



Preparing for an Uncertain Future: Defense Basic Research and Minerva

**Peacekeeping and Stability Operations Education Wksp
14 Apr 2015**

Erin Fitzgerald, Ph.D.
Program Director, Minerva Research Initiative
OSD-AT&L / ASD(R&E) Basic Research Office
OSD Policy / Strategy and Force Development
erin.c.fitzgerald9.civ@mail.mil



Why DoD Invests in Basic Research

(including basic social science research)



- Basic research probes the limits of today's understanding and technologies and discovers new phenomena and know-how that **ultimately lead to future capabilities.**
- Basic research funding **attracts some of the most creative minds to fields of critical DoD interest.**
- Basic research provides a broad perspective to prevent capability surprise by **fostering a community of U.S. experts** who are accessible to DoD, and who follow global progress in **both relevant areas, as well as those that may not seem relevant — until they are.**



What is the Minerva Research Initiative?



Goal: Improve our understanding of the fundamental social, cultural, and political forces that shape U.S. security interests around the world.

- Defense social science basic research uses **rigorous methodology** to investigate *why* and *how*, versus *who* or *what*, of phenomena such as influence, escalation, and resilience.
 - Supports basic research worldwide, all via grants and entirely unclassified.
- **Initiated in 2008 by then-Secretary Robert Gates**
 - **Aim 1:** Build cultural and foreign area knowledge and insights to inform more effective strategic and operational policy decisions by war planners and warfighters.
 - **Aim 2:** Revitalize DoD's connections w/ humanities & soft sciences with the academic social science community.



Minerva is a Department-wide effort



- **Scientific Coordination**

- **Service research organizations** execute and manage Minerva research.
- Service and Joint **military education institutions** conduct Minerva Research for Defense Education Faculty (R-DEF) research.
- **Interagency** coordination with sociocultural research programs at NSF, DHS, DOJ, IARPA, DARPA, and the UK Research Councils.

- **Policy & Operational Community Connections**

- **OSD Policy** (e.g. Strategy, SO/LIC, Cyber Policy, Middle East, African Affairs)
 - Minerva Steering Committee co-chaired by *DASD for Strategy* in OSD Policy and *Director for Basic Research* in OSD/AT&L/Research & Engineering
 - Staff serve as advisors, reviewers, and potential customers for Minerva research outputs.
- **COCOMs** and **Joint Staff**: Contribute to topic development, hold joint workshops with Minerva researchers; potential customers for Minerva research outputs.
- Minerva researchers serve as subject matter experts for studies supporting **Joint Staff** and **COCOM** needs (e.g. via Strategic Multilayer Assessments)
- Minerva serves as a resource for the **IC-wide** Socio-Cultural Analysis Activity
- Researcher briefings requested throughout DoD, IC, State, USAID



Social science to inform tomorrow's key security decisions



FY 15 Topics

Identity, Influence, and Mobilization

- Culture, identity, and security
- Belief formation and influence
- Mobilization for change

Example Applications

Terrorism, Revolutions

Contributors to Societal Resilience and Change

- Governance and rule of law
- Resources, economics, and globalization
- Population and Demographics
- Migration and Urbanization

Stability Ops, Arab Spring 2.0

Power and Deterrence

- Power projection and diffusion
- Beyond conventional deterrence

China, Cyber, Emerging powers

Emerging Topics

- **Analytical Methods and Metrics**
- **Additional Topics**

BAA topics **updated annually** to target knowledge gaps most critical for the warfighter, the force planner, and national security policy development



Research Selection Process



- **Evaluation Criteria:**
 - **Scientific Merit**
 - **Relevance**
 - Impact
 - Researcher qualifications
 - Cost-Value ratio
- **Submissions reviewed by panels of**
 - Defense S&T program managers
 - **Defense policy and operations experts***
 - DoD-external academics
- **Final decisions made by OSD leadership based on panel inputs, balance, etc.**

* Always seeking volunteers! Help us shape future social science research!



Thrust #1: University-Led Minerva Research



- **Funded research**
 - 16 large consortium teams (five ending)
 - 28 single investigator/ small team projects (four ending)
 - **42 ongoing university research efforts**
- **Highly competitive**
 - In FY14 there were 260 initial proposals, 60 full proposals, and 12 awards
 - FY15: **300** initial proposals; **8-10** awards anticipated
- **Broad topic and regional coverage**



Thrust #2: Research for Defense Education Faculty (R-DEF)



Research support for teaching faculty
at participating PME and defense academies

- **Goals:**

- Connect social science insights and methods to current and future defense leadership to inform tomorrow's key security decisions.
- Invest in those educating our future military and national security leaders.
- Incentivize new policy-relevant, social science research in our PMEs.
- Connect PMEs with DoD policy makers to the benefit of both.

