MAPPING USING SPATIAL
BOOTSTRAP

Ana Horta and Amílcar Soares

3D MULTIPLE-POINT STATISTICS FOR FACIES SIMULATION USING 2D AND 1D
CONCEPTUAL MODELS

Julien Straubhaar, Philippe Renard and Alessandro Comunian

SIMULATION OF EARTH TEXTURES BY CONDITIONAL IMAGE QUILTING

Kashif Mahmud, Pejman Tehmasebi, Gregoire Mariethoz, Jeff Caers and Andy Baker

13:15 – 15:00 Lunch Break

15:00 – 15:30

GEORGES MATHERON AND THE PROBABILITY APPROACH

Jean Serra

COMBINING VARIOUS APPROACHES IN GEOSTATISTICAL RESERVOIR MODELLING: METHODS AND BENEFITS

Nicolas Jeannée and Matthieu Bourges

SESSION 4: DATA ASSIMILATION IN GEOSCIENCES

Conveners: Laurent Bertino and Hans Wackernagel

15:45 – 16:15

UPDATING OF UNCERTAINTY IN FRACTURED RESERVOIRS DRIVEN BY GEOLOGICAL SCENARIOS

A. Jung, Darryl Fenwick and Jeff Caers

COUPLING THE ENSEMBLE KALMAN FILTER AND DIRECT SEQUENTIAL SIMULATION

Ana Horta, J. Jaime Gómez-Hernández and Amílcar Soares

SEISMIC STOCHASTIC INVERSION AND ENSEMBLE KALMAN FILTERING: A GEOSTATISTICAL PERSPECTIVE

Olivier Dubrule

16:15 – 16:45 Coffee Break

16:45 – 17:30

PROCESS-LIKE MODELING OF SEDIMENTARY BODIES IN CLASTIC SEDIMENTS: A SMART WAY TO ASSIMILATE MORE CONSTRAINTS IN RESERVOIR MODELS

Gérard J. Massonnat and Francis Morandini

CORRECTED KRIGING UPDATE FORMULAE FOR BATCH-SEQUENTIAL DATA ASSIMILATION

Clément Chevalier, Xavier Emery and David Ginsbourger

JOINT CONDITIONING TO PIEZOMETRIC HEAD AND GROUNDWATER TEMPERATURE DATA WITH AUGMENTED STATE ENSEMBLE KALMAN FILTER

Wolfgang Kurtz, Harrie-Jan Hendricks Franssen and Harry Vereecken

Wednesday, September 4th

Room 1 (Aula S109)

Parallel Session

SESSION 10: RADAR REMOTE SENSING FOR THE DETECTION, MONITORING AND MODELLING OF GROUND INSTABILITIES

Convener: Gerardo Herrera García

10:00 – 11:15

STUDY OF SUBSIDENCES ON AQUIFERS HAVING UNDERGONE EXTRACTION AND RECHARGE CYCLES

Pablo Ezquerro Martín, Juan Carlos Ibáñez Carranza, Gerardo Herrera García, Miguel Marchamalo Sacristán and Rubén Martínez Marín

MULTI-TEMPORAL EVALUATION OF LANDSLIDE-INDUCED MOVEMENTS AND DAMAGE ASSESSMENT IN SAN FRATELLO (ITALY) BY MEANS OF C- AND X-BAND PSI DATA

Silvia Bianchini, Deodato Tapete, Andrea Ciampalini, Federico Di Traglia, Chiara Del Ventisette, Sandro Moretti and Nicola Casagli

NON LINEAR PS TIME SERIES: ANALYSIS AND POST-PROCESSING FOR LANDSLIDES STUDIES

Davide Notti, Claudia Meisna, Francesco Zucca and Alessio Colombo

SUBSIDENCE NUMERICAL MODELING DUE TO GROUND WATER EXTRACTION INTEGRATING ADVANCED DINSAR, IN SITU MONITORING AND GEOTECHNICAL DATA: MURCIA CASE STUDY

Serena Tessitore, Gerardo Herrera, José A. Fernández-Merodo, Roberto S. Tomás, Juan M. Sánchez, Jordi J. Mallorqui, Joaquín Mulas, Geraint Cooksley, Massimo Ramondini and Domenico Calcaterra

OBSERVATION MINING INDUCED SURFACE DEFORMATION USING C AND L – BANDS SAR – CASE STUDY UPPER SILESIAN COAL BASIN (POLAND)

Marek Graniczny, Zbigniew Kowalski, Anna Piatkowska and Maria Przyłucka

11:15 – 12:00 Coffee Break

12:00 – 13:15

IMPROVING THE CAPABILITY FOR DISSOLUTION-INDUCED SUBSIDENCE DETECTION BY INTEGRATING DINSAR DISPLACEMENT MAPS AND GROUND EXPLORATION TECHNIQUES

Jorge P. Galve, Carmen Castañeda, Francisco Gutiérrez, Domingo Carbonel, Jesús Guerrero, Verónica Rodríguez, Rogelio Linares, Carles Roqué, Mario Zarroca and Mehrnoosh Ghadimi

USING MODERN SENSOR DATA AND ADVANCED NUMERICAL MODELLING FOR SLOW LANDSLIDES MOTION FORECASTING

José A. Fernández Merodo, Juan C. García Davalillo and Gerardo Herrera

INTEGRATION OF EARTH OBSERVATION AND GROUND BASED HR DATA IN THE CIVIL PROTECTION EMERGENCY CYCLE: THE CASE OF THE DORIS PROJECT

Paola Pagliara, Giuseppe Basile, Angelo Corazza, Pierluigi Cara, Andrea Duro, Bruno Manfré, Roberta Onori, Chiara Proietti and Vincenzo Sansone

LANDSLIDE PHYSICAL PROCESSES ANALYSED THROUGH NUMERICAL OPTIMIZATION MODELING OF DINSAR DATA AND INCLINOMETRIC MEASUREMENTS: THE CASE STUDY OF IVANCICH LANDSLIDE (ASSISI, CENTRAL ITALY)

