



The Abdus Salam  
International Centre for Theoretical Physics



SMR. 2025

# Satellite Navigation Science and Technology for Africa

23 March 2009 - 9 April 2009, ICTP, Trieste, Italy

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## PROGRAMME

Message from Directors  
Sponsors  
Programme  
Lecturer's information  
List of Participants

## *A Message from the Directors*

Africa's Science and Technology Plan of Action [1] clearly states Africa's commitment to develop and use science and technology for socio-economic transformation and full integration into the world economy. Global Navigation Satellite Systems (GNSS), such as the Global Positioning System (GPS), are a space technology that can help meet that goal. Specifically, GNSS applications can be used to increase food security, manage natural resources, provide efficient emergency location services, improve surveying and mapping, and provide greater precision and safety in land, water and air navigation systems. It also has applications in numerous fields of scientific study including space weather, geophysics, geography, geology, ecology and biology.

The benefits of GNSS for Africa have been recognized. International organizations have initiated the deployment of GNSS ground based stations for both geodetic and conservation activities, and scientific exploration. As Africa begins to employ and benefit from GNSS applications, it is important to initiate programs in GNSS science and technology at the university level for capacity building. This workshop is designed with activities to meet that goal.

The workshop will be conducted under an international partnership between the International Centre for Theoretical Physics (ICTP) and Boston College. Under this partnership, ICTP and BC have provided funding and have secured additional funding from a number of institutions including the [Institute of Navigation](#), the Federal Aviation Administration, the Air Force Research Laboratory and the International Committee for GNSS. In addition, worldwide experts in GNSS have generously donated their time to participate in this workshop as lecturers.

The workshop will include formal lectures and hands-on practice in GNSS architecture, signal structure, hardware, state of the art applications and scientific exploration using GNSS. The workshop participants have been selected from African universities with a commitment to establish GNSS programs and research at the university level. The lecturers have been recruited from the US, Europe, Canada and Africa and have a reputation for excellence in teaching and GNSS. This diverse collection of people will generate an environment for social understanding, international friendships and collaborations. Most importantly, it will represent an international group committed to facilitating the use of GNSS technology in Africa.

As we begin this intensive workshop, we sincerely thank you for your participation and look forward to working with you over the next three weeks. If we can be of assistance during the workshop, please let us know.

With best regards,

S. M. Radicella  
International Centre for Theoretical Physics

Patricia H. Doherty  
Boston College

- 1) Africa's Science and Technology: Consolidated Plan of Action (2006). The New Partnership for Africa's Development (NEPAD) Website]. Available from: [www.nepadst.org](http://www.nepadst.org) [Accessed: 20 February 2008].

## *About the Directors*

Professor Sandro M. Radicella, ICTP  
Ms. Patricia H. Doherty, Boston College



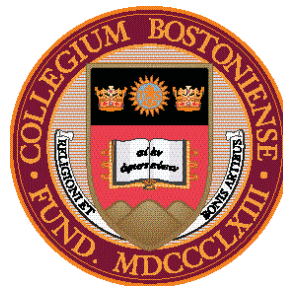
Professor Sandro M. Radicella is the Head of the Aeronomy and Radiopropagation Laboratory at the Abdus Salam International Centre for Theoretical Physics (ICTP) in Trieste, Italy. ICTP is an international organization operating under the aegis of two United Nations Agencies, the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the International Atomic Energy Agency (IAEA). ICTP's mission is to foster advanced studies and research, especially in developing countries. Their activities include theory and applications in all areas of the physical sciences.

Ms. Patricia Doherty is the Director of the Institute for Scientific Research at Boston College. Boston College, a Jesuit Catholic University in the United States, is committed to the highest standard of academic excellence and to uniting high academic achievement with service to others. Boston College is also dedicated to conducting nationally and internationally significant research that advances insight and understanding, enriches culture, and addresses pressing social needs. Research programs are extensive and include the use of GNSS for scientific exploration and air navigation applications.

The directors for this workshop have successfully joined forces in the past on scientific workshops related to navigation science using GNSS. Recent collaborations include directing the Workshop on the Future of Ionospheric Research for Satellite Navigation and Positioning: its Relevance for Developing Countries (December 2006, Trieste, Italy); participating in the G8-UNESCO World Forum on Education, Research and Innovation: New Partnerships for Sustainable Development (May 2007, Trieste, Italy); hosting two International Beacon Satellite Symposiums (October 2004, Trieste, IT; June 2007, Boston, MA); and as scientific coordinators for the International Heliophysical Year (IHY) Space Weather Science and Education Workshop (Addis Ababa, Ethiopia, November 2007).

The directors are committed to the goals of this workshop and are currently planning follow-on activities and another workshop in 2010.

**We sincerely thank our sponsors for their generosity.**



International Committee on  
Global Navigation Satellite Systems



The Abdus Salam  
International Centre for Theoretical Physics



## Satellite Navigation Science and Technology for Africa

Organizer(s): Directors: S.M. Radicella and P. Doherty  
Trieste - Italy, 23 March 2009 - 9 April 2009

**Venue: Adriatico Guest House Giambiagi Lecture Hall**

### Preliminary Programme

#### Workshop Opening and Program Overview (Room:Adriatico Guest House Kastler Lecture Hall)

23 March 2009

**08:30 - 09:30** (Room: Adriatico Guest House (Lower Level 1))  
**REGISTRATION**

**09:30 - 10:00** **S. Radicella, P. Doherty** / *ICTP, Trieste / Boston College, USA*  
**Opening Remarks and Welcome**

**10:00 - 11:00** **P. Misra** / *The MITRE Corporation, Bedford, USA*  
**Satellite Navigation Overview**

**11:00 - 11:15** (Room: Adriatico Guest House (Lower Level 1))  
--- Coffee Break ---

**11:15 - 11:45** **K.R.Sreenivasan/K. Bedell** / *Director, ICTP Trieste/Vice Provost for Research Boston College, USA*  
**Partnership for GNSS Education for Africa**

**11:45 - 13:00** **International Organization Representatives**

(Dr. Yury GRIN, Deputy to the Director - Bureau of Development of Telecommunications, International Telecommunication Union)

(Dr. Sharafat GADIMOVA, Programme Officer - ICG Secretariat, Office for Outer Space Affairs, UN Office at Vienna)

(Dr. Auguste YANKEY K. - Human Resources Science & Technology Department, African Union Commission)

(Dr. Patricia DOHERTY - Representing US Federal Aviation Administration)

(Dr. Christopher HEGARTY, Immediate Past President - US Institute of Navigation)

**13:00 - 14:00** (Room: Adriatico Guest House Cafeteria)  
--- Lunch ---

**14:00 - 14:45** **International and National Organization Representatives continued:**  
(Dr. Vittorio De COSMO, Program Officer - Italian Space Agency,)  
(Dr. Francesco VESPE, Head of GPS Networks - Italian Space Agency)  
(Prof. Sandro M. RADICELLA - Representing Education Office, European Space Agency)

**14:45 - 16:00** **P. Misra / *The MITRE Corporation, Bedford, USA***  
**Satellite Navigation Overview continued**

**16:00 - 16:30** (Room: Adriatico Guest House (Lower Level 1))  
--- Coffee Break ---

**16:30 - 17:30** **Open Discussion on International Collaboration**

**19:30 - 19:30** (Room: Adriatico Guest House Cafeteria)  
--- Welcome Dinner (Hosted by ICTP and Boston College) ---

**Tuesday, 24 March 2009** (Room:Adriatico Guest House Kastler Lecture Hall)  
**Chairperson: Dr. Christopher Hegarty, The MITRE Corporation**

**08:30 - 10:30** **Administrative Formalities**

**10:30 - 13:00** **Coordinate Frames, Time Reference and Orbits**

**13:00 - 14:00** (Room: Adriatico Guest House Cafeteria)  
--- Lunch ---

**14:00 - 15:15** **GPS Space and Control Segments**

**15:15 - 15:30** (Room: Adriatico Guest House (Lower Level 1))  
--- Coffee Break ---

**15:30 - 17:00** **GPS Measurements and Error Sources**

**Wednesday, 25 March 2009** (Room:Adriatico Guest House Kastler Lecture Hall)  
**Chairperson: Dr. John Raquet, AFIT**

**08:30 - 10:15** **Solving for Position and Time, Kalman Filtering, Inertial Navigation and GPS/INS Integration**

**10:15 - 10:45** (Room: Adriatico Guest House (Lower Level 1))  
--- Coffee Break ---

**10:45 - 13:00** **TBA**

**13:00 - 14:00** (Room: Adriatico Guest House Cafeteria)  
--- Lunch ---

**14:00 - 15:15** **Precise Positioning (DGPS-concept and algorithms)**

**15:15 - 15:30** (Room: Adriatico Guest House (Lower Level 1))  
--- Coffee Break ---

**15:30 - 16:00** **Precise Positioning (DGPS-concept and algorithms) contd.**

**16:00 - 17:30** (Room: Adriatico Guest House Informatics Lab.)  
**Laboratory session**

**Thursday, 26 March 2009** (Room:Adriatico Guest House Kastler Lecture Hall)  
**Chairperson: J.Raquet, AFIT, G.Maruccio, ISMB, P.Ward, Navward**

**08:30 - 10:15** **High Accuracy GPS - Carrier-Phase Ambiguity Resolution**

**10:15 - 10:30** (Room: Adriatico Guest House (Lower Level 1))  
--- Coffee Break ---

**10:30 - 13:00** **Laboratory with John Raquet**

**13:00 - 14:00** (Room: Adriatico Guest House Cafeteria)  
--- Lunch ---

**14:00 - 15:15** **Laboratory with John Raquet**

**14:00 - 15:45** **P. Ward / Navward**  
**Introduction to GPS Receiver Design Principals**

**15:45 - 16:15** (Room: Adriatico Guest House (Lower Level 1))  
--- Coffee Break ---

**16:15 - 17:30** (Room: Adriatico Guest House Informatics Lab.)  
**G. Maruccio / Istituto Superiore Mario Boella**  
**SAT-SURF Suite A tool for Hands-on Training on Satellite Navigation**

**Friday, 27 March 2009** (Room:Adriatico Guest House Kastler Lecture Hall)  
**Chairperson: Mr. P. Ward, Navward, / Mr. D. Matsakis, USNO**

**08:30 - 10:15** **P. Ward / Navward**  
**GPS Received Design Principals continued**

**10:15 - 10:45** (Room: Adriatico Guest House (Lower Level 1))  
--- Coffee Break ---

**10:45 - 13:00** **TBA**

**13:00 - 14:00** (Room: Adriatico Guest House Cafeteria)  
--- Lunch ---

**14:00 - 15:15** **D. Matsakis / U.S. Naval Observatory, Washington**  
**Introduction to Clocks, GPS time, Precise Time Applications**

**15:15 - 15:30** (Room: Adriatico Guest House (Lower Level 1))  
--- Coffee Break ---

**15:30 - 17:30**     **D. Matsakis / U.S. Naval Observatory, Washington**  
**Introduction to Clocks, GPS time, Precise Time Applications continued**

