Introduction to the Office of Naval Research Global

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Why Support Basic Research?

- Defense funding of basic research is *normal* in the United States

- "Basic research leads to new knowledge. It provides scientific capital. It creates the fund from which the practical applications of knowledge must be drawn. New products and new processes do not appear full-grown. They are founded on new principles and new conceptions, which in turn are painstakingly developed by research in the purest realms of science." – Vannevar Bush, *Science: The Endless Frontier,* 1945

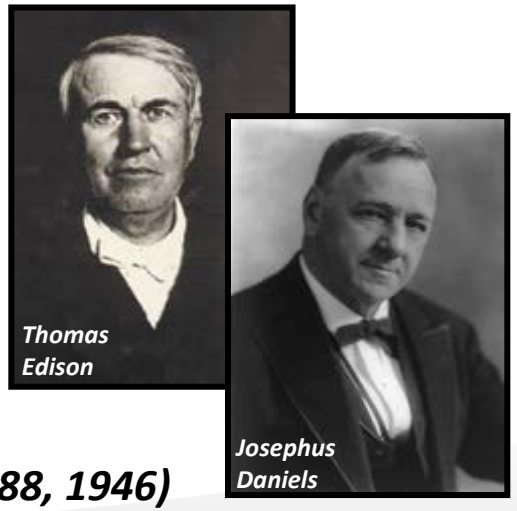
- DoD Basic Research Funding Model
  - Fund a broad range of topics
  - A mix of universities and public and private institutes
  - Independence of researchers
  - Researchers retain intellectual property
  - Free publication of results encouraged

Funding Agency	US$
National Institutes of Health	15,537.5
National Science Foundation	4,476.4
Department of Energy	4,075.3
NASA	3,038.1
Department of Defense	1,983.5
Department of Agriculture	940.9
All Other	1,161.5
Total Basic Research	**31,213.1**

The Naval Research Enterprise

Naval Research Laboratory ***(Appropriations Act, 1916)***

"[Conduct] exploratory and research work…necessary …for the benefit of Government service, including the construction, equipment, and operation of a laboratory…."



Office of Naval Research ***(Public Law 588, 1946)***

"…plan, foster, and encourage scientific research in recognition of its paramount importance as related to the maintenance of future of naval power, and the preservation of national security…"

The Naval Research Enterprise

- Funding agencies
  - Office of Naval Research
  - ONR Global
- Research Labs
  - Naval Research Laboratory
- Medical Research Labs
  - Naval Health Research Center
  - Naval Medical Research Center
  - Naval Medical Research Units (*including NAMRU-6 in Lima, Peru*)
  - Naval Submarine Medical Research Laboratory
  - Navy Experimental Diving Unit
- Development Centers
  - Applied research and advanced technology development
  - Focused on specific spatial domains: aviation, submarine, surface, etc.

ONR has Supported more than 60 Nobel Prize Winners

Andre Geim

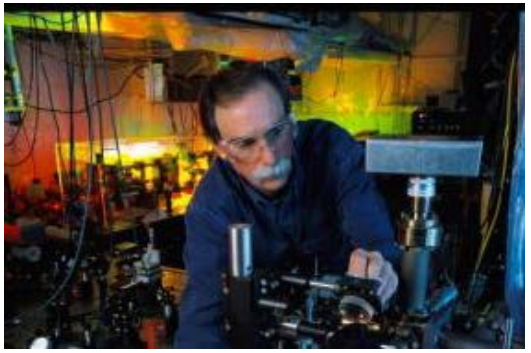
University of Manchester, UK

2010 Nobel Prize in Physics "for groundbreaking experiments regarding the two-dimensional material graphene"

David Wineland

University of Colorado, USA

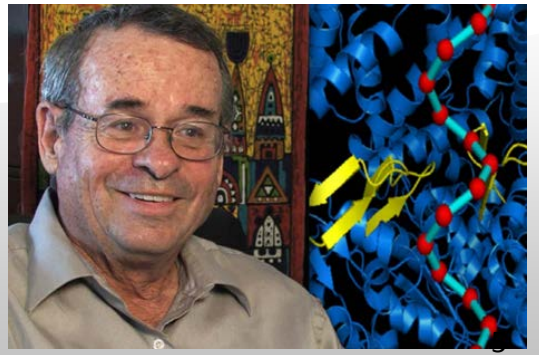
2012 Nobel Prize in Physics "for ground-breaking experimental methods that enable measuring and manipulation of individual quantum systems."



Arieh Warshel

University of Southern California, USA

2013 Nobel Prize in Chemistry "for the development of multiscale models for complex chemical systems"



ONRG Mission

- Search the globe for promising scientific research
- Develop relationships between international researchers and the Naval Research Enterprise
- Support the advancement and dissemination of scientific knowledge
- Fund research at foreign institutions

Why ONRG?

