



***Integrity ★ Service ★ Excellence***

# **AFOSR International Activity**

**5 MAR 2012**

**Mark Maurice, PhD  
Director  
AFOSR International Office  
Air Force Research Laboratory**

## Report Documentation Page

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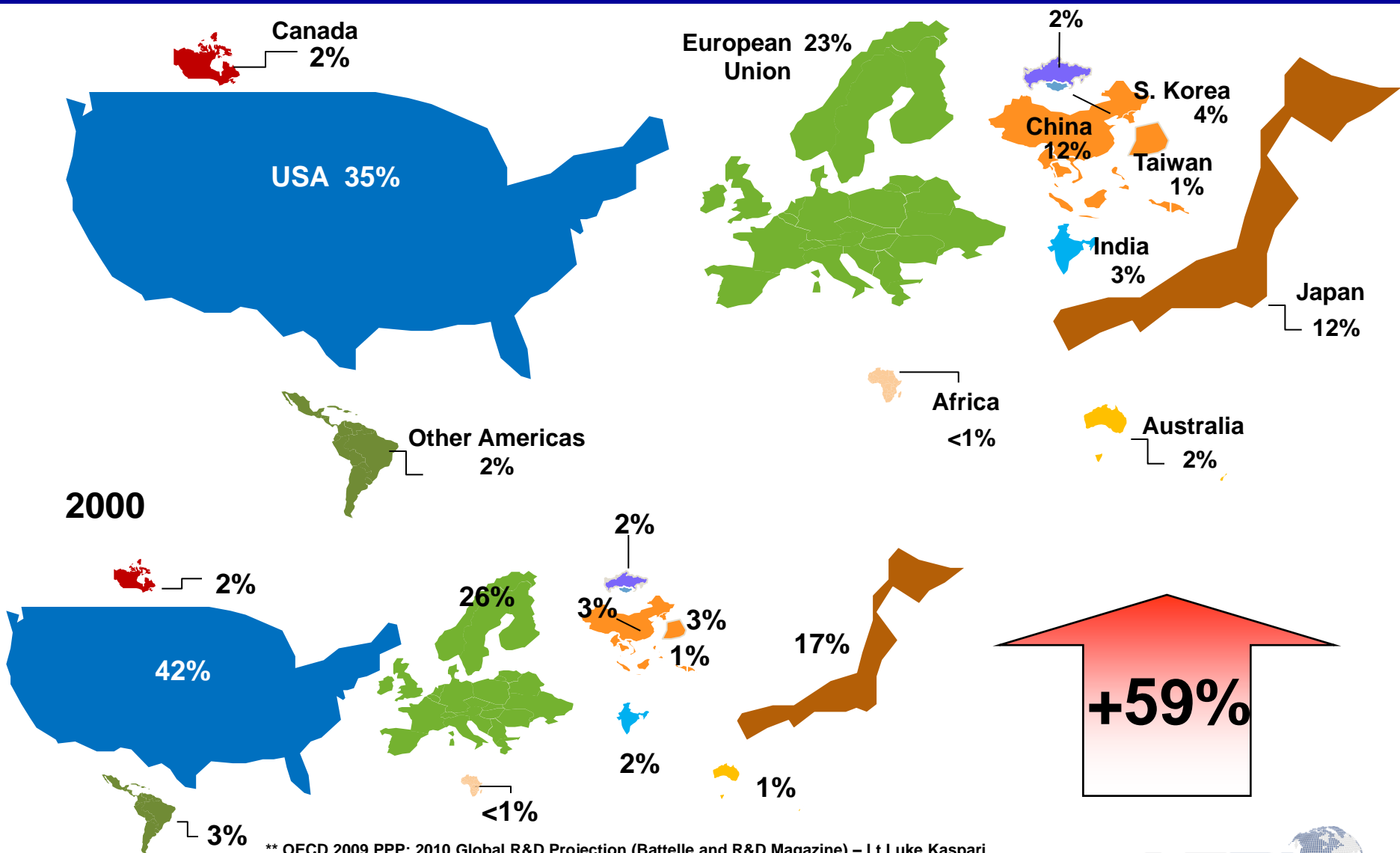
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# World R&D Investment

## 2000\* to 2010\*\*



\*\* OECD 2009 PPP; 2010 Global R&D Projection (Battelle and R&D Magazine) – Lt Luke Kaspari