**Week 2 - Practical Applications** (Room:Adriatico Guest House Giambiagi Lecture Hall)

**Chairperson: Dr. M. Miller, Mr. C. Miller, Dr. J. Morton**

**30 March 2009**

**08:30 - 09:30**     **P. Doherty / S. Radicella / Boston College, USA / ICTP, Trieste**  
**Overview of Week 2**

**09:30 - 10:15**     **M. Miller, J. Morton, C. Miller / AFRL, Eglin, USA, Miami University, WPAFB, Wright Patterson, USA**  
**Autonomous GNSS**

**10:15 - 10:30**     (Room: Adriatico Guest House (Lower Level 1))  
--- Coffee Break ---

**10:30 - 13:00**     **M. Miller, J. Morton, C. Miller / AFRL, Eglin, USA, Miami University, WPAFB, Wright Patterson, USA**  
**Autonomous GNSS continued**

**13:00 - 14:00**     (Room: Adriatico Guest House Cafeteria)  
--- Lunch ---

**14:00 - 15:15**     (Room: Adriatico Guest House Informatics Lab.)  
**Lego Mindstorm Challenge**

**15:15 - 15:30**     (Room: Adriatico Guest House (Lower Level 1))  
--- Coffee Break ---

**15:30 - 17:30**     (Room: Adriatico Guest House Informatics Lab.)  
**Lego Mindstorm Challenge continued**

**19:30 - 19:30**     (Room: Adriatico Guest House Cafeteria)  
--- Official Dinner (Hosted by ICTP and Boston College) ---

**Tuesday, 31 March 2009** (Room:Adriatico Guest House Giambiagi Lecture Hall)

**Chairperson: K. Hudnut, A. Wong, D. Brzezinska**

**08:30 - 09:30**     **K. Hudnut / USGS, USA**  
**Disaster Monitoring/Disaster Relief**

**09:30 - 10:15**     **A. Wong / US State Department, USA**  
**US Interests in GNSS Usage in Africa**

**10:15 - 10:30**     (Room: Adriatico Guest House (Lower Level 1))  
--- Coffee Break ---

**10:30 - 13:00**     **D. Brzezinska / Ohio State University, USA**  
**Mapping and Surveying**

**13:00 - 14:00**     (Room: Adriatico Guest House Cafeteria)  
--- Lunch ---

**14:00 - 15:15**     (Room: Adriatico Guest House Informatics Lab.)  
**Laboratory - Mapping and Surveying**



- 15:15 - 15:30** (Room: Adriatico Guest House (Lower Level 1))  
--- Coffee Break ---
- 15:30 - 17:00** (Room: Adriatico Guest House Informatics Lab.)  
**D. Brzezinska / Ohio State University, USA**  
**Laboratory - Mapping and Surveying continued**

**Wednesday, 1 April 2009** (Room:Adriatico Guest House Giambiagi Lecture Hall)  
**Chairperson: Dr. R. Ehsani, Dr. A. Sassenberg**

- 08:30 - 09:45** **R. Ehsani / University of Florida, USA**  
**Precision Agriculture**
- 10:15 - 10:30** (Room: Adriatico Guest House (Lower Level 1))  
--- Coffee Break ---
- 10:30 - 13:00** **R. Ehsani / University of Florida, USA**  
**Precision Agriculture continued**
- 13:00 - 14:00** (Room: Adriatico Guest House Cafeteria)  
--- Lunch ---
- 14:00 - 15:15** (Room: Adriatico Guest House Informatics Lab.)  
**R. Ehsani / University of Florida, USA**  
**Laboratory session**
- 15:15 - 15:30** (Room: Adriatico Guest House (Lower Level 1))  
--- Coffee Break ---
- 15:30 - 17:00** **A. Sassenberg / John Deere AMS, Europe**  
**John Deere Presentation**

**Thursday, 2 April 2009** (Room:Adriatico Guest House Giambiagi Lecture Hall)  
**Chairperson: T. Walter, B. Arbesser-Rastburg, A. B. Rabi**

- 08:30 - 09:45** **T. Walter / Stanford University, USA**  
**Air Navigation Applications (SBAS, GBAS, RAIM)**
- 10:15 - 10:30** (Room: Adriatico Guest House (Lower Level 1))  
--- Coffee Break ---
- 10:30 - 13:00** **T. Walter / Stanford University, USA**  
**Air Navigation Applications (SBAS, GBAS, RAIM)continued**
- 13:00 - 14:00** (Room: Adriatico Guest House Cafeteria)  
--- Lunch ---
- 14:00 - 15:00** **B. Arbesser-Rastburg / ESA-ESTEC, The Netherlands**  
**Galileo Systems and Services**
- 15:00 - 15:30** **A. B. Rabi / Federal University of Technology, Akure, Nigeria**  
**GNSS Challenges in Africa**

**15:30 - 15:45** (Room: Adriatico Guest House Informatics Lab.)  
--- Coffee Break ---

**15:45 - 17:30** **Presentations by African Universities**

**Friday, 3 April 2009** (Room:Adriatico Guest House Giambiagi Lecture Hall)  
**Chairperson: Dr. R. Langley, Geocaching with Dr. Gopi Seemala**

**08:30 - 09:45** **R. Langley / University of New Brunswick, Canada**  
**Atmospheric Monitoring and Mitigation**

**10:15 - 10:30** (Room: Adriatico Guest House (Lower Level 1))  
--- Coffee Break ---

**10:30 - 13:00** **R. Langley / University of New Brunswick, Canada**  
**Atmospheric Monitoring Laboratory**

**13:00 - 14:00** (Room: Adriatico Guest House Cafeteria)  
--- Lunch ---

**14:00 - 15:00** (Room: Adriatico Guest House Informatics Lab.)  
**Geocache Demonstration and Challenge**

**15:15 - 15:45** (Room: Adriatico Guest House (Lower Level 1))  
--- Coffee Break ---

**Monday, 6 April - Week 3** (Room:Adriatico Guest House Giambiagi Lecture Hall)  
**Chairperson: Doherty,Radicella,Groves,Valladares, VanDierendonck**

**6 April 2009**

**08:30 - 08:45** **P. Doherty, S. Radicella**  
**Overview of Week 3**

**08:45 - 09:15** **P. Doherty, S. Radicella**  
**The Ionosphere and Effects on GNSS**

**09:15 - 10:15** **K. Groves / AFRL, Hansom, USA**  
**Scintillation and Effects on GNSS**

**10:15 - 10:30** (Room: Adriatico Guest House (Lower Level 1))  
--- Coffee Break ---

**10:30 - 11:30** **C. Valladares / Boston College, USA**  
**Sensing Space Weather with Distributed Observatories and the Human Network**

**11:30 - 12:30** **P. Doherty, S. Radicella**  
**The African Ionosphere**

**12:30 - 14:00** (Room: Adriatico Guest House Cafeteria)  
--- Lunch ---

**14:00 - 15:15** **A. J. Van Dierendonck / AJ Systems, USA**  
**GNSS TEC and Scintillation Receivers**

**15:15 - 16:00** (Room: ARPL Laboratory - Galileo Guest House, Lobby Level)  
--- Coffee Break and move to Galileo Building ---

**16:00 - 17:30** (Room: ARPL Laboratory - Galileo Guest House, Lobby Level)  
**A.J. Van Dierendonck, ICTP Staff**  
**Receiver Demonstration**

**Tuesday, 7 April 2009** (Room: Adriatico Guest House Giambiagi Lecture Hall)  
**Chairperson: Radicella, Nava, Beniguel, Carrano, Groves, Amaeshi**

**08:30 - 09:00** **S. Radicella / ICTP**  
**Ionospheric Modeling**

**09:00 - 10:00** **B. Nava / ICTP**  
**Ionospheric Model Adaptation to Experimental Data**

**10:00 - 10:15** (Room: Adriatico Guest House (Lower Level 1))  
--- Coffee Break ---

**10:15 - 10:45** **Y. Beniguel / IEEA**  
**Scintillation Modeling**

**10:45 - 11:30** **C. Carrano / Boston College, USA**  
**Ionospheric Data Processing and Analysis**

**11:30 - 12:00** **L. Amaeshi / University of Lagos, Nigeria**  
**Establishing GNSS Measurements in Africa**

**12:00 - 13:00** **Presentation by African Universities**

**13:00 - 14:00** (Room: Adriatico Guest House Cafeteria)  
--- Lunch ---

**14:00 - 15:15** **K. Groves / AFRL, Hanson, USA**  
**SCINDA**

**15:15 - 15:30** (Room: Adriatico Guest House (Lower Level 1))  
--- Coffee Break ---

**15:30 - 17:30** **K. Groves / AFRL, Hanson, USA**  
**SCINDA**

**Wednesday, 8 April 2009** (Room: Adriatico Guest House Giambiagi Lecture Hall)  
**Chairperson: A. J. Coster, S. Skone, L. Ciraolo**

**08:30 - 09:30** **A. Coster / MIT. Haystack Laboratory, USA**  
**Ionospheric Storm Monitoring and Effects on GNSS**

**09:30 - 10:30** **S. Skone / University of Calgary, Canada**  
**Ionospheric Challenges for Positioning Applications in Africa**

**10:30 - 10:45** --- Coffee Break ---

- 10:45 - 13:00**     **A. Coster, S. Skone / MIT, Haystack Lab. USA, Univ. Calgary, Canada**  
**Ionospheric Impact on Positioning Laboratory**
- 13:00 - 14:00**     (Room: Adriatico Guest House Cafeteria)  
 --- Lunch ---
- 14:00 - 15:00**     (Room: Adriatico Guest House Informatics Lab.)  
**L. Ciraolo / IFAC-CNR, Sesto Fiorentino**  
**TEC Calibration Techniques: Single-station estimation of arc offsets**
- 15:00 - 15:15**     (Room: Adriatico Guest House (Lower Level 1))  
 --- Coffee Break ---
- 15:15 - 17:30**     (Room: Adriatico Guest House Informatics Lab.)  
**L. Ciraolo, C. Carrano, K. Alazo, G. Seemala**  
**TEC Calibration Laboratory**
- 19:30 - 19:30**     (Room: Adriatico Guest House Cafeteria)  
 --- Final Dinner (Hosted by ICTP and Boston College) ---

**Thursday, 9 April 2009** (Room:Adriatico Guest House Giambiagi Lecture Hall)

- 08:30 - 09:15**     **D. Ezigbalike / UN ECA, Ethiopia**  
**Getting there without getting lost !**
- 09:15 - 10:15**     **Open Discussion: The Future: Where do we go from here?**
- 10:15 - 10:30**     (Room: Adriatico Guest House (Lower Level 1))  
 --- Coffee Break ---
- 10:30 - 13:00**     **Results of the Questionnaire: Distribution of Certificates of Participation : End of Workshop**

**Prof. Sandro M. Radicella** is the Head of the Aeronomy and Radiopropagation Laboratory (ARPL) of the Abdus Salam International Centre for Theoretical Physics. He has published more than 130 papers in the fields of aeronomy and radiocommunications. The most important achievement of his recent scientific production is the development of models of vertical distribution of electronic density in the ionosphere in collaboration with colleagues from the ARPL and of the University of Graz, Austria. One of these models is being used by the European Space Agency in areas related to the use of GPS and the new GALILEO satellite system. He has organized a series of Colleges, Schools and Workshops, for participants mainly from developing countries, in the fields of Ionospheric Physics, Radiocommunications and Information and Communication Technology that he directs at the ICTP since 1989. He has been awarded in 2001 with the Doctor Honoris Causa degree from the University of Bucharest, Romania, and in 2005 with the Doctor of Science degree Honoris Causa from the Obafemi Awolowo University in Ile-Ife, Nigeria.