- There are smart people everywhere – no nation has a monopoly on good scientists
- Although US spending on S&T is not decreasing, the US *share* of global S&T spending is decreasing rapidly
- Increased opportunity to find innovative S&T around the globe
- Scientific collaboration is good diplomacy

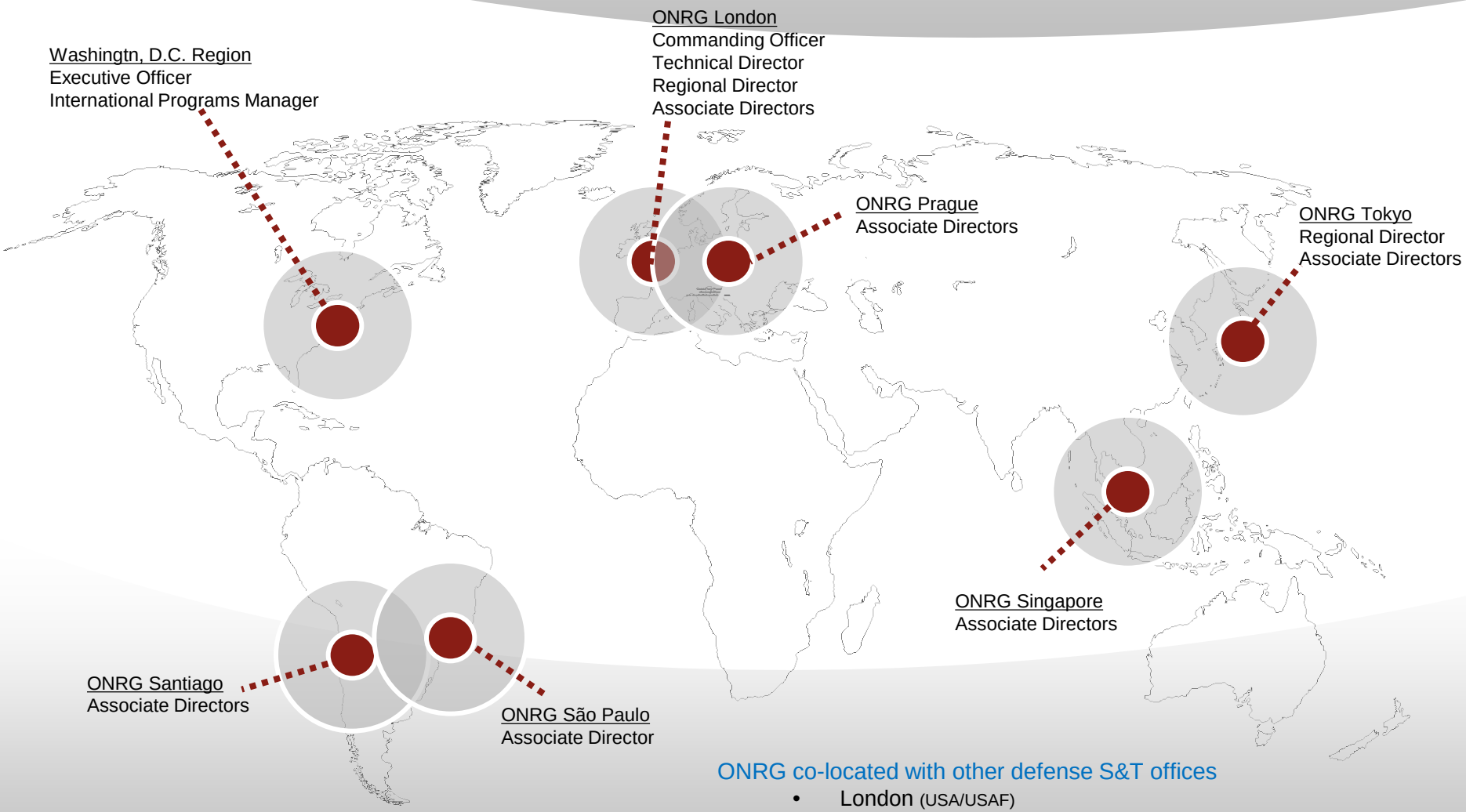
ONRG History

- 1946 – ONR **London Office** created to survey, assess, and report on European S&T activities
- 1974 – ONR **Tokyo Office** opened to liaise and assess Asian S&T activities
- 1977 – ONR London and Tokyo Offices combined to form the **International Field Office** (IFO) to implement integrated DoN S&T strategy for fostering international collaboration
- 2000 – Tokyo Office expands its presence with a Singapore detachment
- 2002 – IFO opens **Santiago Office**
- 2003 – **Office of Naval Research Global** established
- 2006 – ONRG opens **Singapore Office**
- 2010 – ONRG opens **Prague Office**
- 2014 – ONRG opens **São Paulo Office**

Who is ONRG?