Raffaele Castaldo, Piernicola Lollino, Pietro Tizzani, Francesca Ardizzone, Fabiana Calò, Fausto Guzzetti, Riccardo Lanari, Michele Manunta and Mariarosaria Manzo

ADVANCED INSAR TECHNIQUES TO SUPPORT LANDSLIDE

Fernando Bellotti, Marco Bianchi, Davide Colombo, Alessandro Ferretti and Andrea Tamburini

13:15 – 15:00 Lunch Break

15:00 – 15:15

COMPARATIVE ANALYSES OF MULTI-FREQUENCY PSI GROUND DEFORMATION MEASUREMENTS

Javier Duro, José R. Sabater, David Albiol, Francisco Sánchez and Oscar Mora

SESSION 9: REMOTE SENSING A CHANGING WORLD

Conveners: Peter Atkinson and José Fernandez

15:15 – 16:15

MONITORING OF URBAN-DAMAGING LANDSLIDES WITH SATELLITE RADAR MISSIONS: ARCOS DE LA FRONTERA (SPAIN)

Guadalupe Bru, José Fernández, Pablo J. González and Kristy F. Tiampo

A SPATIOTEMPORAL REMOTE SENSED ASSESSMENT OF PEAT COVERED AREAS USING AIRBORNE RADIOMETRICS

Jennifer McKinley, Antoinette Keaney and Alastair Ruffell

TEMPORAL EVOLUTION OF GROUND DEFORMATION PROCESSES RELEVANT TO THE CENTRAL MEDITERRANEAN REGION VOLCANIC ISLANDS DETECTED VIA THE SBAS-DINSAR TECHNIQUE

Susi Pepe, Francesco Casu, Claudio De Luca, Riccardo Lanari, Mariarosaria Manzo, Antonio Pepe, Eugenio Sansosti, Giuseppe Solaro and Pietro Tizzani

MODELLING NET PRIMARY PRODUCTIVITY AND HYDROLOGICAL QUANTITIES IN GOKSU BASIN, TURKEY USING SPATIAL MODELLING AND REMOTE SENSING TECHNIQUES

Cenk Dönmez, Suha Berberoglu and Ahmet Çilek

16:15 – 16:45 Coffee Break

16:45 – 18:00

MULTIVARIATE VARIOGRAM AND MADOGRAM: TOOLS FOR QUANTIFYING DIVERSITY/DISSIMILARITY IN SPATIOTEMPORAL DATA

Phaedon Kyriakidis, Dimitra Kitsiou and Dimitris Kavroudakis

SPATIAL AND TEMPORAL VARIATION OF MODIS NDVI IN SEMI-ARID MEDITERRANEAN WOODLANDS: INVESTIGATING CLIMATIC THRESHOLDS FOR ANNUAL PLANT PRODUCTIVITY

Alzira Ramos, Pedro Pinho, Cristina Branquinho and Maria João Pereira

A SPACE-TIME MODEL FOR REMOTE SENSING OF VEGETATION PHENOLOGY
Petrutza C. Caragea, Jeganathan Chockalingam, Wendy Meiring and Peter M. Atkinson

SPATIO-TEMPORAL INTERACTIONS FOR DAILY MAPPING OF PM10 WITH MODIS AND METEOROLOGICAL DATA

Piero Campalani, Simone Mantovani and Peter Baumann

DOWNSCALING HYDROCLIMATIC VARIABLES OVER MURRAY-DARLING BASIN USING A GEOSTATISTICAL APPROACH

Gregoire Mariethoz, Sanjeev Kumar Jha, Mathew McCabe and Jason Evan

Wednesday, September 4th

Room 2 (Aula S108)

Parallel Session

SESSION 6: SPATIOTEMPORAL ANALYSIS: STRUCTURAL COMPLEXITY AND EXTREME BEHAVIOUR

Convener: José Miguel Angulo

10:00 – 11:15

LOCAL CLUSTERING IN SPATIO-TEMPORAL POINT PATTERNS (**invited**)

Jorge Mateu

ASSESSING INTERPOLATION ERRORS FOR SPACE-TIME MONITORING DATA (**invited**)

Raquel Menezes, Luis Margalho and Ines Sousa

SPACE-TIME PREDICTION OF EXTREME EVENTS BY USING MATHEMATICAL LOGIC MODELING OF CAUSE-EFFECT RELATIONS

Susanna Sirotinskaya

SPATIO-TEMPORAL MODELING OF AFTERSHOCKS: CASE STUDY OF IBERO-MAGHREBIAN SEQUENCES

Mohamed Hamdache, Abdelhak Talbi and José A. Pelaez

11:15 – 12:00 Coffee Break

12:00 – 13:15

STATISTICAL COMPLEXITY ANALYSIS OF SPATIOTEMPORAL DYNAMICS (**invited**)

José M. Angulo and Francisco J. Esquivel

SPATIOTEMPORAL ANALYSIS OF EARTHQUAKE OCCURRENCES USING A MULTIREOLUTION APPROACH (**invited**)

Orietta Nicolis

THE USE OF REMOTE SENSING DATA IN A COLOMBIAN ANDEAN BASIN FOR RISK ANALYSIS

Olga Lucía Ocampo López and Jorge Julián Vélez Upegui

INFORMATION THEORY AND THE ANALYSIS OF UNCERTAINTIES IN THE CONTEXT OF STRUCTURAL GEOLOGICAL MODELLING

J. Florian Wellmann and Klaus Regenauer-Lieb

13:15 – 15:00 Lunch Break

15:00 – 15:45

MODELING DAILY RAINFALL TIME-SERIES USING MULTIPLE POINT GEOSTATISTICS

Fabio Oriani, Philippe Renard, Julien Straubhaar and Gregoire Mariethoz

NON-PARAMETRIC SEPARABILITY TEST FOR SPATIO-TEMPORAL POINT PROCESS APPLIED TO THE ANALYSIS OF WILDFIRES IN GALICIA

Isabel Fuentes-Santos, Wenceslao Gonzalez-Manteiga, Jorge Mateu and Manuel F. Marey-Pérez.

