

# **AEGEAN CONFERENCES**

*Linking the international scientific community  
Bringing the humanity scholars together*

## **20 Years of Nonlinear Dynamics in Geosciences**

**Hilton Conference Center  
June 11 - 16, 2006  
Rhodes, Greece**



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## GENERAL INFORMATION

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### ***Accommodations***

The conference participants will be staying at the Hilton Hotel (A' class), which is located in Ixia, 9 km from the airport.

### ***Breakfast***

Breakfast will be served at the Hilton Hotel during the hours scheduled in this program.

### ***Conference Venue***

The Hilton Conference Center is located at the hotel.

### ***Oral Presentations***

An LCD projector and an overhead projector will be available for the oral presentations. Speakers are asked to bring their USB flash drive or CD to the conference reception desk at least 30 minutes prior to the session. The allocated time for all presentations, unless otherwise indicated, includes five minutes Q&A.

### ***Posters***

Posters should be mounted Monday morning, June 12, on the designated boards and dismounted at the end of the meeting. The dimensions of the boards are 90W x 150H cm. Adhesive tape for mounting the posters on the boards will be available at the poster area.

### ***Welcome Reception and Gala Dinner***

**Badges** are **required** for admission.

### ***City Tour***

Busses for the city tour will be leaving from the hotel on Tuesday, June 13 at 3:00 p.m. Accompanying persons will also be picked up at the hotel front lobby at that time. **Badges** are **required** for participation.

### ***Lunches***

Lunches will be served at the indicated times to all registered participants and registered accompanying persons in the hotel. **Badges** are **required** for admission.

### ***Tour and Travel Information***

A desk operated by the personnel of our official travel agency, "ERA Ltd.", 8 Alexandrou Soutsou Str., Kolonaki 10671 Athens – Greece  
Tel.: 30-210-363-4944, FAX: 30-210-3631690, E-Mail: info@era.gr  
will be located at the conference center throughout the meeting.

*The organizers gratefully acknowledge the generous help provided by Dimitrios Lambris in managing the organization of this meeting, and designing and publishing this program.*

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**20 Years of Nonlinear Dynamics in Geosciences**  
**Hilton Conference Center**  
**June 11 - 16, 2006**  
**Rhodes, Greece**

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**CONFERENCE CHAIRS**

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**Anastasios A. Tsonis**

Department of Mathematical Sciences  
University of Wisconsin-Milwaukee  
Milwaukee, WI 53201-0413  
Tel: (414) 229-5373  
E-mail: [aatsonis@uwm.edu](mailto:aatsonis@uwm.edu)  
<http://www.uwm.edu/~aatsonis/>

**James B. Elsner**

Department of Geography  
Florida State University  
Tallahassee, FL 32306-2190  
Tel: (850) 644-8374  
Fax: (850) 644-5913  
E-mail: [jelsner@garnet.fsu.edu](mailto:jelsner@garnet.fsu.edu)  
<http://garnet.acns.fsu.edu/~jelsner/www/>



## PROGRAM OUTLINE

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### Sunday, June 11

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Registration	5:00-8:00 PM	Hotel Lobby
Welcome Reception/Dinner	8:00 PM	Main Restaurant

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### Monday, June 12

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Breakfast	7:30 AM	Main Restaurant
Registration	9:00 AM – 2:00 PM	Conference Center Lobby
Welcome and Opening Remarks	8:30 AM	Conference Center
<b>Session I</b>	9:00 AM	Conference Center
Coffee Break & Poster Viewing	11:00 AM	Conference Center
<b>Session II</b>	12:00 Noon	Conference Center
Lunch	2:30 PM	Pergola, Hilton Hotel
Dinner	8:00 PM	Local Greek Tavern

*The bus for the tavern will depart from the hotel at 7:30 PM*

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### Tuesday, June 13

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Breakfast	7:30 AM	Main Restaurant
<b>Session III:</b>	9:00 AM	Conference Center
Coffee Break & Poster Viewing	10:30 AM	Conference Center
<b>Session IV:</b>	11:00 AM	Conference Center
Lunch	1:15 PM	Pergola, Hilton Hotel

City Tour	3:00 PM	
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*The bus for the city tour will depart from the hotel at 3:00 PM*

Dinner	8:00 PM	Local Greek Tavern
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**Wednesday, June 14**

