



# AFOSR International Science Program Office

March 4, 2013

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AFOSR/IO

*Integrity ★ Service ★ Excellence*



## Report Documentation Page

*Form Approved*  
*OMB No. 0704-0188*

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1. REPORT DATE <b>04 MAR 2013</b>	2. REPORT TYPE	3. DATES COVERED <b>00-00-2013 to 00-00-2013</b>			
4. TITLE AND SUBTITLE <b>AFOSR International Science Program Office</b>		5a. CONTRACT NUMBER			
		5b. GRANT NUMBER			
		5c. PROGRAM ELEMENT NUMBER			
6. AUTHOR(S)		5d. PROJECT NUMBER			
		5e. TASK NUMBER			
		5f. WORK UNIT NUMBER			
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) <b>Air Force Office of Scientific Research ,AFOSR/IO,875 N. Randolph,Arlington,VA,22203</b>		8. PERFORMING ORGANIZATION REPORT NUMBER			
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)		10. SPONSOR/MONITOR'S ACRONYM(S)			
		11. SPONSOR/MONITOR'S REPORT NUMBER(S)			
12. DISTRIBUTION/AVAILABILITY STATEMENT <b>Approved for public release; distribution unlimited</b>					
13. SUPPLEMENTARY NOTES <b>Presented at the AFOSR Spring Review 2013, 4-8 March, Arlington, VA.</b>					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT <b>Same as Report (SAR)</b>	18. NUMBER OF PAGES <b>14</b>	19a. NAME OF RESPONSIBLE PERSON
a. REPORT <b>unclassified</b>	b. ABSTRACT <b>unclassified</b>	c. THIS PAGE <b>unclassified</b>			



# Overview



- **Changes at the International Science Program Office, IO**
- **Who we are**
- **What we do and plans for the future**



# Changes in the past year



- “XOARDS” still exist but they have new names—IOE, IOA, IOS



EOARD = IOE

- International office in Arlington, IO is now ION



SOARD = IOS

- All four offices now work for IO which is co-located with IOE in London



AOARD = IOA

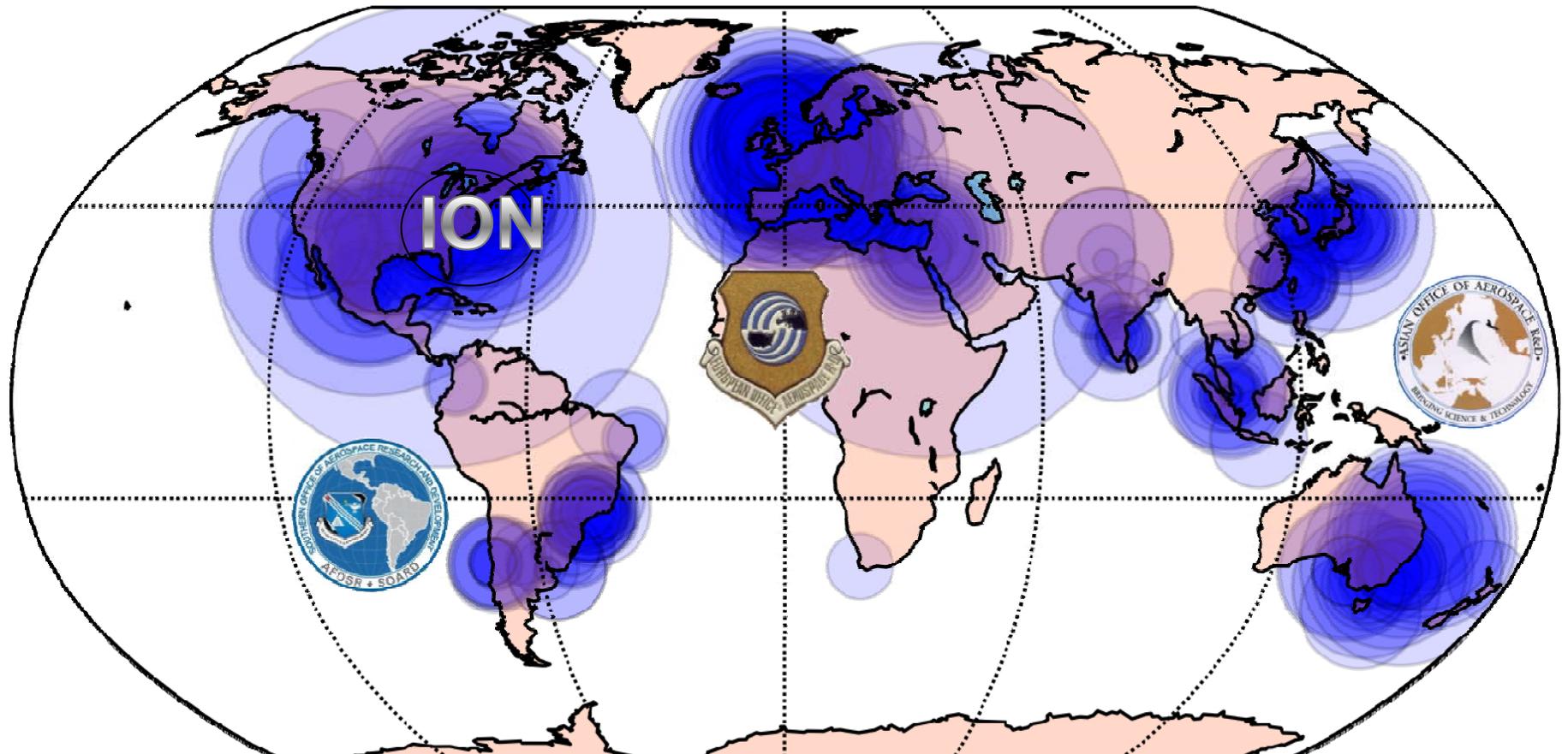
- Lots of change to people/processes in one year; more to come