- 25 Associate Directors distributed around the globe
  - Diverse scientific backgrounds
    - Aerospace Engineering, Fluid Mechanics, Human Factors, Marine Geosciences, Materials Science, Mathematics, Meteorology, Neuroscience, Ocean Acoustics, Oceanography, Physics, Power & Energy, Radar, Naval Architecture, Signal Processing, Systems Engineering
  - Competitively recruited from US defense labs, academia and industry
  - Each AD has both technology-specific and country-specific areas of responsibility

ONRG Around the World



ONRG co-located with other defense S&T offices

- London (USA/USAF)
- Tokyo (USA/USAF)
- Santiago (USA/USAF)
- Singapore (USA only)

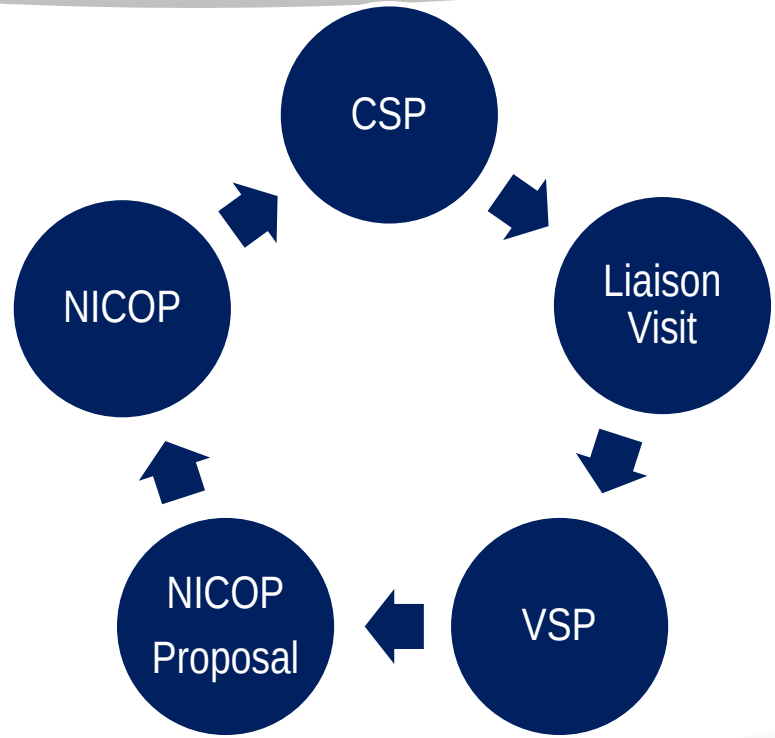
Science Program Tools

Liaison Visits
- ONRG Associate Directors visit international institutions to discover world-class S&T

Collaborative Science Program (CSP)
- Grants to support non-US workshops and conferences