**Ms. Patricia Doherty** is Director and a senior scientist of the Institute for Scientific Research at Boston College. As director of the Institute, she oversees the activities of staff members working on a variety of innovative research projects. These projects include space weather studies, ionospheric effects on space-based systems, ionospheric measurement techniques, chemical reactions in space and magnetospheric physics. Patricia's research interests include GNSS as a space weather sensor; ionospheric effects on satellite-based augmentation systems; and promoting research and education in GNSS technology in developing countries. She holds offices as Eastern Region Vice President of the Institute of Navigation and as the Chair of the Beacon Satellite Studies group under the International Union of Radio Scientists (URSI).

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**Dr. Larry Amaeshi** is a Senior faculty member, in the Department of Physics, University of Lagos, Akoka, Yaba, Lagos, Nigeria. Currently, he is the Head of the GPS/VLF Research Laboratory of the department. His current research interest is broadly on Equatorial Aeronomy, with special interest in Equatorial Ionospheric Irregularities- their causative mechanism, and implications for trans-ionospheric radio wave propagation; and GPS and its applications, especially with respect to air safety in Nigeria. And of particular interest are: (i) TEC and S<sub>4</sub> measurements using dual frequency GPS receivers; (ii) developing GNSS – GPS network for Nigeria. Dr Amaeshi is: (i) a member of Nigerian Institute of Physics, (ii) a member, and the General Secretary of National Association of Radio Science, (NARS), (iii) Member of the National Executive Council of Nigerian Union of Planetary and Radio Sciences, (NUPRS), (iv) a member of the International Executive Committee of eGy- Africa, and (v) a member of Africa Geospace Society.

**Dr. Bertram R. Arbesser-Rastburg**, Head of the Electromagnetics and Space Environment Division of the European Space Agency, studied Electrical Engineering at the Technical University of Graz, Austria. He worked as a Propagation Engineer at

INTELSAT in Washington, D.C. In 1988 he joined the European Space Agency where he was responsible for the planning and implementation of wave propagation studies for all aspects of satellite communication and navigation. He supported the EGNOS Program and the Galileo Program in questions of ionospheric and tropospheric propagation effects. He is Chairman of ITU-R SG3 (Propagation), Coordinator of the European part of the international SBAS-IONO Group and Executive Secretary of the Galileo Science Advisory Committee.

**Dr. Yannick Béniguel**, member IEEE (M'88), obtained a Ph D Thesis from Paris VI university. He worked successively at the Telecommunications National Center (CNET), Issy les Moulineaux, then at the Laboratoire Central des Télécommunications (LCT), Vélizy, where he was the head of the electromagnetism department. He founded IIEEA, a research and development company in antennas, propagation and EMC, in 1987. The company has been involved in various antennas projects in HF, L, X, Ku and EHF bands. Specific commercial softwares have been developed for antenna analysis (MoM) and antenna implementation on structures (asymptotic). The company is also active in propagation studies. The Global Ionospheric Scintillation Model (GISM) has been developed by the author and is the ITU model on this topic. Y. Béniguel is the chairman of SEE (Société des Electriciens et des Electroniciens) waves and Propagation chapter, the co-chairman of the IEEE EMC French chapter. He is also a member of the ESA Ionospheric Expert Team and a French Delegate of ESF project COST 296: Mitigation of Ionospheric Effects on Radio Systems (MIERS). He has over 100 papers published in various conferences and journals.

**Mr. Christopher Bridgwood** is a Research Analyst at the Institute for Scientific Research at Boston College. He has been involved in the development and maintenance of the AFRL-SCINDA network and operational Space Weather products for the Air Force Weather Agency (AFWA). He also performs analysis of real-time ionospheric scintillation data. In addition, a number of scientific studies on ionospheric effects have been performed by him and has been author/presenter of papers based on these studies.

**Dr. Charles S. Carrano** is a senior research physicist at Boston College's Institute for Scientific Research. Previously, he led the Ionospheric Environments and Impacts group of the Space Weather and Effects Division at Atmospheric and Environmental Research, Inc. (AER). His principal contributions have been in the areas of ionospheric impacts on radar, satellite communications, and the Global Positioning System (GPS). Dr. Carrano has served as Principal Investigator for an SBIR related to real-time specification of the near-Earth space environment and as Co-Investigator for a BAA involving data fusion techniques for ionospheric monitoring. He has also served as AER project leader for the AFRL SCintillation Network Decision Aid (SCINDA), a real-time global network for ionospheric scintillation specification and forecasting. Dr. Carrano has developed systems for real-time monitoring of the ionosphere that are deployed in networks spanning the globe including the AFRL-SCINDA network, the Low-latitude Ionospheric Sensor Network (LISN), the Canadian High Arctic Ionospheric Network (CHAIN), and the Instituto Nacional de

Pesquisas Espaciais (INPE). He has managed the development of operational space weather products at Air Force Weather Agency (AFWA), Space Environment Technologies Application Division (SMC/WXT), and the Defense Modeling and Simulation Office (DMSO). Dr. Carrano earned his Ph.D. in aerospace engineering at The Pennsylvania State University and his B.S. in mechanical engineering at Cornell University. He has taught advanced engineering mathematics at the university level, published a number of journal articles, and delivered presentations at many scientific meetings. He has been granted five Scientific and Technical Achievement Team Awards by the AFRL Space Weather Center of Excellence, and been named Employee of the Year by AER, Inc.

**Dr. Luigi Ciraolo** took his degree in Physics discussing a thesis on the measurement of electron temperature in the ionosphere by Langmuir probes. In the following five years, his main field of activity is Electronics, at the institutes “MARITELERADAR” of the Italian Navy and “Electronics and Telecommunications” of the University of Pisa. In 1969 he joins CNR (National Research Council, Italy) working in satellite geodesy, namely the design, realization and scientific use of a Doppler station for the Navy Navigation Satellite System (NNSS) in the framework of a cooperation with US organizations. He investigated the capabilities of software receivers, constructing one prototype for the reception of the VLF OMEGA navigation system. Starting the 90’s, another prototype of software receiver for the NNSS was built, aimed to observe latitudinal behavior of Total Electron Content (TEC). Given the excellent results obtained, a chain of four stations for observations in the Mediterranean area was set up. At the same time the interest moved towards ionospheric use of Global Positioning System (GPS), mainly the problem of correcting the observed differential delays from biases and offsets to get TEC (Calibration or de-biasing). This has become now his main activity. He still attempts, despite his retirement, to reduce as much as possible the occurrence of negative TEC’s from his procedures.

**Dr. Anthea J. Coster** (Ph.D. Rice) is a research scientist at the MIT Haystack Observatory where she directs numerous GPS projects. Her research interests include space weather effects, magnetosphere and ionosphere coupling, GPS positioning and measurement accuracy, and meteor detection and analysis. She has been working with GPS since 1985, and, together with her coworkers, she developed the first real-time ionospheric monitoring system based on GPS in 1991. Her GPS TEC maps were the first to illustrate that storm enhanced density (SED), one of the major sources of space weather at the mid-latitudes, occurs across large areas of the United States during geomagnetic storms. SEDs have now been detected over Europe, Japan, and Australia. She is a member of the Institute of Navigation, the American Geophysical Union, and the Union of Radio Science (U.R.S.I.). She is the past U.S. chair of commission G of U.R.S.I. and she served on the ION council from 2001-2006. More recently, she has served on the science steering committee of the U.S. National Science Foundation’s Coupling, Energetics, and Dynamics of Atmospheric Regions (CEDAR) program.

**Ms. Susan Delay** is a senior research analyst at the Institute for Scientific Research at Boston College. In this role, Susan develops software to access and analyze data

from a number of ionospheric sensors including GNSS satellite receivers and data from the TOPEX and JASON satellites. Susan is also involved in studies involving atmospheric and ionospheric modeling and forecasting. Susan holds a degree in Mathematics from Trinity College in Washington, DC and a MS in Administration from Boston College.

**Dr. Reza Ehsani** is an assistant professor of Agricultural and Biological Engineering at the University of Florida/IFAS Citrus Research and Education Center (CREC). His current areas of research include precision technology for fruit and vegetable production, application of GPS/GIS for orchard management, development of soil and plant sensors, and machine enhancement for citrus mechanical harvesters. He also develops educational materials on the application of GPS/GIS and sensor technology for fruit and vegetable growers and organizes grower conferences on precision agriculture and mechanical harvesting for citrus. He has more than 14 years experience working in the area of precision agriculture for different type of crops. Dr. Ehsani has a Ph.D. in Biological and Agricultural Engineering from the University of California, Davis, where he worked on precision agriculture applications for high value crops. He also obtained a B.S. and M.S. in Agricultural Engineering from Tehran University, Iran. He was an assistant professor and a precision agriculture specialist at the Department of Food, Agricultural and Biological Engineering at the Ohio State University before joining the University of Florida. Dr. Ehsani has authored or co-authored more than 80 journal and technical papers.

**Dr. Dozie Ezigbalike** is the Chief of the Geoinformation Systems Section (GiSS) for the Economic Commission for Africa (ECA). In this role, Dozie coordinates ECA's advocacy activities to improve the use of geoinformation by African countries in the development process. The activities of GiSS include a project to develop a unified African Geodetic Reference Frame (AFREF) based on GNSS technology; coordinating the Mapping Africa for Africa (MafA) initiative; assisting countries to develop national SDI policies; and the implementing regional spatial databases and geovisualization applications. GiSS also provides the secretariat for the Subcommittee on Geoinformation of the Committee on Development Information Science and Technology (CODIST-Geo), which oversees and advises on ECA's work in the area of geoinformation. Prior to joining ECA in 2001, he had lectured at the University of Botswana (1998-2000), The University of Melbourne (1990-1998), and the University of Zimbabwe (1988-1990). He also spent some time at the Sasol Centre for Innovative Environmental Management (SCIEM) of the University of Witwatersrand, South Africa as a Visiting Scholar in 2000-01, where he was involved in the early metadata activities of Safari 2000, an international scientific initiative.