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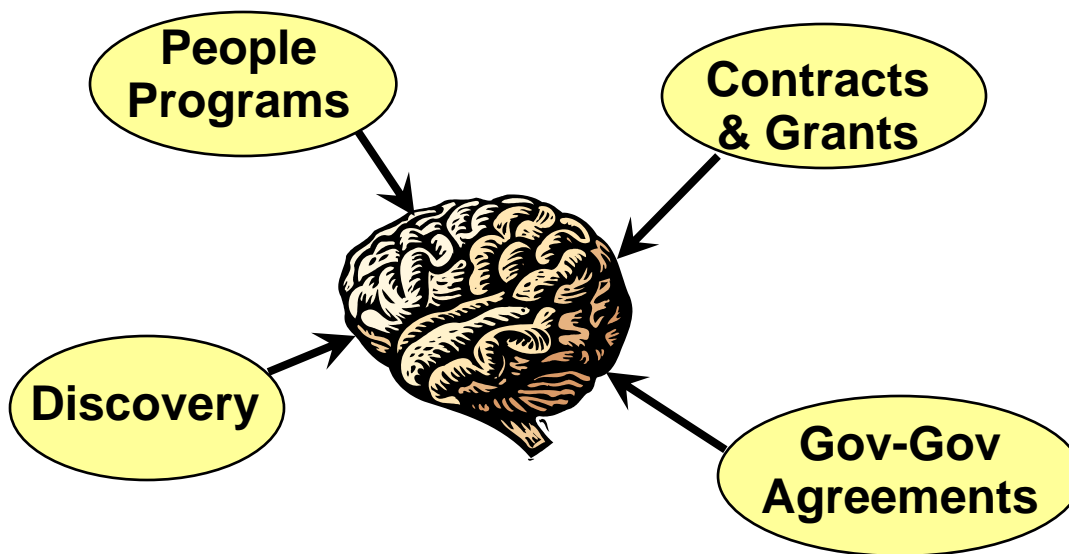




# AFOSR International Goals



- Discover world-class research of AF interest
- Identify and capitalize on emerging trends
- Leverage foreign resources
- Import knowledge into the AF S&T portfolio



A Wide Variety of Different Tools for Different Strategies



# Worldwide Coverage

## All AFRL International Activity

AFOSR

Public  
Domain

AFRL/XPPI

Govt-to-Govt  
Agreements

*2000+ AFRL Int'l Talent Scouts*

EOARD - 1952  
London  
Col Jack McCrae



The Sun Never Sets on AFOSR



# Strategy



## ***Build Relationships***

**...and the rest will follow**

- **Building international goodwill**
- **Strengthening partnerships**
- **Promoting coalition interoperability**
- **Avoiding technological surprise**
- ***Accelerating S&T achievement and transitions to the US***

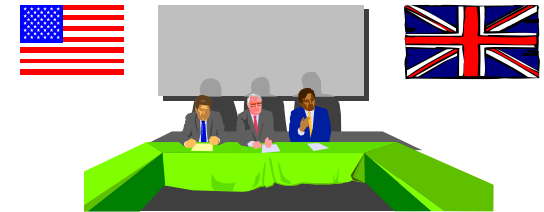
Basic Research “Knows No Political Boundaries”



# Discovery



- **Site visits**
- **Conferences (attendance & support)**
  - *Supported 93 meetings in 30 Countries in FY11*
- **Formal and ad hoc forums**
  - *RTO, TTCP, TWG, ASNR, .....*
- **Data Mining**
- **Tools for transition (*finding customers*):**
  - **Direct Communication**
  - ***International Trends and Opportunities***
  - ***AFRL International Notes***





# People Programs



- **Window-on-Science (WOS)**
  - “Flagship” program—Sends top international scientists to present their research in the U.S.
    - 210 WOS visits from 31 countries in FY11
- **Window-on-the-World (WOW)**
  - Allows AFRL scientists to do research at non-governmental institutes overseas
    - 8 participants to 5 different countries in FY11
    - Dr. Albert Bogozhi - Univ of Manchester, *Graphene Transistor Fabrication & Characterization* (Dr. Andre Geim & Dr. Konstantin Novoselov - Nobel)
- **NRC Associateship Program**
  - Brings domestic AND foreign researchers into lab
    - 19 of 79 current participants non-US citizens



# Engineer and Scientist Exchange Program (ESEP)



- **Established in December 1963 with Germany**
- **Exists with 17 countries today:**  
**Australia, Canada, Czech Rep., Chile, Egypt, France, Germany, Israel, Italy, Japan, Korea, Norway, Poland, Singapore, Spain, Netherlands, United Kingdom**
- **AF currently has 8 (soon to be 11) abroad, and hosting 14 (+2 more in April)**
- **DoD in negotiation with Brazil, India**
- **Over 1500 foreign nationals and over 130 USAF participants since inception**