EARTHQUAKE PRECURSORY SIGNAL ANALYSIS OF ALARM-BASED FORECASTING MODELS

Abdelhak Talbi and Mohamed Hamdache

SESSION 21: MINERAL AND ENERGY RESOURCES FOR PLANET EARTH: EVALUATION, EXTRACTION AND OPTIMAL MANAGEMENT

Convener: Peter Dowd

15:45 – 16:15

IMPROVING MINERAL PROSPECTIVITY MAPS APPLYING SUPPORT VECTOR MACHINE ON RESTORED DATA: THE KUPFERSCHIEFER CASE

Pablo Mejía-Herrera, Jean-Jacques Royer and Jürgen Hartsch

MILLING RESULT PREDICTION

Stephan Matos Camacho, Thomas. Leißner, Petya Atanasova, Andre Kamptner, Martin Rudolph, Urs A. Peuker and K. Gerald van den Boogaart

16:15 – 16:45 Coffee Break

16:45 – 18:00

COMPOSITIONAL BLOCK COKRIGING

Raimon Tolosana-Delgado, Ute Mueller, K. Gerald van den Boogaart and Clint Ward

EFFICIENT PLANNING AND MODELING FOR MODERN DEWATERING CONCEPTS IN UNCONSOLIDATED ROCK UNDER GEOLOGICAL UNCERTAINTY

Jörg Benndorf and Michael Struzina

UNCERTAINTY ASSESSMENT OF THE OREBODIES GEOMETRY BY USING BLOCK INDICATOR SIMULATION

Julia Carvalho, Pedro Correia, Sofia Menezes, Cláudia Peixoto and Amílcar Soares

KRIGING ON AFRICA WITH SPECIAL REFERENCE TO THE CONGO CRATON USING
THE GONDWANA DATABASE

Christien Thiart, Alfred Stein and Maarten de Wit

A GEOSTATISTICAL STUDY ON TERTIARY COAL FIELDS IN TURKEY

Firat Atalay, A.Erhan Tercan, Bahtiyar Ünver, Mehmet Ali Hindistan, Güneç
Ertunç, Suphi Ünal and Yasin Killioglu

Wednesday, September 4th

Room 3 (Aula S107a)

Parallel Session

SESSION 18: NEW DEVELOPMENTS IN OIL AND GAS DISCOVERY MODELING

Convener: Gordon M Kaufman

10:00 – 11:15

A FURTHER INVESTIGATION OF LOCAL NONPARAMETRIC ESTIMATION TECHNIQUES IN SHALE GAS RESOURCE ASSESSMENT

Emil D. Attanasi, Timothy C. Coburn and Philip A. Freeman

THE NORTH AMERICAN SHALE RESOURCE – CHARACTERIZATION OF SPATIAL AND TEMPORAL VARIATION IN PRODUCTIVITY

Qudsia Ejaz and Francis O’Sullivan

A PYRAMID SCHEME: INTEGRATING PETROLEUM SYSTEMS ANALYSIS INTO PROBABILISTIC PETROLEUM RESOURCE ASSESSMENTS

Kirk G. Osadetz and Zhuoheng Chen

APPLICATION AND COMPARISON OF DISCOVERY MODEL AND OTHERS IN PETROLEUM RESOURCE ASSESSMENT

Qiulin Guo, Wei Yan and Zhuoheng Chen

APPLICATION OF A LEAST SQUARE NON-PARAMETRIC DISCOVERY PROCESS MODEL TO COLORADO GROUP MIXED CONVENTIONAL AND UNCONVENTIONAL OIL PLAYS, WESTERN CANADA SEDIMENTARY BASIN

Zhuoheng Chen, Kirk G. Osadetz and Gemai Chen

11:15 – 12:00 Coffee Break

12:00 – 13:15

POSSIBILITY AS A COMPLEMENT TO PROBABILITY IN QUANTIFYING GEOLOGICAL SCENARIO UNCERTAINTY: A DEEP-WATER RESERVOIR CASE STUDY

Lewis Li and Jef Caers

USE OF PROSPECT AND DISCOVERY P10/P90 RATIOS FOR CONSTRAINING THE SIZE BY RANK ESTIMATES FROM OIL AND GAS DISCOVERY MODELING: RESULTS FROM THE EVALUATION OF THE NORWEGIAN PETROLEUM DIRECTORATE'S DISCOVERY DATABASE

Richard Sinding - Larsen, Per Blystad and Gunnar Sjøiland

THE ROLE OF ASSET VALUATION IN EXTRACTIVE INDUSTRIES

David Laughton

HANDLING SEISMIC ANOMALIES IN MULTIPLE SEGMENT PROSPECTS WITH GRAPHICAL MODELS

Gabriele Martinelli, Espen Langlie and Charles Stabell

RELIABILITY ANALYSIS OF LEAST SQUARES ESTIMATION OF A NON-PARAMETRIC DISCOVERY PROCESS MODEL

Mi Shi-yun and Zhang Qian

13:15 – 15:00 Lunch Break

SESSION 16: QUANTITATIVE ENVIRONMENTAL GEOLOGY

Conveners: Juan A. Luque Espinar, Juan Grima Olmedo and Mario Chica Olmo

15:00 – 16:15

GEOLOGICAL AND GEOMORPHIC FACTORS AND QUANTITATIVE ANALYSIS OF RURAL SETTLEMENT PATTERN OF THE NORTH OF RUSSIA

Olga N. Trapeznikova

QUANTITATIVE RISK MANAGEMENT OF GROUNDWATER CONTAMINATION BY NITRATES USING INDICATOR GEOSTATISTICS

Mario Chica-Olmo , Eulogio Pardo-Igúzquiza , Juan A. Luque-Espinar , Víctor Rodríguez-Galiano and Lucía Chica-Rivas