**ION** Arlington = ION





# IO Engagement



*“Provide the US Air Force a strategy, awareness, and access to overseas basic research”*





# Thoughts on Strategy



- **Assumptions:**
  - IO will contribute an international component to a robust AFOSR strategy for 6.1 research
  - Because of our location, we also have the *access* and *awareness* mission
- **Currently:**
  - *Strategy* exists primarily at the IPO/PO level; collaboration between intl office IPOs and Arlington POs highly encouraged
- **How do we do better?**



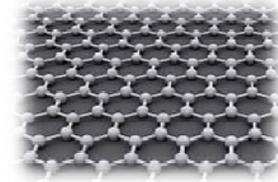
# Scientific Strategic Drivers - EOARD



- **Europe strategy focused on technologies that cross multiple countries**

- **Graphene**

- Began at U. Manchester (UK) - now a worldwide research area
- Nobel Prize in 2010
- 10 yr. \$1B funding initiative for Europe



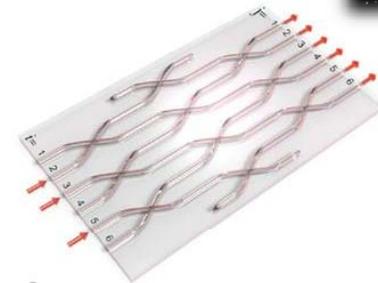
- **Space Weather and Space Situational Awareness (SSA)**

- UK, Norway, Belgium, Germany, & Ireland lead in EU activities
- European Space Agency funds significant research activities



- **Planning & Scheduling (Information Sciences)**

- EU dominating this field at present
- Switzerland, Germany, Israel, & UK lead in activities



- **Quantum Information Science**

- An emerging area of Quantum Photonics
- Major advances through EU research centers
- Oxford, Bristol, Heriot-Watt (UK) & U. Vienna (Austria)

