

IGARSS 2003

2003 IEEE International Geoscience
and Remote Sensing Symposium

Learning From Earth's Shapes & Colors



IGARSS 2003 Final Program

Centre de Congrès Pierre Baudis Toulouse France
21-25 July 2003

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IEEE Geoscience and Remote Sensing Society

Centre National d'Etudes Spatiales

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Society on Social Implications of Technology Representative
Johns Hopkins University
Laurel Maryland USA

Paul Racette, *PACE Representative*
NASA Goddard Space Flight Center
Greenbelt Maryland USA

The 23rd International Geoscience and Remote Sensing Symposium will be held during the week of 21 July 2003, at the Centre des Congrès Pierre-Baudis, in Toulouse, France. Situated midway between the Mediterranean and the Atlantic, Toulouse is the capitol of the great Midi-Pyrenees region, and is the 4th largest French city. Toulouse will be a fitting venue for an IGARSS symposium, given its traditional involvement in the Space and Remote Sensing Industries, featuring the French National Space Agency (CNES); the aircraft company, Airbus Industrie; and home of a host of the world's leading research and technological industries, and three excellent universities.



The theme of this year's IGARSS is "Learning from the Earth's Shapes and Colors," already suggesting the broadest implications and applications for the Geosciences and Remote Sensing. Seven major topics have been carefully chosen to highlight new and important aspects of the theory, concepts, techniques and applications of remote sensing. Well over 2400 abstracts have been submitted to address these topics, continuing our extraordinary growth in numbers and quality of presentations at this outstanding symposium.

Please come and join us for this premier event. The Centre des Congrès Pierre-Baudis is the crown jewel of the district Compans-Caffarelli. France is world renown for its exquisite cuisine and fine wines, and Toulouse is right at the doorstep of many of the most outstanding vineyards. The organizing committee has designed a superb social program to showcase the many attributes of Toulouse and surrounding areas.

On behalf of the IEEE GRS Society, I thank Dr. Didier Massonnet, General Chair; Dr Jean Claude Souyris, Technical Program Chair; and the entire Organizing Committee for preparing an extraordinary program. They have moved the IGARSS symposium to yet a higher plain.

I look forward to personally welcoming you in Toulouse.

See you there!

*Charles A. Luther
President*

WHY SHOULD YOU JOIN THE SOCIETY?

Keep updated in your area of expertise. The "Transactions on Geoscience and Remote Sensing", the Society's premier technical journal, is published monthly. The GRS-S Newsletter, published quarterly, is also an effective interface between the Society and the membership.

Have access to the latest on-line technical information. Using IEEE Xplore you can access the IEEE table of contents, abstracts, indexes full manuscripts of the Transactions on Geoscience and Remote Sensing and now the proceedings of the IGARSS conference in citable format.

Exchange information with colleagues in your area of expertise at the annual IGARSS conference and other GRSS-sponsored symposia at a reduced rate. Network with colleagues where you live and work through local chapter activities and technical committees. Refer to page 8 for more information regarding GRSS Technical Committees.

Membership Options

To receive the full range of benefits from the Geoscience and Remote Sensing Society (GRS-S), consider joining as a full IEEE member or an affiliate member. As a full IEEE member, you receive an extensive benefits package in addition to the GRS-S membership. Affiliate members become members of just the GRS-S and receive full society benefits — perfect for professionals whose broad technical interests are in areas other than those of the IEEE.

Become a GRS-S member for free if you attend IGARSS 2003

You can get a full year's membership in IEEE GRS-S free if you join at the conference! Special applications for this promotion will be accepted at the IEEE GRS-S booth at IGARSS 2003. This offer is limited to first-time, full members of IEEE and GRS-S who are officially registered for the conference and paid a non-member registration fee. This offer does not apply to students, due to the already low rates and benefits offered to IEEE GRS-S student members. The number of free one-year IEEE memberships is limited to the first 100 approved applications. Please see an IEEE GRS-S representative at the society booth when the exhibition opens for more details.

To learn more about the different memberships, visit the Society web site <http://ewh.ieee.org/soc/grss/> and click on "Join Us".

IEEE GRSS Technical Committees

In 1994, three IEEE GRSS technical committees were established to influence the Society's strategic goals. Committees have since expanded to five committees. These committees include: (1) Data Archiving and Distribution, (2) Data Fusion, and (3) Frequency Allocations in Remote Sensing Committee, (4) Instrumentation/Future Technologies, and (5) User Applications in Remote Sensing (UARS) Technical Committee. Conference participants are invited to attend the IEEE GRSS Technical Committee luncheon to meet with Society members and Chapter Chairpersons to discuss the status of IEEE GRSS Technical Committees and local chapters. Tickets may be purchased in advance via the social program reservation form, or on-site at the registration desk.

Descriptions of each Technical Committee are provided as follows for your immediate reference.

DATA ARCHIVING AND DISTRIBUTION COMMITTEE

Roger King, Mississippi State University *_committee chair*
Liping Di, George Mason University *_co-chair*

The mission of the Data Archiving and Distribution Technical Committee is "to provide recommendations and responses to issues related to the archival and distribution of remotely sensed geospatial and geotemporal data, and on how new media, transmission means, and networks will impact the archival, distribution, and format of remotely sensed data. The Technical Committee is also developing a research agenda for this emphasis area to study the impact of media, channel, and network scaling on the archival and distribution of data.

Corresponding Technical Session:

Tuesday afternoon, 22 July, Room 10. Committee meeting to follow immediately after (*room tba*).

FREQUENCY ALLOCATIONS IN REMOTE SENSING COMMITTEE

Christopher S. Ruf, University of Michigan *_chair*
Ram M. Narayanan, University of Nebraska *_co-chair*

The IEEE GRS-S Technical Committee on Frequency Allocations in Remote Sensing (FARS) provides technical assessments, guidance and recommendations regarding matters of frequency sharing and interference between remote sensing and other uses of the radiowave spectrum. The need for strong participation by the research committee in this area of policy has become increasingly important as more and more commercial interests move their frequencies of operation up into the microwave region that we are dependant on. FARS invites all interested individuals to attend our related special session to learn more about the interference problem and potential mitigation strategies. In addition, anyone considering getting involved with FARS is encouraged to join us during the Technical Committees' Luncheon. To learn more, visit us at <http://www.fars-grss.org> or contact us via email [Christopher S. Ruf (cruf@umich.edu); Ram Narayanan (mnarayanan@unl.edu)].

Corresponding Technical Session:

Friday morning, 25 July, Room 5 (before the break).

USER APPLICATIONS IN REMOTE SENSING (UARS) TECHNICAL COMMITTEE

Ellsworth LeDrew, University of Waterloo *_chair*
Venkat Lakshmi, University of South Carolina *_co-chair*

The newest of the technical committees, UARS will hold its first meeting in conjunction with IGARSS 2003. The purpose of this meeting will be to seek ideas for the developing focus and mandate of the Committee and to contribute to the agenda for the first two years. Satellite and other remotely sensed data have had major impact on the face of science, industry, and policy. Recognizing that it is at the user level that the value of remotely sensed data is manifested, the GRS-S in November 2002 approved on a two-year trial basis the formation of a technical committee to focus on user applications in remote sensing (UARS). The charge of the UARS TC is to support the development of remote sensing applications within the broad communities of users in earth and planetary science. Possible themes areas for the committee reflect new challenges in how the GRS-S can contribute to these constituent communities. These areas include: 1) integration of remotely sensed data with other data types for improving the accuracy of derived geophysical parameters, 2) data mining of multidimensional data archives of various types and structures for use in scientific applications, 3) regional and global environmental model development, including models incorporating feedback from multiple ecosystems processes at several spatial and temporal scales, and 4) wideband distributed analysis techniques for remote sensing applications.

Inaugural Technical Committee Meeting: 1730 - 1830
Centre des Congrès Pierre-Baudis, Room tba

DATA FUSION TECHNICAL COMMITTEE

Olaf Hellwich, Technical University Berlin *_chair*
Palma Blonda, CNR-IESI *_co-chair*

Corresponding Technical Session:

Wednesday afternoon, 23 July, Room 6.

INSTRUMENTATION & FUTURE TECHNOLOGIES COMMITTEE

Gary G. Gimmestad, Georgia Institute of Technology *_chair*
Jeffrey Piepmeier, NASA Goddard Space Flight Center *_co-chair*

Corresponding Technical Session:

Tuesday afternoon, 22 July, Room 4.

IEEE GRSS Sections and Chapters

CHAPTER LOCATION	JOINT WITH (SOCIETIES)	CHAPTER CHAIR	EMAIL ADDRESS
REGION 1: NORTHEASTERN USA			
Boston Section MA Springfield Section, MA	GRS AP, MTT, ED, GRS, LEO	John Kerekes Steven Reising	kerekes@ll.mit.edu reising@ieee.org
REGION 2: EASTERN USA			
Washington / Northern VA	GRS	Guoqing Sun	guoqing@ltpmailx.gsfc.nasa.gov
REGION 3: SOUTHEASTERN USA			
Atlanta Section GA	AES, GRS	Richard Levine	rick.levin@gtri.gatech.edu
REGION 4: CENTRAL USA			
Southeastern Michigan Section	GRS	Robert Onstott	ronstott@erim-int.com
REGION 5: SOUTHWESTERN USA			
Denver Section CO Houston Section TX	AP, MTT, GRS AP, MTT, GRS, LEO	Karl Bois Krzysztof Michalski	karl.bois@hp.com krys@ee.tamu.edu
REGION 7: CANADA			
Toronto Ontario Vancouver Section BC	SP, VT, AES, UFF, OE, GRS AES, GRS	Konstantin Plataniotis Jerry Lim	kostas@dsp.toronto.edu jl@mda.ca
REGION 8: EUROPE AND MIDDLE EAST			
Central and South Italy 1 Central and South Italy 2 Germany Section Russia Section Spain Section East Ukraine	GRS GRS GRS GRS GRS AP, NPS, AES, ED, MTT, GRS	Domenico Solimini Maurizio Migliaccio Alberto Moreira Anatolij Shutko Adriano Camps Anatoly Kirilenko	solimini@disp.uniroma.it maurizio.migliaccio@uninav.it alberto.moreira@dlr.de ashutko@aol.com camps@tsc.upc.es kirilenko@ire.kharkov.ua
REGION 10: ASIA AND PACIFIC			
Beijing Section China Seoul Section Korea Japan Council	GRS GRS GRS	Ya-Qiu Jin Wooil Moon Yoshio Yamaguchi	yqjin@fudan.ac.cn wmoon@cc.umanitoba.ca yamaguchi@ie.nii.gata-u.ac.jp