ANALYSIS OF GROUNDWATER MONITORING DATA SETS WITH NON-DETECT OBSERVATIONS. APPLICATION TO THE PLANA DE SAGUNTO (VALENCIA, SPAIN) GROUNDWATER BODY

Juan Grima, Juan A. Luque-Espinar, Juan Ángel Mejía Gómez and Ramiro Rodríguez

RELIABILITY OF PROBABILITY PLOTS FOR THE DETERMINATION OF BACKGROUND VALUES IN GROUNDWATER

Thomas Walter

GEOLOGICALLY CONSTRAINED GROUNDWATER MONITORING NETWORK OPTIMIZATION IN HALLE (GERMANY): A CASE STUDY WITH SALTWATER INTRUSION ALONG A FAULT SYSTEM

Thomas Horschig, Ronny Laehne, Michael Falkenhagen and Wolfgang Gossel

16:15 – 16:45 Coffee Break

16:45 – 17:45

A RADON RISK MAP OF GERMANY BASED ON THE GEOGENIC RADON POTENTIAL

Peter Bossew

A SPATIAL STATISTICAL APPROACH FOR SEDIMENTARY GOLD EXPLORATION – A PORTUGUESE CASE STUDY

Pierre Goovaerts, Teresa Albuquerque and Margarida Antunes

HYDROLOGICAL MODELING OF THE STEPPE WETLAND “LAGUNAS DE PUEBLA DE BELEÑA” (GUADALAJARA; SPAIN) BY VISUAL BALAN

Silvia Martínez Perez, Antonio Sastre Merlín, Paula Navarro Garrido and Eugenio Molina-Navarro

Wednesday, September 4th**Rey Pastor Hall****Plenary Session**

POSTER SESSION III

11:15 - 12:00

SESSION 2: FRONTIER GEOSTATISTICS

GEOSTATISTICAL COMPLEX ANALYSIS OF QUANTITATIVE DATA OF PLACER DEPOSITS OF HEAVY MINERALS

Anna Bochner

THE IMPROVEMENT OF LOCAL SINGULARITY ANALYSIS TECHNOLOGY

Daojun Zhang

GEOMETRIC AND STATISTICAL MODELING OF FRACTURES IN THE 3D DISTURBED ZONE OF A CLAYSTONE AROUND A CYLINDRICAL GALLERY (MEUSE-HAUTE MARNE UNDERGROUND RESEARCH LABORATORY, FRANCE)

Rachid Ababou, Israel Cañamón and Adrien Poutrel

SESSION 4: DATA ASSIMILATION IN GEOSCIENCES

USING ENSEMBLE SMOOTHER TO EVALUATE PARAMETER UNCERTAINTY OF A HYDROLOGICAL MODEL IN YANQI BASIN

Li Ning, Dennis Mclaughlin, Kinzelbach Wolfgang, Li Wenpeng and Dong Xinguang

SESSION 6: SPATIOTEMPORAL ANALYSIS: STRUCTURAL COMPLEXITY AND EXTREME BEHAVIOUR

PATTERN DESCRIPTION WITHIN THE GLOBAL LONG-TERM ESA CII SOIL MOISTURE DATA SET

Angelika Xaver and Wouter A. Dorigo

SESSION 9: REMOTE SENSING A CHANGING WORLD

A METHOD OF MIXED PIXEL DECOMPOSITION FOR HYPERSPECTRAL IMAGERY BASED ON SECOND-ORDER POLYNOMIAL POST NONLINEAR MIXING MODEL

Jindong Xu, Guian Wang, Jianguang Li, Dan Hu, Libao Zhang and Xianchuan Yu

BARE EARTH DEM EXTRACTION FROM AIRBORNE LIDAR DATA FOR TRACING QUATERNARY FAULT EXTENSIONS

Jong Gyu Han and Sung Ja Choi

*SESSION 10: RADAR REMOTE SENSING FOR THE DETECTION,
MONITORING AND MODELLING OF GROUND INSTABILITIES*

**GEOSTATISTICAL ANALYSIS OF PSI RADAR DATA: A METHODOLOGY TO
ASSESS SERVICEABLE LIMIT STATE OF BUILDINGS**

Margarita P. Sanabria, Carolina Guardiola-Albert, Roberto Tomás,
Geraint Cooksley and Gerardo Herrera

**CHARACTERIZATION OF SLOW LANDSLIDES ACTIVITY THROUGH
ANALYSIS OF MULTI-BAND SAR IMAGES AND THEIR RELATIONSHIP WITH
THE DAMAGE OBSERVED IN TENA VALLEY (CENTRAL PYRENEES, SPAIN)**

Juan C. García-Davalillo, Gerardo Herrera, M.I. Álvarez-Fernández, F.
Gutiérrez, J. Guerrero, Davide Notti, Jorge P. Galve, José A. Fernández-
Merodo, G. Cooksley and T. Strozzi

**CROSS-VALIDATION OF SAR COSMO-SKYMED DATA FOR LANDSLIDE
RESEARCH: THE PALERMO PROVINCE (ITALY) CASE STUDY**

Serena Tessitore, D. Di Martire, A. Novellino, M. Ramondini, D.
Calcaterra

**WEB APPLICATION FOR DYNAMIC LANDSLIDE HAZARD MAPS
PROGNOSIS IN SLOVENIA**

Mitja Požar, Jasna Sinijov, Marko Komac, Mateja Jemec-Auflic and
Matija Krivic

**ESTABLISHING THE STABILITY STATUS OF LEVEES IN THE NETHERLANDS
USING RADAR INTERFEROMETRY**

Raluca Lanoschi, Hansje Brinker and Pauline Kruiver

SESSION 16: QUANTITATIVE ENVIRONMENTAL GEOLOGY

**OPTIMIZATION MESH OF THE GEOTECHNICAL INVESTIGATION APPLIED
TO THE DIAGNOSIS OF THE QUALITY OF THE BASEMENT (ALGERIAN
EXPERIENCE)**

