

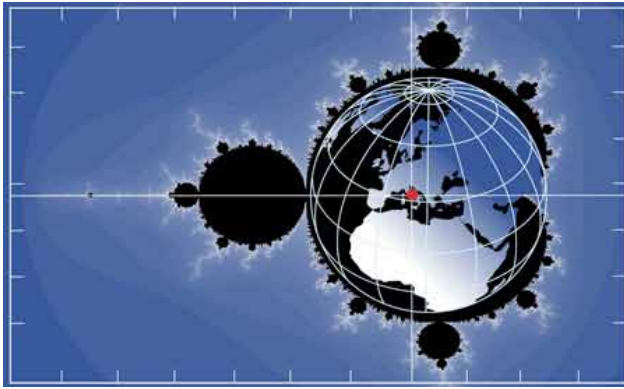
6<sup>th</sup> International Conference on  
*Fractals and Dynamic Systems in Geoscience*

26 September - 02 October 2013  
Perugia (Italy)



[www.fractgeosci2013.unipg.it](http://www.fractgeosci2013.unipg.it)

**Second Circular & Call for Abstracts**



## 6<sup>th</sup> International Conference on *Fractals and Dynamic Systems in Geoscience*

Perugia, Italy  
26 Sept. - 02 Oct. 2013

### **Conference Themes**

Fractals, multifractals, non-linear processes and chaotic dynamical systems are becoming increasingly fundamental for analyzing data and understanding processes in the Earth and Environmental Sciences.

The aim of this conference is to present the latest research and techniques in the application of fractals and dynamic systems to Earth systems, with emphases on predictability of geological risks, natural resources and climate change.

*The conference welcomes contributions on all applications of fractals and dynamic systems in the Earth and Environmental Sciences.*

### **Venue**

The 6th International Conference on Fractals and Dynamic Systems in Geoscience will be held in Perugia (Italy) from September 26, through October 02, 2013 at the Sala del Dottorato (Museo del Capitolo di San Lorenzo), downtown Perugia.

### **Scientific Committee**

Perugini D. (chair), Blenkinsop T., De Campos C.P., Kruhl J.H., Lovejoy S., Peternell M., Poli G., Storti F., Suteanu C., Telesca L.

### **Organizing Committee**

Perugini D. (chair), Comodi P., Frondini F., Kruhl J.H., Poli G., Telesca L.

### **Contacts**

Website: [www.fractgeosci2013.unipg.it](http://www.fractgeosci2013.unipg.it)

Conference Secretary: **Marta Alunni Pini**

e-mail: [cclgeol@unipg.it](mailto:cclgeol@unipg.it)

Scientific questions: **Diego Perugini**

e-mail: [diegop@unipg.it](mailto:diegop@unipg.it)





6<sup>th</sup> International Conference on  
*Fractals and Dynamic Systems  
in Geoscience*

Perugia, Italy  
26 Sept. - 02 Oct. 2013

## Call for Abstracts

Abstracts must be in English and should be submitted by **July 15, 2013**.

Abstract submission has to be made exclusively via e-mail using the abstract template form that can be downloaded from the conference web site: **www.fractgeosci2013.unipg.it**. *The use of this template is mandatory.*

Please e-mail the abstract form to Diego Perugini (e-mail: [diegop@unipg.it](mailto:diegop@unipg.it)). Abstracts must be submitted along with the registration form (**www.fractgeosci2013.unipg.it**).

Acceptance of abstract and decision about presentation mode will be made by the organizing committee by July 30.

## Presentation Modes

- **Oral presentations** - 20 minutes are allocated for standard oral presentations. Computers (Windows and Mac OS X based), one LCD projector, and one overhead projector will be available.
- **Poster presentations** - A special slot has been scheduled in the afternoon of each day of the conference to focus attention on this important form of presentation. The display boards are designed for a maximum poster size of A0 (Portrait). A wine tasting “happy hour” will be organized during each poster session.

## Publication of Conference Proceedings

Selected papers will be published in a Special Issue of an international journal titled “Fractals and Dynamic Systems in Geoscience”. You will be asked if you are interested in contributing to this Special Issue during the conference.



