

2015

# Earth, Geology & Geography Abstracts

Annual International  
Conferences on Earth, Geology  
and Geography  
1-4 June 2015, Athens, Greece

Edited by Gregory T. Papanikos

THE ATHENS INSTITUTE FOR EDUCATION AND RESEARCH





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Abstracts

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# Preface

This abstract book includes all the abstracts of the papers presented at the Annual International Conferences on Earth, Geology and Geography, 1-4 June 2015, organized by the Athens Institute for Education and Research. In total, there were 31 papers and presenters, coming from 17 different countries (Brazil, Chile, Colombia, Czech Republic, Georgia, India, Iran, Iraq, Israel, Malaysia, Mexico, Peru, Romania, Slovakia, Spain, Turkey and USA). The conference was organized into nine sessions that included areas such as Geotechnology, Territorial Development, Geological Processes and other related fields. As it is the publication policy of the Institute, the papers presented in this conference will be considered for publication in one of the books of ATINER.

The Institute was established in 1995 as an independent academic organization with the mission to become a forum where academics and researchers from all over the world could meet in Athens and exchange ideas on their research and consider the future developments of their fields of study. Our mission is to make ATHENS a place where academics and researchers from all over the world meet to discuss the developments of their discipline and present their work. To serve this purpose, conferences are organized along the lines of well established and well defined scientific disciplines. In addition, interdisciplinary conferences are also organized because they serve the mission statement of the Institute. Since 1995, ATINER has organized more than 150 international conferences and has published over 100 books. Academically, the Institute is organized into six research divisions and twenty-seven research units. Each research unit organizes at least one annual conference and undertakes various small and large research projects.

I would like to thank all the participants, the members of the organizing and academic committee and most importantly the administration staff of ATINER for putting this conference together.

**Gregory T. Papanikos**  
**President**



**FINAL CONFERENCE PROGRAM**  
**Annual International Conferences on Earth, Geology and Geography,**  
**1-4 June 2015, Athens, Greece**

**PROGRAM**

**Conference Venue: Titania Hotel, 52 Panepistimiou Avenue, Athens, Greece**

**Organization and Scientific Committee**

1. Dr. Gregory T. Papanikos, President, ATINER & Honorary Professor, University of Stirling, UK.
2. Dr. George Poulos, Vice-President of Research, ATINER & Emeritus Professor, University of South Africa, South Africa.
3. Dr. Nicholas Pappas, Vice-President of Academics, ATINER, Greece & Professor, Sam Houston University, USA.
4. Dr. Panagiotis Petratos, Vice President of ICT, ATINER, Fellow, Institution of Engineering and Technology & Professor, Department of Computer Information Systems, California State University, Stanislaus, USA.
5. Dr. Chris Sakellariou, Vice President of Financial Affairs, ATINER, Greece & Associate Professor, Nanyang Technological University, Singapore.
6. Dr. Serwan Baban, Professor and Vice Chancellor, Cihan University, Iraq.
7. Dr. Codruta Simona Stoica, Associate Professor, Aurel Vlaicu University of Arad, Romania.
8. Dr. Jose Luiz Silverio da Silva, Professor, Laboratory of Hydrogeology, Department of Geosciences, Federal University of Santa Maria, Brazil.
9. Dr. Rini Asnida Abdullah, Senior Lecturer, Department of Geotechnics & Transportation, Faculty of Civil Engineering, Universiti Teknologi Malaysia, Malaysia.
10. Dr. Habib Trouzine, Researcher, Sidi Bel Abbes University, Algeria.
11. Dr. Jorge Rocha, Assistant Professor, Centre of Geographical Studies, Institute of Geography and Spatial Planning, University of Lisbon, Portugal.
12. Dr. Carlos Alberto Tello, Postdoctoral Fellow, University of Montreal, Canada.
13. Ms. Grazielle Anjos Carvalho, President, Association of Minas Gerais Geographers & PhD Student, Federal University of Minas Gerais, Brazil.
14. Ms. Olga Gkounta, Researcher, ATINER.

**Administration**

Stavroula Kyritsi, Konstantinos Manolidis, Katerina Maraki & Kostas Spiropoulos

## Monday 1 June 2015

(all sessions include 10 minutes break)

### 08:00-09:00 Registration and Refreshments

#### 09:00-09:15 (ROOM C) Welcome & Opening Remarks

- Dr. Gregory T. Papanikos, President, ATINER & Honorary Professor, University of Stirling, UK.
- Dr. George Poulos, Vice-President of Research, ATINER & Emeritus Professor, University of South Africa, South Africa.

#### 09:15-11:00 Session I (ROOM C): Environmental Issues I

**Chair:** Olga Gkounta, Researcher, ATINER.

1. \*Serwan Baban, Professor and Vice Chancellor, Cihan University, Iraq. Managing the Impacts of Planned Urbanisation on Sustainable Agriculture in Kurdistan Region, Iraq. (GEL)
2. Rafael Ferreira da Costa, Professor, Universidade Federal Rural da Amazonia, Brazil, Joao Athaydes Silva Junior, Professor, Universidade Federal do Para, Brazil & Leonidas Leao Velloso, Professor, Universidade Federal Rural da Amazonia, Brazil. Events Urban Heat Island in Middle Porte City in the Amazon Basin: The Parauapebas Case of Para, Brazil. (ERT)
3. \*Ta Wee Seow, Associate Professor, University Tun Hussein Onn Malaysia, Malaysia. The Governance of Solid Waste Management in Malaysia: An Insight towards Sustainable Development. (ERT)

#### 11:00-13:00 Session II (ROOM C): Geotechnologies/Applications I

**Chair:** \*Ta Wee Seow, Associate Professor, University Tun Hussein Onn Malaysia, Malaysia.

1. \*Angelo Lampousis, Lecturer, City University of New York, USA, Neil Terry, Ph.D. Student, Rutgers University in Newark, USA & Lee Slater, Professor and Chair, Rutgers University in Newark, USA. Examination of Geophysical Signatures of Ethanol-Water Mixtures in a Homogeneous Sand Column Using Ground Penetrating Radar and Time-Domain Reflectometry. (GEL)
2. Galo Valdebenito, Vice-Dean, Universidad Austral de Chile, Chile, Andres Iroume, Vice-Dean, Universidad Austral de Chile, Chile, David Alvarado, Associate Professor, Universidad Austral de Chile, Chile, Carlos Jara, Associate Collaborator, Universidad Austral de Chile, Chile, Carlos Fuentes, Associate Collaborator & Daniel Antileo5, Montero, I., Associate Collaborator, Universidad Austral de Chile, Chile. Application of Ground Penetrating Radar (GPR) to Characterize Volcanic Induced Sediment and Dead Wood Deposits: A Study Case at Blanco River, Chilean Patagonia. (GEL)
3. Lubos Matejcek, Assistant Professor, Charles University in Prague, Czech Republic. Spatio-temporal Modelling of Vegetation Propagation linked to GIS. (GEO)
4. Norbert Simon, Researcher and Lecturer, National University of Malaysia, Malaysia, Mohd Fahmi Abdul Ghani, National University of Malaysia, Malaysia, Goh Thian Lai, National University of Malaysia, Malaysia, Abdul Ghani Rafek, National University of Malaysia, Malaysia, Azimah Hussin, National University of Malaysia, Malaysia, Lee Khai Ern, National University of Malaysia, Malaysia & Rodeano Roslee, University Malaysia Sabah, Malaysia. Geological Lineament Density and its Association with Rock Mass Strength in the Kinta Valley, Malaysia. (Monday, 1<sup>st</sup> of June 2015, Morning Session) (GEL)