Gheris Abderrahim

**ECOLOGICAL REMEDIATION VOLUME (ERV) IN COASTAL AQUIFERS
AFFECTED BY SEAWATER INTRUSION. METHODOLOGY AND
APPLICATION IN THE OROPESA–TORREBLANCA PLAIN (MASUB 080.110)**

Arianna Renau-Pruñonosa, Ignacio Morell, David Pulido and Jorge
Mateu

**INTERPOLATION FOR 3D GEOMETRY ANALYSIS OF WETLANDS: RABASA
LAKES (ALICANTE, SPAIN)**

Africa de la Hera, Enrique López-Pamo, Esther Santofimia, Raquel
Morales, Juan J. Durán and José M. Murillo

**USING VARIOGRAM TOOLS ON WOOD X-RAY COMPUTED TOMOGRAPHY
IMAGES TO ANALYZE THE TREE RESPONSE TO HIDROGEOMORPHIC
PROCESSES**

Carolina Guardiola-Albert, Juan A. Ballesteros-Canovas, Markus Stoffel
and Andrés Díez-Herrero

SMARTPHONES AND APPS: AN NEW INNOVATIVE TOOL IN EARTH
SCIENCE

Pedro A. Robledo Ardila, Toni Bibiloni, Jose.L Cantón and Esperanza
Palmer

EROSION MODELING IN TURKEY USING SPATIAL INFORMATION
SYSTEMS

Ahmet Cilek, Suha Berberoglu, Mike Kirkby and Brian Irvine

DATA ARCHIVES: DEVELOPMENT AND APPLICATION IN
ENVIRONMENTAL MANAGEMENT

Konstantin V. Alexeev

APPLICATION OF DRASTIC METHODOLOGY FOR EVALUATION OF
GUARANI AQUIFER VULNERABILITY: STUDY CASE IN RIBEIRAO BONITO,
SP, BRAZIL

Rafael Gonçalves Santos, Mara Lúcia Marques, Gabriela Trigo Ferreira
and José Ricardo Sturaro

INFORMATIVE TRACE-ELEMENT FEATURES OF CASSITERITE FROM TIN
MINERALIZED ZONES AND BRECCIAS IN THE RUSSIAN FAR EAST:
APPLICATION OF THE PATTERN RECOGNITION METHOD

Nina Gorelikova, Irina Chizhova and Filipp Balashov

TWO DIFFERENT BEHAVIOR OF THE SANDSTONE FROM MOUNT
NEMRUT AFTER THE ACCELERATED WEATHERING TESTS

Amer Topal and Burcu Ertas Deníz

*SESSION 21: MINERAL AND ENERGY RESOURCES FOR PLANET EARTH:
EVALUATION, EXTRACTION AND OPTIMAL MANAGEMENT*

USE OF CAUSE-EFFECT ANALYSIS FOR THE STUDY OF MINERAL
RESOURCES IN THE POOR-EXPLORED REGION

Susanna Sirotinskaya

A REVISED Δ LOGR METHOD FOR SHALE PLAY RESOURCE POTENTIAL
EVALUATION, - AN EXAMPLE FROM DEVONIAN DUVERNAY FORMATION,
WESTERN CANADA SEDIMENTARY BASIN

Zhuoheng Chen, Kirk Osadetz, Yexin Liu, Kezhen Hu and Bing Xuand
Quilin Guo

“HORSE-SHOE” CU-AU PORPHYRY OREBODY MODELING BASED ON
BLASTHOLE DATA USING UNFOLDING TECHNIQUE

Mohamad Nur Heriawan, Loya Jirga and Anton Perdana

PLACER DEPOSIT: FROM MODELING TO EVALUATION

Nikolay Laverov, Irina Chizhova and Elena Matveeva

APPLICATION OF THREE-DIMENSIONAL MODELING IN JIAMA (GYAMA)
COPPER POLYMETALLIC DEPOSIT, TIBET, CHINA

Tang Juxing

FACTOR ANALYSIS FOR METAL GRADE EXPLORATION AT PALLANCATA
VEIN IN PERU

Jorge E. Gamarra, Ricardo Castroviejo and Jesús Domínguez

Thursday, September 5th

Rey Pastor Room

Plenary Session

KEYNOTE

9:00 – 10:00 KEYNOTE SPEECH

UNIFIED PRINCIPLES FOR NONLINEAR NON-STATIONARY FIELDS IN
GEOSCIENCES

José A. Vargas Guzmán (Aramco, Saudi Arabia)

Thursday, September 5th

Rey Pastor Room

Parallel Session

SESSION 25: MATHEMATICS OF PLANET EARTH

Conveners: Willi Freeden and Zuhair Nashed

10:00 – 11:15

MATHEMATICAL MODELLING OF VOLCANIC PLUMES

Robert McKibbin

A MULTISCALE REGULARIZATION TECHNIQUE FOR TENSORIAL SGG DATA

Helga Nutz

MODELING THE STRESS FIELD IN GEOTHERMAL RESERVOIRS

Matthias Augustin

MODELING AND SIMULATION OF FOREST FIRE SPREADING

Sarah Eberle

SIGNAL ANALYSIS BY MEANS OF MULTI-SCALE METHODS

Christian Blick

11:15 – 12:00 Coffee Break

12:00 – 13:15

STATISTICAL MODEL OF THE EARTH'S MANTLE VISCOSITY

Alex N. Chetyrbotskii

THEORETICAL ADVANCES IN THE FIXED-BOUNDARY GRAVIMETRIC BOUNDARY VALUE PROBLEM

Gregorio Díaz, Jesús I. Díaz and Jesús Otero

THE FINITE POINTSET METHOD (FPM) AND AN APPLICATION IN SOIL MECHANICS

Jörg Kuhnert and Isabel Ostermann

MODELLING ICE DYNAMICS AND THE RELATIONSHIP BETWEEN ICE VISCOSITY AND WATER CONTENT USING AN INVERSE METHOD

Jaime Otero, Martin Rueckamp, Angelika Humbert, Francisco J. Navarro and Javier J. Lapazaran