# 6<sup>th</sup> International Conference on *Fractals and Dynamic Systems in Geoscience*

Perugia, Italy  
26 Sept. - 02 Oct. 2013

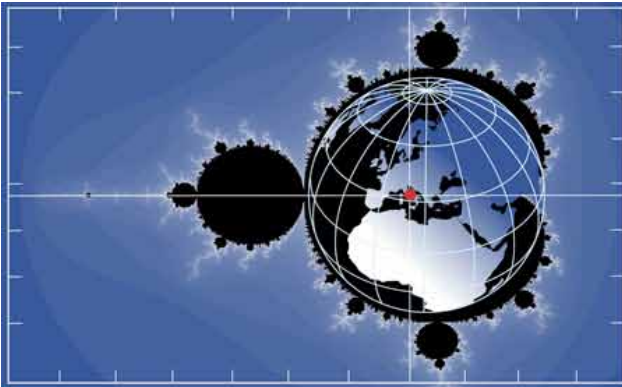
## Workshop Programme: Contents and Schedule

WORKSHOP 1	
<i>Title</i>	<b>Anisotropy and Inhomogeneity Quantification of Rock Fabrics</b>
<i>Coordinators</i>	<b>Mark Peternell &amp; Jörn H. Kruhl</b> (Johannes Gutenberg Univ. Mainz & Technical Univ. Munich, DE)
<i>Programme</i>	<p>Numerous geological processes are direction-related and act variably on different scales and in different domains. They lead to anisotropy and inhomogeneity of rock fabrics which, vice versa, provide information about these processes. Quantification of fabrics is needed in order to fulfil the requirements for useful application, such as correlation with parameters of geological processes, comparison with the results of experiments and modelling, and in technical design. During the last three decades fractal geometry methods have proven extremely useful for quantification of complex rock fabrics and patterns. Recent development in automation of methods led to a previously unmatched level of precision and rate of fabric recording and analysis and opens the possibility to analyse large data sets and fabrics over several orders of magnitude.</p> <p>During the workshop, in addition to a more general overview on the topic and on different ways of anisotropy and inhomogeneity quantification and its application in various fields of geoscience, a new Matlab-based program system will be presented, which combines different methods and allows more comprehensive fabric analyses. The workshop participants will have the chance to present results of their own work and apply the program system to their own data.</p>
<i>Date</i>	<b>Thursday, September 26</b>
WORKSHOP 2	
<i>Title</i>	<b>Fractals and Natural Resources</b>
<i>Coordinator</i>	<b>Tom Blenkinsop</b> (James Cook University, AU and Cardiff University, UK)
<i>Programme</i>	<p>Many aspects of natural resources – for example their distribution, and relationships between grade and tonnage – display fractal properties. These characteristics are useful, even essential, for successful exploration, resource estimation, and utilization of both renewable and non-renewable resources. This short course will introduce a range of relevant fractal and multifractal techniques that will be used to tackle the following topics: i) Production rank approach to resource estimation; ii) grade-tonnage relationships: the De Wijs model; iii) variation in box counting dimension of different commodities; iv) multifractal approaches: modified de Wijs model; v) fractal aspects of geological structures; vi) fractals and prospectivity analysis. Hydrothermal mineral deposits, hydrocarbon deposits (including shale gas) and geothermal resources will be used as examples.</p>
<i>Date</i>	<b>Friday, September 27</b>
WORKSHOP 3	
<i>Title</i>	<b>Fractal-Geometry-Based Treatment of Geohazards</b>
<i>Coordinator</i>	<b>Cristian Suteanu</b> (Saint Mary's University, CA)
<i>Programme</i>	<p>Geohazards often involve processes characterized by strong variability in space and in time. A comprehensive characterization of their dynamical and/or structural features can support activities involved in hazard evaluation, prediction, assessment, recovery planning, etc. This short course offers an introduction to a range of methods capable of characterizing patterns and pattern change related to different types of geohazards such as earthquakes, forest fires, volcanic activity, etc. Complex, irregular natural features and their evolution over time are considered from multiple angles. Step-by-step descriptions of analysis methods are complemented by applicability details and practical examples. Key aspects of fractal analysis applied in a real-world context are discussed, including ways of detecting bias, avoiding interpretation errors, and selecting the most effective approaches to patterns as a function of the available data and the purpose of the analysis.</p>
<i>Date</i>	<b>Saturday, September 28</b>



6<sup>th</sup> International Conference on  
*Fractals and Dynamic Systems  
in Geoscience*

