



**The Abdus Salam
International Centre for Theoretical Physics**



2138 Presentation

**Joint ICTP-IAEA Workshop on Vulnerability of Energy Systems to
Climate Change and Extreme Events**

19 - 23 April 2010

ICTP Overview

Tuniz Claudio
*ICTP
Trieste
Italy*



The Abdus Salam
International Centre for Theoretical Physics



ICTP OVERVIEW C. Tuniz





Quick facts

- > Founded in 1964 by Nobel Laureate Abdus Salam
- > Provides training to improve scientific capacity in developing countries
- > Supports in-house staff of world-class physicists and mathematicians
- > Sponsored by tripartite agreement between Italy, UNESCO and IAEA





Organization

- > A distinguished Scientific Council sets scientific policies and a Steering Committee sets fiscal policies.
- > Some base funding is provided by UNESCO and IAEA, specific programmatic funding by other sources, and $\approx 82\%$ of the Centre's budget comes from Italy.
- > The Centre is connected to many institutions within Trieste, within Europe, and within developing countries.
- >

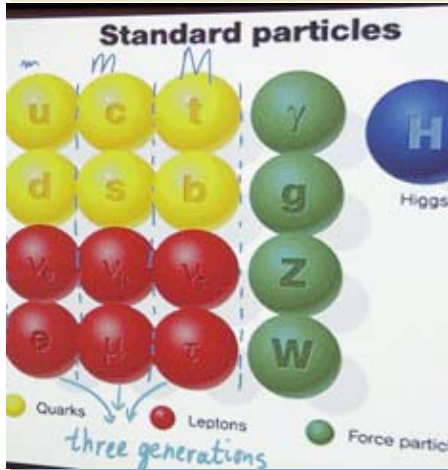




ICTP visiting scientists

- > More than 100,000 visits since 1970
- > 184 countries represented
- > 20% of ICTP visiting scientists are women