### 13:00-14:00 Lunch

#### 14:00-16:00 Session III (ROOM C): Territorial Development & Geography

**Chair:** Rafael Ferreira da Costa, Professor, Universidade Federal Rural da Amazonia, Brazil.

1. Roberto Chiarella, Associate Professor, Pontificia Universidad Catolica Del Peru, Peru. Amazon Integration and Territorial Development. A New Perspective on the Tri Border Management between Peru, Brazil and Bolivia. (GEO)
2. Ryan Galt, Associate Professor, University of California, Davis, USA. Place-Based Agrifood Systems: A Regional Analysis of Community Supported Agriculture (CSA) in California, USA. (GEO)
3. Helena Midori Kashiwagi, Professor, Federal University of Parana, Brazil. Contributions of Homonym Signs to the Reading of the Landscape. (GEO)
4. Gustavo Barrantes Castillo, Assistant Manager, School of Geographical Sciences, National University, Costa Rica. Multi-hazards Heuristic Assessment for Less Developed Countries; The Poas Case, Costa Rica. (GEO)
5. Jose de Ribamar Sa Silva, Associate Professor, Federal University of Maranhao, Brazil & Benjamin Alvino de Mesquita, Associate Professor, Federal University of Maranhao, Brazil. The Recent Agrarian Dynamic in Brazilian Amazon: Commodities Production and Space Reorganization. (GEO)

#### 16:00-17:30 Session IV (ROOM C): Geological Processes I

**Chair:** Lubos Matejicek, Assistant Professor, Charles University in Prague, Czech Republic.

1. \*Bezhan Tutberidze, Professor, Tbilisi State University, Georgia & \*Mariam Akhalkatsishvili, Assistant Professor, Tbilisi State University, Georgia. Low-Temperature Hydrothermal Alteration of Dolerites from the Djavakheti Plateau (Georgia). (ERT)
2. Ali Hossein Jalilian, Assistant Professor, Payame Noor University, Iran. Base-Level Changes as a Major Control on Sedimentation of the Neogene Molasse Deposits of the Zagros Basin, SW Iran. (GEL)
3. \*Nasser Arzani, Professor, Payme Noor University, Iran & Stuart Jones, Department of Earth Sciences, Durham University, U.K. Dryland Alluvial Megafans as Archives of Evolution of Continental Sedimentary Basins: Quaternary Examples From, Central Iran. (GEL)

### 21:00-23:00 Greek Night and Dinner (Details during registration)

## Tuesday 2 June 2015

### 08:00-10:00 Session V (ROOM C): Education, Migration, Cultural and Social Movements

**Chair:** \*Serwan Baban, Professor and Vice Chancellor, Cihan University, Iraq

1. \*Carles Carreras, Professor, University of Barcelona, Spain, Sergi Martinez-Rigol, Lecturer, University of Barcelona, Spain, Lluís Frago, Lecturer, University of Barcelona, Spain & Alejandro Morcuende, Ph.D. Student, University of Barcelona, Spain. Cities, Public Space and Citizenship. Some Contemporary Mediterranean Urban Social Movements. (GEO)
2. Cristobal Mendoza, Professor, Universidad Autonoma Metropolitana, Mexico. Place Attachments, Social Networks and Mexican Urban Migration. (GEO)
3. Rodrigo Giraldo Cocco, Ph.D. Student, Federal University of Santa Catarina, Brazil. Relationships between Public Transportation and Power Pacts in the Great Florianópolis, Brazil: The Interpretation about the Facts of June, 2013 from the Marxist Theory of Social Formation. (GEO)
4. Paulo Irineu Barreto Fernandes, Professor, Federal Mining Triangle Institute, Brazil & Rosselvelt Jose Santos, Professor, Federal University of Uberlandia, Brazil. Place and Topophilic Feelings in Railway Passengers of the Triângulo Mineiro Region - Minas Gerais, Brazil. (Tuesday, 2<sup>nd</sup> of June 2015) (GEO)
5. Rajasekhar Ramakrishnan, Senior Research Scientist, Columbia University, USA. A State Space Transformation Can Yield Identifiable Models in Tracer Kinetics. (Tuesday, 2<sup>nd</sup> of June, 2015, Morning Session) (ERT)

### 10:00-11:30 Session VI (ROOM C): Soil, Water and Other Essays

**Chair:** \*Carles Carreras, Professor, University of Barcelona, Spain

1. \*Serwan Baban, Professor and Vice Chancellor, Cihan University, Iraq. Revitalising Agriculture and Water Sectors in the Kurdistan Region, Iraq. (GEO)
2. Sultana Naheed, Associate Professor, Kanpur University, India. Fluoride Distribution in Groundwaters and Prevalence of Fluorosis in Unnao District, India. (ERT)
3. Peter Hanajik, Researcher, Comenius University, Slovakia, Milan Zvarík, Senior Lecturer, Comenius University, Slovakia & Hannu Fritze, Senior Researcher, Natural Resources Institute Finland (Luke), Finland. Shift of PLFA's in the Forest Soils at the Wind throw Area in the Biospheric Reservation of the Tatras. (ERT)

### 11:30-13:00 Session VII (ROOM C): Environmental Issues II

**Chair:** \*Moshe Inbar, Professor Emeritus, University of Haifa, Israel

1. Camilo Lesmes Fabian, Professor, Saint Thomas Aquinas University, Colombia, Jefferson Rodriguez Chaparro, Research Assistant, Saint Thomas Aquinas University, Colombia & Maria Rojas Lombana, Research Assistant, Saint Thomas Aquinas University, Colombia. Glyphosate Flow Analysis in Banana Crops for the Environmental Risk Assessment in the Caribbean Region in Colombia. (ERT)
2. Ionela Corina Dedita Chirileasa, PhD student, University of Bucharest, Romania. The Role of University in the Development of the Human Capital in Line with the Needs of the Insertion Environment - Case Study: Stefan Cel Mare University of Suceava, Romania. (GEO)
3. Gerardo David Azocar Garcia, Professor, University of Concepcion, Chile, Robinson Torres, Ph.D. Candidate, Arizona State University, USA, Aldo Montecinos, Associate Professor, University of Concepcion, Chile & Jorge Rojas, Professor, University of Concepcion, Chile. Vulnerability and Resistance to Neoliberal Environmental Changes: An Assessment of Agriculture and Forestry in

- the Biobío Region of Chile (1974-2014). (Tuesday, 2<sup>nd</sup> of June 2015) (GEO)\
4. María Rojas Lombana, Research Assistant, Saint Thomas Aquinas University, Colombia, Camilo Lesmes Fabian, Professor, Saint Thomas Aquinas University, Colombia & Jefferson Rodríguez Chaparro, Research Assistant, Saint Thomas Aquinas University, Colombia. Pesticide Flow Analysis in the Tota Lake Watershed in the Boyaca Region in Colombia. (ERT)

### 13:00-14:00 Lunch

#### 14:00-15:00 Session VIII (ROOM C): Geological Processes II

**Chair:** \*Bezhan Tutberidze, Professor, Tbilisi State University, Georgia

1. \*Moshe Inbar, Professor Emeritus, University of Haifa, Israel. Human Impact in Geomorphic Processes since Paleolithic Times in the Middle East - The Israeli Case. (GEL)
2. Beatriz Gonzalez-Corrochano, Research Staff, University of Castilla La Mancha, Jacinto Alonso-Azcarate, Associate Professor, University of Castilla La Mancha, Spain, Luis Rodríguez Romero, Associate Professor, University of Castilla La Mancha, Spain, Agripino Perez Lorenzo, Head of Materials Department and coordinator of Toledo Center, AITEMIN, Spain, Avelino Tirado, Head of Aggregates and Natural Stone Area, AITEMIN, Spain, Maria Fernandez Torio, R&M Manager, Arcillas Refractarias, S.A. (ARCIRESA), Spain & Juan Jose Tejado Ramos, Department Coordinator, INTROMAC, Spain. Valorisation of Waste Water Treatment Plants and Aggregates Processing Sludges for Lightweight Aggregates Production. (GEL) (Tuesday)

#### 15:00-16:00 Session IX (ROOM C): Geotechnologies/Applications II

**Chair:** George Poulos, Vice-President of Research, ATINER & Emeritus Professor, University of South Africa, South Africa.