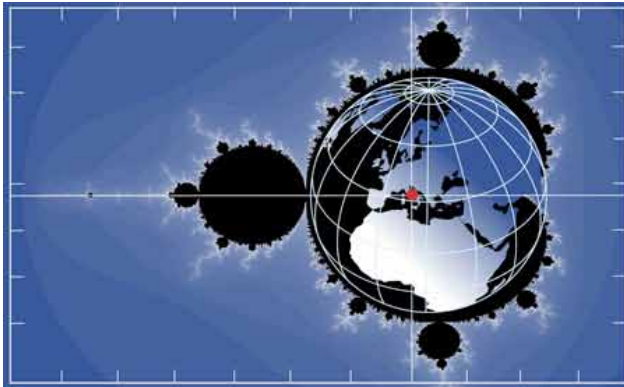
Perugia, Italy  
26 Sept. - 02 Oct. 2013



## Scientific Programme Schedule

Sunday, September 29	
17:00-19:30	Registration and Icebreaker party at the Sala del Dottorato
19:30-20:30	<b>Open Public Lecture</b> given by <b>Heinz O. Peitgen</b> (Jacobs University Bremen, DE) on "How fractal geometry can improve oncological surgery"
Monday, September 30	
8:30	Opening session
9:30	<b>Keynote Lecture:</b> "Nonlinearity and climate change", <b>Jürgen Kurths</b> (Potsdam Institute for Climate Impact Research, DE)
10:00	Oral presentations 20' each
11:00	Coffee break
11:30	Oral presentations 20' each
13:10	Lunch
14:30	<b>Keynote Lecture:</b> "Scaling and predictability of catastrophic failure in real time: from laboratory tests to volcanoes and earthquakes", <b>Ian Main</b> (The University of Edinburgh, UK)
15:00	Oral presentations 20' each
16:20-18:30	Poster session & happy hour
Tuesday, October 01	
9:00	<b>Keynote Lecture:</b> "The weather and climate: emergent laws and multi fractal cascades", <b>Shaun Lovejoy</b> (McGill University, CA)
9:30	Oral presentations 20' each
10:50	Coffee break
11:20	Oral presentations 20' each
13:00	Lunch
14:30	Oral presentations 20' each
16:30-18:30	Poster session & happy hour
20:00	Social Dinner
Wednesday, October 02	
9:00	<b>Keynote Lecture:</b> "Have air temperature patterns been changing?", <b>Cristian Suteanu</b> (Saint Mary's University, CA)
9:30	Oral presentations 20' each
10:50	Coffee break
11:20	Oral presentations 20' each
13:00	Closing session





# 6<sup>th</sup> International Conference on Fractals and Dynamic Systems in Geoscience

Perugia, Italy  
26 Sept. - 02 Oct. 2013

## Registration Fees

Registration fee for each Workshop		
Type of registration	Early Bird (ends on 30 June)	Regular Rate (after 30 June)
Regular registration	90 €	120 €
Student* registration	60 €	90 €
<i>Registration fee for the Workshops includes Workshop material (powerpoint printouts and files of lessons, numerical codes used during training) and coffee breaks during workshops</i>		
Registration fee for the Scientific Programme		
Type of registration	Early Bird (ends on 30 June)	Regular Rate (after 30 June)
Regular registration	140 €	190 €
Student* registration	90 €	140 €
<i>Registration fee for the Scientific Programme includes admission to scientific sessions, conference materials (delegate bag, final programme, abstract book), admission to the icebreaker party and coffee breaks.</i>		

*\* (this includes undergraduate, Master and PhD students)*

**Note:** a special reduction of the registration fee will be considered for applications to more than one Workshop (W) [it applies only to Early Bird registrations]: Regulars (1W=90, 2W=140, 3W= 200), Students (1W=60, 2W=90, 3W= 130).

## Payment of Registration Fees

- Bank Transfer**

Beneficiary: Dipartimento di Scienze della Terra (Università degli Studi di Perugia)

Address: Piazza dell'Università, 06123 Perugia, Italy

Reason: FRACTALS2013 + "your complete name"