- **R-DEF Award Types:**

- **Research Support:** Semester/year awards (up to \$80,000) offer existing PME teaching faculty the resources and time (e.g., via course buyouts) to conduct scholarly research in topics of Minerva interest.
- **Auxiliary Support:** Funds important but smaller dollar research needs like conference funding to facilitate research outreach with the academic community.

- **FY14 pilot:** 22 proposals from nine PMEs; 14 awards ranging from \$5k to \$80k

- **FY15 competition:** Being reviewed with same criteria as university awards



University-Led Minerva Research: 2014 Minerva Award Selectees

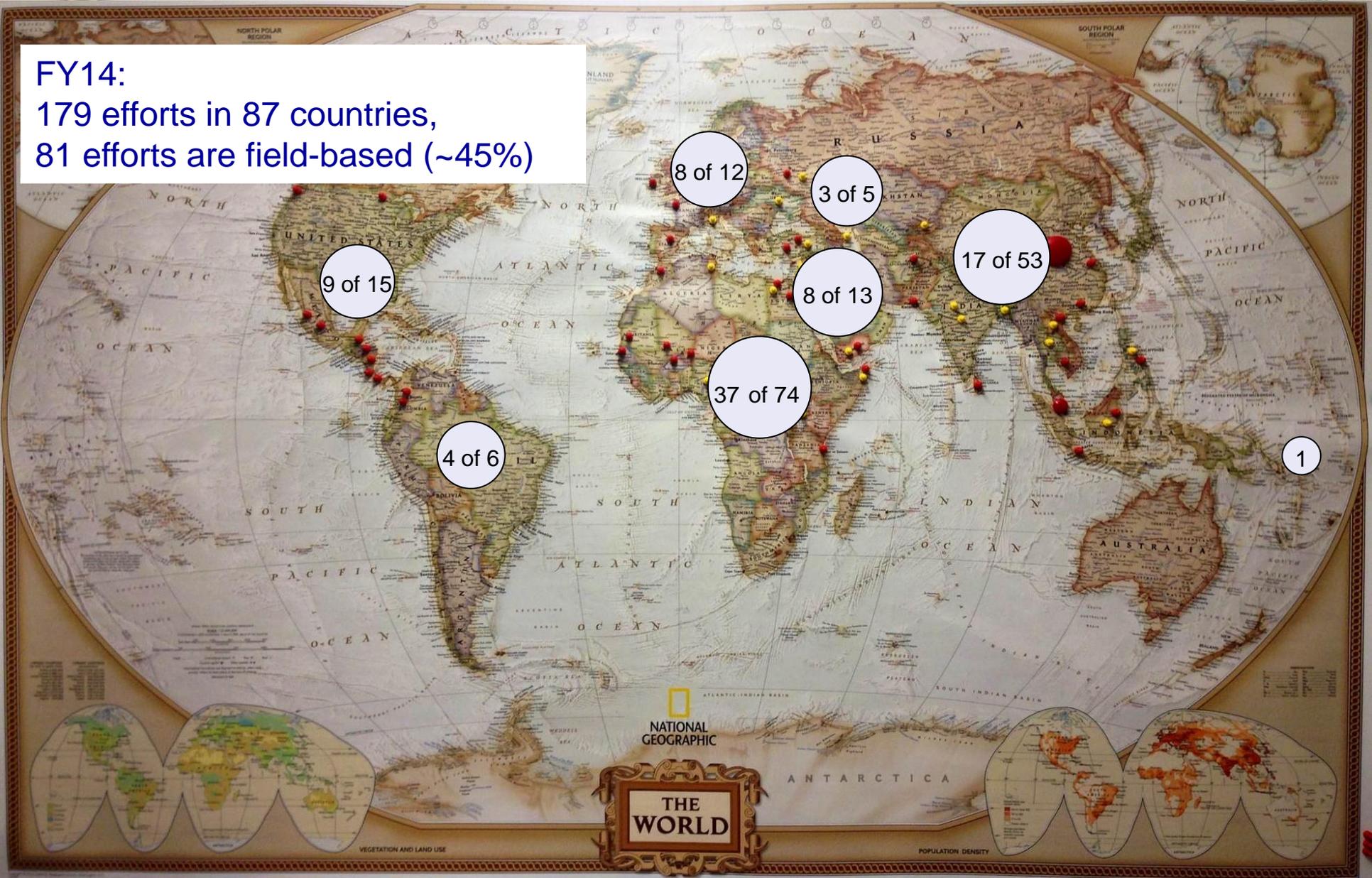


Lead Institution	PI	Title
Australian National Univ	John Blaxland	Thailand's Military, the USA and China: How the Thai Military Perceives the Great Powers and Implications for the US Rebalance
Columbia Univ	Robert Jervis	Culture in Power Transitions: Sino-American Relations in the 21st Century
Cornell Univ	Michael Macy	Tracking Critical-Mass Outbreaks in Social Contagions
Texas A&M U	Valerie Hudson	Household Formation Systems, Marriage Markets, and Societal Stability/Resilience
Univ of Denver	Jonathan Moyer	Taking Development (Im)balance Seriously: Using New Approaches to Measure and Model State Fragility
Univ of Maryland	Paul Huth	Aiding Resilience? The Impact of Foreign Assistance on the Dynamics of Intrastate Armed Conflict
U Mass – Lowell	Mia Bloom	Preventing the Next Generation: Mapping the Pathways of Child Mobilization into Violent Extremist Organizations
U Mass – Lowell	John Horgan	American Muslim Converts in the Contexts of Security & Society
Univ of Memphis	Leah Windsor	Political Crisis and Language
U of Washington	Stephen Kosack	Understanding the Origin, Characteristics, and Implications of Mass Political Movements
UC San Diego	Eli Berman	Deterrence with Proxies
UT Austin	Josh Busby	Complex Emergencies and Political Stability in Asia



Global Coverage

FY14:
179 efforts in 87 countries,
81 efforts are field-based (~45%)





Measuring Program Success



- **Knowledge generation**

- 100s of **peer-reviewed publ'ns**
- 100s of **policy publ'ns, op/eds, and press interviews; 12 books**
- 32 research-organized **workshops and training seminars**
- Building **roadmap to transition** insights to leadership
 - PME curricula, tabletop exercises – efforts in progress
- Briefings and consultation to **senior civilian & military leadership**