1. \*Tamer Rizaoglu, Assistant Professor and Vice Dean of Engineering and Architecture Faculty, Kahramanmaraş Sutcu Imam University, Turkey & Gulay Arican, Research Assistant, Kahramanmaraş Sutcu Imam University, Turkey. The Production of Polyester Binding Molded Granitoid from the Arenitized Essence Granitoid (Afşin-Kahramanmaraş/Turkey). (Tuesday, 2<sup>nd</sup> of June 2015) (GEL)
2. Sara Hassanzadeh, MSc Student, Azad University, Iran, Adabi, M.H., Professor, Shahid Beheshti University, Iran, Kohansal, N., Assistant Professor, Azad University, Iran & Jallali, M., Ph.D Student, Shahid Beheshti University, Iran. Petrographic and Geochemical Evidence for Original Aragonite Mineralogy of the Qoom Formation, as the Best Hydrocarbon Potential, in Central Iran, Evane-Kay City (Garmsar). (GEL)

16:30-19:00 Urban Walk (Details during registration)

20:30- 22:00 Dinner (Details during registration)

**Wednesday 3 June 2015**  
**Cruise: (Details during registration)**

**Thursday 4 June 2015**  
**Delphi Visit: (Details during registration)**

**Nasser Arzani**

Professor, Payme Noor University, Iran

&

**Stuart Jones**

Department of Earth Sciences, Durham University, U.K.

**Dryland Alluvial Megafans as Archives of Evolution of  
Continental Sedimentary Basins:  
Quaternary Examples From, Central Iran**

Alluvial megafans evolve in continental settings by tectonics, climate, base level and peri-basin morphology and the relative importance of these controls on fan morphology and sedimentary architecture is still not fully understood. This study examines the evolution of alluvial megafans (>30 km in length) in extensional/strike-slip basins, by examining selected megafans in central Iran. These fans toe out to playa environment or are cut distally by an axial river and playa lake sediments reflecting seasonal and more regional climatic fluctuations. They formed in a tectonically active basin, with an arid to semiarid climatic setting and associated long-term (Plio-Pleistocene to Recent) change from wetter to drier conditions. However, important key differences between these fans exist in the catchment bedrock, catchment geometry and outlet spacing. Detailed fan surface mapping (based on 1/50000 topographic maps, satellite images, and fieldwork) combined with the collection of geomorphic parameters reveals that the evolution of these megafans responded to key differences in upstream catchment characteristics of the bedrock geology. This paper identifies and explores the main controls on the evolution of megafans and their importance as archives of evolution along the margin of the mountain range in continental sedimentary basins.



**Gerardo David Azocar Garcia**

Professor, University of Concepcion, Chile

**Robinson Torres**

Ph.D. Candidate, Arizona State University, USA

**Aldo Montecinos**

Associate Professor, University of Concepcion, Chile

&

**Jorge Rojas**

Professor, University of Concepcion, Chile

## **Vulnerability and Resistance to Neoliberal Environmental Changes: An Assessment of Agriculture and Forestry in the Biobío Region of Chile (1974-2014)**

This article examines the dynamics of double exposure, vulnerability, and resistance to neoliberal globalization and environmental change in the Chilean agricultural region of Biobío. By using climatic models and secondary agricultural census data from 1997 and 2007, we assess how Chilean neoliberal reforms have, since 1974, facilitated land use changes and forestry investments. We demonstrate that policy changes which incentivize forestry investments have reduced cultivated agricultural lands and native forest, and concentrated land in the hands of global agribusiness corporations. Compounding these issues, Biobío shows a climatic trend towards aridity coupled with an increasing demand for irrigation. Analyzing these conditions, we argue that the neoliberal globalization of regional agriculture under the context of climatic changes has produced a regional space of increasing vulnerabilities and uneven geographical development in Biobío. We particularly demonstrate that the Chilean mode of agricultural neoliberalization has been conducive to land dispossession— to the detriment of traditional agriculture —and has homogenized the biophysical landscape, replacing traditional crops and native forests with exotic species like pines and eucalyptus. We also examine how local producers are using resistance movements to cope with and contest neoliberal environmental changes. The premise of this paper is that environmental changes and neoliberal globalization are jointly affecting biophysical environments and socio-political conditions at global and local scales. We conclude by evaluating the implications of these spaces of agricultural vulnerabilities and local resistances in the context of uneven geographical development at a regional and global scale.

**Serwan Baban**

Professor and Vice Chancellor, Cihan University, Iraq

## **Managing the Impacts of Planned Urbanisation on Sustainable Agriculture in Kurdistan Region, Iraq**

The Kurdistan region is well suited for agriculture as it boasts large areas of arable land and fertile soil. However, the Kurdistan Region is undergoing significant urbanisation and development since gaining autonomy. The unfortunate reality in developing regions like Kurdistan is that farmland is often regarded as a reserve for future urban expansion. This is mainly due to the land being relatively cheap; farming seen as hard work for town dwellers and lucrative development schemes.

Research indicates that cities as well other main settlements have historically evolved on the most suitable soils for agriculture due to the society being agricultural in nature. However, the paradox is, that as the population grows, the need for urban expansion grows and the latter can only be carried out through squandering productive agricultural land, therefore endangering sufficient food production for the current as well as the growing population. Clearly, there is a critical need to protect the remaining finite amount of good agricultural land. More specifically, it is important that government laws and regulations underline the resource value of good agricultural land and the public obligation to protect it for agricultural use by future generations.

This paper examines the impacts of urbanization and in particular the Master plans on squandering agricultural land as well as endangering sustainable agricultural production in the Kurdistan region. Furthermore, the paper presents a practical science based management approach for managing the issue by proposing guidelines to preserve productive agricultural land and to manage urbanization.

**Serwan Baban**

Professor and Vice Chancellor, Cihan University, Iraq

## **Revitalising Agriculture and Water Sectors in the Kurdistan Region, Iraq**

The agriculture and water resources sectors in the Kurdistan region, Iraq have suffered from a series of unfortunate damaging events which include war, political conflicts and harmful national and international policies. This paper will recount and examine the implementation of a specifically developed road map during the period June 2012- May 2014. The road map aimed to provide science based practical steps to rehabilitate, improve and to sustainably develop agriculture and water resources in the region. The ultimate goal being to achieve food sufficiency and security for the region.

The analysis shows that the challenges facing the realisation of strategic objectives include; urban expansion, the efforts by neighbouring upstream countries to build dams and irrigation projects, the allocated budget, governorate law, the Ministry's structure and workforce, lack of local data and not effectively employing research driven management options.

Overall, the outcomes show an optimistic picture of tangible and conceptual achievements include; realising self sufficiency with wheat and potato production. Work has started on building 22 dams and will also start on some larger dams, completing work on 86 ponds with plans for build another 50, additionally work has started on several large irrigation projects. In addition to success in implementing the plans based on participatory decision making, following a clear and transparent process and to giving the highest priorities to quality assurance and control processes.

**Gustavo Barrantes Castillo**

Assistant Manager, National University, Costa Rica

## **Multi-hazards Heuristic Assessment for Less Developed Countries; The Poas Case, Costa Rica**

For the Natural Hazards assessment it is recommended to use a probabilistic approach, but most of the time this involves a long record of quality data. This way, there are some frameworks for multi-risks analysis in order to integrate properly the risks on multi-hazards spaces; for example, the Bayesian logic tree. However, that condition is rarely occurs in less developed countries, where the historical record is short and instrumental data is scarce. Therefore, we have developed a heuristic approach that allows us to combine individual qualitative assessments to multi-hazards spaces in order to guide the land by using the planning and local risk reduction strategy. The Costa Rican law is demanding the local governments to use the ground with planning beforehand, that way it will require a scientific method to incorporate the natural hazards. We present this framework analysis applied to Poás Township, Costa Rica, where there are volcanic hazards (tephra fallout, acid rain, lahars, etc) hydrologic hazards (fast floods, landslide) and seismic hazard. Therefore, we applied a multi-hazard analysis to Poás that allows the local politician to support decision making on risk management. The individual assessment of each hazard is combined in an overall evaluation for each pixel (5m X 5m), considering possible interactions between hazards that spatially match using an interactions matrix. For that reason, we did a Poás multi-hazard map that allows the local politician to support decision making on risk management.