Bank name: Unicredit Banca

Agency: Perugia Università

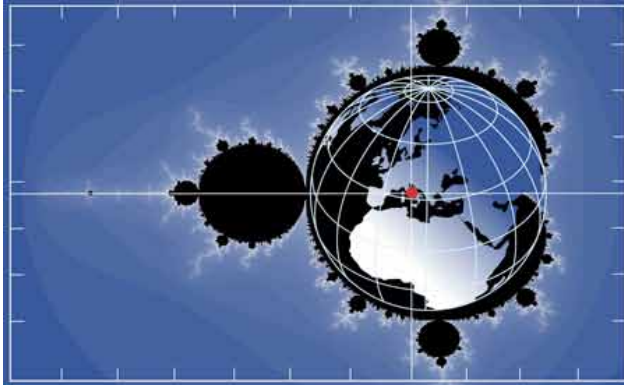
IBAN: IT 73 A 02008 03043 000029451786

BIC/SWIFT: UNCRITM1J11

**(NOTE: The money transfer charge has to be paid by the sender)**

- Cash Payments (on-site) - It applies only for Regular Rate registration -**





## 6<sup>th</sup> International Conference on *Fractals and Dynamic Systems in Geoscience*

Perugia, Italy  
26 Sept. - 02 Oct. 2013

### **Student Support**

A limited financial support covering the registration fee for the workshops and/or the conference will be available to facilitate participation of Master and PhD students. Applications reporting the type of requested support should be submitted no later than June 30 by e-mail to the address: [diegop@unipg.it](mailto:diegop@unipg.it). The application shall be accompanied by a short CV and a supervisor's reference letter. The Organizing Committee will decide upon eligible applications.

### **Letters of Invitation and VISA requirements**

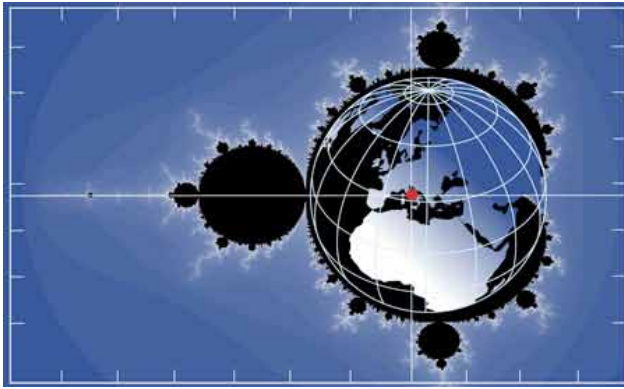
Participants who require invitations to participate in Workshops and Conference should email Diego Perugini ([diegop@unipg.it](mailto:diegop@unipg.it)), Chair of the Organizing Committee. These documents do not grant any financial support by the organizers.

Participants are invited to check with their local travel agency regarding any VISA requirements to enter Italy. For support for VISA applications please email directly to Marta Alunni Pini ([cclgeol@unipg.it](mailto:cclgeol@unipg.it)), the Conference Secretary.

### **Accommodation**

- **HOTELS:** A list of selected hotels is reported on the website of the conference: [www.fractgeosci2013.unipg.it](http://www.fractgeosci2013.unipg.it). All the hotels listed on the website are located in the centre of Perugia, within a 10-15 minutes walking distance from the Conference venue. Participants should make their own hotel reservations directly with the hotel of their choice.
- **"LOW COST" ACCOMODATIONS:** A number of "low cost" accommodations is available through the university accommodation service. The quality of rooms is very good and they are located downtown, 10-15 min walking distance from the Conference place. Fares are 15 € for a single room and 12 € for a double room. Breakfast is not included. Please contact the Conference Secretary (**Marta Alunni Pini**; e-mail: [cclgeol@unipg.it](mailto:cclgeol@unipg.it)) for checking availability and make reservations.





6<sup>th</sup> International Conference on  
*Fractals and Dynamic Systems  
in Geoscience*

Perugia, Italy  
26 Sept. - 02 Oct. 2013

## Travel information

### By train:

Information and timetable available at: <http://www.trenitalia.com>

### By plane:

- Leonardo da Vinci - Fiumicino International Airport (Rome) is about 210 km from Perugia.  
Tel.: +39.06.65951  
Website: [www.adr.it](http://www.adr.it)  
Connections by coach to and from Perugia are assured by ACAP-SULGA company:  
[http://www.sulga.it/orari/perugia\\_roma.pdf](http://www.sulga.it/orari/perugia_roma.pdf)
- Florence Airport (Florence) is about 180 Km from Perugia.  
Tel.: +39.055.3061702  
Website: [www.aeroporto.firenze.it](http://www.aeroporto.firenze.it)
- Sant' Egidio Airport (ca. 20 km from Perugia) is connected daily to the main European airports via Malpensa Airport (Milan) and Palermo. A direct fly to and from London (Stansted) is provided by RyanAir.  
Website: [www.airport.umbria.it](http://www.airport.umbria.it)  
The Airport is connected to the city with a bus service.