GEOSTATISTICAL ESTIMATION OF THE CRUSTAL THICKNESS INFERRED FROM THE GEOMETRY OF MONOGENETIC VOLCANOES (CENTRAL MEXICO CASE)

Raúl Pérez-López, Carolina Guardiola-Albert and Jose Luis Macías

13:15 – 15:00 Lunch Break

Thursday, September 5th

Room 1 (Aula S109)**Parallel Session****SESSION 11: GEOGRAPHIC INFORMATION SYSTEMS/GEOINFORMATICS**

Conveners: Robert Marschallinger and Eric Grunsky

10:00 – 11:15

ESTIMATION OF INFORMATION LOSS WHEN MASKING CONDITIONAL DEPENDENCE AND CATEGORIZING CONTINUOUS DATA: FURTHER EXPERIMENTS ON A DATABASE FOR SPATIAL PREDICTION MODELLING IN NORTHERN ITALY

Andrea G. Fabbri, Simone Poli, Antonio Patera, Angelo Cavallin and Chang-Jo Chung

FLOOD HAZARD ANALYSIS IN THE CANARY ARCHIPELAGO, SPAIN

Miguel Llorente Isidro and Luís Laín Huerta

USING OF VARIATIONAL METHODS IN GEOLOGICAL MAPPING TASKS

Andrey N. Sidorov, Andrey G. Plavnik, Andrey A. Sidorov and Mikhail S. Shutov

A REGIONAL-SCALE GIS OF PRECIOUS METAL DEPOSITS OF THE MAGADAN REGION (NORTHEAST OF RUSSIA)

Irina Golubenko, Sergei Lyamin, Boris Palymsky, Nikolai Goryachev and Ivan Litvinenko

INFORMATION TECHNOLOGIES FOR MODELING AND COMPLEXIFICATION IN GEOSCIENCES

Evgeniya Cheremisina, Vladimir I. Galuev, Svetlana Malinina and Nadegda Pimanova

11:15 – 12:00 Coffee Break

12:00 – 13:00

GEOPROCESSING TOOL REGENERAT – CHARACTERIZATION OF MINERAL RESOURCE QUALITY OF RENEWABLE SEDIMENT DEPOSITS

Heinz Reitner, Sebastian Pfeleiderer, Thomas Untersweg, Maria Heinrich, Irena Lipiarska, Piotr Lipiarski, Julia Rabeder and Ingeborg Wimmer-Frey

ANIMATION OF GROUNDWATER FLOW WITH STRING

Isabel Ostermann and Torsten Seidel

3D-GIS ANALYSIS FOR MINERAL RESOURCES EXPLORATION IN LUANCHUAN, CHINA

Gongwen Wang, Yinglong Hao, Yuanxing Cao and Jianan Qu

IAMG2013

BUILDING ORE-BODY SOLID MODELS BY 3D ISO-SURFACES

Li Zhang-lin, Wu Chong-long, Zhang Xia-lin; Weng Zheng-pin and Liu Gang

13:00 – 15:00 Lunch Break

Thursday, September 5th

Room 2 (Aula S108)

Parallel Session

SESSION 12: QUANTITATIVE METHODS IN GEOMORPHOLOGY AND LAND SURFACE PROCESSES

Convener: Francisco Gutiérrez

10:00 – 11:15

NUMERICAL KARST: SPATIO-TEMPORAL MODELLING OF KARST SYSTEMS
Eulogio Pardo-Igúzquiza, Juan J. Durán, Carolina Guardiola-Albert, Juan Antonio Luque, Sergio Martos, Pedro Robledo and Juan L. Plata

TWO-DIMENSIONAL HYDRAULIC MODELLING AND ANALYSIS OF MORPHOLOGICAL CHANGES IN THE PALANCIA RIVER (SPAIN) DURING THE FLOOD OF OCTOBER 2000
Beatriz Náchter Rodríguez, Ignacio Andrés-Doménech, Carles Sanchís Ibor, Francisca Segura Beltrán, Francisco J. Vallés Morán and Eduardo Albentosa Hernández

LINE-GEOMETRY-BASED INVERSE DISTANCE WEIGHTED INTERPOLATION (L-IDW): GEOSCIENTIFIC CASE STUDIES
Wolfgang Gossel and Michael Falkenhagen

SIMULATION OF SUCCESSIVE BRAIDED RIVER DIGITAL ELEVATION MODELS WITH MULTIPLE-POINT STATISTICS
Guillaume Pirot, Philippe Renard and Julien Straubhaar

OBJECT-BASED LANDSLIDE CLASSIFICATION IN VHR SATELLITE IMAGERY: APPLICATION TO THE 2010 MADEIRA ISLAND FLASH-FLOODS
Sandra Heleno, Maura Lousada, Maria Pereira and Pedro Pina

11:15 – 12:00 Coffee Break

12:00 – 13:15

QUANTITATIVE METHOD ON HISTORICAL RECONSTRUCTION OF COASTAL GEOMORPHOLOGICAL CHANGE ON WAVE-DOMINATED COAST - A CASE STUDY OF POMERANIAN BAY, SOUTHERN BALTIC SEA
Junjie Deng, Jan Harff and Joanna Dudzinska-Nowak

KARST NETWORK GEOMETRY AND TOPOLOGY: AUTOMATIC CLASSIFICATION OF NETWORK GEOMETRY
Philippe Renard, David Bernasconi, Andrea Borghi, Pauline Collon-Drouaillet and Cécile Vuilleumier