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Breakfast	7:30 AM	Main Restaurant
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<b>Session V:</b>	9:00 AM	Conference Center
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Coffee Break & Poster Viewing	11:15 AM	Conference Center
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<b>Session VI:</b>	12:00 Noon	Conference Center
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Lunch	2:00 PM	Pergola, Hilton Hotel
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Dinner	8:00 PM	Local Greek Tavern
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*The bus for the tavern will depart from the hotel at 7:30 PM*

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**Thursday, June 15**

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Breakfast	7:30 AM	Main Restaurant
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<b>Session VII:</b>	9:00 AM	Conference Center
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Coffee Break & Poster Viewing	11:00 AM	Conference Center
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<b>Session VIII:</b>	11:30 AM	Conference Center
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Concluding remarks	2:00 PM	Conference Center
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Lunch	2:15 PM	Pergola, Hilton Hotel
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Gala Dinner	8:00 PM	Hilton Hotel
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**Friday, June 16**

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Breakfast	7:30 AM	Main Restaurant
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**Departure**

# **PROGRAM**



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**Sunday, June 11**

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5:00 - 8:00 PM    Open Registration  
8:00 PM            Welcome Reception/Dinner

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**Monday, June 12**

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8:30 AM            **Welcome and Opening Remarks**  
A Tsonis

**Session I.**            **Chair: James Elsner**

9:00 AM            **1**    ***20 Years of Nonlinear Dynamics in Oceanography from the Particle Perspective***

**Keynote**            AD Kirwan Jr, BL Lipphardt Jr., M Zweng, and L Kantha

**Talk**  
9:30 AM            **2**    ***Nonlinear Predictive Models of the Dynamic Geomagnetic Field***

D Vassiliadis and A Klimas

9:45 AM            **3**    ***Intercomparison of the northern hemisphere winter mid-latitude atmospheric variability of the IPCC models***

V Lucarini, S Calmanti, PM Ruti, A Dell'Aquila, and A Speranza

10:00 AM            **4**    ***Embracing emergence in modeling earth-surface processes***

AB Murray

10:15 AM            **5**    ***What do networks have to do with climate?***

AA Tsonis

10:30 AM            **6**    ***Distinguishing random environmental fluctuations from nonlinear events in the oceans and atmosphere***

**Keynote**            G Sugihara  
**Talk**

11:00 AM            Coffee Break & Poster Viewing

**Session II**            **Chair: Witold Krajewski**

12:00 Noon            **7**    ***Insights from a Century of Forecast Errors: The Evolving Role of Nonlinearity in Operational Forecast Systems***

**Keynote**            L Smith  
**Talk**

12:30 PM            **8**    ***The arctic ocean as a coupled oscillating system to the forced 18.6 year lunar gravity cycle***

H Yndestad

12:45 PM            **9**    ***Investigations of Nonlinear Response of Minor Species to***

***Gravity Waves in the Mesosphere with the Application of the KBM Averaging Method***

TY Huang

- 1:00 PM **10** ***Wavelet Decomposition of Magnetometer Measurements to Enable Separation of Non-LINEAR M-I Currents***  
JJ Sojka, P Kokoszka, L Zhu, A Jach, and I Maslova
- 1:15 PM **11** ***Nonlinear dynamics in the Earth's magnetosphere***  
DN Baker, AJ Klimas, D Vassiliadis, and V Uritsky
- 1:30 PM **12** ***Global spatial organization of temperature extremes***  
LV Carvalho, AA Tsonis, C Jones, and HR Rocha
- 1:45 PM **13** ***Is there evidence for solar forcing of climate at multi-year and decadal periods?***  
J Moore, A Grinsted, and S Jevrejeva
- 2:00 PM **14** ***Kinking nonlinear and nonlinear mesoscopic elastic solids, part I evidence and models***  
MW Barsoum, A Zhou, S Basu, T Zhen, and SR Kalidindi
- 2:15 PM **15** ***Kinking nonlinear and nonlinear mesoscopic elastic solids, part II Dynamic hysteretic Solids and dislocations***  
MW Barsoum, M Radovic, T Zhen, P Finkel, and SR Kalidindi
- 2:30 PM Lunch
- 8:00 PM Dinner at a local Greek Tavern  
*The bus for the tavern will depart from the hotel at 7:30 PM*

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**Tuesday, June 13**

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**Session III**

**Chair: John Moore**

- 9:00 AM **16** ***Nonlinear dynamics of natural hazards***  
**Keynote** DL Turcotte  
**Talk**
- 9:30 AM **17** ***Effects of radar-rainfall estimates uncertainties on inferring scaling properties of space-time rainfall***  
WF Krajewski, G Villarini, and GJ Ciach
- 9:45 AM **18** ***Oceanic and atmospheric transport of multi-year ENSO signature to the polar regions detected by Monte Carlo Singular Spectrum Analysis and waveletcoherence method***  
S Jevrejeva, JC Moore, and A Grinsted
- 10:00 AM **19** ***Nonlinear copepod dynamics in marine waters***  
FG Schmitt