Local and Technical Program Committees

LOCAL ORGANIZING COMMITTEE

Didier Massonnet <i>_general chair</i>	Christine Correcher <i>_executive secretary</i>	Thuy Le Toan <i>_workshop/tutorial chair</i>
Jean-Claude Souyris <i>_technical program chair</i>	Philippe Munier <i>_exhibits chair</i>	Daniel Vidal-Madjar <i>_special session chair</i>
Pierre Louis Contreras <i>_finance chair</i>	Eric Pottier <i>_session chair coordinator</i>	Jöelle Guinle <i>_conference manager</i>
Jean Louis Astor <i>_executive finance chair</i>	Jean-Claude Cazaux <i>_regional technology development</i>	Daniel Domont <i>_local authorities coordination</i>

TECHNICAL PROGRAM COMMITTEE

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Shabeer Ahmed	Martti T. Hallikainen	Eric Pottier
Werner Alpers	Olaf Hellwich	Claudio Prati
Olivier Arino	Ben Holt	Laurent Prévot
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Frédéric Baret	Thomas J. Jackson	K. S. Rao
Al Bedard	Hervé Jeanjean	John A. Reagan
Jon A. Benediktsson	Andrew T. Jessup	Steven C. Reising
Jerôme Benveniste	Verne Kaupp	Ake Rosenqvist
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Wolfgang Boerner	Roger King	Marc Saillard
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Keith R. Carver	Jon Sen Lee	Michael Seymour
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K. S. Chen	Thuy Le Toan	Akira Shibata
Mark J. Chopping	Elena Lobl	Masanobu Shimada
Tommy Coleman	Tom Lukowski	Haruhisa Shimoda
Thomas Cooley	Charles A. Luther	Mohammed Shokr
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Gianfranco De Grandi	Francesco Mattia	Karen M. St. Germain
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Albin J. Gasiewski	Jay Pearlman	Helen Wood
Gary G. Gimmestad		Yong Xue

Welcome from the Conference Chair

I am extremely pleased to invite you to attend the 23rd edition of IGARSS. This year the symposium will be held in Toulouse, France, from the 21st to the 25th of July.

The theme we selected for IGARSS'03 is expressed by our motto "learning from Earth's shapes and colors". It conveys the basic idea that, despite the tremendous improvement experienced by our science and techniques in the past decade, we are still far from understanding the evolution of our planet, to which we contribute in a sometimes irreversible way. The shapes and colors evoke the basic sources of information we rely on in remote sensing: geometry and radiometry.

We are very happy with the record-breaking amount of abstracts we have received for the symposium, the first in Europe since Hamburg in 1999. We have defined a programme with 990 oral presentations and more than 1200 posters for which we have tried to maximize exposure time throughout the five days of the conference. The wonderful work of the Technical Programme Committee, which peaked during the Orlando meeting is again to be praised this year.

I have no doubts about the quality of the work which will be presented. The delegates of IGARSS have always shown a production worth of the highest standards, making the symposium, year after year, the top reference in remote sensing. The recent launches of major projects such as ENVISAT, SPOT5, AQUA, JASON, ADEOS2 produced or will soon produce a wealth of new, advanced data, which will challenge our skills and bring their share of unexpected facts, as always.

In addition to our business context, please do not forget to pay attention to the place. Toulouse is an area of contrast: It is one of the major city in the world for aircraft construction and it counts one of the highest percentage, in France, of students among its half a million inhabitants. You can visit the Airbus facility where the largest commercial jetliner is being assembled. It is also a place where the quality of life has been elevated to an art for centuries. It is difficult to decide whether the place itself or the men who live in are responsible. It is probably a complex interaction that started ages ago making names like Cro-magnon, Lascaux or Tautavel famous. But if you are not interested in prehistory, what about middle age fortresses or 1900's painting you can visit the city of Carcassonne or Albi, the hometown of painter Toulouse-Lautrec.

The local organizing Committee has prepared nice social events. In addition to the traditional ice-breaker to be held in the Congress Center on Sunday, there will be a cocktail reception in the "Salle des Illustres" in Toulouse City Hall, which happens to be also an Opera House. A concert (tango) will take place on Tuesday at "La Halle aux Grains". The traditional soccer game has not been forgotten on Wednesday. Finally, the banquet will take place in the Hotel Dieu, a 16th century hospital, on Thursday.

Again, welcome to IGARSS 2003 and welcome to Toulouse. We will be happy to print your memories.



Didier Massonnet
General Program Chair

Overview from the Technical Program Chair

On behalf of the IGARSS'03 Organizing Committee, I would like to welcome you to the 23rd International Geoscience and Remote Sensing Symposium in Toulouse, and to express my deepest appreciation to the International Technical Program Committee (TPC) for their valuable contributions to the symposium organization.

Members of the TPC reviewed numerous abstracts; they determined those of them best suited for interactive placement; they scheduled sessions into the program week, taking particular care to minimize the overlap of like and cross-over topics. The review stage was finalized during the TPC meeting held in Orlando in February 2003. My particular gratitude goes to the TPC meeting attendees, who greatly contributed to the final touch of the IGARSS'03 content. Without their help, such an outstanding program would not have been achieved.

The technical program reflects a wide-ranging coverage of all remote sensing areas: applications, missions and programs, geoscience modeling and processes, data processing and algorithms, electromagnetic problems, instrumentation and techniques, policy societal issues and education initiatives.

This year, in what is shaping up to be a record year with over 2400 abstracts received, we came to the conclusion that an 11th oral session was necessary to accommodate part of the extra attendance expected at IGARSS 2003 (i.e., an increase of 20% in the abstracts). Moreover, the eleven oral sessions held in parallel will be extended by the interactive part of the program, that will be fully considered as a 12th session: interactive papers will be gathered in technical categories. Each technical category will be allotted clearly defined time slot of half a day, during which authors will be present. This will allow more time for poster presentations during the conference "working hours" (and outside of coffee breaks!). Again, overlapping of technical subjects covered by both oral and poster sessions will be avoided as much as possible.

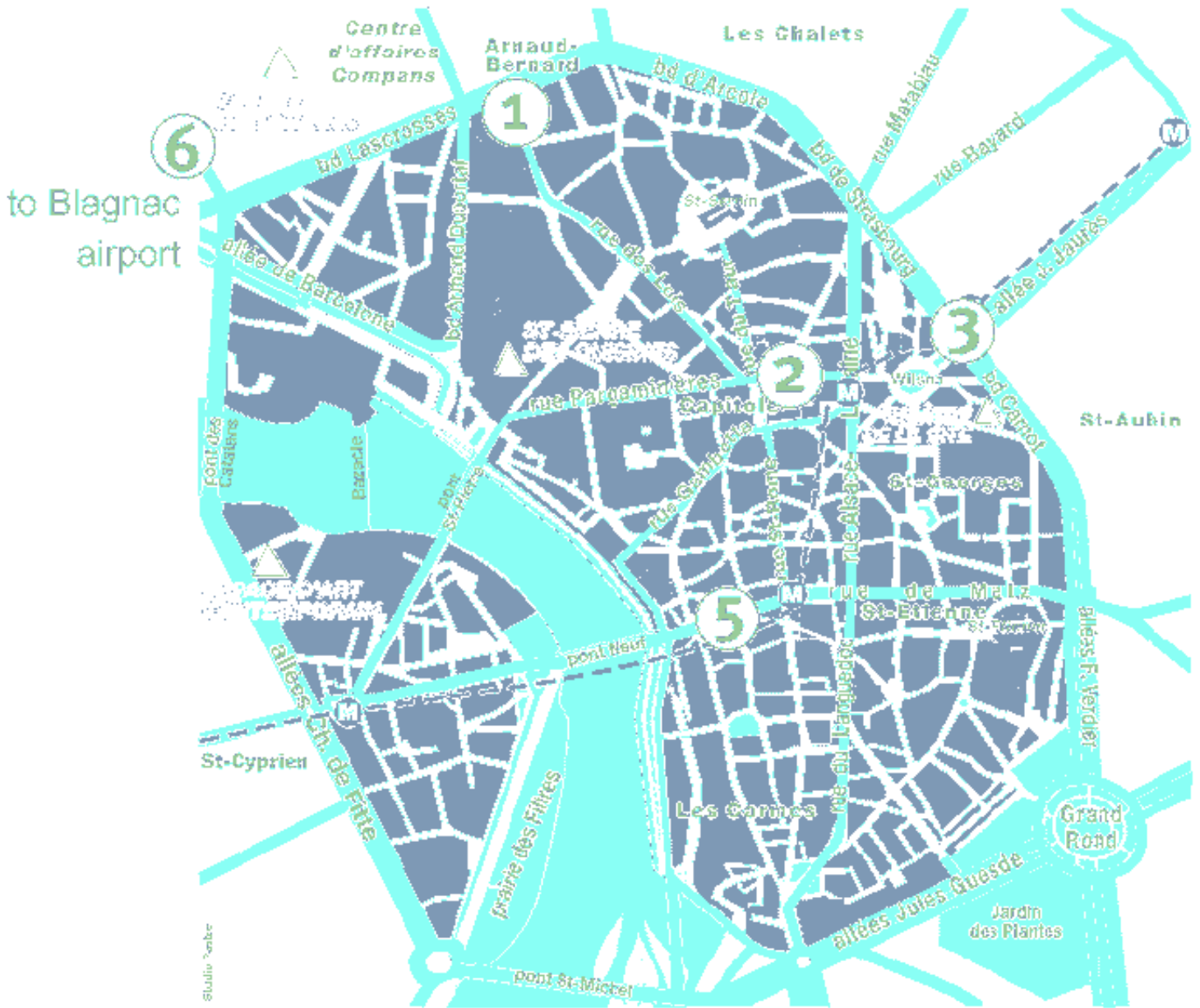
We have also prepared a stimulating series of tutorials given on Sunday July 20th, that will embrace essential topics of remote sensing: polarimetry & interferometry (including the emerging pol-insar technique), hyperspectral processing and applications, data mining & data fusion, and finally a focus on the use of MODIS data. Each tutorial will start from basics, and progress to the latest and most advanced applications.