**Dr. Dorota A. Grejner-Brzezinska** (PhD 1995, The Ohio State University) is a Professor in Geodetic Science, and director of the Satellite Positioning and Inertial Navigation (SPIN) Laboratory at The Ohio State University. Her research interests cover GPS/GNSS algorithms, in particular, high precision positioning and navigation, such as DGPS and RTK, GPS/inertial and other sensor integration for navigation in challenged environments, sensors and algorithms for indoor and personal navigation, signal processing in integrated navigation systems using Kalman filter and non-linear



filtering, and precision orbit determination for GNSS/LEO. She is vice-President of the International Association of Geodesy (IAG) Commission 4, *Positioning and Applications*, and chair of the Sub-Commission 4.1, *Multi-sensor Systems*, and is an IAG Fellow; she has been serving on the Institute of Navigation (ION) Council for the past 7 years. She published over 160 peer reviewed journal and proceedings papers, numerous technical reports and five book chapters on GPS and navigation, and led over 20 research projects sponsored by DOD, NASA, NGS, NGA, NSF, Federal DOT, Ohio DOT, with a total budget of over eleven million USD. She is the recipient of the 2005 ION Thomas Thurlow Award, the 2005 United States Geospatial Information Foundation (USGIF) Academic Research Award, and ESRI Award for Best Scientific Paper in Geographic Information Systems published in 2004.

**Dr. Keith M. Groves** received his B.S. in physics from Andrews University and his Ph.D. in Space Physics from Massachusetts Institute of Technology (MIT) in 1991. He has been employed by the Air Force Research Laboratory, Space Vehicles Directorate since 1992. He is currently the Principal Investigator of the Ionospheric Impacts on RF Systems Program of the Space Weather Center of Excellence, where he has designed, developed and deployed a global real-time scintillation monitoring and modeling system (SCINDA). His research interests include radio wave scintillations, high power HF ionospheric modification, wave-particle interactions, and space weather impacts on communication, navigation and surveillance systems. Dr. Groves received the Merewether Award for the most significant Space Weather Development of the Year: Operational Space Environment Network in 2001, the P.V.H. Weems Awards from the Institute of Navigation in 2004, and the annual International Award from AFRL in 2006.

**Dr. Christopher J. Hegarty** is a director with The MITRE Corporation where he has working primarily on aviation applications of GPS since 1992. He is the chair of RTCA's Program Management Committee, co-chair of RTCA Special Committee 159, and associate editor of NAVIGATION: The Journal of the Institute of Navigation. He was a co-recipient of the 1998 ION Early Achievement Award and the recipient of the 2005 ION Johannes Kepler Award. He served as ION President in 2008.

**Dr. Richard B. Langley** is a professor in the Department of Geodesy and Geomatics Engineering at the University of New Brunswick in Fredericton, Canada, where he has been teaching and conducting research since 1981. He has a B.Sc. in applied physics from the University of Waterloo and a Ph.D. in experimental space science from York University, Toronto. He spent two years at MIT as a postdoctoral student, researching geodetic applications of lunar laser ranging and VLBI. For work in VLBI, he shared two NASA Group Achievement Awards. Prof. Langley has worked extensively with the Global Positioning System. He has been active in the development of GPS error models since the early 1980s and is a co-author of the venerable Guide to GPS Positioning and a columnist and contributing editor of GPS World magazine. His research team is currently working on a number of GPS-related projects including the study of atmospheric effects on wide-area augmentation systems, the adaptation of techniques for spaceborne GPS, and the development of

GPS-based systems for machine control and deformation monitoring. Prof. Langley is the principal investigator for the GPS instrument on the Canadian CASSIOPE research satellite now under construction. Prof. Langley is a fellow of The Institute of Navigation (ION) and the Royal Institute of Navigation and shared the ION 2003 Burka Award with Don Kim, and received the ION's Kepler Award in 2007.

**Dr. Demetrios Matsakis** is Head of the U.S. Naval Observatory's Time Service Department and has been employed at the USNO for almost 30 years. He has worked on time scales, atomic fountains, trapped-ion clocks, pulsars, VLBI (Very Long Baseline Interferometry), CEI (Connected Element Interferometry), atmospheric modeling, water vapor radiometers, maser amplifiers, and molecular radio astronomy. He received his Ph.D. in Physics at U.C. Berkeley studying under Dr. Charles Townes and his undergraduate degree in Physics from MIT. Dr. Matsakis has published over 100 scientific papers, and is ex-President of the International Astronomical Union's Commission on Time. He teaches in a private capacity.

**1st. Lt. Casey C. Miller** is the executive officer for the Sensors Directorate, Air Force Research Laboratory. Lt. Miller received his undergraduate B.S. degree in computer engineering in 2006 from Miami University, OH. He worked in the Automatic Target Recognition (ATR) Assessment Branch at the AFRL Sensors Directorate as a target/treat evaluation engineer where he was responsible for both in-house and contracted exploratory and developmental projects that advanced the state-of-the-art in ATR systems technology for aerospace vehicles. Lt. Miller has been involved with the ION since he was 16, presenting four papers and winning Best Presentation/Paper twice. He currently serves as the vice-chair of the ION Dayton Section, supports the ION's Robotic Lawnmower Competition and is co-chair for the ION's Mini-Urban Challenge.

**Dr. Mikel Miller** is the technical director for the Advanced Guidance Division of the Munitions Directorate of The Air Force Research Laboratory at Eglin AFB, FL. Prior to his appointment at Eglin, he was the technical advisor for the Reference Systems Branch, Sensors Directorate at the Air Force Research Laboratory in Dayton, Ohio where he was also an AFIT professor. Since 1986, he has focused on navigation system R&D, and test and evaluation - including GPS, GPS/INS integrations, and alternative navigation techniques. Dr. Miller has held several ION Council positions, and has also served as a program chair, general chair, technical chair, and session chair for numerous ION conferences and past chair for the Satellite Division's Robotic Lawnmower Competition. Additionally, Mike is an ION fellow and currently serves as the ION's president.

**Dr. Pratap Misra** has been active in satellite navigation research since 1989. His early work dealt with applications of GPS and GLONASS in civil aviation. He has also conducted research on precise (centimeter-level) navigation with GPS and GLONASS carrier phase measurements. He is the coauthor (with Professor Per Enge) of a widely used GPS textbook. Dr. Misra received a B. S. degree in 1965 from Indian Institute of Technology, Kanpur, and an M. S. degree in 1967 from Lehigh

University, both in mechanical engineering. He received a Ph. D. degree in engineering sciences in 1974 from the University of California, San Diego. Dr. Misra was elected a Fellow of the Institute of Navigation (ION) in 2004 and a Fellow of the IEEE in 2007 "for contributions to global satellite navigation systems."

**Dr. Jade Morton** is a Professor of Electrical Engineering at Miami University. She received her B.S. in Physics from Nanjing University in China, M.S.E.E. in Electrical Engineering from Case Western Reserve University, M.S.A in Systems Analysis from Miami University, and Ph.D. in Electrical Engineering from The Pennsylvania State University. She was a post-doctoral research fellow at the University of Michigan Space Physics Research Laboratory. In 1993, she left her research career in radar and satellite remote sensing of the ionosphere to take care of her family. She returned to academic in 2000 and was instrumental in the creation of the new Electrical and Computer Engineering Department at Miami University. Her current research focuses on advanced Global Positioning Systems receivers, GPS signal processing, and ionosphere effects on GPS measurements. Her research is supported by the Air Force Office for Scientific Research, Air Force Research Laboratories, National Science Foundation, state of Ohio, Consortium of Ohio Universities on Navigation and Timekeeping, and private industries. She is the author or co-author of over seventy technical publications in these areas. She was a past chair of the Institute of Navigation Dayton Section, a past ION Eastern Region Member-at-Large, current ION Outreach Committee Chair, and IEEE Microwave Theory and Technology Society Digital Signal Processing Subgroup technical committee member.

**Dr. Bruno Nava** is a researcher at the Aeronomy and Radiopropagation Laboratory of the Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste, Italy. His main field of application is 3D ionospheric electron density modeling, with particular interest to model adaptation to experimental data. As a member of the Ionospheric Expert Team and of the Advisory Group on Ionosphere of the European Space Agency he has been involved in support activities related to EGNOS and GALILEO projects. He has also been involved in the European COST actions 251, 271 and, as co-leader of the working package "Data Ingestion and Assimilation in Ionospheric Models" he had an active role in the European COST action 296. At the present time, B.Nava's research efforts are addressed to radio occultation data inversion, with the participation to the ROSA (Radio Occultation Sounder for Atmosphere) project.

**Dr. Babatunde RABIU** is the Associate Director of the Centre for Space Research and Applications, Federal University of Technology, Akure, Nigeria. Dr. Rabiun obtained a Ph.D. in Ionospheric Physics in 2000 from the University of Nigeria. He has acquired almost 2 decades of teaching and research experience within the University System in Africa. He is a visiting Professor to a number of African Universities. He was a visiting Associate Professor to Space Environment Research Center at Kyushu University, Japan, and Solar Terrestrial Environment Laboratory, Nagoya University, Japan in 2008. He is the pioneer president of the African Geospace Society – a regional body that brings together all geoscientists in Africa. He is a member of many professional bodies including American Geophysical Union,

Japan Geoscience Union, Nigerian Institute of Physics. His research interest lies mainly in Ionospheric Physics and Solar Terrestrial Interactions. He is engaged in scientific Curriculum development and played an active role in the just concluded International Heliophysical Year program. He has over 30 published scholarly articles to his credits.

**Dr. John F. Raquet** is an Associate Professor of Electrical Engineering at the Air Force Institute of Technology (AFIT), where he is also the Director of the Advanced Navigation Technology (ANT) Center. The ANT Center consists of 22 faculty members, 5 staff members, and over 40 students working to solve a wide variety of navigation problems. Dr. Raquet directly supervises the research of 6-10 MS and PhD students, and he is also responsible for teaching all of the GPS-related classes at AFIT. He has a multidisciplinary background, teaching in an electrical engineering department but having degrees in geomatics engineering (PhD, University of Calgary, 1998), aero/astro engineering (SM, Massachusetts Institute of Technology, 1991), and astronautical engineering (BS, US Air Force Academy, 1989). He has published over 100 navigation-related conference and journal papers and taught 26 navigation short courses to a number of different organizations. Dr. Raquet has been an active participant in the Institute of Navigation, and he has served as a session chair, program chair, track chair, and general chair of ION conferences, and on the ION Council as Central Region Vice President, Eastern Region Vice President, and Outreach Chair. He received the 2002 Institute of Navigation Early Achievement Award, the 1994 International Test and Evaluation Association (ITEA) Time-Space Position Instrumentation Data Collection and Electro-Optic Test and Evaluation Award, and the 1989 John von Neumann Award (presented to the top cadet in the Astronautical Engineering Department at the US Air Force Academy).

**Mr. Alexander Sassenberg** is the Manager of Business Development for the John Deere Agriculture Management Solutions (AMS) in Zweibruecken, Germany. John Deere AMS is an advanced technology group that focuses on products and solutions that advance the excellence in agriculture.