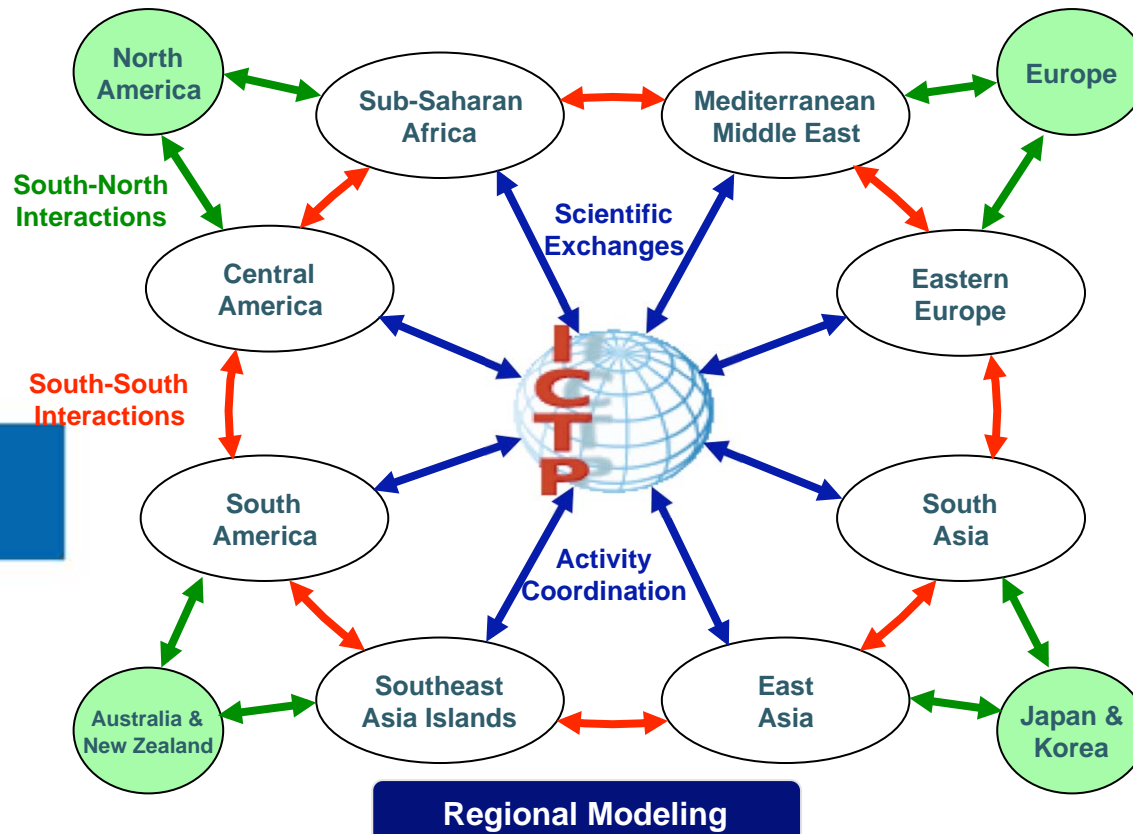


Research at ICTP

- > Condensed Matter and Statistical Physics
- > Earth System Physics
- > High Energy, Cosmology and Astroparticle Physics
- > Mathematics
- > Applied Physics
- > Multidisciplinary Laboratory



Example of ESP Networking: The Regional Climate research NETWORK, RegCNET



Collaborative research projects

E-mail list (over 300 p.)

Use of ICTP model tools and datasets

Interactions with other international programs

Workshops at ICTP and off-site

Visitor program

Regional Modeling

Weather Prediction

Seasonal Prediction

Climate Change

Storms

Flood

Drought

Water Resources

Energy

Agriculture

Landuse Change

Pollution

Health

Fisheries

Ecosystems





Research at ICTP

- > 27 staff scientists, plus 85 post docs, staff associates, long-term visitors
- > Research support
 - > ICTP Library holdings include 64,000 books, 450 journal subscriptions and 3,500 e-journals
 - > State-of-the-art computer equipment and support
 - > Publications and printing unit
 - > Open access to e-journals, digital lectures
 - > *African Physical Review*



ICTP training and education

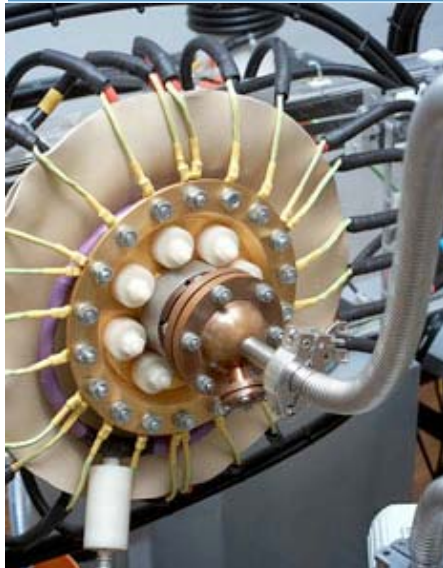
- > Provides training and skills to scientists from developing countries
- > Organises more than 60 conferences/workshops each year
- > Welcomes 4000 scientists from about 130 nations each year
- > Attracts an additional 2000 scientists/year through hosted activities





ICTP training and education

- > Pre-PhD programmes
 - > Diploma Programme
 - > ICTP/IAEA Sandwich Training Educational Programme
 - > Joint Ph.D. programme with University of Trieste
 - > ICTP/University of Trieste Laurea Magistralis





ICTP training and education

- > Scientific career support:
 - > Associate and Federation Schemes
 - > Training and Research in Italian Laboratories
 - > ICTP visitors' programme
 - > Training at Elettra Synchrotron Light Laboratory
 - > SESAME Programme