We hope you enjoy your stay in Toulouse but more importantly that you will find here another IGARSS true to its reputation of technical excellence. *Bienvenue dans la ville rose; bon séjour parmi nous !*



Jean-Claude Souyris
IGARSS'03 Technical Program Chair

Location and Accommodations



Location and Accommodations

TOULOUSE FRANCE

Stroll through the old town, with its colourful markets, viewing the architecture and environment of subtle mix of stone, red brick and russet roof tiles. Discover narrow winding streets with their treasure troves of hidden courtyards and ancient dwellings. Relax along the Garonne riverbank or the tree-shaded tow paths of the Canal due Midi slowly navigated by pleasure boats. Enjoy the bustling terrace life or an unforgettable traditional streetside cafe. All of these pleasures await the guest who ventures to Toulouse France, host for the 2003 IEEE International Geoscience and Remote Sensing Symposium (IGARSS'03).

Located in France's largest region, Midi-Pyrenees, 150 miles from the Atlantic, 90 miles from the Mediterranean, nestled at the foothills of the Pyrenees Mountains, Toulouse is the country's fourth largest city. The vast number of red brick buildings give Toulouse an Italian appearance but visitors will find a prominent Spanish influence. Touted as a southern city, its citizens enjoy the outdoors and guests will appreciate the ease of traversing the city and visiting its 140 parks and 40 fountain squares on foot. Toulouse's openness to newcomers, extensive range of public transportation, educational and leisure facilities, and peaceful security annually place the city at the top of most desired places to be.

Home to the French National Space Agency (CNES) and to one of the largest aircraft assembly facilities in the world, Airbus Industrie, Toulouse offers the IGARSS attendee insight into the vast technological advances driving the city, bringing foreign nationals to its region and giving it an international dimension. Toulouse boasts 11,000 researchers, 400 laboratories, and multiple links between research and industry from well-known high-tech companies and its three universities.

ACCOMMODATIONS

Rooms have been blocked at the following hotels and university facilities at various rates. IGARSS attendees are responsible for making their own room reservations. You are encouraged to request a written confirmation to verify your reservation.

All rates are based on Euro (€). US\$ approximations will vary based on the daily exchange rate and confirmed by each hotel. When making your reservation, please refer to the BLOCK CODE to obtain the group rate. If making a reservation via facsimile, please include date of arrival, date of departure, smoking or non-smoking preference, single or double room, block code and credit card data. It is important to note that all hotel blocks and group rates will expire 20 May 2003. Reservations made after this date will be at the current daily advertised rate and will be accepted according to availabilities. There are no exceptions. **When contacting the hotels while making your reservations, please refer to IGARSS03 to receive the group discounted rate.**

HOTEL ZONE	MAIN STREET REFERENCES	CATEGORY
Zone 1	Near the Congress Center Compans Caffarelli Boulevard de l'Embouchure	3-star / 2-star hotels
Zone 2	Downtown Place du Capitole Place Wilson Place St-Georges	4-star / 3-star / 2-star hotels
Zone 3	Grands boulevards Allées Jean-Jaurès Place Jeanne d'Arc Boulevard Carnot	4-star / 3-star / 2-star hotels
Zone 4	Railway Station Rue Matabiau Rue Bayard	3-star / 2-star hotels
Zone 5	Old Town – Esquirol Pont-Neuf Rue de Metz Halle aux Grains	3-star / 2-star hotels
Zone 6	Others Blagnac Airport Outskirt	4-star / 3-star / 2-star hotels

Accommodations

IGARSS 2003 - TOULOUSE - 2003 Rates

HOTEL	CAT	AREA	EUROS/Room breakfast included	EMAIL/FAX/PHONE	Block Code
ALBERT 1er	2	4	70-88 ₣	hotel.albert.1er@wanadoo.fr phone : +33 (0)561211791 fax : +33 (0)561210964	IGARSS03
CLIMAT DE France / KYRIAD	2	6	58-60 ₣	phone:+33(0)5 61 34 11 77 fax:+33 (0)5 61 34 12 21	IGARSS03
IBIS MATABIAU	2	4	62,5-68 ₣	H2772@accor-hotels.com phone: +33 (0)561625090 fax: +33 (0)5 61 99 21 02	IGARSS03
IBIS PONTS JUMEAUX	2	1	61,56 ₣	H1430@accor-hotels.com phone: +33 (0)562272828 fax: +33 (0)5 62 27 14 01	IGARSS03
IBIS Toulouse Centre	2	3	65-70,50 ₣	H1429@accor-hotels.com phone : +33 (0)5 61 63 61 63 fax : +33 (0)5 61 63 07 46	IGARSS03
PARK HOTEL	2	2	57 ₣	contact@au-park-hotel.com phone : +33 (0)561212597 fax : +33 (0)5612329627	IGARSS03
TAUR (DU)	2	2	50-56 ₣	contact@hotel-du-taur.com phone : +33 (0)561211754 fax : +33 (0)561137841	IGARSS03
TRIANON (LE)	2	4	58 - 68 ₣	Hotel-Trianon@wanadoo.fr phone : +33 (0)561627474 fax : +33 (0)561991544	IGARSS03
BRIENNE (DE)	3	1	86 ₣	hoteldebrienne@wanadoo.fr phone : +33 (0)561236060 fax : +33 (0)561231894	IGARSS03
Apart'Hotel CITADINES Halle aux Grains	3	3	67 ₣	halleauxgrains@citadines.com phone : +33 (0)825010367 fax : +33 (0)561630889	IGARSS03
Apart'Hotel CITADINES WILSON	3	3	95 ₣	wilson@citadines.com phone : +33 (0)825010354 fax : +33 (0)561990755	IGARSS03
CLOCHER DE RODEZ (LE)	3	3	65,5 ₣	toulouse@couleursud.com phone : +33 (0)561624292 fax : +33 (0)5 61 62 68 99	IGARSS03
HOLIDAY INN TOULOUSE CENTRE	3	2	92-102 ₣	holiday-inn-toulouse-centre@wanadoo.fr phone: +33 (0)5 61 10 70 70 fax : +33 (0)5 61 21 96 70	IGARSS03
LES CAPITOUIS GRND HOTEL JEAN JAURES	3	3	94,50 ₣	info@hotel-capitouls.com phone : +33 (0)5 34 41 31 21 fax : +33 (0)5 61 63 15 17	IGARSS03

Accommodations

HOTEL	CAT	AREA	EUROS/Room breakfast included	EMAIL/FAX/PHONE	Block Code
MERCURE ATRIA (Host Hotel)	3	1	99-114 ₣	h1585@accor-hotels.com phone : +33 (0)561110909 fax : +33 (0)561231412	IGARSS03
MERCURE MATABIAU	3	4	65-74 ₣	h1259@accor-hotels.com phone : +33 (0)534413670 fax : +33 (0)534413671	IGARSS03
MERCURE SAINT GEORGES	3	2	111-126 ₣	h0370-rd@accor-hotels.com phone : +33 (0)5362277979 fax : +33 (0)562277900	IGARSS03
MERCURE WILSON	3	2	97-106 ₣	h1260@accor-hotels.com phone : +33 (0)534454060 fax : +33 (0)534454061	IGARSS03
NOVOTEL Centre (Host Hotel)	3	1	97,5-113 ₣	h0906@accor-hotels.com phone : +33 (0)561217474 fax : +33 (0)561228122	IGARSS03
NOVOTEL TOULOUSE AEROPORT			110-120 ₣	h0445-rd@accor-hotels.com phone : +33 (0)561150000 fax : +33 (0)561158844	IGARSS03
PARTHENON TOULOUSE	3	3	113-121 ₣	h1910@accor-hotels.com phone : +33 (0)561102400 fax : +33 (0)561102420	IGARSS03
CAPITOUIS (Groupe Beaux Arts)	4	5	170-192 ₣	contact@hoteldescapitouls.com phone : +33 (0)534319480 fax : +33 (0)534319481	IGARSS03
CROWNE PLAZA	4	2	208,00 ₣	hlcptoulouse@alliance-hospitality.com phone : +33 (0)561611919 fax : +33 (0)561237996	IGARSS03
GRAND HOTEL DE L'OPERA	4	2	139-246 ₣	contact@grand-hotel-opera.com phone : +33 (0)561218266 fax : +33 (0)561234104	IGARSS03
SOFITEL Centre	4	3	186-202 ₣	h1091-re@accor-hotels.com phone : +33 (0)561218266 fax : +33 (0)561234104	IGARSS03
SOFITEL Aéroport	4	airport	150-167 ₣	h0565@accor-hotels.com phone : +33 (0)561711125 fax : +33 (0)561300243	IGARSS03

Other Accommodations

For students, please contact IGARSS 2003 c/o Colloquium at igarss03@colloquium.fr

- CROUS - Students facilities : 13 ₣ - 13 \$

- Gites de France

Travel To and Around Toulouse / General Information

AIR TRAVEL

Toulouse "Blagnac" Airport

The Toulouse "Blagnac" airport is 15 minutes away from downtown. Public shuttle are programmed every hour to the center-city. A transfer by shuttle is 3.70 € (3,7 US\$) and by taxi is more or less 20 € (20 US\$).

Passports and Visas

Every person entering France should be in possession of a valid passport or identity card. For residents of some countries a visa is required. Please contact the nearest French embassy or consulate nearest to your home for further information.

Letter of Invitation

The Secretariat is pleased to send an official letter of invitation upon request. It is understood that such an invitation is intended to help potential attendees to raise travel funds or obtain a visa. It is not a commitment on the part of the Organizers to provide any financial support.

GROUND TRANSPORTATION

The Centre des Congrès Pierre Baudis is within walking distance of the City Center (15 minutes walk), however, for those venturing to city sites or hotels located further out, bus and metro transportation is available.

Buses

The main bus route likely to be used is route 1 which covers a circular route along the main boulevards (Lascrosses, d'Arcole, Strasbourg, Carnot).