**Dr. Gopi Krishna Seemala** is working as a Post Doctoral Research Scientist at Boston College, USA; in the area of ionospheric physics and Space weather effects on the Satellite based Navigation systems (ex: GPS). Expertise in characterizing and analyzing ionospheric total electron content (TEC), irregularities, plasma depletions, space weather effects and evaluating their impact on satellite based navigation systems. At Institute of Scientific Research, Boston college he is currently working on low latitude Ionospheric dynamics and application to GPS aided navigation (ex: SBAS) and error mitigation, real time monitoring of total electron content (TEC) and scintillations using the LISN (Low Latitude Ionospheric Sensor Network) and possible prediction of scintillations & depletions. He received his Ph.D. from Andhra University, India with Prof. PVS Rama Rao as his supervisor, while doing as a Junior and Senior Research Fellow in CSIR (Council of Scientific and Industrial Research, Govt. of India). For his Ph.D. he has studied spatial and temporal characteristic behavior of L-band scintillations and Total Electron Content (TEC) over the Indian ionospheric region using the GPS network under Indian GAGAN (GPS Aided Geo

Augmented Navigation) program. He got his Masters degree in Electronics from Andhra University, India.

**Dr. Susan Skone** is an associate professor in geomatics engineering, Schulich School of Engineering, University of Calgary. She has a background in space physics and conducts research in the area of ionospheric and tropospheric effects on GNSS. She has developed licensed software for atmospheric research and has received multiple national and international awards. She has led a number of major projects and international study groups focused on remote sensing of the atmosphere using GNSS. She currently chairs the Canadian Navigation Society.

**Dr. Cesar Valladares** is a senior scientist at Boston College. He started his professional career as an engineer at the Jicamarca Radio Observatory. He obtained M. Sc. and PH.D. degrees in physics from the University of Texas at Dallas. There, he reported satellite observations of a different type of plasma structures that occur within the equatorial ionosphere. After graduation Dr. Valladares worked at the Sondrestrom radar facility in Greenland between 1984 and 1987, where he was the resident physicist and conducted the first detection of plasma lines. At Boston College, he is the principal investigator of a contract with the Air Force and a grant with NSF. He has conducted studies of the dynamics of Sun-aligned arcs, the formation of polar cap patches and has been instrumental in locating an all-sky imager at Heiss Island to conduct studies of the cusp in coordination with other high latitude imagers. He leads the LISN group devoted to install the first distributed observatory in South America.

**Dr. A. J. Van Dierendonck** is an international consultant at AJ Systems. He received his BSEE from South Dakota State and MSEE and PhD from Iowa State University. He has worked on the NAVSTAR Global Positioning System (GPS) for 35 years. AJ has received the Burka Award (twice), the Kepler Award and the Thurlow Award from the US ION, and the Kershner Award from the IEEE. He is an ION Fellow and an IEEE Life Fellow. AJ's current activities include such subjects as ionospheric scintillation effects on GNSS and GNSS spectrum protection. He is co-chairman of 2 RTCA SC159 groups dealing with modernized signals and airborne antennas.

**Dr. Todd Walter** received his B.S. in physics from Rensselaer Polytechnic Institute and his Ph.D. from Stanford University in 1993. He is currently a senior research engineer at Stanford University. He is a co-chair of the FAA's WAAS Integrity Performance Panel focused on the implementation of WAAS. His current activities include defining future architectures to provide aircraft guidance and working with the FAA and GPS-Wing on assuring integrity on GPS-III. Key early contributions include: prototype development proving the feasibility of WAAS, significant contribution to WAAS MOPS, and design of ionospheric algorithms for WAAS. He is a fellow of the ION.

**Mr. Phillip W. Ward, P.E.**, is President of Navward GPS Consulting, which he founded in October 1991, in Dallas, Texas. Prior to becoming a consultant, he was Senior Member of the Technical Staff in the Defense Systems & Electronics Group of Texas Instruments Incorporated. He has been involved in the field of navigation since 1958 and with GPS receiver design as a Systems Engineer since 1976. He received the Institute of Navigation (ION) Satellite Division Johannes Kepler lifetime achievement award in 2008 “for his pioneering work in GPS receiver development and continued teaching, consulting and publishing aimed at advancing the utility of both commercial and military applications of the Global Positioning System.” He was the first ION Congressional Fellow (2001). He was Chair of the ION Satellite Division (1994-96) and ION President (1992-93). He received the ION Thurlow Award in 1989 for developing the first commercial GPS receiver, the TI 4100. He is a Fellow in the ION, a Senior Member of the Institute of Electrical and Electronics Engineers, and a Registered Professional Engineer in Texas. He has eight patents and has authored more than 40 technical papers. He wrote three chapters of the highly popular book “Understanding GPS – Principles and Applications, edited by Elliot D. Kaplan and Christopher J. Hegarty, Artech House publishers (Second Edition 2005). Mr. Ward received his B.S.E.E. degree from the University of Texas at El Paso and his M.S.E.E. degree from Southern Methodist University in Dallas, TX. He also took postgraduate courses in Computer Science at Massachusetts Institute of Technology (MIT) while he was a Member of the Technical Staff of the MIT Instrumentation Lab (now Charles Stark Draper Laboratory).



*The Abdus Salam  
International Centre for Theoretical Physics*



Activity SMR: **2025**

# **Satellite Navigation Science and Technology for Africa**

23 March 2009 - 9 April 2009  
Trieste - ITALY

**Total Number of Visitors: 84**

**Preliminary List of Participants**

No.	NAME and INSTITUTE	DoB	Gender	Nationality	Function
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**DIRECTOR****Total number in this function: 2**

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1.	<b>DOHERTY PATRICIA</b>	23/05/1950	F	UNITED STATES OF AMERICA	<b>DIRECTOR</b>
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Research Field :

Research Topic :

Permanent address:

Institute for Scientific Research  
Boston College  
St. Clement's Hall  
140 Commonwealth Avenue  
CHESTNUT HILL MA 02467-3862  
Massachusetts  
UNITED STATES OF AMERICA  
Permanent Institute e mail dohertpd@bc.edu

2.	<b>RADICELLA SANDRO MARIA</b>	07/05/1937	M	ITALY	<b>DIRECTOR</b>
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Research Field :

Research Topic :

Permanent address:

Abdus Salam International Centre For Theoretical Physics  
Aeronomy and Radiopropagation Laboratory  
Via Beirut 7  
Trieste  
ITALY  
Permanent Institute e mail rsandro@ictp.trieste.it



No.	NAME and INSTITUTE	DoB	Gender	Nationality	Function
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**CONFERENCE LECTURER**

**Total number in this function: 33**

3.	<b>ARBESSER-RASTBURG BERTRAM</b>	19/10/1951	M	AUSTRIA	<b>CONFERENCE LECTURER</b>
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Research Field :

Research Topic :

Permanent address:

European Space Agency (Esa)  
 Estec  
 Space Science Department  
 Postbus 299  
 2200 AG Noordwijk  
 NETHERLANDS  
 Permanent Institute e mail bertram@tec-ee.esa.int

4.	<b>BEDELL KEVIN</b>	07/07/1948	M	UNITED STATES OF AMERICA	<b>CONFERENCE LECTURER</b>
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Research Field :

Research Topic :

Permanent address:

Boston College  
 Office of the Provost and Dean of Faculties  
 Waul House 207  
 Chestnut Hill MA 02467  
 UNITED STATES OF AMERICA  
 Permanent Institute e mail kevin.bedell.1@bc.edu

5.	<b>BENIGUEL YANNICK</b>	20/05/1947	M	FRANCE	<b>CONFERENCE LECTURER</b>
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Research Field :

Research Topic :

Permanent address:

I.E.E.A.  
 13 Promenade Paul Doumer  
 92400 Courbevoie  
 FRANCE  
 Permanent Institute e mail BENIGUEL@CLUB-INTERNET.FR

No.	NAME and INSTITUTE	DoB	Gender	Nationality	Function
6.	<b>BRIDGWOOD CHRISTOPHER</b>	22/06/1964	M	UNITED STATES OF AMERICA	<b>CONFERENCE LECTURER</b>
	Research Field :				
	Research Topic :				
	Permanent address:				
	Institute for Scientific Research Boston College St. Clement's Hall 140 Commonwealth Avenue CHESTNUT HILL MA 02467-3862 Massachusetts UNITED STATES OF AMERICA Permanent Institute e mail christopher.bridgwood@bc.edu				
7.	<b>BULLETT TERENCE</b>	31/12/1900	M	UNITED STATES OF AMERICA	<b>CONFERENCE LECTURER</b>
	Research Field :				
	Research Topic :				
	Permanent address:				
	University of Colorado CIRES E GC2 325 Broadway Boulder CO 80305 UNITED STATES OF AMERICA Permanent Institute e mail terence.bullett@colorado.edu				
8.	<b>CARLSON HERBERT C.</b>	10/05/1937	M	UNITED STATES OF AMERICA	<b>CONFERENCE LECTURER</b>
	Research Field :				
	Research Topic :				
	Permanent address:				
	European Office of Aerospace Research and Development 223/231 Old Marylebone Road London NW1 5TH UNITED KINGDOM Permanent Institute e mail herb.carlson@london.af.mil				

No.	NAME and INSTITUTE	DoB	Gender	Nationality	Function
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9.	<b>CARRANO CHARLES</b>	27/11/1968	M	UNITED STATES OF AMERICA	<b>CONFERENCE LECTURER</b>
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Research Field :

Research Topic :

Permanent address:

Institute for Scientific Research  
 Boston College  
 St. Clement's Hall  
 140 Commonwealth Avenue  
 CHESTNUT HILL MA 02467-3862  
 Massachusetts  
 UNITED STATES OF AMERICA  
 Permanent Institute e mail   charles.carrano@bc.edu

10.	<b>CIRAOLO LUIGI</b>	25/01/1940	M	ITALY	<b>CONFERENCE LECTURER</b>
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Research Field :

Research Topic :

Permanent address:

Consiglio Nazionale delle Ricerche  
 Istituto di Fisica Applicata  
 "Carrara"  
 via Madonna del Piano 10  
 50019 Sesto Fiorentino  
 ITALY  
 Permanent Institute e mail   l.ciraolo@ifac.cnr.it

11.	<b>COSTER ANTHEA JANE</b>	04/07/1953	F	UNITED STATES OF AMERICA	<b>CONFERENCE LECTURER</b>
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Research Field :

Research Topic :

Permanent address:

M.I.T. - Atmospheric Sciences Group  
 Haystack Observatory  
 Off Route 40  
 01886 Westford  
 UNITED STATES OF AMERICA  
 Permanent Institute e mail   ajc@haystack.mit.edu