- **Ultraintense and Ultrafast Laser Physics**

- Europe leads world in Ultra-High Intensity Laser research





# Scientific Strategic Drivers--AOARD



**Why:** Strong economy, w/ growing Investments in Information, Space, Nano, & other Sciences.

**What:** Hypersonics  
Aero. and Info. Sciences  
Nano and Bio Technologies



Australia

**Why:** Large S&T Investment in Nanotechnology.

**What:** Nanoscience & Materials  
Brain Science & Molecular Biology



Korea

**Why:** 3<sup>rd</sup> Largest economy and publisher of S&T papers. Growing emphasis in green innovation.

**What:** Green Innovation Energy  
Machine Cognition  
Theoretical Materials Sciences



Japan

**Why:** Converging Research Activities w/ U.S. in Nanosciences.

**What:** Nanotechnology  
NanoBiotechnology  
Information Technology



Taiwan

**Why:** Increasing Investment in Basic Research.

**What:** Information Technology  
Aero & Material Sciences  
Bio-Inspired Flight



India

**Why:** Gross Domestic Expenditures on R&D expected to reach 3.5% of GDP in 2012. Interconnected S&T community.

**What:** Biotechnology  
Information Sciences  
Physical Sciences



Singapore

**Why:** 2<sup>nd</sup> Largest Publisher of S&T papers. Strong in broad range of S&T areas.

**What:** Materials Science  
Power & Energy  
*\*Limited direct engagement*



China



# Scientific Strategic Drivers--SOARD



**Why:** Strong human behavior/social sciences, and applied mathematics

**What:** Cognitive science/decision making  
Theoretical Physics  
Cyber



Argentina

**Why:** 8<sup>th</sup> Largest GDP and growing economy and publisher of S&T papers in Latin Am. Leader in bio-fuel research. 3<sup>rd</sup> largest Aero-industry in the world (EMBRAER)

**What:** Aero and Material Sciences  
Bio-energy  
Hypersonic  
Mathematics  
Space Sciences



Brazil

**Why:** Geographically located under magnetic equator and site world-class radio observatory.

**What:** Space Science



Peru

**Why:** Strong economy and highest GDP/capita in Latin Am. High Mts and dark skies are home of world-class space observatories. Geography (driest desert, geothermal activity, and Antarctica) provide unique variety for bio studies. Abundant mineral resources.

**What:** NanoBiotechnology/Extremophiles  
Material Sciences  
Physical Sciences  
Space Sciences



Chile

**Why:** Second largest investor in S&T in Latin Am. 11<sup>th</sup> largest GDP in world. Growing S&T investment in National Laboratories system for graduate students research

**What:** Material Sciences  
Nanotechnology  
Energy Storage



Mexico



# ION Programs



- **Engineer & Scientist Exchange Program**

- AF currently has 4 (soon to be 10) abroad, and hosting 4

- **Window-on-the-World (WOW)**

- 7 participants to 6 different countries in FY12



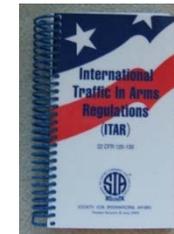
- **Data Mining**

- Developing methods to leverage site visits & conferences



- **Tech Security**

- AFOSRI 61-3, ITAR – EAR training, FDO



- **DC Area IO Representative**

- Developing ties and leveraging initiatives with other DC agencies
- Developing new initiatives with local PO's
- Interface to DC embassies
- AFOSR host to visiting international delegations





# AFOSR Space Group



## **Develop & Coordinate World-wide Strategy and Investments in Basic Space Science and SSA**

### **Members:**

- **Lt Col Barry Behnken, ION**
- **Lt Col Kevin Bollino, IOE/EOARD**
- **Dr. Tom Caudill, IOE/EOARD**
- **Mr. Jim Fillerup, IOS/SOARD**
- **Dr. Kent Miller, RTB – AFOSR Tech Area Lead**
- **Dr. Rengasamy Ponnappan, ION**
- **Dr. Ingrid Wysong, IOA/AOARD – Space Group Facilitator**