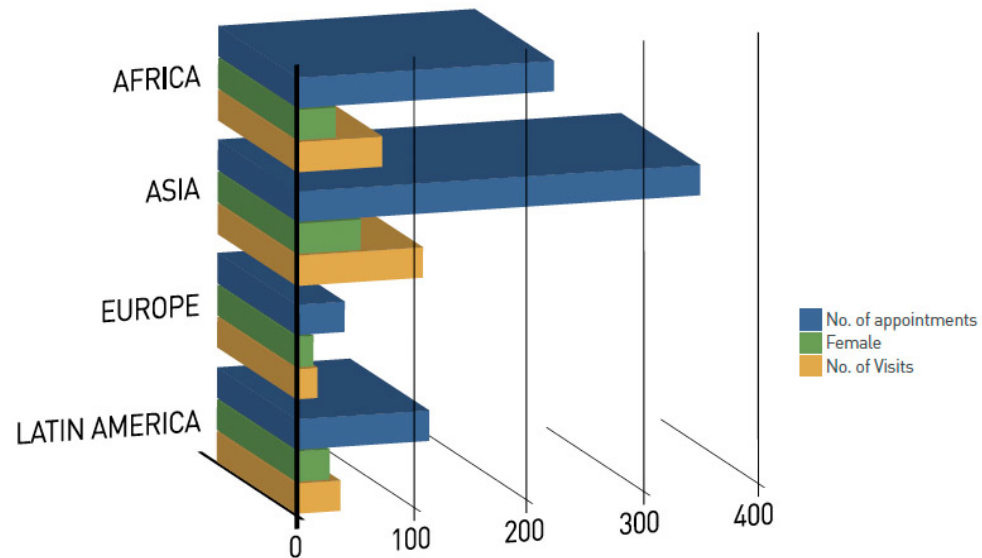




ICTP training and education

> Spotlight: Associateship Scheme

Geographical Distribution of Associate Members, 2008





ICTP training and education

> Office of External Activities

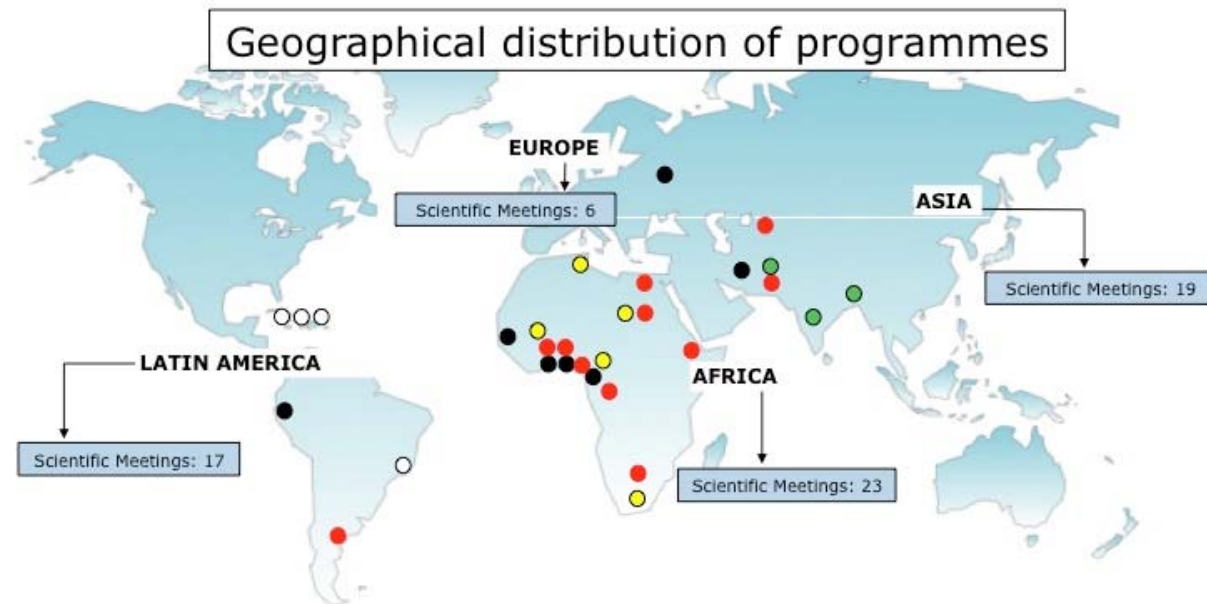
- > Supports scientific activities in developing countries
 - > PhD courses
 - > Scientific meetings
 - > Regional networks
 - > Affiliated centres





ICTP Training and Education

> Office of External Activities





ICTP Prizes and Awards

- > Dirac Medal
- > ICTP Prize
- > ICO/ICTP Gallieno Denardo Award
- > Ramanujan Prize