No.	NAME and INSTITUTE	DoB	Gender	Nationality	Function
12.	<b>DELAY SUSAN</b>	25/10/1941	F	UNITED STATES OF AMERICA	<b>CONFERENCE LECTURER</b>
	Research Field :				
	Research Topic :				
	Permanent address:				
	Institute for Scientific Research Boston College St. Clement's Hall 140 Commonwealth Avenue CHESTNUT HILL MA 02467-3862 Massachusetts UNITED STATES OF AMERICA Permanent Institute e mail delay@bc.edu				
13.	<b>EHSANI REZA</b>	08/09/1964	M	UNITED STATES OF AMERICA	<b>CONFERENCE LECTURER</b>
	Research Field :				
	Research Topic :				
	Permanent address:				
	University of Florida, IFAS Citrus Research and Education Center CREC 700 Experimental Station Road Lake Alfred FL 33850-2299 UNITED STATES OF AMERICA Permanent Institute e mail ehsani@crec.ifas.ufl.edu				
14.	<b>EL-ARINI M. BAKRY</b>	01/07/1944	M	UNITED STATES OF AMERICA	<b>CONFERENCE LECTURER</b>
	Research Field :				
	Research Topic :				
	Permanent address:				
	The Mitre Corporation  7515 Colshire Drive McLean VA 22102-7539 UNITED STATES OF AMERICA Permanent Institute e mail bakry@mitre.org				

No.	NAME and INSTITUTE	DoB	Gender	Nationality	Function
15.	<b>EZIGBALIKE CHUKWUDOZIE</b>	22/08/1955	M	AUSTRALIA	<b>CONFERENCE LECTURER</b>
	Research Field :				
	Research Topic :				
	Permanent address:				
	United Nations Economic Commission for Africa P. O. Box 3005 Addis Ababa ETHIOPIA Permanent Institute e mail dozie@ezigbalike.com				
16.	<b>GADIMOVA SHARAFAT</b>	25/11/1962	F	AZERBAIJAN	<b>CONFERENCE LECTURER</b>
	Research Field :				
	Research Topic :				
	Permanent address:				
	Un Office For Outer Space Affairs Vienna International Centre P.O. Box 500 A-1400 Vienna AUSTRIA Permanent Institute e mail sharafat.gadimova@unoosa.org				
17.	<b>GREJNER-BRZEZINSKA D.</b>	10/03/1963	M	UNITED STATES OF AMERICA	<b>CONFERENCE LECTURER</b>
	Research Field :				
	Research Topic :				
	Permanent address:				
	the Ohio State University Dept. Computer & Informat.Sci. 2015 Neil Avenue Mall OH 43210-1277 Columbus UNITED STATES OF AMERICA				
18.	<b>GROVES KEITH</b>	12/03/1962	M	UNITED STATES OF AMERICA	<b>CONFERENCE LECTURER</b>
	Research Field :				
	Research Topic :				
	Permanent address:				
	Air Force Research Lab. Hanscom MA 01731 UNITED STATES OF AMERICA Permanent Institute e mail keith.groves@hanscom.af.mil				

No.	NAME and INSTITUTE	DoB	Gender	Nationality	Function
19.	<b>HEGARTY CHRISTOPHER</b>	31/03/1968	M	UNITED STATES OF AMERICA	<b>CONFERENCE LECTURER</b>
	Research Field :				
	Research Topic :				
	Permanent address:				
	The MITRE Corporation 202 Burlington Rd. / Rte 62 Bedford MA 01730-1420 UNITED STATES OF AMERICA Permanent Institute e mail <a href="mailto:chegarty@mitre.org">chegarty@mitre.org</a>				
20.	<b>HUDNUT KENNETH W.</b>	31/12/1900	M	UNITED STATES OF AMERICA	<b>CONFERENCE LECTURER</b>
	Research Field :				
	Research Topic :				
	Permanent address:				
	United States Geological Survey Earthquake Hazards Program 525 South Wilson Ave. Pasadena Ca 91106-3212 UNITED STATES OF AMERICA Permanent Institute e mail <a href="mailto:hudnut@usgs.gov">hudnut@usgs.gov</a>				
21.	<b>LANGLEY RICHARD B.</b>	17/08/1949	M	CANADA	<b>CONFERENCE LECTURER</b>
	Research Field :				
	Research Topic :				
	Permanent address:				
	University of New Brunswick Geodetic Research Laboratory Geodesy and Geomatics Engineering Fredericton N.B., E3B 5A3 CANADA Permanent Institute e mail <a href="mailto:lang@unb.ca">lang@unb.ca</a>				

No.	NAME and INSTITUTE	DoB	Gender	Nationality	Function
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22.	<b>MATSAKIS DEMETRIOS</b>	30/05/1952	M	UNITED STATES OF AMERICA	<b>CONFERENCE LECTURER</b>
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Research Field :

Research Topic :

Permanent address:

U. S. Naval Observatory  
3450 Massachusetts Avenue, N. W.  
Washington DC 20392  
UNITED STATES OF AMERICA  
Permanent Institute e mail matsakis.demetrios@usno.navy.mil,dnm@usno.navy.mil

23.	<b>MILLER CASEY C.</b>	03/11/1984	M	UNITED STATES OF AMERICA	<b>CONFERENCE LECTURER</b>
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Research Field :

Research Topic :

Permanent address:

Wright Patterson Air Force Base  
Sensors Directorate  
2241 Avionics Circle  
WPAFB  
Wright Patterson OH 45433  
UNITED STATES OF AMERICA  
Permanent Institute e mail casey.miller@wpafb.af.mil

24.	<b>MILLER MIKEL</b>	08/05/1960	M	UNITED STATES OF AMERICA	<b>CONFERENCE LECTURER</b>
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Research Field :

Research Topic :

Permanent address:

Air Force Research Laboratory  
101 West Eglin Blvd., Ste. 268  
Eglin AFB FL 32542-6810  
UNITED STATES OF AMERICA  
Permanent Institute e mail mikel.miller@eglin.af.mil

No.	NAME and INSTITUTE	DoB	Gender	Nationality	Function
25.	<b>MISRA PRATAP</b>	01/07/1944	M	UNITED STATES OF AMERICA	<b>CONFERENCE LECTURER</b>
	Research Field :				
	Research Topic :				
	Permanent address:				
	The MITRE Corporation 202 Burlington Rd. / Rte 62 Bedford MA 01730-1420 UNITED STATES OF AMERICA Permanent Institute e mail pmisra@mitre.org				
26.	<b>MORTON JADE</b>	01/08/1963	F	UNITED STATES OF AMERICA	<b>CONFERENCE LECTURER</b>
	Research Field :				
	Research Topic :				
	Permanent address:				
	Miami University Dept. of Electrical and Engineering 260 P. Engineering Building Oxford OH 45056 UNITED STATES OF AMERICA Permanent Institute e mail mortonyt@muohio.edu				
27.	<b>NAVA BRUNO</b>	24/09/1968	M	ITALY	<b>CONFERENCE LECTURER</b>
	Research Field :				
	Research Topic :				
	Permanent address:				
	Abdus Salam International Centre For Theoretical Physics Aeronomy and Radiopropagation Laboratory Via Beirut 7 Trieste ITALY Present Institute e-mail: bnava@ictp.it				



No.	NAME and INSTITUTE	DoB	Gender	Nationality	Function
28.	<b>RAQUET JOHN</b>	11/03/1967	M	UNITED STATES OF AMERICA	<b>CONFERENCE LECTURER</b>
	Research Field :				
	Research Topic :				
	Permanent address:				
	Air Force Institute of Technology 2950 Hobson Way, BLDG. 641 Wright Patterson AFB OH 45433 UNITED STATES OF AMERICA Permanent Institute e mail john.raquet@afit.edu				
29.	<b>SASSENBERG ALEXANDER</b>	05/01/1971	M	GERMANY	<b>CONFERENCE LECTURER</b>
	Research Field :				
	Research Topic :				
	Permanent address:				
	John Deere Ag Management Solutions Europe Prager Ring 4 - 12 66482 Zweibrucken GERMANY Permanent Institute e mail sassenbergalexander@johndeere.com				
30.	<b>SKONE SUSAN</b>	18/07/1967	F	CANADA	<b>CONFERENCE LECTURER</b>
	Research Field :				
	Research Topic :				
	Permanent address:				
	The University of Calgary Faculty of Engineering Dept. of Geomatics Engineering 2500 University Drive N.W. Calgary T2N 1N4 Alberta CANADA Permanent Institute e mail sskone@ucalgary.ca				

No.	NAME and INSTITUTE	DoB	Gender	Nationality	Function
31.	<b>SPARKS LAWRENCE</b>	25/02/1952	M	UNITED STATES OF AMERICA	<b>CONFERENCE LECTURER</b>
	Research Field :				
	Research Topic :				
	Permanent address:				
	Jet Propulsion Laboratory - JPL Tracking Systems and Applications Section (335) 4800 Oak Grove Drive Pasadena CA 91109 UNITED STATES OF AMERICA Permanent Institute e mail sparks@jpl.nasa.gov				
32.	<b>VALLADARES CESAR</b>	04/01/1951	M	UNITED STATES OF AMERICA	<b>CONFERENCE LECTURER</b>
	Research Field :				
	Research Topic :				
	Permanent address:				
	Institute for Scientific Research Boston College St. Clement's Hall 140 Commonwealth Avenue CHESTNUT HILL MA 02467-3862 Massachusetts UNITED STATES OF AMERICA Permanent Institute e mail valladar@bc.edu				
33.	<b>VAN DIERENDONCK ALBERT JOHN</b>	19/11/1938	M	UNITED STATES OF AMERICA	<b>CONFERENCE LECTURER</b>
	Research Field :				
	Research Topic :				
	Permanent address:				
	AJ Systems/GPS Silicon Valley 1131 Seena Avenue CA 94024-4925 Los Altos California UNITED STATES OF AMERICA Permanent Institute e mail ajvd@aol.com				

No.	NAME and INSTITUTE	DoB	Gender	Nationality	Function
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34.	<b>WALTER TODD</b>	19/03/1965	M	UNITED STATES OF AMERICA	<b>CONFERENCE LECTURER</b>
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Research Field :

Research Topic :

Permanent address:

Stanford University  
 Department of Applied Physics  
 CA 94305-4090 Stanford  
 UNITED STATES OF AMERICA  
 Permanent Institute e mail twalter@stanford.edu

35.	<b>WARD PHIL</b>	10/06/1935	M	UNITED STATES OF AMERICA	<b>CONFERENCE LECTURER</b>
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Research Field :

Research Topic :

Permanent address:

Home address:

No.	NAME and INSTITUTE	DoB	Gender	Nationality	Function
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**TUTOR**

**Total number in this function: 2**

36.	<b>ALAZO CUARTAS KATY</b>	08/03/1971	F	CUBA	<b>TUTOR</b>
-----	---------------------------	------------	---	------	--------------

Research Field : **AERONOMY, SPACIAL GEOPHYSICS**

Research Topic : **IONOSPHERIC PHYSICS**

Permanent address:

Ministry of Science, Technology & Environment  
 Institute of Geophysics and Astronomy  
 Spacial Geophysics Department  
 Calle 212 No. 2906 e/ 29 y 31  
 Rpto. La Coronela, La Lisa  
 11600 La Havana  
 CUBA  
 Permanent Institute e mail    katy@iga.cu