**Paulo Irineu Barreto Fernandes**

Professor, Federal Mining Triangle Institute, Brazil

&

**Rosselvelt Jose Santos**

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## **Place and Topophilic Feelings in Railway Passengers of the Triângulo Mineiro Region - Minas Gerais, Brazil**

The reasons that led Brazil to abandon the railway transport of passengers are subject to discussion and little agreement exists. However, it is possible to find points of agreement among scholars of the issue. One of these reasons was the prioritization of road transport in the period called the “Brazilian economic miracle” in the late 1960s and early 1970. As for the reality of the Triângulo Mineiro region (Minas Gerais - Brazil), the arrival of railroads and trains, in the late nineteenth century brought new features to the places and the local landscape, decreasing the time of displacement and facilitating the emergence of new cities. One hundred years after the arrival, the carriage of passengers by railways no longer offered. However, the carriage of passengers did not constitute just a service but a “way of life” introduced into the routine of individuals. This work focused on the concept of “place” and from reading authors like Tuan, Deleuze, Guattari and Milton Santos, aims to contribute to a better understanding of the elements of the question, especially the implications of the interruption of passenger trains in the Triângulo Mineiro, in late 1990. The study is based on three fundamental elements: the appeal of topophilic feelings of people who lived in the localities served by the railway transport service, it is the subjective dimension of this study; the materiality of the old railway lines and stations, whose presence keeps alive the “echoes” of the past, constituting the material dimension of the problem; and finally, we advocate the need for a more specific study involving government agencies and the private sector, about the viability of the service restructuring, for commercial, touristic and educational uses, which is the public dimension of this study.

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## **Cities, Public Space and Citizenship. Some Contemporary Mediterranean Urban Social Movements**

Cities, and mainly their central squares have been very relevant in the explosion of the so called Arab spring. Cities, as a the main stage of all kind of social movements, have always been connected to the explanation of social conflict and change; at the beginning of the 1970's has been created the concept of Urban social movements by the French sociologists, but this paper tries to remark a new role of some cities in order to explain the characteristics of the new social protests. While in Athens the economic protests were concentrated around the political representative buildings, in the other Mediterranean cities the popular use of the Urban space has selected a very few places that became not only stage, but even the cradle of the new social movements.

This paper tries to put some central public spaces on the research focus with the first objective to analyze the birth and evolutions of these social movements in 2011. A second, and more general objective is to study the role of the public spaces in the Mediterranean cities, from the Barcelona study case. In addition to the main analysis on the Barcelona's plaza de Catalunya case, the research team has experiences on the Madrid's Puerta del Sol, and other public spaces in Alexandria, Napoli and Sarajevo on the framework of the historical Mediterranean urbanism.

The main hypothesis are:

- 1.- Urban public spaces are the main variable in the creation of the new Urban social movements in the context of the global technico-scientific informational milieu.
- 2.- The Mediterranean Public spaces have some special functional, cultural and morphological features that facilitate socialization in all his forms, even de protest.

3.- There is some kind of geopolitical and cultural transmission of the social movements in the Mediterranean

In spite of these assumptions there are also some other variables that could explain that some cities are not able to create the same social reactions.

**Roberto Chiarella**

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**Amazon Integration and Territorial Development.  
A New Perspective on the Tri Border Management between  
Peru, Brazil and Bolivia**

Our object of study is the tri-border Amazon territory that covers Iñapari (Peru), Assis Brasil (Brazil) and Bolpebra (Bolivia) urban centers. Particularly, we study the conurbation process between these settlements. In the future, the explosive and disordered urban growth of these hamlets will lead to a physical continuity between the three urban centers, due to a clear trend towards the formation of an international conurbation. We believe that in a few years the problems of border towns will be exacerbated: environmental pollution, depletion of natural resources, delinquency, prostitution, trafficking and abuse of drugs, smuggling, etc. This will hinder the territorial management of one of the world richest areas in biodiversity, affecting the fragile environment and ecosystems of the Acre River basin. Therefore, the levels of life quality and development expectations will be compromised.

The study of a tri-border issue is a greater challenge due to the complexity of this multicultural reality. The region has generated a socioeconomic system that integrates the populations of the area, and turns into the existence of cultural borders and cultures of borders, as important as political and administrative limits. Local identity references are crucial in the daily interaction that differentiates border residents from the people who live far from the frontier. This shows that images from the state do not dilute local identity references.

We intend to present a new development perspective of the area of study. In this regard, it is necessary to adopt a strategic approach that integrates territorial planning and management, crossing international boundaries. In the final analysis, we are talking about the constitution of a single institutional structure for tri-border urban planning and management: an international city.



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**The Role of University in the Development of the Human  
Capital in Line with the Needs of the Insertion  
Environment - Case Study: Ștefan Cel Mare University of  
Suceava, Romania**

Universities are considered by definition and practice institutions of higher learning, which contribute to the development of highly qualified human capital, based on the acquisition, synthesis and transmission of knowledge (Gerry Boucher et. al., 2004). Through the contribution that they bring forth to the education of the most important resources - the human resource - these higher education institutions contribute to the social and economic development of the insertion environment in which they activate. In order to this approach may have as finality the generation of a competitive advantage in the local and regional insertion environment of the University, a special importance it resents the correlation of the educational offer with the local and regional requirements of the labor market. Ștefan cel Mare University of Suceava, a higher education institution situated in the least developed region of Romania, defines itself to be an institution which aims to develop its educational offer in according with the needs and requirements of the local community and of the Region North-East and to interconnect itself with the development and progress directions, determined nationally and internationally. The article aims to analyze the relationship between the educational offer of this university, the economic sectors with a potential for specialization and the the socio-economic structure of the local and regional insertion environment of the of the higher education institution.

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**Joao Athaydes Silva Junior**

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**Leonidas Leao Velloso**

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## **Events Urban Heat Island in Middle Porte City in the Amazon Basin: The Parauapebas Case of Para, Brazil**

Discussing the possible factors influencing the blizzards in England of the mid-twentieth century, Manley (1958), pioneered the hypothesis suggesting that the warming caused by urban growth in Central London influence in reducing the incidence of snowfall place during winter. Was launched the concept of Urban Heat Island (UHI). The UHI is a change in microclimate due to anthropogenic changes in urban landuse. Changes in the radiation and energy balances in urban areas, caused by a greater storage solar energy in the built surfaces differ from trade carried out in rural areas around it, when much of the available energy is used to evaporate the moisture present, leaving less energy for local air heating. For Landsberg (1981), anthropogenic heat and air pollution, are also important factors in the microclimate changes observed in an UHI. The calculation to determine the occurrence of UHI in Parauapebas, was the equation proposed by Oke (1975) which considers the difference between the air temperature in the urban area and the air temperature in the rural area around it. To collect the urban meteorological data were used 02 microloggers model HOBO U10 (Onset, USA). The information of the countryside were obtained in the Automatic Weather Station of the Federal Rural University of Amazonia (UFRA Campus Parauapebas), all records were every 15 minutes. In March 2015, Parauapebas complete only 27 years of politicalemancipation, and a little more than 30 years of history. Emerged in 1981 as a camp for workers of the iron mining Grande Carajas Project, for 5,000 people. In 1988 it was transformed into County (6,886.2 km<sup>2</sup>and 30,000 inhabitants). In 2000, already had 71,568 residents, reaching 153,908 inhabitants in 2010 (IBGE, 2010). In 2015, Parauapebas already has 263,843 inhabitants (DVA/SEMSA, 2015). A population growth of approximately 880% in just a quarter of century. The UHI observed in the month of September 2013 in two urban areas studied, reached 3.9 oC (New Town district) and 3.7 oC (Neighborhood Garden City). Costa & Mattos (1998) observed UHI occurrences in the city of Belém do Pará, northeastern Amazonia,

during the dry season (4.5 °C) and in the rainy season (1.5 °C).

**Ryan Galt**

Associate Professor, University of California, Davis, USA

## **Place-Based Agrifood Systems: A Regional Analysis of Community Supported Agriculture (CSA) in California, USA**

Recent developments in agrifood systems have involved re-localizing production and consumption linkages. One of the most prominent place-based agrifood systems that have developed in recent decades is community supported agriculture (CSA), in which consumers become members of the farm and pay for shares of the farms' production beforehand. CSAs have grown from two in 1986 to about 13,000 today. Using data from a 2013-2014 California statewide survey of 111 CSAs, this paper provides a regional analysis of important farm, farmer, and member characteristics of CSAs in California, the state with the largest number of CSAs in the United States. We find that a variety of CSA characteristics vary by region within the state, and theorize that regional attributes, including competition, saturation of the market, consumer incomes, and demand for localized produce influence these characteristics, together with farmers' experiences, resources, and preferences. In areas of strong competition, we find that CSAs are less likely to be strongly supported by their members, suggesting that the important values underpinning local and regional food systems can be undermined by competitive pressures.