Metro

The metro is very safe, efficient and comfortable. There is a metro stop at the railway station which goes through the center of the city with stops at Jean Jaures (for Place Wilson and the Boulevards) and Capitole. The network is open from 0500 to midnight.

BREAKS

Coffee breaks will be held 1000 - 1020 each morning and 1520 - 1540 each afternoon in the following locations:

Monday all day *Foyer Concorde*

Tuesday morning *Foyer Concorde*

Tuesday afternoon *Espace Concorde*

Wednesday all day *Espace Concorde*

Thursday all day *Espace Concorde*

Friday all day *Foyer Concorde*

ELECTRICITY

Electricity in France is 220 volts; frequency is 50 Hz and plugs have two round prongs. Plan to bring along a transformer and an adapter for plugs for your electrical or electronic equipment using different voltage and plugging.

FOREIGN EXCHANGE AND CREDIT CARDS

The New European Monetary System is valid as from January 1, 2002, on Euro (€). Therefore, ALL RATES are given in the programme in EURO. French Francs are no longer accepted.

International Currency exchange services are available at the airport, downtown banks and currency exchange outlets located throughout the city. Most hotels will also offer currency exchange services. All major credit cards are accepted in France. You can also use automatic tellers by using your credit card (VISA or Eurocard/Mastercard) and your personal confidential code. You will be given Euro (€), and your bank account will be automatically debited in the currency of your country.

INSURANCE AND LIABILITY

The Organizers will accept no liability for loss or damage to property belonging to Congress participants, either during or as a result of the Congress and during all tours and events. Participants are strongly recommended to purchase additional personal insurance coverage for health and accident, lost luggage and trip cancellation.

INTERNET CAFE

Internet access will be available to all registrants via the Internet Cafe in the Salle Diamant within the Centre des Congrès Pierre Baudis. Internet Cafe hours will be from 0700 to 2300, Monday through Friday.

LANGUAGE

The official language of the Symposium is English.

MESSAGES

Participants may receive messages and faxes at the following numbers:

tel: 33 5 62 30 41 81

fax: 33 5 62 30 47 25

Messages will be posted near the Registration Desk as they are received. Faxes may be sent through the Conference Technical Office for a small per page fee.

TECHNICAL OFFICE

The Conference Technical Office located in the Salon Presse Mermoz within the Centre des Congrès Pierre Baudis. Services offered via the Technical Office are as follows:

- receive and send faxes (33 5 62 30 47 25)
- receive telephone messages (33 5 62 30 41 81)
- purchase past-conference CDROM proceedings
- make copies of documents
- obtain answers to technical program questions and/or concerns

REVISED
HOURS

The Technical Office will be open Monday through Friday, 0900 to 1330 AND 1430 - 1730.

PRESS

Fully accredited members of the international press are invited to attend the Symposium. Application for media delegate registration should include a copy of your official media accreditation and a completed registration form. Members of the Press are invited to attend all technical and plenary sessions, the Opening Ceremony, the Welcome Reception.

SHOPPING

Shops are open during the week, Monday through Saturday, 1000 to 1900 and most are closed on Sunday.

WEATHER

The climate is hot in Toulouse in July, with 8-10 hours of sunshine per day on average and temperatures around 30°C (minimum 11°C).

Registration Services

REGISTRATION PROCEDURES

All participants must be registered. Registration must be made on the official registration website with your payment to the Congress Office.

Methods of Payment

All payments must be made in Euros.

Credit Card: Mastercard/Eurocard or Visa will be accepted. Please note that if your credit card is declined or is invalid, an alternate means of payment must be used to remit fees. If this action occurs following the early registration deadline, late registration fees will apply.

Purchase Order: If your remitting payment via purchase order, a copy of the purchase order must accompany the registration form and be received by 10 May 2003 to qualify for early registration rates. If the purchase order is forwarded under separate cover and is received following the early registration deadline, late registration rates will be applied to your account.

Collective remittances must be accompanied by a list of names and details of payment for each person. Bank charges may not be deducted from the registration fee; attendees must pay all bank charges.

REGISTRATION FEES

Category	Before 10 May	After 10 May
IEEE Members*	600 EURO	700 EURO
Non Members	650 EURO	750 EURO
Students/Retired†	170 EURO	250 EURO
One Day Pass	350 EURO	350 EURO
Tutorials — Professional	160 EURO	160 EURO
Professional		
full day	160 EURO	160 EURO
half day	80 EURO	80 EURO
Students		
full day	80 EURO	80 EURO
half day	40 EURO	40 EURO

Early registration ends 10 May 2003.

*IEEE Members are individuals who have joined the IEEE by completing an application and remitting the appropriate fees.

†Proof of status should be provided by students by sending a photocopy of their student card.

INCLUSIONS

Participant registration fees include admission to conference sessions, exhibit and break areas, welcoming and interactive receptions, and receipt of all conference materials, including one (1) CD ROM Proceedings (not included with student/retired fees.) To take advantage of lower registration rates, your completed registration form and payment must be received by 10 May 2003. Payment must accompany your registration and may be made via credit card, check or purchase order.

Registered participants are entitled to:

- access to the technical and plenary sessions and exhibition area,
- access to the opening ceremony,
- access to the ice breaker on Sunday evening,
- access to the welcome reception on Monday evening
- access to the concert on Tuesday evening,

ON SITE REGISTRATION AND CHECK IN

All attendees are required to check in at the Registration Desk upon arrival at the conference. Materials, including a name badge which must be worn at all times while in the conference area, will be included in the registration packet given all registered guests. Access will be prohibited to the exhibit, break, interactive areas and technical sessions if a name badge is not visible.

Incomplete or Pending Payment:

Any outstanding payment will be collected on site by the congress office IGARSS03 secretariat.

Badge Distribution

A name badge will be provided with your registration documents on site (and not mailed out prior to the congress). Wearing this badge is compulsory both inside the conference rooms and sessions and at all events organized within the context of the conference.

Final Program

One printed hardcopy final program may be found in each registration packet. Additional copies may be purchased while supplies last for 5 EURO and with the proof of registration (name badge).

REGISTRATION DESK

The Registration Desk in the Centre des Congrès Pierre Baudis will be open at the following times to assist you and your guest with registration, information and assistance throughout the conference.

Saturday	July 19*	1400 - 1800 (tutorial only)
Sunday	July 20	0730 - 2000 1400 - 1800
Mon-Friday	July 21-25	0800 - 1800

* Tutorial participants should check-in at this time.

CANCELLATION POLICY

Cancellations received prior to end of May 2003 are entitled to a full refund, less the \$50.00 processing fees. Published authors will be charged the Program Deposit in addition to the processing fee. Absolutely no refunds will be given after end of May 2003. All cancellations must be made in writing (i.e., letter or fax confirmed by mail) to IGARSS 2003 c/o Colloquium 12 rue de la croix Faubin 75567 Paris cedex 11 France. All refunds will be processed after the Congress.

Conference Publications

CONFERENCE PROCEEDINGS

Delegates (except student/retired registrants/K-12 teachers) will receive as part of their registration fee, the IGARSS 2003 Proceedings on CDROM. Additional CDROM Proceedings may be purchased in advance via the registration form or on-site at the Registration Counter for 29 EUROS respectively while supplies last.

POST-CONFERENCE SOFTBOUND PROCEEDINGS PURCHASE

Following the Symposium, copies of the IGARSS 2003 Proceedings, softbound edition, may be purchased from IEEE directly:

IEEE Single Copy Sales
445 Hoes Lane
Piscataway NJ 08855-1331 USA
tel: 732.981.0060 fax: 732.981.9667

POST-CONFERENCE CD ROMS

Copies of the IGARSS 2003 Proceedings on CDROM may be purchased post-conference from IEEE GRSS. Cost is US\$ 25.00 plus \$2.00 or \$5.00 shipping per CDROM, U.S. and international destinations respectively. An order form may be downloaded from the Society website <http://ewh.ieee.org/soc/grss/> or obtain via email request to grss@ieee.org.

PREVIOUS YEAR PROCEEDINGS

CDROM Proceedings from the years 1994-2001 (excluding 1995 & 1997) are available for purchase for US\$ 5.00 each at the Conference Technical Office or post-conference through IEEE GRSS for US\$5.00 plus \$2.00 or \$5.00 shipping per CDROM, U.S. and international destinations respectively. Log on to the Society website at <http://ewh.ieee.org/soc/grss> to obtain an order form.

TGARS IGARSS 2003 SPECIAL ISSUE

IGARSS 2003 presenters are invited to submit manuscripts no later than 30 September 2003 for possible publication in the *IEEE Transactions on Geoscience and Remote Sensing IGARSS 2003 Special Issue* to be published September 2004. Submissions should be complete descriptions of new and significant results. In most cases, the conference paper as printed in the Symposium Proceedings will not be suitable for submission to the Transactions. Papers published but not presented will not be considered.

Manuscripts should be prepared according to the instructions listed on the inside back cover of any recent *Transactions* issue. Papers will be reviewed in the standard IEEE process. Publication decisions will be rendered approximately 01 April 2004.

Authors are strongly encouraged to submit electronically using the TGARS submission website: <http://www.ieee.org/tgrs/emanuscript/>. Alternate submissions means may cause a delay in the processing of the manuscript. Authors who are unable to create electronic files should send five (5) hard copies of the manuscript to:

TGARS Manuscript Review Assistant
Transactions on Geoscience and Remote Sensing
IGARSS 2003 Special Issue
IEEE Periodicals
445 Hoes Lane
Piscataway NJ 08855 USA

All questions regarding manuscript submission should be directed to oprsadmin@ieee.org.

Social Programs and Tours

SUNDAY, 20 JULY 2003

1730 - 1900

Ice Breaker_Centre des Congrès Pierre-Baudis Foyer Ariane

Free admission for registered participants, accompanying persons and exhibitors. This event will be held at the Centre des Congrès Pierre-Baudis in conjunction with registration.

MONDAY, 21 JULY 2003

1900 - 2000

Welcome Reception_City Hall (Capitole)

A reception will be offered in City Hall - Place du Capitole. Free admission for registered participants, accompanying persons and exhibitors. The City Hall is a 15-minute walk from the Centre des Congrès Pierre-Baudis. A map is available on the conference website and will be provided in each registration packet.