Ties That Last a Lifetime





# Research Projects



- **Proposals respond to AFOSR Broad Agency Announcements**
- **Projects at universities / institutes:**
  - **Most start at 1 year and modest funds (\$40K is typical)**
    - 255 new grants/contacts with 32 countries in FY11
  - **Huge foreign matching:**
    - Direct matching + fee waivers
    - Equipment in place
    - Low overheads
  - **Results:**
    - Acquire new knowledge / understanding / technology
    - Build teams
    - Shift effort and funding AF goals



HyShot scramjet

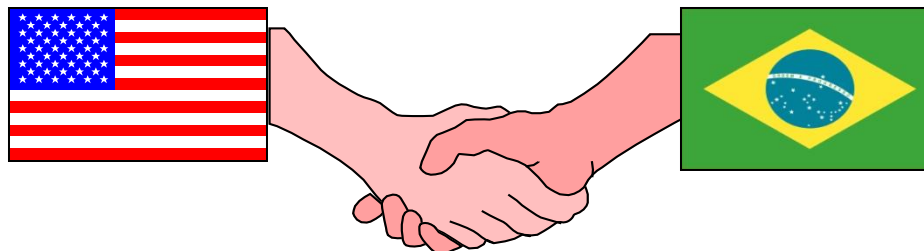




# Government-to-Government S&T Agreements



- **Data/Information Exchange Agreements**
  - Hypersonics – Brazil – Dr. John Schmisser
  - Nanoscience – Taiwan – Dr. Harold Weinstock – Exp.
  - Materials Science for Life Cycle Management
    - James Fillerup - New
- **Collaborative Project Agreements**
  - Hypersonics – Australia – Dr. John Schmisser