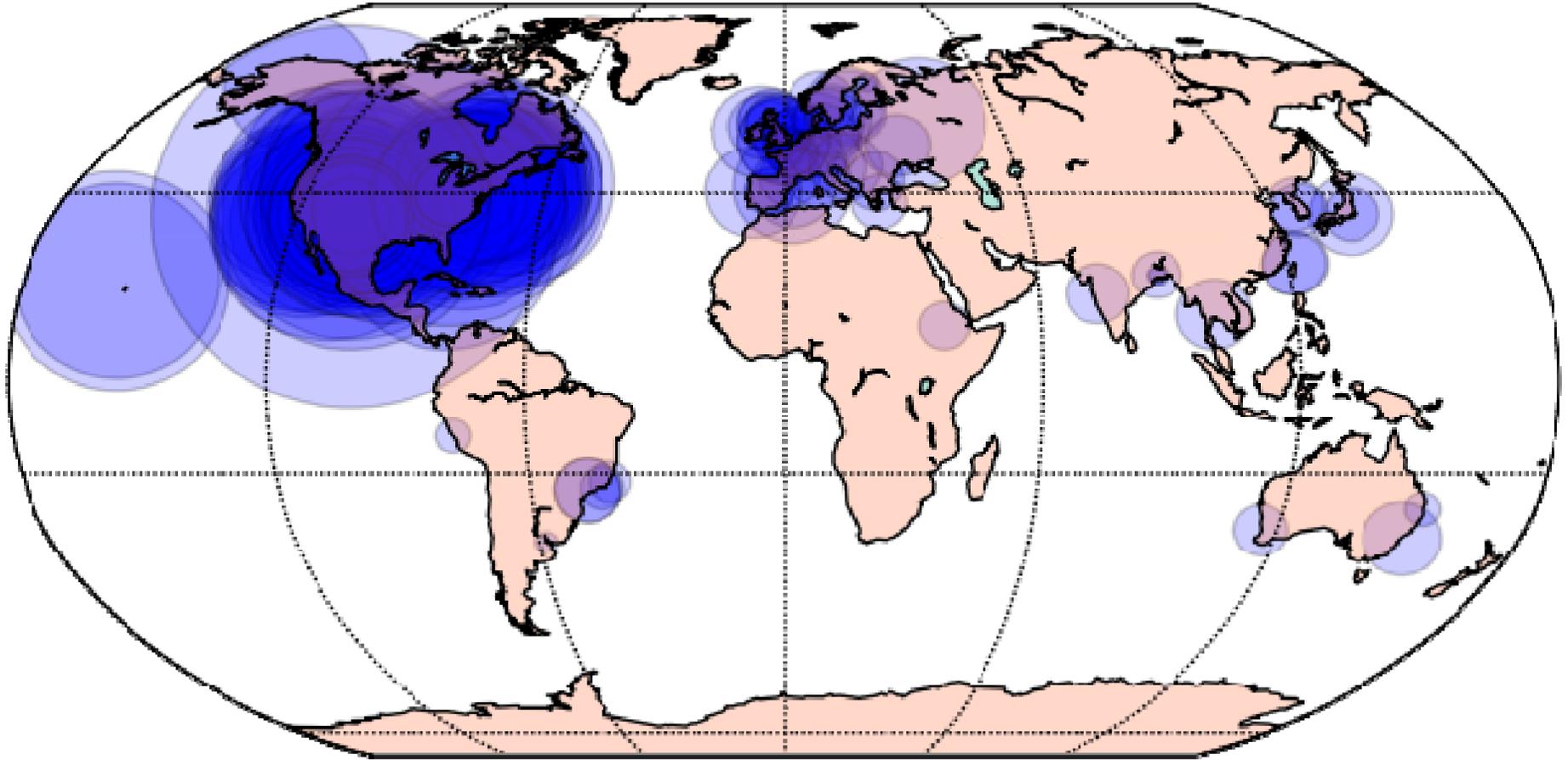
### **Share information, monthly virtual meetings and documents folder:**

- **TD interests and research needs**
- **Awareness by all of existing and planned grants, Other agency activities**
- **Worldwide science state-of-the-art, Data mining**

### **Develop Topics for next research focus areas**



# AFOSR Space Group projects: Worldwide



This includes all grants (traditional, conferences, YIP, lab tasks, AFIT, AFA, STTR, DURIP) active since 1 Jan 2012. Both FY2012 and FY2013 money.



## Strategy, cont.



- **IO strategy will try to combine a bottoms-up and top down approach; i.e., Global Horizons, AF/ST**
- **Ultimately, some regular assessment of progress is required**
- **Measuring progress will be challenging**

***Limited IO resources make it imperative we spend them where potential payoff is highest***



# Plans for remainder of FY13



- **Standardization, where appropriate, of IO practices**
  - **Communication, People, Planning, Tasking, Tracking**
  - **Already seeing progress in Windows on Science and financial processes**
- **Retuning all of our roles—*strategy, awareness, access***
  - **Overseas--IOE, IOA, IOS**
    - **Know your AOR, science and how it fits into a global picture**
  - **Arlington--ION**
    - **combining old and new tasks to best support all of IO**
    - **ESEP, WOW, international agreements, developing international initiatives, “1-800-AFOSR international”**
    - **external/internal communication, engagement within DC, data mining, ‘hard drive’ for IO**





- **Questions?**
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