TUESDAY, 22 JULY 2003

1730 - 1900

Exhibit and Interactive Opening and Reception_Centre des Congrès Pierre-Baudis, Concorde Room

Enjoy complimentary refreshments and meet the IGARSS03 exhibitors and sponsors in Espace Concorde (lower level of the Congrès Centre). Admission is complimentary for registered delegates and accompanying persons. This cocktail hour is an excellent precursor to the concert.

2100

Concert Tango at the Halle aux Grains

Free admission for registered participants and accompanying persons. Participants may either enjoy the 25-minute walk or take the n°1 bus which stops in front of the Centre des Congrès Pierre-Baudis, disembarking at the Saint-Etienne stop.

WEDNESDAY, 23 JULY 2003

1200 - 1330

IEEE GRSS Technical Committees Luncheon_Novotel Hotel

Delegates are invited to meet with Society members and Chapter Chairpersons to discuss the status of technical committees and local chapters. In 1994, three IEEE GRSS technical committees were established to influence the Society's strategic goals, these included: (1) Data Standardization and Distribution, (2) Data Fusion, and (3) Instrumentation/Future Technologies — all of which continue today. These founding Committees were recently joined by the Frequency Allocations in Remote Sensing Committee, and a fifth, the User Applications in Remote Sensing (UARS) Technical Committee which will hold its inaugural meeting at IGARSS 2003. For more information, refer to page 8.

All persons interested in advancing the strategic goals of the Society are encouraged to attend the luncheon. Tickets may be purchased in advance via the registration form, or on-site at the registration desk. Price per person: 25,50 EURO.

1830

Europe versus the Rest of the World Soccer Game_Stade Latécoère

Interested participants (players and guests) should sign up in advance at the conference website (www.igarss03.com) or [at the Technical Office by 1800 on Monday, July 21](#). A bus will transport participants to the soccer field from the front of the Centre des Congrès Pierre-Baudis promptly at 1730.

UPDATE

TIME
CHANGE

THURSDAY, 24 JULY 2003

1900 - 2300

IGARSS 2003 IEEE GRSS Awards Banquet_Hotel Dieu (former Saint-Jacques Hospital)

The IGARSS 2003 Awards Banquet will take place in the rooms of the former Saint-Jacques Hospital built in the XIVth Century. Located next to the Garonne River and the "Pont Neuf" Bridge, the hospital has been damaged by floods and destroyed by fire, nevertheless, was always rebuilt and accepted patients through the end of the 1950s. The site is characterized by the harmony of its construction and was classified as a historic monument by decree on May 27, 1932.

In 1258, the chapel was built for pilgrims who were welcomed and cared for as they traveled to Saint-Jacques-de-Compostelle. Entrance to the chapel is through a portrait gallery called the Anteroom of the Pilgrims' Room and is the place where IGARSS 2003 guests will gather for a brief reception preceding dinner. A passage to the left in the transverses wing gives access to the former Saint Lazarus Hall, also called the Room of the Columns, where dinner will be served, followed by awards and entertainment.

IEEE GRSS Administrative Committee and IGARSS 2003 team members invite you to join them in viewing outstanding architecture, enjoying exquisite cuisine and fine wine, honoring the 2003 award recipients, and relaxing to the the soulful sounds of jazz.

Bus service will be available promptly at 1845 from the Centre des Congrès Pierre-Baudis and Place Wilson (in front of the cinema "Le Gaumont") to the Hotel Dieu.*

Price per person: 61 EURO.

honored recipients

IEEE Fellow Honorees_

William Emery

Rolf Ernst

Wool Moon

Niels Skou

James Rujang Wang

Tat Soon Yeo

2003 Distinguished Achievement Award_*Ed Westwater*

2003 Outstanding Service Award_*Ram Narayanan*

2003 Education Award_*David Landgrebe*

Certificates of Recognition_*tba*

2002 Transactions Prize Paper Award_*Simon Yueh,*

William J. Wilson, Steve J. DiNardo

2002 Symposium Prize Paper Award_*Naoto Ebuchi and Shoichi Kizu*

2002 Interactive Session Prize Paper Award_*B.T. Tolton*

2003 Student Prize Paper Award_*tba*

*Hotels located near the Place Wilson stop are as follows:

- | | |
|-------------------------------|---------------------------------|
| - Albert ler | - Appart Hotel Citadines Wilson |
| - Crowne Plaza | - Grand Hotel de l'Opera |
| - Holiday Inn | - Hotel du Taur |
| - Hotel Mercure Matabiau | |
| - Hotel Mercure Saint-Georges | |
| - Hotel Mercure Wilson | - Le Trianon |
| - Les Capitales | - Sofitel |

Social Programs and Tours

SIGHTSEEING TOURS

Half day: Panoramic tour of Toulouse

Departure from the Centre de Congrès Pierre Baudis. The opportunity to discover Toulouse by coach through the eyes of a guide-lecturer: Capitole square, rue Alsace Lorraine, Jeanne d'Arc square, grands boulevards, a beautiful view of the Saint Sernin chevet, Compans Cafarelli quarter, Boulevard Armand Duportal, Brienne Canal, Pont des Catalans bridge, Saint Cyprien Square, Pont Neuf bridge, tour of the Hôtel d'Assézat (not including the Bemberg foundation), quai de Tounis embankment, Pont Saint Michel bridge (panoramic view of the banks of the Garonne river), Parc des Expositions exhibition centre, Stadium, the banks of the Canal du Midi (listed in the World Heritage list), the gardens, tour of Saint Etienne cathedral, a strange building with very different constructions built over the period between 1073 and 1611. Return to the Centre de Congrès Pierre Baudis congress centre.

Price per person: 28 EURO - 28 \$

Includes: Coach trip and an English-speaking guide.

E1 — Monday, 21 July, 1400 - 1700

E3 — Tuesday, 22 July, 0900 - 1200

Half day: Heritage Treasures

You will leave on foot from the Centre de Congrès Pierre Baudis. The CAPITOLE, City hall, Tour of the Archives, Henri IV court yard, Salles d'Apparat (if open) late XIXth century paintings. The BASILICA OF SAINT-SERNIN, built on the plan of a Latin cross and divided into five naves of 115m x 21m; it houses the holy relics of Saint-Saturnin, martyred in 250. An important stopping place on the pilgrim road to Compostella, this building is the finest example of the heritage dating back to the era of the Counts of Toulouse: altar table, capitals and tympanum (XIth and XIIth century). The JACOBIN CONVENT, Mother house of the Preaching Friars whose order was founded by Saint Dominique in 1216. A vast church with two naves, 1230-1340, separated by a row of seven columns supporting a star-vault roof; one of the columns has twenty two ribs running to it, that makes it look like a palm tree. The Cloister (1310), Chapter House (1300), refectory, bell tower (1298) the finest example of Toulouse-style bell tower construction (height 45m).

HOTEL DE BERNUY, sumptuous residence that belonged to Jean de Bernuy, the greatest Pastel merchant of his time (1504-1530). Return on foot.

Price per person: 16 EURO

Includes: An English-speaking guide and monument entrances fees.

E4 — Tuesday, 22 July, 1400 - 1700

E8 — Wednesday, 23 July, 0900 - 1200

*Half day: ** Airbus Assembly Line ***

Departure by coach from the Centre de Congrès Pierre Baudis. The largest aeronautic site in Europe. Clément Ader, born near Toulouse, was the first, in 1890, to fly in an "aeroplane". Later, the Aéropostale, the first French airmail service between Europe and South America, great names in aviation (Mermoz, Saint Exupéry etc.), brilliant engineers (Latécoère, Dewoitine etc.) and, more recently, prestigious aircraft (Caravelle, Concorde, Airbus etc.) have hailed Toulouse 'Capital' of Aerospace for ever. Located south of the Blagnac runways, where tests are carried out, the Aerospace site covers 350 hectares and employs almost 10000 members of staff. Design offices, storage, assembly, paint workshops... a passionate and exciting world organised with a single aim in view: designing and building aeroplanes. This is where the ATR (Avion Transport Régional – Regional Transport Aircraft) and Airbus aircraft (A300-600, A310, A320, A330, A340) are assembled. After a commented coach tour of the Aerospace site, the visit will continue with a tour of the Clément Ader factory. Airbus A330 and A340 saw the light of day and were assembled in this spectacular factory, which has an indoor surface area of 6 hectares. The concept of a modular production line, implemented for final aircraft assembly, makes the Clément Ader factory the most modern aeronautic unit in the world. Cargo aircraft deliver sub-assemblies from European partners manufacturing units every day. Return by coach to the Centre de Congrès Pierre Baudis congress centre.

Price per person: 33 EURO

Includes: the coach trip, an English speaking guide courier, entrance fee.

E5 — Tuesday, 22 July, 1300 - 1600

E12 — Thursday, 24 July, 1300 - 1600

** The site is under high security and very strict control. If you want to register for this visit you must send with the form, a copy of your passport.

Half day: Cruise down the Canal du Midi (or the Garonne River)

Departure by coach from the Centre de Congrès Pierre Baudis. Enjoy a charming leisurely boat trip down the Canal du Midi or the Garonne river. See the beauty of Toulouse and the Canal du Midi (listed as "World Heritage" by UNESCO) at their best. Return by coach to the Centre de Congrès Pierre Baudis congress centre.

Price per person: 43 EURO

Includes: the coach trip, English speaking courier guide, the boat trip.

E2 — Monday, 21 July, 1400 - 1700

E11 — Thursday, 24 July, 1000 - 1300

Social Programs and Tours

Day trip : Cité de l'espace - Space Museum

Departure by coach from the Centre des congrès Pierre Baudis. Explore this unique space museum through interactive experiences: The life-size Ariane 5 launcher tower 55 metres over the park, the Mir station, and forecasting equipments On site luncheon. Spectacle of the universe in the Planetarium during the afternoon.