**Rodrigo Giraldi Cocco**

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**Relationships between Public Transportation and Power  
Pacts in the Great Florianópolis, Brazil: The Interpretation  
about the Facts of June, 2013 from the Marxist Theory of  
Social Formation**

During the month of June 2013, there were intense popular demonstrations with different claims, in several Brazilian cities. The main complaint was related to the threat of a widespread increase in the public transportation fares. The movements occurred at a time of full employment and income distribution throughout the development policies carried out by the governments of Lula da Silva and Dilma Rousseff (2002-2015). This "new" development increased the average social segment and sharpened the old contradictions associated with the lack of collective use-values, i.e. there was a jump from one contradiction to the other, according to the dialectic of development. However, these contradictions are more efficiently realized when there is an approach of the problem from a concrete Socio-Spatial Formation. This is the case of the Great Florianópolis, Santa Catarina State, in which it is possible to enforce with more security the categories of value and of collective use-values. In other words, within the singularities of a determined socio-spatial and historical context. The aim of this paper is to test the hypothesis: it is possible to understand that the "essence" of the transportation problems and mobility, in the Great Florianópolis, dates back to the inertia of power pacts that were consolidated in the region and cities. Also, due to the difficulty of regimenting a coalition of forces interested in the improvement and effectiveness of the workforce reproduction. In this sense, the region of the Great Florianópolis is an example of transitional Social Formation - according to the Sereni's Marxist Social Formation theory or the Milton Santos's Socio-spatial Formation - in which the advanced capitalist social relations are less consolidated. For these reasons, the creation of general conditions on urban production tends to be less homogeneous, and there is a lower cohesion between the State and the interests of the "capitalist class in general," which is a determinant factor for long-term planning. In this case, the public authority is under the orbit of a group or private interest's pact, serving more special (and reactionary) interests. These findings forces us to revisit the New Urban Sociology approaches, but also considering the innovations made by Lefebvre's Production of Space Theory As says Neil Brenner (2002). For example, in this region, the mobility conditions are unsatisfactory. This happens, among other

factors, by the duplication of cycles times from the buses lines (between 2010 and 2012) on account of the jammed mixed traffic and a higher volume of cars on the roads. Moreover, as a sample of low competitiveness on public transportation, it is observed that the car fleet grows apace in the region (36% between 2002 and 2010). Nevertheless, the performance of the public transportation system is below expectations (between 2004 and 2011, there was a growth of 6% of the transported passengers, 4% in the IPK and -11% of travels). Especially, in a region whose economic activities are labor-intensive (services, software development and planning/administrative activities of the State). In other words, they require the enhanced value of human productive forces. Nonetheless, there is a gap between this operational inefficiency (to the user) and the economic efficiency of the transportation companies, which is guaranteed by extra-economic strategies. These examples show that the tariff issue and claims of June are more related to an effect of factors combination, dating back to the Social Formation in the region, than an isolated cause to be addressed directly. Indeed, there is a political economy of public transportation that must be unraveled, and it acts in a decisive way in the production of space and use of values that compose it.

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## **Valorisation of Waste Water Treatment Plants and Aggregates Processing Sludges for Lightweight Aggregates Production**

The elimination of wastes is one of the main environmental problems in the mining and industrial activities. Manufacturing of lightweight aggregates (LWAs) from mineral and organic wastes is considered to be a satisfactory alternative, since a starting material with no value becomes a product with important industrial applications.

A lightweight aggregate is a granular material with a bulk density not exceeding 1.20 Mg/m<sup>3</sup> or with a particle density not exceeding 2.00 Mg/m<sup>3</sup> (EN 13055-1:2002). Artificial LWAs are produced by a rapid heating at high temperature of materials that have the ability to expand. They are an important component in building materials such as lightweight thermo-acoustic insulation concrete and lightweight structural concrete, as well as coating road along with bituminous materials or other geotechnical applications. Moreover, their inert and porous character makes them highly suitable for agricultural applications.

The main objective was to demonstrate the viability of the recycling of sludge from the aggregate extraction process and from the waste water treatment plants in order to obtain a usable material such as artificial lightweight aggregates with applications in the construction and infrastructure sectors. The study was financed by the European Commission (LIFE+ Programme, project SLUDGE4AGGREGATES; ref. LIFE12/ENV/ES/0123).

Lightweight aggregate has been produced in a laboratory scale rotary kiln. The raw material consisted of two types of sludges, previously characterized: chemically, physically and mineralogically. On the basis of these results, they were mixed, milled, formed into pellets, pre-heated between 30 s. and 5 min. and sintered in a rotary kiln at temperatures between 1150°C and 1275 °C for heating times between 30 s. and 30 min.

Effects of the heating temperatures and dwell times on the LWAs properties were determined. The basic properties of the produced lightweight aggregate have been investigated: bloating index (*BI*), loose bulk density ( $\rho_b$ ), apparent and dry particle density ( $\rho_a$  and  $\rho_d$ ), compressive strength (*S*) and water absorption (*WA*<sub>24h</sub>).

The obtained products were lightweight aggregates in accordance with standard EN 13055-1:2002 ( $\rho_b \leq 1.20 \text{ Mg/m}^3$  or particle density  $\leq 2.00 \text{ Mg/m}^3$ ). The produced LWAs did not achieve expansion because of the sludges did not show the adequate composition to trap the generated gases in the granules. They showed water absorption values between 23.54% and 23.85% and compressive strength values between 0.82 MPa and 1.07MPa.

The possible applications of our LWAs, taking into consideration their bulk density and compressive strength values could be similar to those of *Arexpan E07*<sup>®</sup>, - a special variety of the expanded clay based LWAs produced, under the trademark *Arexpan*<sup>®</sup>, by the Spanish company *Arcillas Refractarias, S. A. (ARCIRESA)* -, and which is mainly used as a raw material for the manufacture of structural concretes.



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### **Shift of PLFA's in the Forest Soils at the Wind throw Area in the Biospheric Reservation of the Tatras**

We analyzed phospholipid fatty acids (PLFA), carbon soluble fractions, holocelulose, klasonlignin and microbial biomass carbon content in topsoils of the forest areas damaged by windthrow in biospheric reservation of the Tatras in Slovakia. Soil ecosystem services and secondary succession at the area were affected due to the instant wood debris removal. Topsoils were sampled nine years after windthrow event at three plots selected according to geomorphological similarity and different forest windthrow treatment. EXT represented a site where all the wood biomass was removed, NEX site was part of the area left for self-regeneration without stem and debris removal and as a control we sampled soils in a spruce stand (REF). Mol% of lipids extracted from the soil samples were interpreted using Principal Component Analysis (PCA) analysis followed by Analysis of Variance (ANOVA) and Redundancy Analysis (RDA). ANOVA analysis did not show significant treatment effect on the microbial communities at studied plots, however PCA analysis showed similarity of the microbial community composition on the REF and NEX plot. RDA analysis showed that dry weight, loss of ignition and microbial characteristics were the most important factors in determining the PLFA microbial community composition ( $\alpha = 0.05$ ). This work is part of APVV-0866-12 and VEGA 1/0365/14.

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**Petrographic and Geochemical Evidence for Original  
Aragonite Mineralogy of the Qoom Formation, as the Best  
Hydrocarbon Potential, in Central Iran, Evane-Kay City  
(Garmsar)**

The Qoom Formation with the age of Oligo-Miocene is widespread in the central Iran and has hydrocarbon potential. The studied section, which is located in the North of Evane-Kay city (Sarvan section) has a total thickness of one hundred forty two m, and due to the presence of Neo-Alveolins fossil, it can be concluded that its age is equivalent to Burdigalian stage. Six carbonate facies have been recognized in this study and these facies belong to open marine, shoal and lagoon sub-environments. Many large fossils such as corals, red algae, bryozoans and echinoderm built bioclastic barriers. Some times ooids construct ooid shoals. Pelagic foraminifers are present in open marine facies. Elemental (major and minor) analysis such as Ca, Mg, Sr, Na, Mn, and Fe has been used to determine original carbonate mineralogy. Results of this study indicate that aragonite was original carbonate mineralogy, similar to the Asmari Formation (in Zargos Basin) and the Mozduran Formation in Kopet-Dag Basin, as the both best hydrocarbon reservoirs. Geochemical data such as high Sr values, mean Sr/Na values of > two and high Na contents support an original aragonite mineralogy. These results correlate well with petrographic studies.