### By bus:

A bus service (SULGA) connects Rome (stazione Tiburtina or Rome Airport), Florence, Milan and Naples with Perugia.

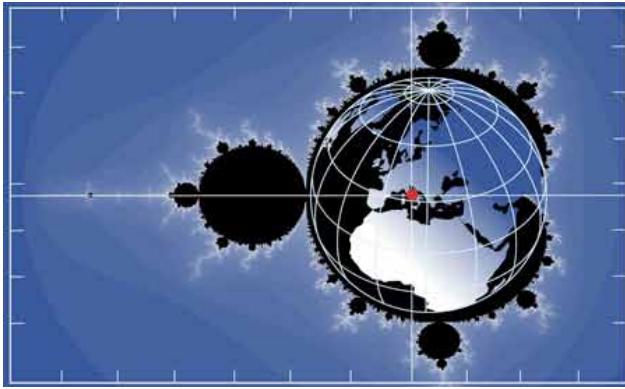
For information, please contact the bus line SULGA at: [info@sulga.it](mailto:info@sulga.it).

### By car:

- For those arriving from the North/North West Motorway A1 "del Sole" Florence-Rome, exit at Valdichiana.
- For those arriving from the North-East on A13/A14, exit at Cesena (follow direction for Citta' di Castello, Perugia) or at Fano (follow direction for Gubbio and then Perugia).
- For those arriving from the South exit the A1 at Orte for the E45, direction Perugia.
- For those arriving from the South-East exit the A14 at: Ancona Nord (follow directions for Gubbio, Perugia) or Civita Nova Marche (follow direction Foligno-Perugia). The dual carriage-way 'E45' Cesena-Orte crosses the Umbria region.







## 6<sup>th</sup> International Conference on *Fractals and Dynamic Systems in Geoscience*

Perugia, Italy  
26 Sept. - 02 Oct. 2013

### **Workshop and Conference location**

The conference will be held in Perugia (Italy). Perugia is the capital city of the region of Umbria in central Italy. The city is located about 164 kilometers north of Rome and 155 kilometers south of Florence.



**Workshops** will be held at the **Department of Earth Sciences** of the University of Perugia (Piazza Università, 06123 Perugia).



**Scientific sessions** will be held at the **Sala del Dottorato**, which is located in the Museo del Capitolo di San Lorenzo, on the main square (Piazza IV Novembre) of the town.

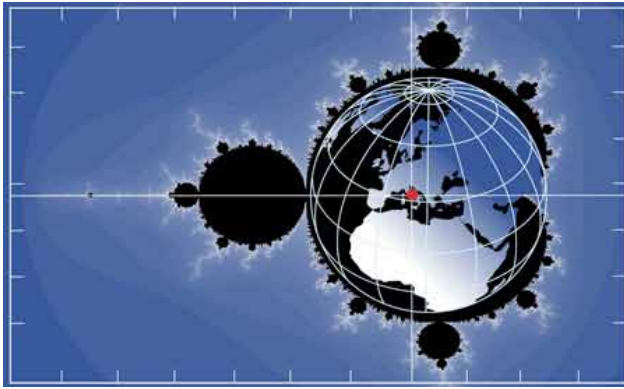
### **Social and Accompanying Persons' Programme**

The Social Dinner will be on Tuesday evening at one of the downtown Perugia restaurants. The Social Dinner, made by typical Umbria cuisine including local wines, is not included in the Conference fee and should be paid separately on site. The approximate cost for the dinner will be ca. 30 € per person (further details will be given in the Third Circular).

During the conference, a series of activities for accompanying persons will be organized. These include guided tours of the town of Perugia and wine tasting at selected wine producers in the surroundings of Perugia.

Additional details and pricing will be posted in due course on the conference website ([www.fractgeosci2013.unipg.it](http://www.fractgeosci2013.unipg.it)) and through the Conference mailing list.





# 6<sup>th</sup> International Conference on *Fractals and Dynamic Systems in Geoscience*

Perugia, Italy  
26 Sept. - 02 Oct. 2013

## Summary of Important Dates

- **Abstract submission:** July 15, 2013
- **“Early bird” registration:** June 30, 2013
- **Application for student support:** July 15

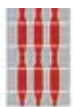
## Sponsors



Dipartimento di  
Scienze della Terra  
Università di Perugia



Comune di Perugia



Regione Umbria