Price per person: 57 EURO

E7— Tuesday, 22 July, 1000 - 1730

E15 — Thursday, 24 July, 1000 - 1730

Day trip: Carcassonne

Departure by coach from the Centre de Congrès Pierre Baudis . Arrival in CARCASSONNE and guided tour of this 2000-year old city: an exceptional collection of medieval fortifications boasting 52 towers, 2 concentric surrounding walls and 3 km of ramparts on the inside on which stand the Roman and Gothic château Comtal and Basilica of Saint-Nazaire. Guided tour of Château Comtal. If there is a city where history is still so potent it can make you forget the present then Carcassonne is that very town. The greatest fortress in Europe where all the fabulous decors from the Middle Ages are still intact. Lunch in the city. Free afternoon to wander around and shop in the narrow streets of the city. Return by coach to the Centre de Congrès Pierre Baudis congress centre.

Price per person: 74 EURO

Includes: the coach trip, English speaking courier guide, lunch including wine and coffee, a guided tour of the city

E9 — Wednesday, 23 July, 0900 - 1800

E16 — Friday, 25 July, 0900 - 1800

Day trip: The Charms of the Tarn -Cordes-

Departure by coach from the Centre de Congrès Pierre Baudis. Arrival in CORDES, a walled town founded in 1222, a monumental collection of gothic houses: "Le Grand Fauconnier", "Le Grand Veneur", "Le Grand Ecuyer", XIVth Hall and quality craftsmanship. Guided tour of the medieval village. Lunch. Free afternoon then return trip via the Gaillac vineyards. Gaillac wine tasting. Return by coach to the Centre de Congrès Pierre Baudis congress centre.

Price per person: 66 EURO

Includes: the coach trip, English speaking courier guide, lunch including wine and coffee.

E6 — Tuesday, 22 July, 0900 - 1800

E18 — Friday, 25 July, 0900 - 1800

Day trip: Château de Mauriac and Albi

Departure by coach from the Centre de Congrès Pierre Baudis . Guided tour of the CHATEAU DE MAURIAC in Senouillac (XIVth), Historical Monument, kept by the protestants in the XVIth century and besieged in 1580. Lunch in Albi. Afternoon: stop in ALBI, known as the "Ville Rouge" because of its red-brick buildings: Fortress-like Sainte-Cécile Cathedral (XIIIth), Gothic choirs and rood-screen, Renaissance fresco, the Vieil Alby. Guided tour of the Palais-Musée de la Berbie museum, which houses more than 600 paintings and drawings by the painter Toulouse-Lautrec, born in Albi in 1864. Return by coach to the Centre de Congrès Pierre Baudis congress centre.

Price per person: 74 EURO

Includes: the coach trip, English speaking courier guide, lunch including wine and coffee, entrance fees.

E10 — Wednesday, 23 July, 0900 - 1800

E13 — Thursday, 24 July, 0900 - 1800

Day trip: St Bertrand de Comminges

Departure by coach from the Centre de Congrès Pierre Baudis. Arrival in ST BERTRAND-DE-COMMINGES, located on a isolated hilltop, on the threshold of the mountain valley of the Garonne river, the town stands in a remarkable site surrounded by ramparts and dominated by an imposing cathedral featuring a bell tower porch sheltered by a wooden balcony. Its art treasures, testament to 2000 years of history, make it an significant place to visit in the Pyrénées. Guided tour of village. From the Basilica of St Just to Valcabrière, superb view of the village of St Bertrand. Lunch in the village. Afternoon: tour of the Prehistoric Gargas Caves near St Bertrand de Comminges. These caves feature particularly original hand prints where some of the phalanges are missing, probably due to mutilation. Return by coach to the Centre de Congrès Pierre Baudis congress centre.

Price per person: 72 EURO

Includes: the coach trip, an English speaking courier guide, lunch including wine and coffee, entrance fees.

E17 — Friday, 25 July, 0900 - 1800

Day trip: D'Artagnan Country

0930 Departure by coach from the Centre de Congrès Pierre Baudis. Arrival in AUCH, ancient capital of Gascogne: Gothic-style Sainte-Marie (XVth-XVIIth) cathedral, Statue of d' Artagnan and Salinis square. Tour of the town. Lunch. Afternoon: Tour of a foie gras conserverie and foie gras tasting. Stopover in Château de Cassaigne, the ideal place to discover the history of the Gascogne area. Surrounded by more than 30 hectares of vineyards, it is also home to Armagnac production.

Return to Toulouse via the Route des Bastides (fortified towns).

Price per person : 66 EURO

Includes: the coach trip, an English speaking courier guide, lunch including wine and coffee, entrance fees.

E14 — Thursday, 24 July, 0900 - 1800

E19 — Friday, 25 July, 0900 - 1800

Participants are encouraged to visit with all exhibiting companies in the Espace Concorde (Centre des Congrès Pierre Baudis, lower level) according to the following schedule:

Tuesday, July 22	1200 - 1900
Wednesday, July 23	1000 - 1600
Thursday, July 24	1000 - 1600

An opening reception will held Tuesday early evening, 1730 - 1900.

Three (3) destinations will be offered as technical tours at various times throughout the conference week at no charge. A fourth technical tour (Airbus assembly lines) is available and will be offered under the social tour program for a fee. Individuals must reserve a space in advance via the social tour reservation form to participate. **A passport number will be required to participate in a technical tour.**

Alcatel Space

Alcatel Space ranks among the world's leading space systems prime contractors. Leveraging its dual expertise in civil and military applications, Alcatel Space develops satellite technology solutions for telecommunications, navigation, optical and radar observation, meteorology, and scientific applications. The company is also Europe's number one prime contractor for Earth observation, meteorology and navigation ground segments, as well as space systems operations. A fully-owned subsidiary of Alcatel (100%), Alcatel Space generated 2001 revenues of 1.4 billion euros. This visit will take place after a presentation in the auditorium of Alcatel Space, its production facilities in general and all related to optical production and programmes in particular. For more information, please visit the Alcatel website at www.alcatel.com/space.

Astrium

Astrium is Europe's number one space company and an industry world leader, with an impressive track record across the spectrum of the space business:

- a world leader in Earth observation satellites
- an international player in scientific programmes
- prime contractor for over 60 communications satellites to date
- a major provider of military space systems
- a major player in the European satellite navigation programme
- prime contractor for every Ariane 4 and 5 vehicle equipment bay to date

Astrium is committed to the development and delivery of customer solutions that respond to the current and future needs of a continually evolving space industry. Visit <http://www.astrium-space.com> for more information.

Intespace

Europe's leading independent space test centre, performs environmental testing from single component all the way to ARIANE 5-class satellites. More information may be accessed at the Intespace website (<http://www.intespace.fr>).

Tutorials

All tutorials will be held on Sunday, July 20. All tutorial participants should check-in on Saturday as noted below. To register and participate in an IGARSS 2003 tutorial:

- pre-register via online registration (www.igarss03.com)
- check-in Saturday, July 19, 1400 - 1800, or Sunday, July 20, 0730 - 1330
- arrive at designated room before tutorial starts
- sign-in with tutorial instructor(s)

TUTORIAL PARTICIPANT CHECK-IN

The registration desk will be open temporarily from 1400 - 1800 on Saturday, July 19, for tutorial participants to check-in and obtain their name badges, tutorial workbooks, etc. in the Hall d'Accueil, Centre des Congrès Pierre Baudis.

TUTORIAL SCHEDULE

0830 ... *full-day tutorials begin**

1015 - 1030 ... *mid-morning break*

1200 - 1330 ... *lunch (full-day tutorials only)*

1330 ... *full-day tutorials resume
half-day tutorials begin***

1545 - 1600 ... *mid-afternoon break*

1700 ... *full-day tutorials end*

1800 ... *half-day tutorials end*

*Full-day tutorials: Tutorials 1, 2, 3, 5, 7

**Half-day tutorials: Tutorials 4 and 6

CONTINUING EDUCATION UNITS (CEUS)

Continuing Education Units will be forwarded to each tutorial participant following the symposium when verification of attendance is received.

TUTORIAL 1:

Accessing and Understanding MODIS Data (full day)

INSTRUCTORS:

- Gregory Leptoukh, NASA Goddard Space Flight Center
Greenbelt Maryland USA
- Calli B. Jenkerson, USGS, Sioux Falls South Dakota USA
- Siri Jodha Singh Khalsa, National Snow and Ice Data Center
Boulder Colorado USA

SUMMARY:

The National Aeronautics and Space Administration (NASA) launched the Terra satellite in December 1999, as part of the Earth Science Enterprise promotion of interdisciplinary studies of the integrated Earth system. Aqua, the second satellite from the series of EOS constellation, was launched in May 2002. Both satellites carry the MODerate resolution Imaging Spectroradiometer (MODIS) instrument. MODIS data are processed at the Goddard Space Flight Center, Greenbelt, MD, and then archived and distributed by the Distributed Active Archive Centers (DAACs). Data products from the MODIS sensors present new challenges to remote sensing scientists due to specialized production level, data format, and map projection. MODIS data are distributed as calibrated radiances and as higher level products such as: surface reflectance, water-leaving radiances, ocean color and sea surface temperature, land surface kinetic temperature, vegetation indices, leaf area index, land cover, snow cover, sea ice extent, cloud mask, atmospheric profiles, aerosol properties, and many other geophysical parameters. MODIS data are stored in HDF-EOS format in both swath format and in several different map projections. This tutorial guides users through data set characteristics as well as search and order interfaces, data unpacking, data subsetting, and potential applications of the data. A CD-ROM with sample data sets, and software tools for working with the data will be provided to the course participants.

Dr. Gregory Leptoukh

M.S. in Theoretical Physics, Ph.D. in Cosmic Rays Physics, Tbilisi State University, Georgia - Before joining the NASA Goddard Earth Sciences (GES) DAAC in 1997, worked on ADEOS program at NOAA. At the GES DAAC, he led the Ocean Color Data Support Team supporting the SeaWiFS mission; and then the MODIS Data Support Team for MODIS instruments on the Terra and Aqua platforms. Since 2000, he led the EOS Missions Science Support at the GES DAAC, coordinating data processing and data support for the current (Terra, Aqua, SORCE) and future EOS missions. Currently he the GES DAAC (Radiance and Geolocation, Ocean and Atmosphere MODIS products) Science Data Manager.