Dirac Medal of the ICTP



P.A.M. Dirac
1902 - 1984



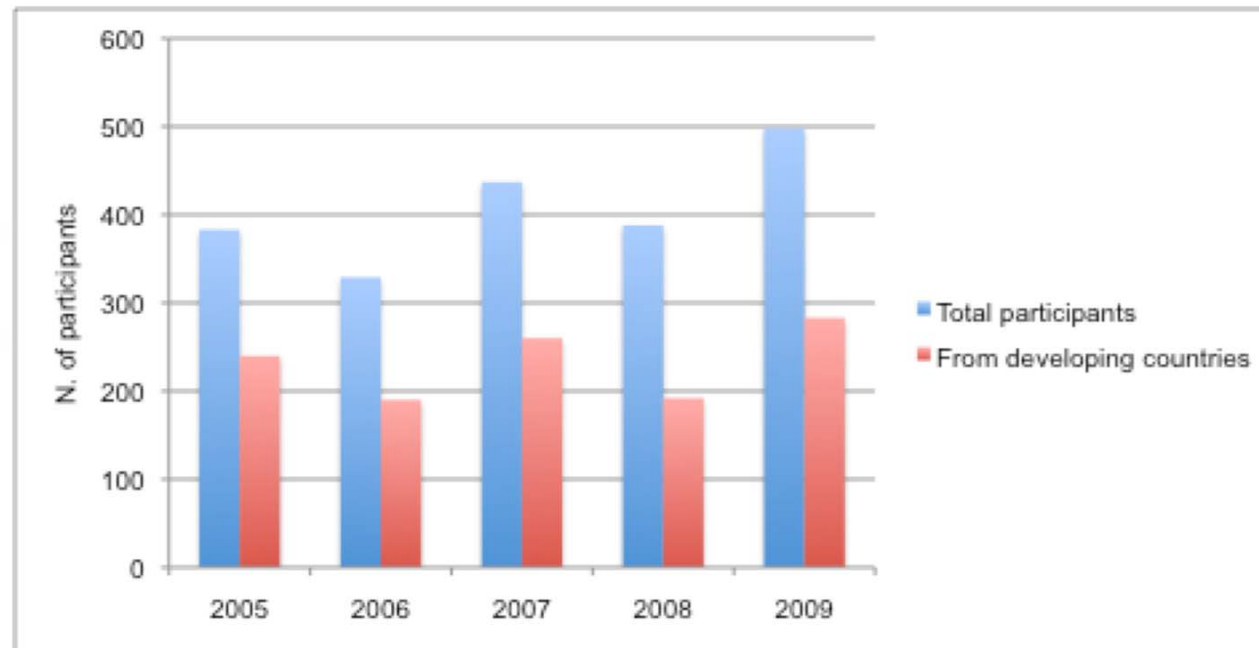


Present ICTP IAEA Collaboration

- > Workshops/Scientific events [about 10-15 per year]
- > PhD training for Agency Fellows (STEP)
- > Participation of IAEA staff in ICTP events
- > Placement of IAEA Fellows in Italy (2010)



Summary of ICTP-IAEA joint activities, 2005-2009



ICTP-IAEA joint activities by year:

9 in 2005 and 2006

8 in 2007

10 in 2008

13 in 2009



To increase cooperation

Joint studies and research with involvement of:

- > ICTP Associates and Post-Doctoral Fellows
- > ICTP Affiliated Centers and Networks
- > ICTP Research Staff in IAEA CRPs



Summary topics of common interest (cont'd)

> Fusion/Plasma Research

- > Theory, data, plasma lab

> General

- > Management of knowledge
- > ICT technologies/GRID computing
- > Remote access/Virtual laboratory



Topics of common interest

> Nuclear and radiation analyses

- > Advanced x-ray/neutron/ion microscopies
- > Accelerator applications
- > Portable x-ray/neutron analytical systems

> Interdisciplinary programmes

- > Marine sciences (climate modelling, advanced analyses)
- > Environment (modelling impacts and risks)
- > Energy **new!**



SELECTED 2010 ACTIVITIES

- > International Conference on Human Resource Development for Introducing and Expanding Nuclear Power Programmes (Abu Dhabi, United Arab Emirates, 14 to 18 March 2010)
- > ICTP-IAEA Workshop on Vulnerability of Energy Systems to Climate Change and Extreme Events
- > ICTP-IAEA Workshop on Nuclear Reaction Data for Advanced Reactor Technologies



SELECTED 2010 ACTIVITIES

- > ICTP-IAEA Course on Natural Circulation Phenomena and Passive Safety Systems in Advanced Water Cooled Reactors
- > ICTP-IAEA School of Nuclear Knowledge Management
- > ICTP-IAEA Workshop on Dense Magnetized Plasma and Plasma Diagnostics
- > ICTP-IAEA School of Nuclear Energy Management **new!**

ICTP-IAEA School of Nuclear Energy Management (26 Nov. 2010)

Organizer(s): IAEA: H. Holger Rogner, Y. Yanev, M. Saidy. ICTP: C. Tuniz

Aimed at building future leadership in managing nuclear energy programs

- **World Energy Balance, Geopolitics and Climate Issues**
- **Energy Planning, Energy Economics and Nuclear Power Economics and Finance**
- **IAEA Support for Nuclear Power Development**
- **Nuclear Power – Technology and Life Cycle, INPRO**
- **Nuclear Applications**
- **Nuclear Safety and Security**
- **Nuclear Law, International Conventions and Relevant Mechanisms**
- **Nuclear Safeguards**
- **Human Resource Development and Knowledge Management**
- **Nuclear Leadership/Management and Nuclear Sociology**