Petrographic evidences such as isopachous acicular to fibrous cements, oomold, spalled ooids, diffused laminae, shattered micritic envelope support original aragonite mineralogy. Due to dissolution of aragonite by meteoric water, particularly in open diagenetic system (low Sr /Mn values) with high water/ rock interaction, hydrocarbon fluids can pass through the carbonate systems. The different type of porosities such as vuggy, channel, fracture and moldic as secondary porosities, makes favourable condition for hydrocarbon accumulation in these carbonates. Similar to the Asmari and Mozduran formations, as the best hydrocarbon reservoirs in the Middle East, the Qoom

Formation has excellent potential for hydrocarbon exploration, due to original aragonite mineralogy.

**Moshe Inbar**

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## **Human Impact in Geomorphic Processes since Paleolithic Times in the Middle East - The Israeli Case**

The Mediterranean-type climate region is an inherently unstable earth-surface system.

Human impact is a major factor in land degradation in the Mediterranean region. It starts with the appearance of Man in Israel about 1.5 million years ago, but the major effects on landscape modification occurred in historic times. Seven phases of land degradation are recognized, since the first one covering the Paleolithic period until the present one, covering the last three decades, when the degradation processes aggravated. Land degradation processes like wild fires and urbanization, increases the seasonality of flow stream, with higher runoff rates in the winter floods and less percolation into groundwater, decreasing springs discharge and lowering exploitable aquifers. The increased variability causes more flood damage and erosion, making water management a more complex and expensive task. Water recycling for irrigation increased soil salinization, as salt flushing by the natural river system was impeded. Forest fires have increased, and on average 5% of the forests in Israel are burnt each year. Urbanization changes the surface to an impervious one, increasing the runoff/rainfall ratio from 1-2% under natural conditions to more than 50%. The coastal area of Israel is a narrow and fragile strip, with an enormous human pressure for intense exploitation.

Human interference in the Mediterranean environment exacerbates the negative natural biophysical processes, and the results are more frequent and more severe geomorphic events, as floods, landslides and soil erosion.

**Ali Hossein Jalilian**

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## **Base-Level Changes as a Major Control on Sedimentation of the Neogene Molasse Deposits of the Zagros Basin, SW Iran**

The upper part of the Neogene sequence of the Zagros basin consists of a clastic succession which is an excellent example of synorogenic sedimentation as molasse deposited in northern portion of the Persian Gulf foreland basin. This sequence generally consists of three different lithostratigraphic units named as Aghajari and Bakhtyari formations and Lahbari Member. Sedimentological analysis of 3 outcrop sections representing Miocene-Pliocene sediments in the central Zagros resulted in recognizing 9 lithofacies and 4 architectural elements. These lithofacies include conglomerate (Gt, Gh, Gmm), sandstone (Sp, Sh, Sr, St) and mudstone (Fm, Fl) that were deposited in meandering stream, braided river and alluvial fan environments. Paleocurrent analysis indicates that these Neogene clastics were mainly derived from Cretaceous to Paleogene highlands in the north of the Zagros Mountains. This stratigraphic record is coarsening-upward and formed by a regressive depositional megacycle under arid climate. Facies and depositional history analysis show that sedimentation of the Zagros molasse was primarily controlled by base-level changes rather than catchment lithology or climate. The sedimentary record of this regressive megacycle reveals the base-level was constantly falling down on one hand and the provenance was uplifting on the other hand. Tectonic activities and Zagros Mountains rising in the Late Miocene resulted in deposition of fining-upward point-bar and floodplain sequences of the Aghajari Formation in low-gradient meandering streams. The Lahbari Member of the Aghajari Formation represents deposition in braided rivers that composed predominantly of floodplain deposits in the Early Pliocene. Finally, the sedimentary cycle of the Zagros molasse deposits terminated with massive conglomerates of the Bakhtyari Formation deposited in large alluvial fans near the source area.

**Helena Midori Kashiwagi**  
Professor, Federal University of Parana, Brazil

## **Contributions of Homonym Signs to the Reading of the Landscape**

This research's main objective is to identify homonym signs of the landscape which subsidize public policies of planning of the Superagui National Park. The lack of a Management plan which establishes the rules for local sustainability will condition all daily activities, implying the practice of illegal activities as a means of survival. Indeed, subtle changes are perceived in the cultural landscape, threatening the extinction of local culture and the redefinition of the landscape. In opposite sides in this scenario of transformation are the local residents, the public government and the tourists, whose unilateralism of interests set forth divergent meanings of the same landscape. Accordingly, it is a border research's with epistemological perspective in which the foundations are consolidated in deepening the theoretical-conceptual legal aspects to understand the conduct of public policies in areas of environmental preservation, occupied by traditional communities. Seeking to justify and decode the signs construction of the qualitative research, we appealed to the theoretical-methodological contributions of Humanistic-Cultural Geography, in its phenomenological origination, with the interface of the sign theories of semiotics and linguistics for the conceptual formation of the sign homonyms. The empirical research was consolidated based on numerous experiences, observations and everyday life participation, utilizing open interviews as research tools and mind maps because they are methods well accepted by the community. In constructing the meaning of images of signs, we relied on the contributions of semiotics to define the triadic relation image-object-interpreter. What was proposed to defend in this research's was the existence of homonymous images composed from the sign interpretation of mental maps in the different groups surveyed. This research's proposed much more than suggest a method of interpretation of image signs, but to demonstrate the contribution of this study under an approach of Humanistic-Cultural Geography to the policies of environmental, urban and tourism planning.

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&

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## **Examination of Geophysical Signatures of Ethanol-Water Mixtures in a Homogeneous Sand Column Using Ground Penetrating Radar and Time-Domain Reflectometry**

In recent years there has been an increase in the frequency of incidents involving ethanol-blended gasoline affecting the groundwater. Near-surface geophysical methods hold promise for site-characterization at ethanol contaminated sites. We attempted to record the broadband dielectric properties of ethanol at various concentrations as it was circulating through a closed tank containing either sand or a sand-clay mixture. Two high frequency GPR antennas were positioned symmetrically on either side of the sample holder to obtain transmission measurements. In the first part of the experiment we used a sample consisting of sand. In the second part of the experiment we used a sample containing sand mixed with 2% clay. Ethanol concentration was increased inside the sample holder by incrementally introducing additional pure ethanol. The sample holder was part of a closed circulation system that allowed the adjustment of ethanol concentration in the 0%-28% range. Prior to starting the experiments we established a dielectric permittivity relationship for liquid ethanol-water mixtures in the range of ethanol concentrations between 0% and 100% using TDR. Using this relationship we inferred concentrations of the ethanol-water mixtures circulating through the sample holder by temporarily suspending the flow and collecting TDR measurements of the mixtures entering and exiting the sample. We evaluated the potential for GPR to predict ethanol concentrations based on a CRIM model in sand or sand-clay media. Ethanol concentration in the sand and sand-clay mixtures are well-predicted by the CRIM model when ethanol is added. However, the CRIM model does not succeed in predicting ethanol concentrations in either mixture undergoing ethanol withdrawal. During ethanol withdrawal, dielectric permittivity values exhibit hysteretic effects. Synthetic modeling exercises indicate that this behavior is not the result of a change in the fitting parameter within the CRIM model, and that the hysteresis observed is a physical process warranting further research.