 - NSA Director, PACOM Cmdr, PACFLEET Cmdr, US Security Coord for Israel/Pal'n Authority, National Security Staff, House of Lords (UK Parliament),...

- **Building communities**

- Half of proposers are **new contributors to DoD research**
- 22 **new Ph.Ds trained** through Minerva research now at universities, nonprofits, government.
- **Researchers entering government** (civilian and political positions)

- **Decision support**

- **Evidence of leader + operator decisions informed by Minerva insights.**



Some Minerva Insights with Defense Impact



- Learned **small-scale conditional aid reduces violence**; **large-scale aid** distributed regardless of who controls territory **does not**.
Cited, with three other team findings, in **Senate Foreign Relations** committee report 112–21 on *Evaluating U.S. Foreign Assistance to Afghanistan*
- Identified **innovation drivers and key trends in the Chinese defense economy** based on open source Chinese documents and interviews, helping to better understand the reform and the pace of modernization in China's defense industry.
Briefed and concepts shared with ADM Samuel Locklear, **Commander, PACOM** in January 2014.
- Developed a **metric** empirically characterizing **tribal cohesiveness**, which appears to be a predictor of the susceptibility of those tribes to Al Qaida influence in Africa.
Briefing requested at Dec 2010 **joint workshop** with **SOCOM**, resulting in operational recommendations.
- Built and publicly released **Mapping Tool** using geospatial technology to analyze how **African communities are vulnerable to climate change**, understand links between climate change and conflict, and assess the effectiveness of targeting international responses.
Minerva Climate Change and African Political Stability team was selected for 2013 ESRI award for Special Achievement in GIS. The tool and several CCAPS datasets are used by **AFRICOM J2**.



Ways to engage



- **Contribute ideas** for future topics (every ~March)
- Help to **review proposals** and select future research
- Attend reviews of ongoing research to help **course-adjust research aims** as appropriate
- Sign up for **Minerva announcements** of research output.
- Attend Minerva Meeting & Program Review to **meet + exchange with researchers** (DC every September)



osd.minerva@mail.mil

@DoDMinerva

<http://minerva.dtic.mil/>

QUESTIONS?