10:15 AM 20 *From Diversity to Volatility: Probability of Daily Precipitation Extremes*  
A Gershunov, A Panorska, and T Kozubowski

10:30 AM Coffee Break

**Session IV** Chair: Chris Barton

11:00 AM 21 *Pacing glacial cycles*  
**Keynote** E Tziperman, M Raymo, P Huybers, and C Wunsch  
**Talk**

11:30 AM 22 *River network topology and multiscaling in flow paths*  
B Lashermes and E Foufoula-Georgiou

11:45 AM 23 *Sticky and non-sticky passive particles in compressible turbulent flows*  
J Kalda

12:00 Noon 24 *A Compound Reconstructed Prediction Model for Nonstationary Climate Process*  
W Geli and Y Peicai

12:15 PM 25 *Microseismic activity and equilibrium fluctuations*  
AM Correig, J Vila, and R Macià

12:30 PM 26 *Reducing forecast uncertainty to improve understanding of atmospheric flow transitions*  
PJ Roebber and AA Tsonis

12:45 PM 27 *Sensitivity of attractor to external influences: Approach by Unstable Periodic Orbits*  
E Kazantsev

1:00 PM 28 *Some applications of nonlinear inverse problem methods in geophysics*  
S Cht Mavrodiev

1:15 PM Lunch

3:00 PM City Tour  
*The bus for the city tour will depart from the hotel at 3:00 PM*

8:00 PM Dinner at Local Greek Tavern  
*The bus for the tavern will depart from the hotel at 7:30 PM*

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**Wednesday, June 14**

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**Session V** Chair: Efi Foufoula-Georgiou

- 9:00 AM **Keynote Talk** 29 *Towards a theory of coupled processes on ordered channel networks*  
VK Gupta
- 9:30 AM 30 *Dune retreat and shoreline change on the outer banks of north carolina*  
SF Tebbens and SM Burroughs
- 9:45 AM 31 *Long-term persistence in nature: On global warming and the clustering of extreme events*  
A Bunde
- 10:00 AM 32 *Predictability of stratosphere-troposphere coupling during stratospheric sudden warming events in the Northern hemisphere*  
H Mukougawa, Y Kuroda, and T Hirooka
- 10:15 AM 33 *Weather Forecasting: Its About Dynamics, Its Not About Statistics*  
K Judd, LA Smith, and CA Reynolds
- 10:30 AM 34 *The low order chaos in real fluid with infinite degree of freedom*  
K Mimura
- 10:45 AM 35 *Bridging the gap between pedology, soil physics and hydrology*  
E Braudeau and Rabi H Mohtar
- 11:00 AM 36 *Ensemble prediction of extratropical storm tracks*  
LSR Froude, KI Hodges, and L Bengtsson
- 11:15 AM Coffee Break & Poster Viewing

**Session VI Chair: Dimitris Vassiliadis**

- 12:00 Noon **Keynote Talk** 37 *Scale, scaling and multifractals in geophysics twenty years on: what have we learned, where are we going?*  
S Lovejoy and D Schertzer
- 12:30 PM 38 *An investigation of the forecasting predictability of hourly ozone time series*  
A Sfetsos, D Vlachogiannis, and AK Stubos
- 12:45 PM 39 *Reduced Lorenz Equations for convective cell transport*  
K Rypdal
- 1:00 PM 40 *Does the subtropical jet catalyze the mid-latitude atmospheric regimes?*  
PM Ruti, V Lucarini, A dell'Aquila, S Calmanti, and A Speranza
- 1:15 PM 41 *Kalman filtering and data assimilation into high resolution ocean models*

- 1:30 PM 42 *Undertand climate dynamics using network theory*  
G Triantafyllou, I Hoteit, G Korres, and G Petihakis
- 1:45 PM 43 *Does atmospheric stability affect inertial-range properties of boundary layer turbulence?*  
G De Masi, M Verdecchia, and G Caldarelli
- S Basu, B Lashermes, E Foufoula-Georgiou, and A Arnéodo
- 2:00 PM Lunch
- 8:00 PM Dinner at a local Greek Tavern  
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**Thursday, June 15**

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**Session VII**      **Chair: Cecile Penland**