37.	<b>SEEMALA GOPI KRISHNA</b>	09/08/1980	M	INDIA	<b>TUTOR</b>
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Research Field :

Research Topic :

Permanent address:

Institute for Scientific Research  
 Boston College  
 St. Clement's Hall  
 140 Commonwealth Avenue  
 CHESTNUT HILL MA 02467-3862  
 Massachusetts  
 UNITED STATES OF AMERICA  
 Permanent Institute e mail    gopi.seemala@bc.edu

**PARTICIPANT**

**Total number in this function: 47**

38. **ADENIYI JACOB OLUSEGUN** 27/09/1947 M NIGERIA **PARTICIPANT**

Research Field : **PHYSICS OF THE UPPER ATMOSPHERE**

Research Topic : **EQUATORIAL IONOSPHERIC VARIABILITY**

Permanent address:

University of Ilorin  
Faculty of Science  
Department of Physics  
P.M.B. 1515

Ilorin

Kwara State

NIGERIA

Permanent Institute e mail jadeniyi@unilorin.edu.ng

39. **ALI SEYDIE MEBRIE** 21/02/1981 M ETHIOPIA **PARTICIPANT**

Research Field : **SPACE PHYSICS**

Research Topic : **GPS SCINTILATION IN ETHIOPIA**

Permanent address:

Debre Markos College of Teachers Education  
Debre Markos 428  
Amhara  
ETHIOPIA

Permanent Institute e mail

seydiembrie2004@yahoo.com

Present institute:

Addis Ababa University  
Department of Applied Physics  
Space Physics Stream  
Aratkilo

Addis Ababa 1176  
ETHIOPIA

Until: **29 May 2009**

40. **AMAESHI LAWRENCE (LARRY) LEMCHUKWU N.** 10/08/1947 M NIGERIA **PARTICIPANT**

Research Field : **AERONOMY**

Research Topic : **EQUATORIAL IONOSPHERIC TEC & S\$ MEASUREMENTS**

Permanent address:

University of Lagos  
Faculty of Science  
Department of Physics  
Akoka-Yaba

Lagos

NIGERIA

Permanent Institute e mail larryamma@yahoo.co.uk

No.	NAME and INSTITUTE	DoB	Gender	Nationality	Function
41.	<b>AREGBESOLA IKOTUN THEODORA OLUFUNKE</b> Research Field : <b>SPACE SCIENCE/MICROMETEOROLOGY</b> Research Topic : <b>TURBULENCE/APACE SCI.CURRICULUM DEVELOPMENT</b>	18/10/1968	F	NIGERIA	<b>PARTICIPANT</b>
Permanent address: Institute of Education Faculty of Education Obafemi Awolowo University Ile Ife Osun State NIGERIA Permanent Institute e mail   bledore@oauife.edu.ng					
42.	<b>ARIYIBI EMMANUEL ABIODUN</b> Research Field : Research Topic :	31/12/1968	M	NIGERIA	<b>REGULAR ASSOCIATE</b>
Permanent address: Department of Physics Obafemi Awolowo University Osun State 220005 Ile Ife NIGERIA Permanent Institute e mail   eariyibi@oauife.edu.ng					
43.	<b>AWOKE KASSAHUN TURE</b> Research Field : <b>ATMOSPHERIC PHYSICS</b> Research Topic : <b>ATMOSPHERIC TRACE MONITORING</b>	28/10/1970	M	ETHIOPIA	<b>PARTICIPANT</b>
Permanent address: Addis Ababa University Department of Physics P.O. Box 1176 Addis Ababa ETHIOPIA Permanent Institute e mail   kassahunture@yahoo.com, ttesfaye@phy.aau.edu.et,					

No.	NAME and INSTITUTE	DoB	Gender	Nationality	Function
44.	<b>AYODELE EMMANUEL GBENGA</b> Research Field :  Research Topic :	29/09/1975	M	NIGERIA	<b>PARTICIPANT</b>
Permanent address: University of Lagos Faculty of Science Department of Physics Akoka-Yaba Lagos NIGERIA Permanent Institute e mail    geodayo@yahoo.co.uk					
45.	<b>BOLAJI SEGUN</b> Research Field : <b>IONOSPHERIC PHYSICS USING MAGNETOMETER DATA</b> Research Topic : <b>IONOSPHERIC EFFECT ON THE EQUATOR</b>	04/08/1975	M	NIGERIA	<b>PARTICIPANT</b>
Permanent address: Bells University of Technology College of Natural and Applied Sciences Department of Physical Sciences Km 8, Idiroko Road PMB 1015 Ota 112001 Ogun State NIGERIA Permanent Institute e mail    oloriebimpjch2002@yahoo.co.uk					
46.	<b>CHAOUNI ABDEL-ALI</b> Research Field : <b>GEO-HAZARD (EARTHQUAKE, LANDSLIDE)</b>  Research Topic : <b>REMOTE SENSING, GEO. INFORMATION SYST. GPS</b>	09/01/1971	M	MOROCCO	<b>PARTICIPANT</b>
Permanent address: Universite Sidi Mohamed Ben Abdellah Faculte Polydisciplinaire de Taza B.P. 1223 Taza MOROCCO Permanent Institute e mail    alichaoui@yahoo.fr					

No.	NAME and INSTITUTE	DoB	Gender	Nationality	Function
47.	<b>ELMISSIRY MOSAD MOHAMED</b>	04/11/1947	M	ZIMBABWE	<b>SENIOR ASSOCIATE</b>
	Research Field :				
	Research Topic :				
	Permanent address:				
	Electrical Engineering Department University of Zimbabwe P.O. Box MP 167 Harare ZIMBABWE Permanent Institute e mail    mosad56@hotmail.com,mosad47@yahoo.co.uk				
48.	<b>FASUNWON { LAWAL} OLUSOLA OLUFUNKE</b>	26/06/1970	F	NIGERIA	<b>JUNIOR ASSOCIATE</b>
	Research Field :				
	Research Topic :				
	Permanent address:				
	Olabisi Onabanjo University Faculty of Science Department of Physics P.M.B. 2002 Ogun State Ago Iwoye NIGERIA Permanent Institute e mail    sfasunwon@yahoo.co.uk,sfasunwon@physics.org				
49.	<b>FAYOSE SOLA RUFUS</b>	12/05/1972	M	NIGERIA	<b>PARTICIPANT</b>
	Research Field : <b>SPACE PHYSICS</b>				
	Research Topic : <b>IONOSPHERIC SCINTILLATION &amp; TOTAL ELECTRON CONTE</b>				
	Permanent address:				
	Adekunle Ajasin University Department of Physics and Electronics P.M.B. 01 Ondo State Akungba Akoko NIGERIA Permanent Institute e mail    oluboy_2005@yahoo.com				



No.	NAME and INSTITUTE	DoB	Gender	Nationality	Function
50.	<b>HABARULEMA JOHN BOSCO</b> Research Field : <b>SPACE PHYSICS</b>  Research Topic : <b>CHARACTERIZATION OF THE IONOSPHERE USING GPS DATA</b>	31/01/1980	M	UGANDA	<b>PARTICIPANT</b>
	Permanent address:          jhabarulema@hmo.ac.za			Present institute: Hermanus Magnetic Observatory Space Physics Group 1 Hospital Street P.O.Box 32 Hermanus 7200 Western Cape SOUTH AFRICA Present Institute e-mail: jhabarulema@hmo.ac.za Until: <b>31 December 2010</b>	
51.	<b>HASSANIN ALSHAIMAA SAAD AMEEN AHMED</b> Research Field : <b>SOLAR PHYSICS</b>  Research Topic : <b>SPACE ENVIROMENT</b>	27/06/1984	F	EGYPT	<b>PARTICIPANT</b>
	Permanent address: Cairo University Faculty of Science Dep. Astronomy and Meteorology P.O.Box 12613 Giza Cairo EGYPT Permanent Institute e mail al.sh.sd@gmail.com				
52.	<b>INTSIFUL JOSEPH DANIEL KOJO</b> Research Field :  Research Topic :	18/11/1968	M	GHANA	<b>PARTICIPANT</b>
	Permanent address: UK Met Office Hadley Centre Fitzroy Road, Devon Exeter EX1 3PB UNITED KINGDOM Permanent Institute e mail joseph.intsiful@metoffice.gov.uk, jintsiful@yahoo.com				

No.	NAME and INSTITUTE	DoB	Gender	Nationality	Function
53.	<b>KARORO ANGELA</b> Research Field :  Research Topic :	31/12/1900	F	UGANDA	<b>PARTICIPANT</b>
Permanent address:					
Makerere University Faculty of Science Department of Physics P.O. Box 7062 Kampala UGANDA Permanent Institute e mail   kangela@physics.mak.ac.ug					
54.	<b>KIROE ANTHONY JOSEPH</b> Research Field : <b>ASTROPHYS. AND MICROELECTRONICS</b>  Research Topic : <b>SPACE ENVIRONMENT &amp; ORBITAL MECHANICS</b>	27/05/1975	M	KENYA	<b>PARTICIPANT</b>
Permanent address:					
Jomo Kenyatta University College of Agriculture and Technology Department of Physics P.O. Box 62000 Nairobi KENYA Permanent Institute e mail   kiroe@fsc.jkuat.ac.ke,anthony_kiroe@yaho.com			Present institute: Universita' degli Studi di Roma 'La Sapienza' Dipartimento Aerospaziale Via Eudossiana. 16 00184 Roma ITALY Present Institute e-mail:   anthony_kiroe@yahoo.com Until: <b>31 March 2010</b>		
55.	<b>KUSI SANDRA</b> Research Field : <b>NATURAL RESOURCES MANAGEMENT</b>  Research Topic : <b>CLIMATE CHANGE</b>	24/05/1984		GHANA	<b>PARTICIPANT</b>
Permanent address:					
Institute of Mathematical Sciences P.O. Box LG 197 Accra Legon GHANA Permanent Institute e mail   sandybee@yahoo.com					

No.	NAME and INSTITUTE	DoB	Gender	Nationality	Function
56.	<b>LOREH PETER ONYANGO</b> Research Field :  Research Topic :	12/06/1986	M	KENYA	<b>PARTICIPANT</b>
Permanent address: Jomo Kenyatta University Department of Physics P.O. Box 62000 00200 Nairobi KENYA Permanent Institute e mail    lorehjunior@yahoo.com					
57.	<b>MANYALA RECCAB OCHIENG</b> Research Field : <b>ELECTRONICS &amp; ENERGY TECHNOLOGIES</b>  Research Topic : <b>RENEWABLE ENERGY - SOLAR, BIOFUELS &amp; WIND</b>	16/08/1956	M	KENYA	<b>PARTICIPANT</b>
Permanent address: Maseno University Faculty of Science Department of Physics & Materials Science Busia Road Maseno KENYA Permanent Institute e mail    reccabo@yahoo.com					
58.	<b>MARZOUGUI HABIB</b>  Research Field :  Research Topic :	29/01/1963	M	TUNISIA	<b>REGULAR ASSOCIATE</b>
Permanent address: Universite 7 Novembre de Carthage Faculte des Sciences de Bizerte Departement de Mathematiques 7021 Bizerte TUNISIA Permanent Institute e mail    hmarzoug@ictp.it					