Calli B. Jenkerson

Calli B. Jenkerson is the MODIS Science Data Specialist for NASA's Land Processes Distributed Active Archive Center (LP DAAC) at the USGS EROS Data Center. Graduate of Southeast Missouri State University, with a Masters degree from the University of Wyoming. Her current work is focused on developing and maintaining interfaces between the MODIS Science Team and the DAAC to provide data and support to the user community.

Dr. Siri Jodha Singh Khalsa

B.A. in Physics Uni. of California, Irvine, Ph.D. in Atmospheric Sciences Uni. of Washington, Seattle - has worked in support of the NASA DAAC at the National Snow and Ice Data Center (NSIDC) for 9 years. Prior to that he worked at the University of Colorado leading research programs in air-sea interaction, boundary layer turbulence and remote sensing of climate change. In his role as Science Data Coordinator at the NSIDC (Snow and Ice MODIS products) DAAC he has worked extensively with the MODIS data products, and has been active in data access issues, metadata support, and the development of tools for working with data in the HDF-EOS format.

TUTORIAL 2:

Characterizing Land Surfaces with Hyperspectral Observations (full day)

INSTRUCTORS:

- Frédéric Baret, Institut National de Recherche Agronomique (INRA), Avignon, France
- Robert O. Green, Jet Propulsion Laboratory, Pasadena, California, USA

SUMMARY:

The spectral dimension of the reflectance field in the 400-2500nm domain provides high potential for the characterization of land surfaces. Such sensors such as AVIRIS, CASI, HYMAP, DAIS ... have already acquired data from airborne platforms for a range of applications. Satellite borne sensors have been also developed such as MERIS, HYPERION and CHRIS, and future ones are currently under development with such spectral sampling capacity. However, the interpretation of this type of data is difficult if one wants to exploit all the spectral information as acquired by hyperspectral sensors.

The objective of this tutorial is to provide the necessary background on hyperspectral remote sensing for an efficient interpretation of this complex type of data. The course will first focus on the basic physical mechanisms driving the spectral variation of the signal. It will review the main factors influencing the soil (including some mineralogic aspects), leaf, canopy and atmosphere signatures. The main features of spectro-imaging systems will be reviewed with due attention on radiometric and spectral calibration issues. The course will present elements showing the information content associated to hyperspectral data, along with techniques used to reduce noise and compress the information. Then, empirical or semi-empirical methods currently used for the estimation of land surface characteristics will be reviewed, including (un)mixing methods, spectral angle mapping, multiple regression, spectral library fitting. Finally, methods based on the inversion of radiative transfer models will be presented. Agriculture and environmental applications will be used for illustration over few case studies.

Frédéric Baret

In 1986 he received a PhD on the application of remote sensing for crop monitoring. He is the head of the remote sensing team at INRA Avignon since 1997. He was involved in the development of radiative transfer models for soil, leaf and canopies, and specialized in the inversion of such radiative transfer models for canopy biophysical characteristics estimation. He was involved in a range of experiments and projects (ReSeDA, VALERI, ADAM, CYCLOPES). He is also involved in the definition of satellite missions and products with hyperspectral capacities (SPECTRA, MERIS, ...).

Robert O. Green

He is working at the JPL/NASA and is in charge of the deployment of the AVIRIS instrument since 1990. He participated to a large range of campaigns along which the instrument was largely improved. He is also involved in the processing of the hyperspectral data, with due attention to the calibration, atmospheric correction and exploitation of data for a range of applications. He is organizing since many years the AVIRIS workshop where new concepts, ideas and results about the use of hyperspectral data are presented.

TUTORIAL 3:

Polarimetry: From Basics to Applications (full day)

INSTRUCTOR:

- Professor Eric Pottier
Institut d'Electronique et de Télécommunications
de Rennes, France

SUMMARY:

Thanks to the new polarimetric radar sensors (ENVISAT ASAR and the future RADARSAT-2 and ALOS-PALSAR), it is now shown that the accelerated advancement of POLSAR techniques is of direct relevance and of priority to local-to-global environmental ground-truth measurement and validation, stress assessment, and stress-change monitoring of the terrestrial and planetary covers. POLSAR remote sensing offers an efficient and reliable means of collecting the information required in order to extract the biophysical and geophysical parameters about the Earth's surface and have found successful application in crop monitoring and damage assessment, in forestry clear cut mapping, deforestation and burn mapping, in land surface structure (geology) land cover (biomass) and land use, in hydrology (soil moisture, flood delineation), in sea ice monitoring, in oceans and coastal monitoring (oil spill detection), ... Today, it can be said that there is more and more a great deal of interest in the use of radar polarimetry for radar remote sensing and wave polarization is today of fundamental importance in the information retrieval problem of microwave imaging and inverse scattering.

Scientists and engineers already engaged in the fields of radar remote sensing generally gain their specialist knowledge in polarimetry by working through scientific papers and specialised literature available on the subject. The aim of this Lecture Series is to provide a substantial and balanced introduction to the basic theory, scattering concepts, systems and advanced concepts and applications typical to radar polarimetric remote sensing.

Eric Pottier

Professor Eric Pottier is presently the Head of the Radar Polarimetry Remote Sensing Group and the deputy Director of the Institute of Electronics and Telecommunications of Rennes. His research covers a wide spectrum of areas from radar image processing (SAR, ISAR), polarimetric scattering modeling, supervised/unsupervised polarimetric segmentation and classification to fundamentals and basic theory of polarimetry.

He has supervised 25 research students to graduation (MSc and Ph.D) in Radar Polarimetry covering areas from theory to remote sensing applications. He has 6 publications in books, 22 papers in refereed journals and 139 papers in Conference and Symposium proceedings. He received the *Award For A Very Significant Contribution In The Field Of Synthetic Aperture Radar* during EUSAR2000 for his research activities, co-authored with J.S. Lee (US Navy/NRL), in the topic of POL-SAR unsupervised segmentation.

TUTORIAL 4:

*A Decades Experience on Topography Using IN-SAR:
From Airborne, to ERS and SRTM-XSAR (half day)*

INSTRUCTOR:

- Michael Eineder
Germany Aerospace Center — DLR
Oberpfaffenhofen Germany

SUMMARY:

Since the first ideas about SAR interferometry (InSAR) in the 70's and several experiments in the following years, this technique has most rapidly developed during the past 10 years. The driving forces for this rapid development were the availability of high quality data accompanied by thorough research on the interferometric techniques.

The European satellites ERS-1 and ERS-2 have continuously acquired data of excellent interferometric quality for more than a decade since 1991. During the same time span, airborne interferometric sensors matured from experimental platforms to precision tools for high resolution topographic mapping. And within only 11 days in the year 2000 the Shuttle Radar Topography Mission (SRTM) mapped 80 percent of the Earth with a completeness and quality unknown so far.

The lecture highlights the development of interferometric DEMs during the recent years. The interferometric technique is explained and the specific properties of DEMs from ERS, from airborne sensors and from SRTM are shown. Problems like atmospheric distortions and decorrelation in repeat pass interferometry are demonstrated together with DEM stacking techniques that are used to overcome them. Special attention is given to SRTM data that is currently being processed at DLR and at NASA/JPL. High resolution DEM samples from airborne sensors supplement the lecture.

Having shown the current state of technology the lecture summarizes the lessons learned so far at DLR and gives a preview on future interferometric missions like the "Interferometric Cartwheel" and the Radarsat-2/3 mapping mission.

Michael Eineder

Michael Eineder received the Diploma in electrical engineering and telecommunication in 1990 from the Technical University of Munich. In 1990 he joined the German Aerospace Center (DLR) for the development of SAR signal processing algorithms for the SIR-C/X-SAR mission. Later he was responsible for the development of an interferometric processing system for SRTM X-SAR. At present he is leading a team at DLR working on SAR and interferometric SAR with focus on the future German SAR system TerraSAR.

TUTORIAL 5:

Polarimetric Radar Interferometry (full day)

INSTRUCTOR:

- Shane R. Cloude
AEL Consultants, Fife Scotland UK

SUMMARY:

The objectives of this course are to provide a review of those aspects of radar polarimetry and interferometry required to appreciate their fusion as air and space borne polarimetric radar interferometry. This multi-parameter radar technique has important applications in forestry and vegetation mapping as well as in quantitative studies of surface roughness and moisture content. This course is intended for those interested in quantitative radar remote sensing and its applications. Some background in SAR processing techniques would be an advantage and familiarity with matrix linear algebra and standard integral calculus is required.

Learning Outcomes : To understand the basic principles of polarimetric radar interferometry, to learn how to generate multiple polarization interferograms and how to use them with simple inversion models to estimate surface parameters, vegetation height and ground topography.

Shane R. Cloude

Shane Cloude received his BSc degree from the University of Dundee, Scotland in 1981 and his PhD from the University of Birmingham, England in 1987. He then worked as a radar scientist at the Royal Signals and Radar Establishment (RSRE) in Great Malvern, England. Following this he held teaching and research posts at the University of Dundee, the University of York in England and the University of Nantes in France before taking on his present role in 1996. He is now senior scientist with AEL Consultants, undertaking contract research on a range of problems associated with radar and electromagnetic scattering. He has presented advanced courses on Radar Polarimetry and Interferometry to a wide range of organisations, including the European Joint Research Centre (JRC) in Italy, DLR the German Space Research Institute and at NASA-JPL in Pasadena, CA.

Dr Cloude is a Fellow of the IEEE Geoscience and Remote Sensing Society, a Fellow of the Alexander von Humboldt Society in Germany and Honorary Professor at the Universities of Dundee and York. His main research interests lie in polarization effects in electromagnetic scattering and their applications in radar and optical remote sensing. He is the author of 10 book chapters, 20 journal publications and over 75 international conference and workshop papers.

TUTORIAL 6:

Remote Sensing Data Fusion: Overview and Current Status (half day)

INSTRUCTOR:

- Paul Smits
Joint Research Centre, Institute for Environment
and Sustainability, Ispra Italy

SUMMARY:

Geospatial data fusion is conceived as the broad range of processes that combine remote sensing data with other sources of geospatial information to improve the understanding of specific phenomena. The tutorial is to give an overview of the main approaches to data fusion, and shows how recent developments in information and communication technology (e.g., the data object paradigm, distributed processing over the internet) can give new impetus to data fusion research and applications.