- 9:00 AM 44 *The role of ENSO in regulating its background state*  
**Keynote**  
DZ Sun
- 9:30 AM 45 *Estimation of the time scale and appropriate model for ice volume proxies*  
F De Ridder, A de Brauwere, and R Pintelon
- 9:45 AM 46 *Auroral microstructures*  
PJ Tanskanen and K Kaila
- 10:00 AM 47 *Avalanches occurring in space and in earth's atmosphere*  
NB Crosby
- 10:15 AM 48 *Nonlinear interaction between random walkers via traces made themselves*  
N Ikeda
- 10:30 AM 49 *Lessons from the long flow records of the Nile: Determinism vs. indeterminism and maximum entropy*  
D Koutsoyiannis and AP Georgakakos
- 10:45 AM 50 *Physical and mathematical properties of a quasi-geostrophic model of intermediate complexity of the mid-latitudes atmospheric circulation*  
V Lucarini, A Speranza, and R Vitolo
- 11:00 AM Coffee Break

**Session VIII**      **Chair: Anastasios Tsonis**

- 11:30 AM 51 *Global and multiscale phenomena in solar wind –*

<b>Keynote</b>		<i>magnetosphere coupling</i>
<b>Talk</b>		A Surjalal Sharma
12:00 Noon	52	<i>Deterministic and stochastic parameter adaptation in the “Jungian” synchronization-based approach to data assimilation</i> GS Duane and JJ Tribbia
12:15 PM	53	<i>A stochastic view of nonlinear geosystems</i> C Penland
12:30 PM	54	<i>Low dimensional dynamo models for the geodynamo pole reversals and excursions</i> I Oprea
12:45 PM	55	<i>Analyzing, modeling, and forecasting shoreline dynamics</i> CC Barton, F Tebbens, SM Burroughs, AB Murray, and AD Ashton
1:00 PM	56	<i>Rare events approximation for waiting times between avalanches</i> DM McClung
1:15 PM	57	<i>Extreme value statistics of the total energy in an intermediate complexity model of the mid-latitude atmospheric jet</i> V Lucarini, R Vitolo, M Felici, and A Speranza
1:30 PM	58	<i>Predictability of stratospheric sudden warmings as inferred from ensemble forecast data</i> T Hirooka, T Ichimaru, and H Mukougawa
1:45 PM	59	<i>Self organized criticality or/and low dimensional chaos in earthquake processes (theory and practice)</i> GP Pavlos, AC Iliopoulos, and MA Athanasia
2:00 PM		Concluding remarks
2:15 PM		Lunch
8:00 PM		<b>Gala Dinner</b>

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**Friday, June 16**

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7:30 AM	Breakfast <b>Departure</b>
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**POSTERS**

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- 60** *Scaling analysis of water level records from the North American Great Lakes*  
J Smigelski, SF Tebbens, and CC Barton

- 61 *Scaling analysis of tide gauge data from the Atlantic, Gul of Mexico, and Pacific Coasts of the Unites States*  
J Smigelski, CC Barton, and SF Tebbens
- 62 *Numerical and analogue experiments of partial melting processes*  
A Soesoo
- 63 *Long-run correlations in seismic catalogs*  
A Jiménez, AM Posadas, and KF Tiampo
- 64 *Power laws in seismicity*  
A Jiménez, AM Posadas, and KF Tiampo
- 65 *Low dimentional chaos in earthquake process geometrical and dynamical characteristics of seismic time series concerning the area of greece*  
AC Iliopoulos, GP Pavlos, and MA Athanasiau
- 66 *Dual mesh finite volume method for irregular 3D voronoi grids*  
C Huettig
- 67 *Entropy study of self-potential time series associated to the Mw=7.4 earthquake of 14 September 1995 in México*  
F Cervantes-De la Torre, A Ramírez-Rojas, CG Pavía-Miller, and F Angulo-Brown
- 68 *A fractal and multifractal study of self-potential time series*  
F Cervantes-De la Torre, A Ramírez-Rojas, CG Pavía-Miller, and F Angulo-Brown
- 69 *Studies of mining induced seismicity phase space*  
Z Mortimer, B Mora de Korytowo Korytowska, and A Laskownicka
- 70 *Complexity and predictability of daily precipitation in a semi-arid region: an application to Ceará, Brazil*  
MES Silva, LMV Carvalho, MAF Silva Dias and TMBS Xavier
- 71 *Seismic site effects in Bucharest City, Romania. Linear versus nonlinear approach*  
A Bala, S Balan, V Raileanu, and B Grecu
- 72 *Hierarchical Bayesian model of extreme hurricane winds*  
JB Elsner and TH Jagger
- 73 *On the behaviour of background seismic noise at its lowest level*  
J Vila, R Macià, and AM Correig
- 74 *UV reconstruction modeling with analogue methods*  
A Curylo
- 75 *Midsummer during the presence of ENSO in Jalisco,*