No.	NAME and INSTITUTE	DoB	Gender	Nationality	Function
59.	<b>MENE MEDARD NIANGORAN</b> Research Field : <b>ATMOSPHERIC PHYSICS</b> Research Topic : <b>MAGNETOSPHERIC ELECTRIC FLD</b>	13/12/1978	M	COTE D'IVOIRE	<b>PARTICIPANT</b>
Permanent address: Universite de Cocody UFR SSMT Laboratoire de Physique de L'Atmosphere (LAPA-MF) 22 BP 582 Abidjan 22 COTE D'IVOIRE Permanent Institute e mail    medardmene@yahoo.fr					
60.	<b>MENGISTIU TSIDU GIZAW</b> Research Field : <b>LOWER &amp; UPPER ATMOS. PHYS. &amp; REMOTE SENSING</b> Research Topic : <b>REMOTE SENSING</b>	07/01/1967	M	ETHIOPIA	<b>PARTICIPANT</b>
Permanent address: Addis Ababa University Department of Physics P.O. Box 1176 Addis Ababa ETHIOPIA Permanent Institute e mail    gizaw@phys.aau.edu.et					
61.	<b>MUTONYI D'UJANGA FLORENCE</b> Research Field : <b>MATERIALS SCIENCE</b> Research Topic : <b>CONDUCTIVITY IN CLAYS</b>	29/07/1954	F	UGANDA	<b>PARTICIPANT</b>
Permanent address: Makerere University Faculty of Science Department of Physics P.O. Box 7062 Kampala UGANDA Permanent Institute e mail    fdujanga@physics.mak.ac.ug					

No.	NAME and INSTITUTE	DoB	Gender	Nationality	Function
62.	<b>MWIINGA NCHIMUNYA</b> Research Field : <b>SPACE PHYSICS</b>  Research Topic : <b>MODELLING THE HELIOSPHERE &amp; COSMIC RAY TRANSPORT</b>	26/12/1974	M	ZAMBIA	<b>PARTICIPANT</b>
Permanent address: University of Zambia School of Natural Science Department of Physics P.O. Box 32379 10101 Lusaka ZAMBIA Permanent Institute e mail    nchimy@unza.zm					
63.	<b>NDEDA JARED HERA</b> Research Field : <b>SOLAR-METEOROLOGICAL RELATIONSHIPS</b>  Research Topic : <b>SOLAR EFFECTS ON MET PARAMETERS &amp; OZONE</b>	02/03/1955	M	KENYA	<b>PARTICIPANT</b>
Permanent address: Jomo Kenyatta University College of Agriculture & Technology P.O. Box 62 000 Nairobi KENYA Permanent Institute e mail    jndeda6060@yahoo.com					
64.	<b>NGWIRA CHIGOMEZYO MUDALA</b> Research Field : <b>SPACE PHYSICS</b>  Research Topic : <b>SPACE WEATHER EFFECTS, IONOSPHERE &amp; GEOMAGNETISM</b>	19/11/1978	M	ZAMBIA	<b>PARTICIPANT</b>
Permanent address: Hermanus Magnetic Observatory Space Physics Group 1 Hospital Street P.O.Box 32 Hermanus 7200 Western Cape SOUTH AFRICA Permanent Institute e mail    cngwira@hmo.ac.za					

No.	NAME and INSTITUTE	DoB	Gender	Nationality	Function
65.	<b>OBROU KOUADIO OLIVIER</b> Research Field : <b>SPACE SCIENCE PHYSICS</b>  Research Topic : <b>IONOSPHERIC SCIENCES</b>	01/01/1969	M	COTE D'IVOIRE	<b>PARTICIPANT</b>
Permanent address: Universite de Cocody UFR SSMT Laboratoire de Physique de L'Atmosphere (LAPA-MF) 22 BP 582 Abidjan 22 COTE D'IVOIRE Permanent Institute e mail    obrou.olivier@univ-cocody.ci					
66.	<b>OFFIONG ETIM</b> Research Field : <b>SATELLITE COMMUNICATIONS</b>  Research Topic : <b>GNSS, DIGITAL IMAGE PROCESSING</b>	25/06/1980	M	NIGERIA	<b>PARTICIPANT</b>
Permanent address: African Regional Centre For Space Science & Tech. Education Obafemi Awolowo University Private Mail Bag 019 OAU Post Office 220005 Ile Ife NIGERIA Permanent Institute e mail    offiong_arcsstee@oauife.edu.ng					
67.	<b>OLADIPO OLUSHOLA ABEL</b> Research Field :  Research Topic :	05/01/1976	M	NIGERIA	<b>PARTICIPANT</b>
Permanent address: University of Ilorin Faculty of Science Department of Physics P.M.B. 1515 Ilorin Kwara State NIGERIA Permanent Institute e mail    abeladipoo@yahoo.com					

No.	NAME and INSTITUTE	DoB	Gender	Nationality	Function
68.	<b>OLANDE PAUL BAKI</b> Research Field : <b>SPACE PHYSICS</b>  Research Topic : <b>IONOSPHERIC DISTURBANCES</b>	14/10/1966	M	KENYA	<b>PARTICIPANT</b>
Permanent address: University of Nairobi Department of Physics P.O. Box 30197 Nairobi 00100 KENYA Permanent Institute e mail      pbaki@uonbi.ac.ke					
69.	<b>OLAWEPO OLAYINKI ADENIJI</b> Research Field :  Research Topic :	24/02/1964	M	NIGERIA	<b>PARTICIPANT</b>
Permanent address: University of Ilorin Faculty of Science Department of Physics P.M.B. 1515 Ilorin Kwara State NIGERIA Permanent Institute e mail      nijiolawepo@yahoo.com					
70.	<b>OLWENDO JOSEPH OUKO</b> Research Field : <b>SPACE WEATHER</b>  Research Topic : <b>MODELLING OF THE IONOSPHERIC STRUCTURE OF NAIROBI</b>	25/11/1981	M	KENYA	<b>PARTICIPANT</b>
Permanent address: University of Nairobi Department of Physics P.O. Box 30197 Nairobi 00100 KENYA Permanent Institute e mail      castrajoseph@yahoo.com; physics@uonbi.ac.ke					

No.	NAME and INSTITUTE	DoB	Gender	Nationality	Function
71.	<b>OMINGO DICKSON OCHOLA</b> Research Field : <b>RADIO (WIRELESS) COMMUNICATIONS</b> Research Topic : <b>WRELESS COMPUTER NETWORKING</b>	27/12/1953	M	KENYA	<b>PARTICIPANT</b>
Permanent address: Maseno University Department of Computer Science and Technology Kisumu KENYA Permanent Institute e mail   omingodo@maseno.ac.ke					
72.	<b>OMULLOH COLLINS MITO</b> Research Field : <b>REMOTE SENSING</b> Research Topic : <b>TEMPERATURE &amp; HEAT FLUX ESTIMATES FROM SATELLITES</b>	17/11/1969	M	KENYA	<b>PARTICIPANT</b>
Permanent address: University of Nairobi Department of Physics P.O. Box 30197 Nairobi 00100 KENYA Permanent Institute e mail   collins@uonbi.ac.ke					
73.	<b>ONJWAYA FELIX OTIENO</b> Research Field : Research Topic :	31/12/1900	M	KENYA	<b>PARTICIPANT</b>
Permanent address: Jomo Kenyatta University Department of Physics P.O. Box 62000 00200 Nairobi KENYA Permanent Institute e mail   oonywaya@yahoo.com					
74.	<b>OWIS ASHRAF HAMDY MOHAMED</b> Research Field : <b>ASTRODYNAMICS</b> Research Topic : <b>SPACECRAFT DYNAMICS</b>	26/02/1975	M	EGYPT	<b>PARTICIPANT</b>
Permanent address: Cairo University Faculty of Science Dep. Astronomy and Meteorology P.O.Box 12613 Giza Cairo EGYPT Permanent Institute e mail   aowis@cu.edu.eg					



No.	NAME and INSTITUTE	DoB	Gender	Nationality	Function
75.	<b>RABIU AKEEM BABATUNDE</b> Research Field : <b>IONOSPHERIC PHYSICS</b>  Research Topic : <b>RADIO PROPAGATION, EQUATORIAL ELECTROJET</b>  Permanent address: Federal University of Technology Space Laboratory Physics Department Ondo State Akure 234 NIGERIA Permanent Institute e mail    tunderabiu@yahoo.com	02/04/1970	M	NIGERIA	<b>PARTICIPANT</b>
76.	<b>RASSEM MOHAMED ABD EL-AZIZ</b> Research Field : <b>RELATIVISTIC ASTROPHYSICS</b>  Research Topic : <b>X-RAY SOURCES, QSO &amp; COSMOLOGICAL MODELS</b>  Permanent address: Cairo University Faculty of Science Dep. Astronomy and Meteorology P.O.Box 12613 Giza Cairo EGYPT Permanent Institute e mail    info-rassem@ssc-cu.edu.eg	15/07/1954	M	EGYPT	<b>PARTICIPANT</b>
77.	<b>SALEH MAGDY YOUSSEF AMIN</b> Research Field : <b>ASTROCHEMISTRY</b>  Research Topic : <b>CHEMISTRY OF INTERSTELLAR CLOUDS</b>  Permanent address: Cairo University Faculty of Science Department of Astronomy Cairo EGYPT Permanent Institute e mail    myouamin@yahoo.com	01/06/1963	M	EGYPT	<b>PARTICIPANT</b>

No.	NAME and INSTITUTE	DoB	Gender	Nationality	Function
78.	<b>SALU BABATUNDE OLALEYE</b> Research Field :  Research Topic :	13/11/1978	M	NIGERIA	<b>PARTICIPANT</b>
Permanent address:					
African Regional Centre For Space Science & Tech. Education Obafemi Awolowo University Private Mail Bag 019 OAU Post Office 220005 Ile Ife NIGERIA Permanent Institute e mail    salu_arcsstee@oauife.edu.ng					
79.	<b>SHORE SALLE CHOTA</b> Research Field :  Research Topic :	04/04/1985	M	ETHIOPIA	<b>PARTICIPANT</b>
Permanent address:					
Dilla University Department of Physics P.O.Box 419 Dilla ETHIOPIA Permanent Institute e mail			Present institute: Addis Ababa University Faculty of Science Department of Applied Physics Atmospheric Physics Stream Aratkilo Addis Ababa 1176 ETHIOPIA		
shorephy@yahoo.com			Until: <b>29 May 2009</b>		
80.	<b>SIBANDA PATRICK</b> Research Field : <b>SPACE PHYSICS</b>  Research Topic : <b>MODELLING THE TOPSIDE IONOSPHERE</b>	10/11/1977	M	ZAMBIA	<b>PARTICIPANT</b>
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