Rare for AFOSR

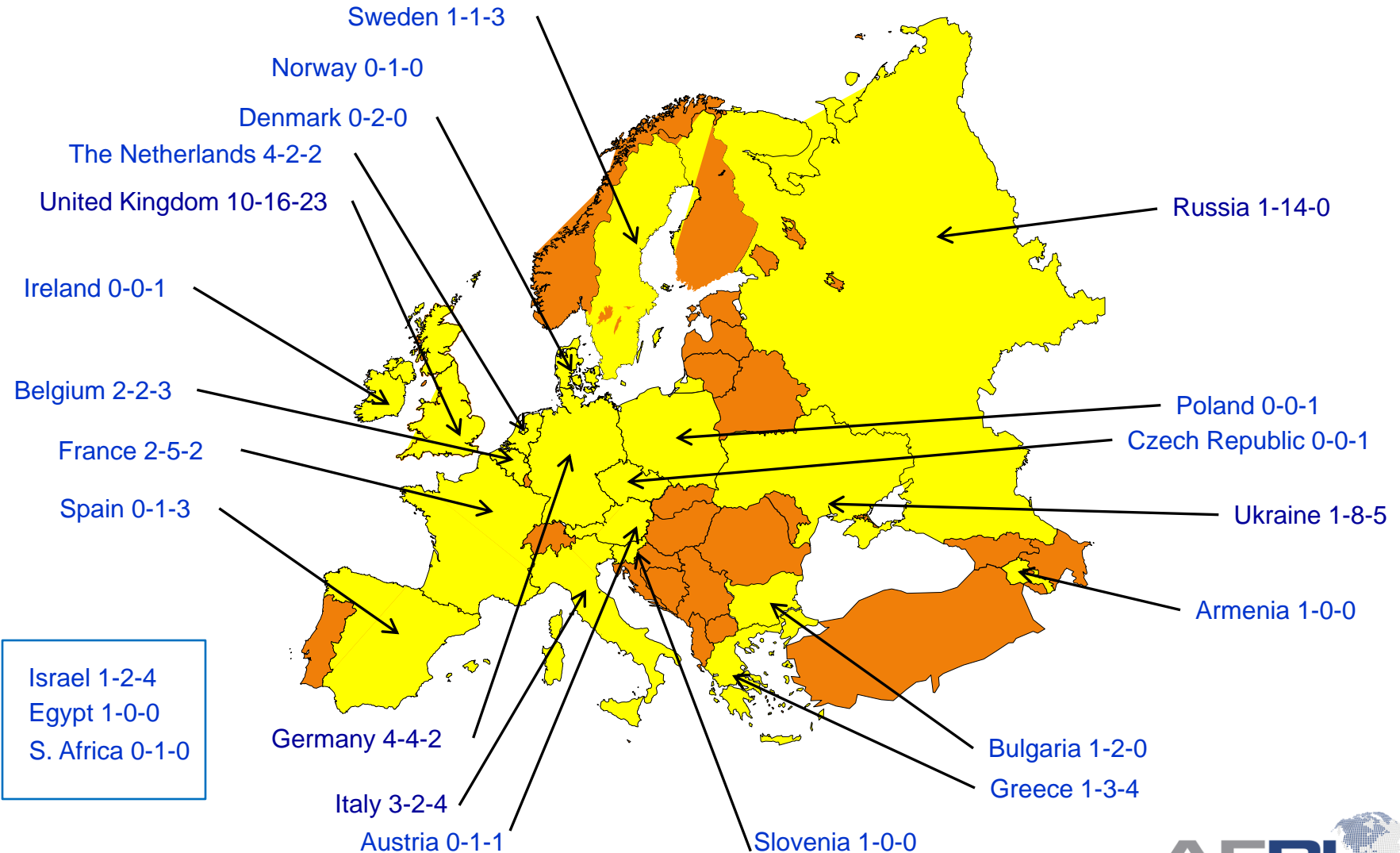


# EOARD Science – FY11

## 160 Activities in 23 Countries



34 Conferences – 67 Windows on Science – 59 Grants



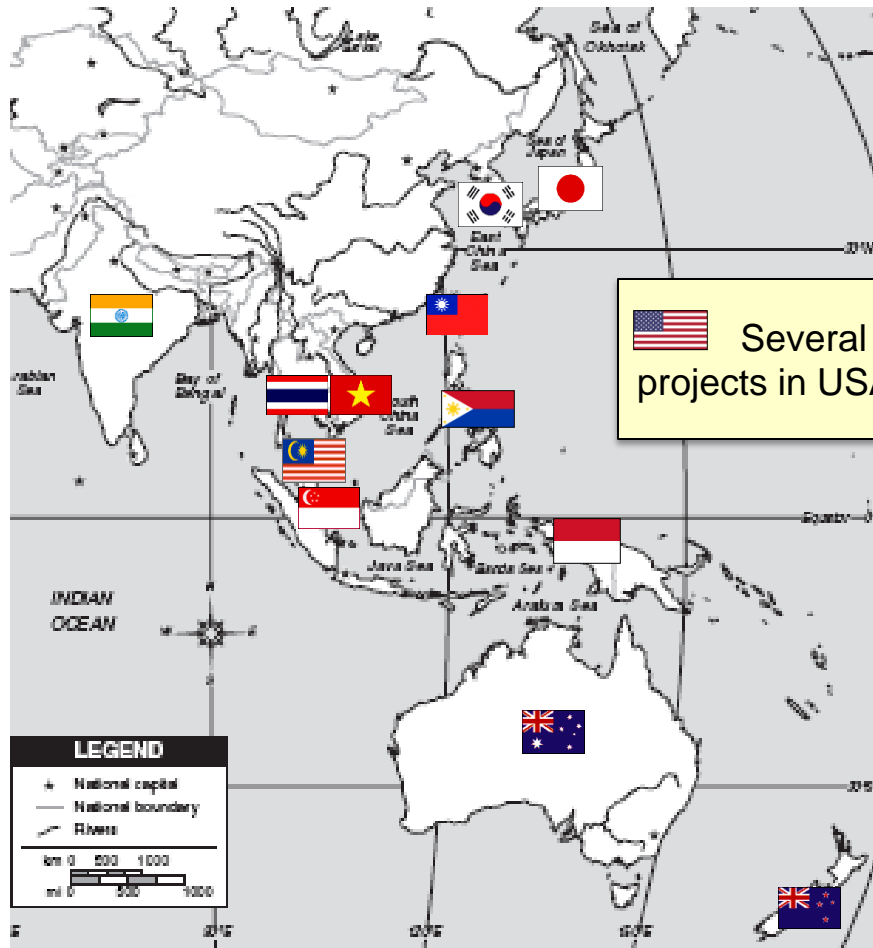
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# AOARD Science in FY11