APPLICATION OF STOCHASTIC THEORY FOR NATURAL HAZARD FORECASTING
(LANDSLIDE CASE STUDY)

Alexey Victorov

LINFO - A VISUAL BASIC PROGRAM FOR ANALYSIS OF SPATIAL PROPERTIES OF
LINEAMENTS

A.C. Dinesh, Vipin Joseph Markose and K. S. Jayappa

SINKHOLE CHARACTERIZATION BY MEANS OF THE TRENCHING TECHNIQUE AND
GEOPHYSICAL SURVEYS (GPR, ERT)

Domingo Carbonel, Verónica Rodríguez, Francisco Gutiérrez, James McCalpin,
Carles Roqué, Rogelio Linares, Mario Zarroca, Jesús Guerrero, Jorge P. Galve
and Mehrnoosh Ghadimi

13:15 – 15:00 Lunch Break

Thursday, September 5th

Room 3 (Aula S107a)

Parallel Session

SESSION 24: MATHEMATICAL GEOSCIENCES AND PLANETARY GEOLOGY

Conveners: Vera Pawlowsky-Glahn and Jesús Martínez Frías

10:00 – 11:15

FRISER-IRMIK DATABASE: A WEB-BASED SUPPORT SYSTEM WITH IMPLICATIONS IN PLANETARY MINERALOGICAL STUDIES, GROUND TEMPERATURE MEASUREMENTS AND ASTROBIOLOGY

Jesús Martínez-Frías, María Serrano Rubio, F. Javier Martín-Torres, M. Paz Zorzano, José A. Rodríguez-Manfredi, Javier Gómez-Elvira and REMS team

A MATHEMATICAL ALGORITHM TO SIMULATE THE GROWTH AND TRANSFORMATION OF FRAMBOIDAL PYRITE: CHARACTERIZATION OF THE BIOGENIC INFLUENCE IN THEIR SIZE DISTRIBUTIONS

Raúl Merinero Palomares, Rosario Lunar Hernández, Francisco-Javier González-Sanz, Luis Somoza Losada and Jesús Martínez-Frías

WHAT CAN IAMG OFFER TO THE PLANETARY SCIENCES?

Jesús Martínez-Frías and Vera Pawlowsky-Glahn

COMPUTATIONAL SIMULATIONS OF METEOR IMPACTS AS TOOLS FOR ANALYZING AND EVALUATING MANAGEMENT ISSUES RELATED TO CRISIS SCENARIOS

Jesús Martínez-Frías and Alain Leppinette-Malvite

DOMAINING BI-MODAL DATA SETS GEOSTATISTICALLY USING A DIRECTIONAL NEIGHBORHOOD SEARCH

Steffen Brammer

11:15 – 12:00 Coffee Break

12:00 – 13:15

DETERMINATION OF PLANETARY SURFACE COMPOSITIONS BY EXOSPHERE OBSERVATION AND MODELLING

Helmut Lammer, Peter Wurz, Helberg I.M. Lichtenegger and Josep A. Martín-Fernández

COMPOSITIONAL DATA METHODS TO ANALYZE MARTIAN SURFACE MATERIALS

Josep A. Martín-Fernández, Christoph Kolb and Helmut Lammer

IN-SITU RAMAN ANALYSIS OF THE PRECIPITATION MINERAL SEQUENCE OF
SULPHATE MINERALS USING SMALL DROPLETS

Fernando Rull, Francisco Sobrón, Julia Guerrero, Jesús Medina, Gloria Venegas,
Fernando Gázquez and Jesús Martínez-Frías

MARTIAN SURFACE TEMPERATURE AND SPECTRAL RESPONSE FROM THE MSL
REMS GROUND TEMPERATURE SENSOR

F. Javier Martín-Torres, Jesús Martínez-Frías, M. Paz Zorzano, María Serrano
Rubio, Teresa Mendaza, Vicky Hamilton, Eduardo Sebastián, Carlos Armiens,
Javier Gómez-Elvira, the REMS team and the MSL Science Team

13:15 – 15:00 Lunch Break

Thursday, September 5th

Rey Pastor Hall

Plenary Session

POSTER SESSION IV

11:15 - 12:00

SESSION 11: GEOGRAPHIC INFORMATION SYSTEMS/GEOINFORMATICS

SHEE PROGRAM, A TOOL FOR DISPLAY, ANALYSIS AND INTERPRETATION OF HYDROLOGICAL PROCESSES IN WATERSHEDS

Jesús Mateo Lázaro, José Ángel Sánchez Navarro, Alejandro García Gil and Vanesa Edo Romero

FLOOD RISK ANALYSIS IN THE CANARY ARCHIPELAGO, SPAIN

Miguel Llorente Isidro and Luis Laín Huerta

APPLICATION OF DECISION TREE MODEL AND GIS FOR THE GROUND SUBSIDENCE HAZARD MAPPING NEAR ABANDONED UNDERGROUND COAL

Saro Lee and Inhye Park

DEVELOPMENT OF NEW MULTI-PLATFORM GEOSCIENCE INFORMATION SYSTEM OF KOREA USING HTML5 AND OPEN SOURCE TOOLS

JongGyu Han and YeonKwang Yeon

GEOLOGICAL MAP CONSTRUCTION AND THREE-DIMENSIONAL TERRITORY MODELING THROUGH THE USE GIS INTEGRO

Mikhail Finkelstein, Alexander Shumikhin and Maxim Churilin

A HEALTH RISK ANALYSIS AND ASSESSMENTS FOR THE ASBESTOS EXPOSURE AREA USING GIS AND SPATIALLY WEIGHTED REGRESSION MODE

Jaehong Hwang

COMPARISON OF METHODS FOR DEPTH TO GROUNDWATER CALCULATION IN HARD ROCK AREAS

Ronny Lähne, Dorothee Altenstein and Wolfgang Gossel

A NEW GIS PROGRAM TO SUPPORT MINE RECLAMATION PLANNING

Boyoung Park, Yosoon Choi, Sung-Min Kim, Jangwon Suh, Sungchan Oh, Hyeong-Dong Park and Wa-Ra Go