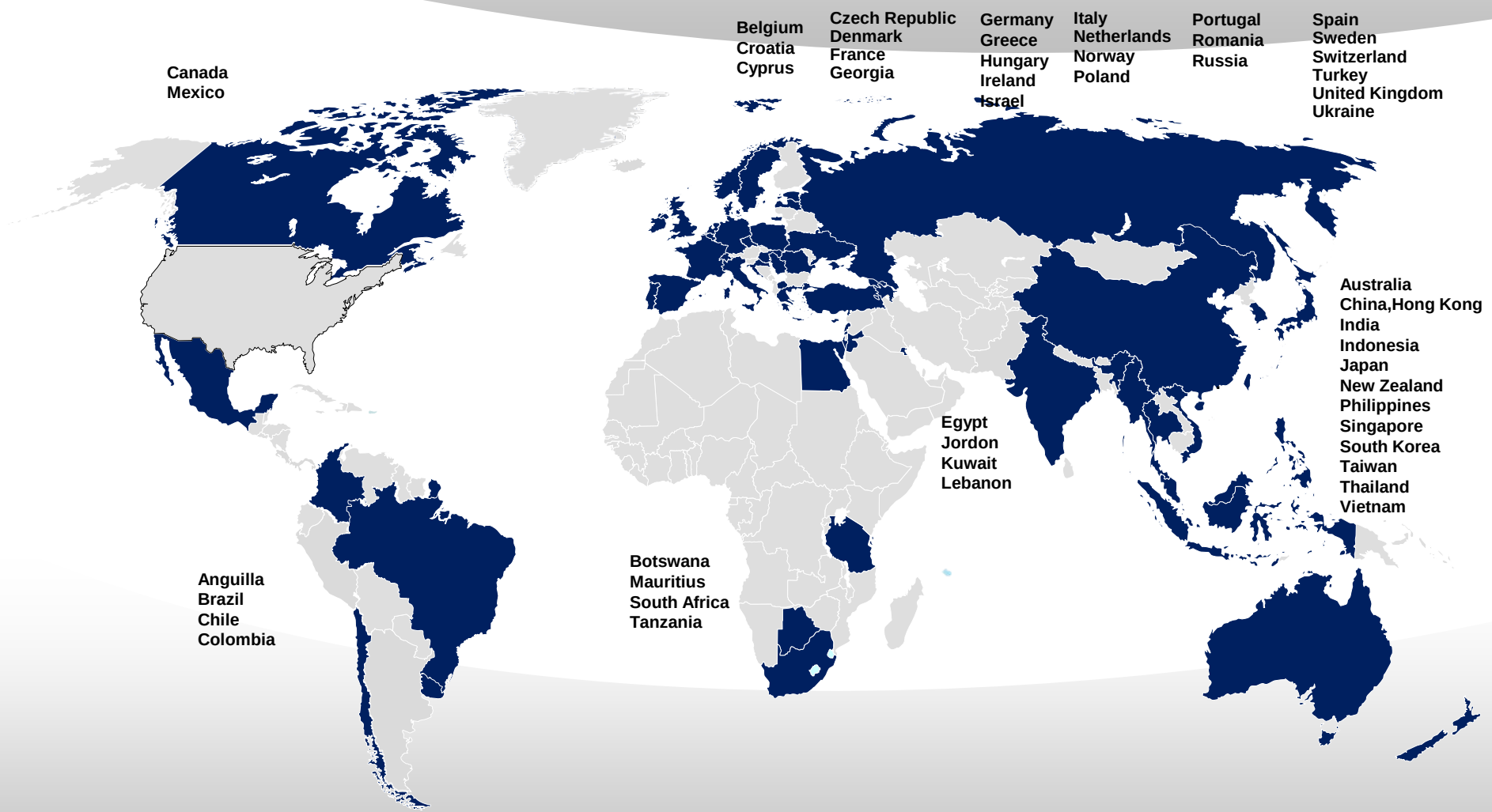
Visiting Scientist Program (VSP)
- Support travel of non-US scientists to US to socialize new research ideas with the Naval Research Enterprise

Naval International Cooperative Opportunities Programs (NICOP)
- Research grants to overseas institutions
- Typically 1-3 year projects



ONRG provides seed funding for innovative research

2013 Grants Distribution



432 Grants in 52 Countries Totaling $13.7 Million

ONRG Areas of Interest

Alternative Energy	Energetic Materials	Marginal Ice Zone Dynamics	Ocean Acoustics	Space Weather
Antifouling	Energy Distribution & Storage	Marine Mammals	Ocean/Atmospheric Modeling	Stress Physiology
Artifical Intelligence	Fatigue Management	Marine Meteorology	Ocean Engineering	Structural Materials
Autonomous Vehicles	Fuels	Metamaterials	Photonics	Synthetic Biology
Bulk Nanostructured Materials	Functional Materials	Microbial Fuel Cells	Physical Oceanography	Thermal Management
Climate Change	Gut Microbiology	Multi-Scale Modeling	Precision Navigation & Timing	Training & Education
Composite Materials	Human Performance	Nanoscience/Nanotechnology	Propulsion Systems	Traumatic Injury
Computational Fluid Dynamics	Human-Robot Interaction	Neural Computation	Quantum Computing	Ultra-High-Temperature Materials
Control Systems	Hypersonics	Noise-Induced Hearing Loss	Radar	Undersea Medicine
Decision Making	Lasers	Non-Destructive Evaluation	Sensors	Water Desalinization/Purification
Electrochemistry	Littoral Geosciences	Nonlinear Dynamics	Social Networks	Wave Processes in the Arctic

How to Apply for a Grant

- Send me a 1-3 page white paper
  - Explain what you want to do
  - How much it will cost
  - Why it is important
- If I think it's a good fit, I will try to find co-funding from the Naval Research Enterprise and/or other agencies
- If this is successful, I will ask for a full proposal and send instructions on how to submit it

Other International Funding Opportunities

- US Air Force
  - Southern Office of Aerospace Research & Development (Santiago)

- US Army
  - RFEC Americas
    - Santiago
    - Buenos Aires
    - São Paulo (coming soon – 2015)

Questions?

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