- Mexico*  
J Alcalá-Gutiérrez, FO García-Concepción, AR Meulenert-Peña, HU Ramírez-Sánchez, and M García-Guadalupe
- 76 *Climatology of sensitivities of intense Mediterranean cyclones*  
V Homar, A Jansà, A Genovés, J Campins, and C Ramis
- 77 *Solar signal in climatic records: results of EMD and cross wavelet analysis*  
TV Barlyaeva and DI Ponyavin
- 78 *Noise assisted transitions in the non-linear dynamics of the Pleistocene glacial cycles*  
PD Ditlevsen
- 79 *Synchronization in baroclinic systems*  
AA Castrejon-Pita and L Read
- 80 *Regional ensemble forecasts over the Mediterranean applied during the Warmed-Inttereg IIB project*  
K Lagouvardos, V Kotroni, and N Mazarakis
- 81 *Testing geometric bred vectors with a Mesoscale Short Range Ensemble Prediction System*  
A Martin, V Homar, LL Fitam, and C Primo
- 82 *The G-functions and a mathematical model of laser control over formation of fractal structures*  
AB Gavrilovich
- 83 *Nonlinear effects of wave due to runup and rundown on sloping bottom*  
WC Yang, RR Hwang, and CM Hsieh
- 84 *A nonlinear approach for the natural hazards studies*  
B Rangelov
- 85 *An Application in Environmental Finance: Modeling CO<sub>2</sub> permit prices from the EEX*  
G Daskalakis, D Psychoyios, and RN Markellos
- 86 *Optimal timing of environmental policies in the presence of extreme events*  
G Dotsis, V Makropoulou, and RN Markellos
- 87 *Tsunami difference schemes in the Hermitian finite element space*  
IA Winnicki
- 88 *Construction of nonlinear ionosphere predictors*  
N Manaenkova and V Eremenko
- 89 *Three-dimensional simulation of jets in cross-flow*  
RR Hwang and A Sau

**90** *Application of dromions in the magnetospheric boundary layers*

SS Ghosh, A Sen and GS Lakhina

**91** *Charge conduction in porous media: a model of self-organized criticality*

AV Milovanov, K Rypdal, JJ Rasmussen, and BV Kozelov

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**Endorsed by:**

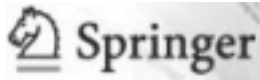


American Meteorological Society



European Geosciences Union (EGU)

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## UPCOMING EVENTS

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### **1<sup>st</sup> International Conference on Ovarian Cancer: State of the Art and Future Directions**

Aldemar Knossos Royal Village. Crete, Greece.  
June 26 - July 1, 2006

### **3<sup>rd</sup> International Conference on Gene Regulation in Lymphocyte Development**

Dassia Chandris Conference Center. Corfu, Greece.  
September 23 - 28, 2006

### **4<sup>th</sup> International Conference on Pathways, Networks, and Systems: Theory and Experiments**

Royal Myconian Conference Center. Mykonos, Greece.  
October 8 - 13, 2006

### **3<sup>rd</sup> International Conference on Tissue Engineering**

Hilton Conference Center. Rhodes, Greece.  
May 27 - June 1, 2007

### **4<sup>th</sup> Lymphocyte Signal Transduction Workshop**

Hilton Conference Center. Rhodes, Greece.  
June 3 - 8, 2007

### **4<sup>th</sup> Workshop on Complement Associated Diseases, Animal Models, and Therapeutics**

Porto Heli Conference Center. Porto Heli, Greece.  
June 10 - 15, 2007

### **2<sup>nd</sup> International Conference on Crossroads between Innate and Adaptive Immunity**

Aldemar Knossos Royal Village. Crete, Greece.  
June 17-22, 2007

### **5<sup>th</sup> International Conference on Pathways, Networks, and Systems: Theory and Experiments**

Porto Heli Conference Center. Porto Heli, Greece.  
September 30 - October 5, 2007

### **3<sup>rd</sup> International Conference on Autoimmunity: Mechanisms and Novel Treatments**

Hilton Conference Center. Rhodes, Greece.  
October 7 - 12, 2007