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&

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## **Glyphosate Flow Analysis in Banana Crops for the Environmental Risk Assessment in the Caribbean Region in Colombia**

Glyphosate is a common herbicide which is used to control weeds since 1970. This herbicide has the advantage of having a moderately persistence; however, studies worldwide have found high levels of glyphosate in rivers, groundwater, and soils after the application. In Colombia, the banana crops occupy 74.000 ha with an annual average production of 2 million tons, exporting 87%. The Uraba region occupies 76% of the total banana production area in Colombia. In this area, a survey found 447 farms in which an annual average of 0.75 kg/ha of glyphosate is applied. Taking this into account, the "Material Flow Analysis" methodology was applied in order to study the mechanisms of distribution of this herbicide in the different environmental compartments: soils, groundwater, rivers and finally the Caribbean Sea. Two production areas were identify, one with high content of sand and a second one with high content of clay. Additionally, the persistence of the herbicide was estimated according to the different environmental compartments. The model estimations show an annual average amount of 180.5 kg of glyphosate arriving to the Caribbean See from sandy soils and 149.1 kg of glyphosate from clay soils. Previous studies worldwide have found a reduction in the populations of insects, molluscs, crustaceans and amphibians because of the use of glyphosate and taking into account the high biodiversity level in ecosystems in the Colombian Caribbean Region, it is concluded that the use of glyphosate in banana crops has a high environmental impact. However, following environmental impact mitigation strategies such as better cultural practices, reducing the use of pesticides, this might result in a significant decrease of the environmental impact. Part of the present results belongs to the project "Life Cycle, Human Exposure and Risk Assessment of Pesticide use in Agricultural Products in Developing Countries" sponsored by the Swiss Science National Foundation under the supervision of Prof. Claudia R. Binder (Ludwig Maximilian University of Munich) and Stefanie Hellweg (ETH Zurich) in

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cooperation with the Faculty of Civil Engineering of the Saint Thomas  
Aquinas University - Tunja.

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## **Spatio-temporal Modelling of Vegetation Propagation linked to GIS**

The paper is focused on computer modelling of natural vegetation propagation across selected disturbed sites. The sites located in the different environments were selected to illustrate the proposed spatio-temporal model. Aerial images assisted in identifying and monitoring the progress in the propagation of vegetation. Analysis of the aerial images was based on varying vegetation coverage explored by classification algorithms. A new approach is proposed entailing coupling of a local dynamic model and a spatial model for vegetation propagation. The local dynamic model describes vegetation growth and its dispersal phenomena on the local scale and on the scale of outlying spreading. The disturbed sites are divided into a grid of microsites with the relative vegetation density on a scale from 0 (no vegetation) to 1 (long-term maximum of vegetation density). The grid of cells forms a set of ordinary differential equations for prediction of relative vegetation density. A few case-oriented studies are provided to show various predictions of vegetation propagation across selected disturbed sites. The first case study simulates vegetation growing without spatial propagations in the spatio-temporal model. The second and the third case studies extend the previous study by including local and outlying vegetation propagation, respectively. The fourth case study explores the delayed outcome by vegetation propagation across the disturbed space. The performed case-oriented studies confirm the applicability of the proposed spatio-temporal model to predict vegetation propagation in short-term successions and to estimate approximate vegetation changes in long-term development. As a result, it can be concluded that GIS and remotely sensed data are valuable sources of information for estimates of model parameters and provide a cost-effective method for monitoring the progress of vegetation propagation across the selected sites, spaces disturbed by human activities.

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## **Place Attachments, Social Networks and Mexican Urban Migration**

By using qualitative data and a representative survey of Valle de Chalco-Solidaridad, a municipality on the periphery of Mexico City, this article provides fresh information on urban migration to the U.S. Specifically it explores the role of social networks and place attachments in urban settings for understanding emigration patterns. The article critically reviews previous theoretical assumptions about the nature of Mexican migration with regard to the role of social networks in organizing migration flows that were largely based on rural-origin datasets and case studies. Even if a municipality that is very homogeneous in terms of poverty and employment opportunities, the article demonstrates that variations on the socio-demographic profile of the would-be emigrants to the US are found depending on the household's social networks. Our data suggests that urban females may organize their own autonomous social networks, the higher educated in cities value their future in Mexico (and only try the adventure further north when they have the support of social networks). Finally, and maybe because the municipality is mainly composed of in-migrants from other parts of Mexico, the survey and the interviews clearly show that place attachments are irrelevant for understanding urban migration from Mexico.

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## **Fluoride Distribution in Groundwaters and Prevalence of Fluorosis in Unnao District, India**

Fluoride plays significant role in caries prevention but ingestion of fluoride beyond tolerable limit leads to dental and skeletal fluorosis. Present investigation was carried out in fifteen villages of Tehsil Purwa of Unnao District, India, which are endemic for fluorosis. Underground wells and handpump are only source of drinking water in these villages. Fifty groundwater samples were analysed for fluoride content and 1500 persons (1-40 years) were surveyed for quantitative assessment of fluorosis. We have found maximum 65.8% prevalence of fluorosis at highest 14.00ppm fluoride level in village Vishnukhera and minimum 27.3% prevalence of fluorosis at lowest 1.80 ppm fluoride level in Unch Gaon. Our findings indicated that nearly all the villages have fluoride level in groundwater above permissible limit 1.5ppm.

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## **A State Space Transformation Can Yield Identifiable Models in Tracer Kinetics**

Tracer studies are routinely analyzed by multicompartmental models (linear, ordinary differential equations with constant coefficients) where the state variables are tracer amounts or activities in the different pools or compartments. The model parameters are rate constants, defined naturally by expressing fluxes as fractions of the source pools. We consider an alternative state space with tracer enrichments or specific activities as the state variables, the rate constants redefined by expressing fluxes as fractions of the destination pools. Although the redefinition may seem nonintuitive, we show that, for a variety of structures, provided the structure is linear and stationary, the model in the enrichment state space has fewer parameters than that in the activities state space, and is hence better both to study identifiability and to estimate parameters. Our results suggest that studies with labeled precursors are modeled best with enrichments.

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## **The Recent Agrarian Dynamic in Brazilian Amazon: Commodities Production and Space Reorganization**

In this paper we highlight some of the impacts of cattle farming, mining and soy and eucalyptus monocultures, on deforestation and food production in the Brazilian Amazon, from the last decade of the twentieth century and early twenty-first century. We analyze information from official agencies in Brazil, as CONAB, IBAMA and IBGE. The Amazon region corresponds to over half of the 8.5 million square kilometers of the Brazilian territory. Especially in the 1990s, the government strengthened some economic policies in the interests of the big corporations and international organizations (IMF, World Bank and WTO), expressed in the Washington Consensus, such deregulation, privatization and more open trade. This scenario caused changes in the Amazon agrarian dynamics, through concentration of land to increase production of commodities, having direct impact on the degree of deforestation, the destruction of the family food production and the modes of use of rainforest by local people. So, has worsened the risk of food and nutrition insecurity in the region and deepen them problems to be faced, paradoxically, in a historical moment in which the country has made significant international commitments for reducing poverty and ensuring better living conditions on Earth, like the Millennium Development Goals.

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**The Production of Polyester Binding Molded Granitoid  
from the Arenitized Esence Granitoid  
(AfşinKahramanmaraş/Turkey)**

Due to their aesthetic appearance of the textures formed by minerals, become resistant to physical and chemical alteration, the granitoids have always been sought and desired as a natural building material in construction industry. The majority of granitoids undergo the alteration and arenitization after intrusion and emplacement into the earth. This study aims to produce a new building material from the arenitized granitoids of Southeast Anatolian orogenic belt (Esence granitoid in Afşin-Kahramanmaraş-Turkey) as an alternative building material to existing materials (granite-marble-artificial marble etc), and show physico-mechanical characteristics of the final product. The low block efficiency of granitoids and marbles casued to move the production of artificial marble in this sector. The properties of artificial marbles such as high production cost, being more insensitive to the environment emerged the need for the use of arenitized granitoids as a raw material, which altered and fragmented in their natural environment, less polluting the environment and need less energy in preparation for production.