## 342 Activities in 14 Countries and Regions



<b>CONFERENCE SUPPORT</b>	
Conferences	Countries
53	11

<b>WINDOW-ON-SCIENCE</b>	
Visitors	Countries
135	10

<b>RESEARCH PROJECTS</b>	
Projects	Countries
154	11

### Top 6 – Conf./Travel/Res.

Japan – 10/28/31 = 69

Australia – 8/18/26 = 52

Taiwan – 5/17/25 = 47

Korea – 8/8/19 = 35

India – 3/17/15 = 35

Singapore – 8/3/13 = 24

} **96%**  
of AOR







# SOARD Science – FY11

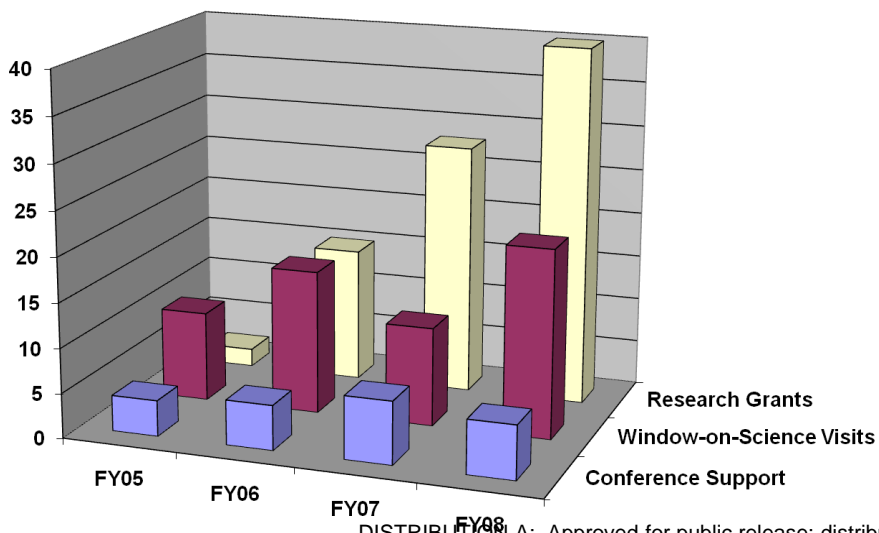
## 56 Activities in 6 Countries



### Milestones

- 2005 Latin American Initiative
- 2006 First call for proposals
- 2007 SOARD est. / Brazil Focus
- 2008 Workshops / Mexico Focus
- 2009 SOARD moves south / Chile Focus
- 2011 Three-Person Office Staffed

COUNTRY	WOS	CSP	R&D New/Total
 BRAZIL	3	2	9 / 23
 MEXICO	1	2	2 / 9
 CHILE	3	1	2 / 4
 ARGENTINA	0	1	0 / 4
 URUGUAY	1	0	0 / 1
 COLOMBIA	0	0	0 / 1
<b>TOTAL</b>	<b>8</b>	<b>6</b>	<b>13 / 42</b>





# Selected International Initiatives



- **Taiwan Nanoscience Initiative**
  - *Leverages >\$100M/yr National Program*
- **Korean Nano/Bio/Info Initiative**
  - *Korea Funds its Own Half of \$1.5M/yr Collaboration*
- **Indian Bio-Inspired MAV Flight Initiative**
  - *Leverages Growing Indian Investment in Emerging Science*
- **Russian Plasma Initiative**
  - *Bought into 40 Years of FSU Research*
- **Mexican/South American Initiatives**
  - *Working Toward Cooperative Funding w/ Latin American Agencies*
- **African Materials Initiative**
  - *Developing Collaborative Funding with NSF*

**AFOSR/TO Topic Candidate Paper**

Available Options	Status
Topic Candidate Paper (TCP) Introduction If this is your first visit, we suggest that you read this introduction before proceeding.	[On-Line]
Topic Candidate Paper (TCP) Management System The On-Line Management System to allow you to create, edit, submit, view, and review Topic Candidate Papers (TCP).	[On-Line]

*TCP(s) for Fiscal Year 2003*  
Start Date for Submissions 9/16/02  
End Date for Submissions 11/15/02



# Conclusions



- **Creativity and Expertise are Found Worldwide**
- **2/3 of S&T is Overseas - Opportunities to Significantly Leverage and Enhance AF S&T**
- **~4% of AF FY11 6.1 Core Budget Bought 558 Activities in 41 Countries**
- **International is Integral and Seamless to the AFOSR Research Portfolio**

AFOSR's International Enterprise –  
*Ensuring USAF Access to the World's Best  
Science and Technology*