SOIL EROSION AND SEDIMENT YIELD MODELING AT THE SAMGWANG MINE IN KOREA USING GIS

Jinyoung Song, Yosoon Choi, Sung-Min Kim, Hyeong-Dong Park and Wa-Ra Go

GEO-MODELLING FOR GEO-MONITORING: TECHNIQUES AND IMPLEMENTATION WITH WEB-GIS

Anna Lyubimova

MATHEMATICAL METHODS OF THE DATA ANALYSIS IN A PROSPECTING DATABASE FOR GEOLOGICAL MAPPING

Oleg Mironov

FUNCTION CONDITIONED QUALITIES OF LAND DIGITAL MODELS, ASSESSMENT CRITERIA

Šárka Hošková-Mayerová and Václav Talhofer

SPATIOTEMPORAL DATA MODEL FOR MULTI-FACTOR GEOLOGICAL PROCESS ANALYSIS WITH CASE STUDY

Gang Liu, Xiang Que, Xiaonan Hu, Shanjun Tian, Jiacheng Zhu and Xin Li

SESSION 12: QUANTITATIVE METHODS IN GEOMORPHOLOGY AND LAND SURFACE PROCESSES

STREAM LENGTH-GRADIENT INDEX MAPPING AS A TOOL FOR LANDSLIDE IDENTIFICATION

Jorge P. Galve, Daniela Piacentini, Francesco Troiani and Marta Della Seta

SURFACE INSIGHTS OF STRUCTURAL RELIEF DISTRIBUTION MODEL WITHIN MADRID BASIN FROM FLUVIAL AND TERRAIN MORPHOMETRIC INDEX

Julio Garrote and Guillermina Garzón

DIGITAL MAPPING OF EPIKARST THICKNESS USING GEOPHYSICS AND TERRAIN ANALYSIS

Sergio Martos-Rosillo, Juan Antonio Luque-Espinar, Eulogio Pardo-Igúzquiza, Carolina Guardiola-Albert, Juan José Durán Valseiro, Pedro Agustín Robledo-Ardila, Antonio Pedrera Parias and Carlos Gata Maya

SESSION 24: MATHEMATICAL GEOSCIENCES AND PLANETARY GEOLOGY

OPTIMAL ORBITING OF TERRESTRIAL PLANETS AND OPTIMAL SHAPE OF A SELF-GRAVITATING AND ROTATING CELESTIAL BODY

Anvar R. Kacimov

SPECTRAL SIGNATURE ANALYSIS FOR ANOMALY DETECTION IN THE CENTRAL VOLCANIC RANGE, COSTA RICA. IMPLICATIONS IN PLANETARY GEOLOGY

Juan G. Rejas-Ayuga, Rubén Martínez-Marín, Miguel Marchamalo-Sacristán, Javier Bonatti and Jesús Martínez-Frías

THE GENERAL LAWS OF CHEMICAL ELEMENTS COMPOSITION DYNAMICS IN THE LITHOSPHERE AND HYDROSPHERE

Vyacheslav D. Korzh

SESSION 25: MATHEMATICS OF PLANET EARTH

ESTIMATING AIRFLOW TURBULENCE LENGTH SCALES FROM GAS TRACER DATA

Robert McKibbin and Aimee Harris

MATHEMATICAL MODELLING OF GEOCHEMICAL PROCESSES APPLIED TO CENOZOIC IBERIAN VOLCANICS: A REVIEW

Raúl Benito and Jesús Martínez-Frías

DECORRELATION OF GRAVIMETRIC DATA

Sandra Möhringer

DISTRIBUTION OF TEMPERATURE TO BORDER ASTENOSPHERE - LITHOSPHERE (MATHEMATICAL MODEL)

Alex N. Chetyrbotskii

ANALYSIS ON TEMPERATURE FIELD OF NORTH ANCHOR FOUNDATION PIT OF RUNYANG BRIDGE DURING ARTIFICIAL FREEZING CONSTRUCTION

Youliang Chen and Peng Wang

GEOCHEMICAL SIMULATION ALGORITHM APPLIED TO LAVA FLOW HAZARD IN EL HIERRO ISLAND

José M. Morales, Laura Becerril, Inés Galindo, Luis Laín and Nieves Sánchez

ITERATIVE SPARSE RECOVERY OF THE GRAVITATIONAL FIELD FROM EXTREMELY SCATTERED DATA

Roger Telschow

Thursday, September 5th

Room 1 Rey Pastor

Plenary Session

DISCUSSION BOARD

15:00 –16:15

GEOMATHEMATICS AND PLANETARY HABITABILITY: FROM EARTH
TO MARS

Moderator:

Dr. Frits Agterberg (Secretary General IAMG)

Participants:

Dr. Helmut Lammer (Austrian Academy of Sciences, Austria)

Dr. Jesús Martínez Frías (CSIC, Spain)

Dr. Quiming Chen (York University, Canada)

Dr. Fernando Rull (UVA, Spain)

Dra. Mari Paz Zorzano (INTA, Spain)

Dra. Elena González-Toril (INTA, Spain)

Thursday, September 5th

Room 1 Rey Pastor

Plenary Session

STUDENT CHAPTER'S SESSION

17:00 –19:00

INTRODUCTION TO SESSION AND OVERAL VIEW OF STUDENT
CHAPTERS OF IAMG

Orhun Aydin (Stanford University, USA)

IAMG STANFORD STUDENT CHAPTER

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Sebastian M. Ernst (Freiberg University, Germany)

IAMG NANCY STUDENT CHAPTER

Pablo Mejía (Nancy School of Geology, France)

IAMG CUG-SCC STUDENT CHAPTER

Video conference

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Katherine Eve (Geophysics & Geochemistry Journals landline)