Stages of production of new material from the arenitized granitoid starts with sizing raw material after taking it from the field. Then the sized raw material is mixed with binder material (calcite powder) in various proportions. Next, to improve the visualization, performance against external influences and hygen properties of the product, molding resin material called gelcoat is applied one day before. Then, according to the mold size, the mixture of the natural materials (arenitized granitoid and calcite powder), which optimum ratios will be investigated in this study, polyester and hardener are added into mixer and mixed till being dough. Optionally, by adding the natural rocks and mineral fragments in different colors (pyroxenite, gabbro, peridotite, muscovite, biotite, amphibole, etc.) can also be added to diversify the aesthetic characteristics of the product. Then, the mixture under the form of dough is laid on a molds coated with gelcoat and dispensed properly, and it is put on the shaking band for removing the

cavity and homogenous distribution. Finally, the material becoming suitable is taken from shaking band and allowed to be dried and hardened. After dried and hardened within a few hours depending on the climatic conditions, the molded granitoid is removed from the mold, adjusted the edges, and has been converted into the final product.

Physico-mechanical tests on the new product yielded as Bending resistance: 19,37Mpa, Water absorption in boiling water: 46 %), Wear loss with friction: 2,679cm<sup>3</sup>/50cm<sup>2</sup>, Fullness ratio: 99,85 %, Breakage load: 2,65KN, Capillary water absorption: 0,0029g/cm<sup>2</sup>, Thermal conductivity coefficient: 1,2140 w/mk.



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## **Pesticide Flow Analysis in the Tota Lake Watershed in the Boyaca Region in Colombia**

The Tota Lake, the largest in Colombia, with a surface of 55 km<sup>2</sup> and a hydrographic watershed of 20.100 ha, is an important natural resource located in the department of Boyacá. A large population (25.000 people approximately) live in the watershed whose economy is based in agricultural, touristic, industrial and commercial activities. Due to these activities, there is a constant pollution in the water bodies caused by pesticides, fertilizers, industrial chemical products and domestic wastewater. One of the major concerns is the use of pesticides mainly in onion crops which cover an area of approximately 4300 ha. A survey made in the area found the use of pesticides such as propineb (fungicide: carbamate), profenofos (insecticide: organophosphate), deltamethrin (insecticide: pyrethroid) and carbofuran (insecticide, nematicide, acaricide: carbamate). These pesticides have different degradation rates and because of the doses and application frequencies and the different fates in the soil, the lake, the air and the rivers along the whole watershed, the agricultural system requires an environmental risk assessment in the whole watershed. This research proposes an environmental risk assessment approach based on the "life cycle assessment" methodology in order to study the flow of pesticides in the systems and how they affect the populations of mammals, birds, fishes, microorganisms, bees and the human being in the different environmental compartments such as the soil, surface water, groundwater, the lake and the urban settlements around the lake watershed. The preliminary results showed that from the 100% of the pesticide, 49% goes to the air and 50% goes to the soil. From the total amount arriving to the soil, 28% goes to the surface water, and 1,285% goes to the groundwater. The lake receives 0.87% of the total amount of applied pesticides. This information is the result of the mass balance evaluation and a further research is done in order to integrate the dynamic parameters such as the degradation and frequency rates. This research is funded by the Saint Thomas Aquinas University in Tunja within the project "Sustainability Assessment of Agricultural and

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### **The Governance of Solid Waste Management in Malaysia: An Insight towards Sustainable Development**

Solid waste management in Malaysia has experienced transformation since early 1960. Therefore, the plans, strategies, framework, policies and the system of solid waste management in Malaysia have changed to suit the current solid waste characteristic and number of solid waste generated. These changes have brought huge responsibility to many stakeholders and become more challenging in the context of governance. The governance of solid waste management has involved several actors that play different roles. This paper will review the institutional structure and the role of each stakeholder that involve on the governance of solid waste management in Malaysia. Besides that, the issues and challenges that emerged on the governance of solid waste management in Malaysia will be discussed to critically examine the gaps of good governance practices in solid waste management. The good governance of solid waste management could be an insight towards sustainable development in the future.

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## **Geological Lineament Density and its Association with Rock Mass Strength in the Kinta Valley, Malaysia**

This study focusses on evaluating the association between geological lineament density with the quality of limestone rock mass in the Kinta Valley, Perak, Malaysia. The assessment of rock masses involved 12 assessment stations on seven limestone hills; Gunung Rapat, Gunung Datok, Gunung Lang, Gunung Paniang, Gunung Kandau, Gunung Panjang, and Gua Tempurung. By using the Rock Mass Strength (RMS) method, these assessment stations were later ranked into five classes; very strong, strong, moderate, weak, or very weak based on the parameters used in the RMS (intact rock strength using Schmidt hammer, weathering, spacing of joints, joint orientations, width of joints, continuity of joints, and outflow of groundwater). The lineaments were derived from Landsat 7 band 4 satellite image using the Robinson filter. Later, the lineaments were classified into three classes (low, moderate, high) and these classes were overlaid on the assessment stations to examine the association between the lineament density with the RMS ranked for each station. Based on the RMS rating, 11 stations were ranked into the medium class and one station in the weak class. The cross analysis between the lineament density map with the ranked assessment stations resulted in 73% match. This shows that the lineament density obtained from the satellite image can be used to estimate the condition of rock masses before ground assessment is conducted. However, detailed investigation should be carried out to ascertain the stability of slopes in this region so that damage to property and loss of lives due to rockfall can be avoided.

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### **Low-Temperature Hydrothermal Alternation of Dolerites from the Djavakheti Plateau (Georgia)**

The zones of hydrothermal alternations have been manifested in the dolerites of calc-alkalic series of Late Pliocene – Early Pleistocene (1.8 Ma) in the extreme East of the Javakheti Volcanic Plateau. The hydrothermal alternation zones are related with the areas of broken and brecciated mother rocks and the areas of hydrothermal system unloading. The association of low temperature minerals has been developed in hydrothermal alternation zones. The identification of secondary minerals was done through using: chemical, optical, X-ray diffraction (XDR) and geochemical research methods. In the mineral complexes of hydrothermal alternation zones, collection of ceolites are not widely presented. They integrate shabazites and thomsonites – varieties of Ca and Na-Ca. Widely spread is calcites and smectites. Pumpellyites and organic material are insignificantly represented.

Chabazites create well developed, often facolite-type crystals. They are presented in the form of large crystal individuals and druse. Thompsonites are developed in the form of radial and radially fibrous fibrillar aggregates. Pumpellyites are characterized by acicular and fibrous aggregates; smectites are widely spread minerals, which are represented by globular, reniform and scaly aggregates; In the association of secondary minerals, calcite is considered to be one of the main minerals. The mineralogical composition of mother rocks significantly determines formation of Ca and Na-Ca ceolites and their local distribution in hydrothermal alternation zones. Ceolites are mainly formed as a result of compositional transformation of base plagioclase, and smectites as a result of olivine transformation. The process of secondary transformation of dolerites takes place under pulsation influence of solutions enriched with alkali Na-Ca and CO<sub>2</sub> in low depths (surface or subvolcanic conditions) within the condition of low temperature (120°C) and pressure.

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**Application of Ground Penetrating Radar (GPR) to  
Characterize Volcanic Induced Sediment and Dead Wood  
Deposits: A Study Case at Blanco River, Chilean Patagonia**

The 2008 explosive Chaiten volcanic eruption severely affected in-channel and riparian forests and drainage network of the Blanco river basin in the Chilean southern Patagonia, filling the river valley with several meters-thick deposits of sediment and dead wood. Fluvial bank erosions are mobilizing sediments and wood into the Chaiten Gulf creating a new delta which grows continuously endangering the operation of the Chaiten port and forcing the Ministry of Public Work to undertake a permanent dredging to maintain operative the port.

An adequate sedimentary and geomorphologic characterization of these deposits is necessary to understand the importance and permanency in time of these post-eruptive adjustments. Geophysical surveys based on the Ground Penetrating Radar (GPR) technique can facilitate the study of *ex-post* sedimentologic conditions allowing a detailed stratigraphic characterization including the identification of singularities such a buried dead wood.

In this paper, we present the results of an application of the GPR technique to evaluate the sedimentary conditions of the Blanco River at Chaitén, in southern Chile. The hydrologic, sedimentary and geomorphic conditions are exposed, as well as the results of the GPR surveys including the basic calibration parameters and field conditions.

Results show that the application of the GPR technique constitutes a useful tool to study geomorphologic changes and sedimentary conditions in river channels affected by eruptive processes, permitting a

very high definition of the geomorphologic and sedimentary conditions.