The target audience is undergraduate and graduate students with an interest in remote sensing and about to obtain a degree in engineering, and professionals who want to get a picture of how remote sensing applications will develop.

Paul Smits

Paul Smits is scientific officer at the European Commission's Joint Research Centre. His expertise concerns geo-informatics and geospatial analysis. He works on projects related to standardisation and interoperability, user requirements, automatic change detection for land-cover updating, geospatial data fusion, and the integration of image analysis and pattern recognition techniques in geographic information systems. He is a Marie Curie Fellow, member of the Institute of Electrical and Electronic Engineers (IEEE), the International Associations for Pattern Recognition (IAPR), and the International Society for Ecosystem Health (ISEH). From 1999 to 2002, Dr. Smits was chairman of the IEEE Geoscience and Remote Sensing Society's Data Fusion Committee (www.dfc-grss.org).

TUTORIAL 7:

Image Information Mining and Scene Understanding: Approaches for Image Content Exploration and Knowledge Discovery in Large Image Data Volumes (full day)

INSTRUCTOR:

- Mihai Datcu
German Aerospace Center — DLR
Oberpfaffenhofen Germany

SUMMARY:

Presently Earth Observation (EO) data exploitation is faced, among other, with two major questions:

- 1) How to access, exploit and valorize the millions of EO data sets acquired in the last 30 years
- 2) How to examine, interpret, manage, or extract information from the new generation of satellite images with resolution in the range of meters.

Only a single such image can have more than 20 000 x 20 000 pixels! The objective of this tutorial is to introduce both the theoretical background, the technology and novel concepts for better exploitation of remote sensing data content, mainly for high resolution imagery.

Mihai Datcu

Mihai Datcu holds a professorship in electronics and telecom with University "Politehnica" of Bucharest UPB, Romania, since 1981. He held several visiting professor appointments (1991 to 1992 with the University of Oviedo, Spain, 2000 to 2002 with the Université Louis Pasteur, and the International Space University of Strasbourg, France). In 1994 he was guest scientist with the Swiss Center for Scientific Computing. From 1992 to 2002 he has longer visiting professor assignments with the Swiss Federal Institute of Technology ETH Zürich. He is teaching stochastic image analysis, information theory, image information mining, and related topics.

Since 1993, he is scientist with the DLR, where he is currently Senior Scientist and Image Analysis research group leader with the Remote Sensing Technology Institute IMF. His interest is in Bayesian inference, information and complexity theory, stochastic processes, model-based scene understanding, image information mining, for applications in information retrieval and understanding of high resolution SAR and optical observations.

IGARSS 2003

2003 IEEE International Geoscience
and Remote Sensing Symposium

Learning From Earth's Shapes & Colors



IGARSS 2003 Technical Program

Centre de Congrès Pierre Baudis Toulouse France
21-25 July 2003



NOTES

Horizontal lines for taking notes.

LEARNING FROM EARTH'S SHAPES AND COLORS

Room: Salle Concorde, Centre de Congrès Pierre Baudis_lower level

speakers in order of appearance

welcoming remarks

Didier Massonnet_Program General Chair

Philippe Douste-Blazy_Mayor of Toulouse

Raymond Findley_2002 President of the IEEE

Charles Luther_President of the IEEE/GRSS

Claudie Haigneré_Minister of Research and Technology

10:15 - 10:35_break

honored speakers

Frank Herr_Head of Department, Office of Naval Research
Ocean and Atmosphere Observation Program

José Achache_Director of Earth Observation Programmes, ESA
Glimpses on ENVISAT

Marc Garneau_President, Canadian Space Agency

Yannick d'Escatha_President, CNES
Glimpses on SPOT 5

Jean-François Minster_President, IFREMER
Special Conference on Altimetry

Program Overview

NOTES

MONDAY, JULY 21
1340 - 1720

SMOS

ADEOS II

25th Anniversary of the Seasat Launch — Seasat Legacy

Geographic Information Systems

Remote Sensing of Sea Ice

Hyperspectral Processing and Analysis

RADARSAT-1

Rough Surface Scattering

An Earth Science Vision: Global Understanding of the

Complexities of Our Planet

Remote Sensing Applications in Agriculture

Image Registration and Geocoding

Optical Stereoscapy and Radargrammetry

Interferometric Data Processing

Interferometric and Differential Interferometric SAR

Crustal Movements, Earthquake, Volcano and Subsidences

SAR and 3D SAR Processing Techniques

Radar Image Processing Techniques

Ocean Waves and Winds / Air-Sea Interactions

Ocean Surface and Sub-Surface Processes

Program Overview

TUESDAY, JULY 22 0820 - 1200

Information Extraction from High Resolution SAR Data
Deformation: Earthquakes, Subsidence and Volcanos
Ocean Waves and Winds
Land Use — Land Cover
Sea Ice Information from Newly Multi-Sensor Satellite Data
Hyperspectral Methods
SPOT-5
Student Prize Paper Competition
NPOESS
Agriculture
Soil Moisture and Hydrological Modeling
Advanced Active and Passive Sensors / New Concepts /
Future Technologies
Instrumentation and Techniques: Acoustic, Infrared, Laser
and Radar Altimetry, Lidar, Remote Sensing Using GPS,
Field Experiments
Airborne Sensors / Remotely Piloted Vehicles
Sensor Calibration and Image Quality
SMOS and Interferometric Radiometry
Climate and Climate Change
Earth Radiation Budget

1340 - 1720

Advances in Polarimetry
Optical Very High Resolution Image Processing
Educational Techniques in Remote Sensing
SIBERIA II
Instrumentation and Future Technologies
Reconfigurable SAR Systems
Hyperspectral Applications
SPOT-5
Vegetation Fluorescence
Earth Observing Architectures: Technology Challenges
for the Coming Generation of Earth Explorers
Data Archiving and Distribution
First AMSR Science Results
Agriculture
Electromagnetic Propagation and Scattering
Inverse Problems
Data Assimilation
Atmosphere

WEDNESDAY, JULY 23 0820 - 1200

Pol- and Pol-INSAR Data Processing
WINDSAT
Optical Image Processing
Mine and Target Detection
Bistatic Radar Remote Sensing
Registration and Combination of Imagery
In-Flight Ocean Altimetry
Snow Cover
EOS Terra and Aqua MODIS Validated Science Results
Spaceborne Remote Sensing of Precipitation
Soil Moisture Retrieval
Educational Initiatives
Policy and Societal Issues
Remote Sensing Applications for Urban-Regional
Planning and Development
Information Systems and GIS
Data Compression, Standardization, Archiving,
Retrieval and Distribution
Sea Ice and Salinity

1340 - 1720

Polarimetric and Interferometric Data Processing
Near Surface Ocean Processes
Vegetation and Forest Analysis
Use of Remote Sensing and GIS Technologies for Planning,
Management, Monitoring and Forecasting in Africa
Military Applications of Remote Sensing
Data Fusion Applications
Present and Future Altimeters
Electromagnetics and GPS
ENVISAT/ASAR
Techniques for Remote Sensing of Precipitation
Hydrological Applications
Classification and Segmentation Algorithms
Optical Image Processing Techniques / Optical Remote
Sensing Methods
Image Registration and Combination, Change Detection
Multi-Sensor Analysis
NASA EOS and ESSP, NPOESS, MODIS, ADEOS-II
Snow, Glaciers and Ice Sheets

Program Overview

THURSDAY, JULY 24

0820 - 1200

Interferometric SAR Processing

Advanced Microwave Radiometer Techniques

Active Sensing of Ocean Winds

Aerosols: Characterization and Sensing

Environmental Hazards

RADARSAT-2 / TERRASAR / COSMO-PLEIADES

Future NASA Earth Observing System Missions

Volume and Subsurface Scattering

ENVISAT / Atmospheric Chemistry

Change Detection Techniques

Active Microwave Soil Moisture and Roughness

Vegetation and Environmental Monitoring

Soil and Vegetation Biophysical Properties

Forest Monitoring and Classification

Hyperspectral Processing and Analysis

Clouds and Precipitation

TRMM and GPM

1340 - 1720

Polarimetric Interferometry and Applications

SAR and Bistatic SAR Processing

Remote Sensing Potential to Support Multi-National

Environmental Conventions

Atmospheric Remote Sensing

Spaceborne Lidar: CALIPSO and GLAS

Disaster and Hazards

Geological Process Monitoring

The Dynamic Landscape

ENVISAT / MERIS-AATSR

Ice Sheets and Glaciers

Estimating Vegetation Parameters Using SAR

Volume and Sub-Surface Sensing

Geology / Mineral Resource Mapping / Archaeology /

Planetary Studies

HR Imagery / Military Applications

SRTM / Cartography and Topography

SAR and Altimetry Missions and Programs

Arid and Semi-Arid Lands

Coastal, Coral, Lake and Riverside Environments

FRIDAY, JULY 25

0820 - 1200

Pol- and Pol-INSAR Data Processing

SAR Data Processing and Filtering

Soil and Vegetation Biophysical Properties

TRMM & GPM

Urban Planning and Environmental Monitoring

Frequency Allocations in Remote Sensing

Lidar Remote Sensing

Hyperspectral Applications and Methods

Classification and Segmentation

Compression Techniques Applicable to Multidimensional

Remote Sensing Data

Advanced Land Observing Satellite

Arid Zones and Archaeology

MODIS Applications

Future Missions

Disaster and Hazards

Ocean Pollution Detection and Monitoring

HF Ocean Radar

Environmental Degradation and Pollution

Fires and Floods

Land Cover Changes and Land Surface Dynamics

Land Cover and Ecosystems

Bistatic Remote Sensing and Multi-Angular Optical

Measurements

1340 - 1720

Ocean Waves and Dynamics

Forest Biomass Monitoring

TRMM & GPM

Urban Planning and Management

SAR Processing and Statistical Modeling

New Hyperspectral Instruments and Techniques

Data Compression

Classification and Segmentation

Information Processing and Extraction

Environmental Degradation and Pollution

Stable Points Interferometry

Coastal Environment

Novel Radar and Radiometry Concepts and Technology

Polarimetry and Polarimetric Interferometry

Hydrology, Water Resources, Soil Moisture

ENVISAT

Aerosols

Data Fusion

Data Mining

Visualization and Interactive Analysis Techniques