FY09-13 Consortia

(bold: no-cost extensions of performance period)



Mapping the Diffusion and Influence of Counter-Radical Muslim Discourse (complete)	Arizona State University
Explorations in Cyber International Relations	MIT-Harvard
Iraq's Wars with the US from the Iraqi Perspective (complete)	Monterey Institute of International Studies
Terrorism, Governance, and Development	Princeton University
Emotion and Intergroup Relations	San Francisco State University
The Evolving Relationship Between Technology and National Security in China	UC San Diego
Climate Change and African Political Stability	UT Austin



Previously funded research: FY09-11 Small Team Efforts



Mapping genealogies of militant groups <i>(Stanford University)</i>	Predicting the nature of conflict: An evolutionary analysis of tactical choice <i>(Virginia Commonwealth University and Virginia Military Institute)</i>
Strategies of violence, tools of peace, and changes in war termination <i>(Columbia University)</i>	
Fighting and bargaining over political power in weak states <i>(UC-Berkeley)</i>	Status, manipulating group threats, and conflict within and between groups <i>(University of Guelph and Indiana U)</i>
Alternative models of conflict bargaining <i>(UVA, U Mississippi and SUNY – Binghamton)</i>	Modeling dynamic violence: Integrating events, data analysis, and computational modeling <i>(College of William and Mary, UNC-Charlotte, U of Georgia, Southern Illinois U-Carbondale, and BYU)</i>
Behavioral insights into national security issues <i>(UT-Dallas and UVA)</i>	
The strategic limits and potential of public diplomacy in U.S. national security policy <i>(USC)</i>	How politics inside dictatorships affects regime stability and international conflict <i>(UCLA and Penn State)</i>
Avoiding water wars: Environmental security through river treaty institutionalization <i>(U Georgia)</i>	Deciphering civil conflict in the Middle East <i>(Ohio State University)</i>
Modeling discourse and social dynamics in authoritarian regimes <i>(Cornell, U Memphis, and UT-Austin)</i>	People, power, and conflict in the Eurasian migration system <i>(Social Science Research Council, U Arizona, Kennan Institute, U Maryland, Moscow State University)</i>



FY12-14 Awards

(Research began June-Dec 2012)



<p>Uncovering the Motivational, Cognitive, and Social Elements of Radicalization and Deradicalization <i>(Lead: UMD; five-year effort)</i></p>	<p>China's Emerging Capabilities in Energy Technology Innovation and Development <i>(Brown)</i></p>
<p>A Global Value Chain Analysis of Food Security and Food Staples for Major Energy-Exporting Nations in the Middle East and North Africa <i>(Duke U)</i></p>	<p>Identifying and countering early risk factors for violent extremism among Somali refugee communities resettled in North America <i>(Lead: Harvard)</i></p>
<p>Strategic Response to Energy-related Security Threats <i>(U of Vermont)</i></p>	<p>Autocratic Stability During Regime Crises <i>(Lead: Penn State)</i></p>
<p>Political Reform, Socio-Religious Change, and Stability in the African Sahel <i>(U Florida)</i></p>	<p>Brazil's Military-Scientific-Industrial Complex and its Foreign and Defense Policy <i>(Lead: UC San Diego)</i></p>
<p>Terrorist Alliances: Causes, Dynamics, and Consequences <i>(Lead: U Michigan)</i></p>	<p>Quantifying Structural Transformation in China <i>(UC San Diego)</i></p>



FY13-15 Awards

(Research began June-Dec 2013; bold indicates possible five yrs)



<p>Deterring Complex Threats: The Effects of Asymmetry, Interdependence, and Multi-polarity on International Strategy (<i>Lead: UCSD</i>)</p>	<p>The Strength of Social Norms Across Cultures: Implications for Intercultural Conflict and Cooperation (<i>Lead: U Maryland</i>)</p>
<p>Public Service Provision as Peace-building: How do Autonomous Efforts Compare to Internationally Aided Interventions? (<i>Lead: NPS</i>)</p>	<p>The Human Geography of Resilience and Change: Land Rights and Political Stability in Latin American Indigenous Societies (<i>Lead: U Kansas</i>)</p>
<p>Multi-Source Cyber-Based Assessments of State Stability (<i>Lead: Carnegie Mellon</i>)</p>	<p>Natural Resources and Armed Conflict (<i>Lead: UNC Charlotte</i>)</p>
<p>METANORM- A Multidisciplinary Approach to the Analysis and Evaluation of Norms and Models of Governance for Cyberspace (<i>Lead: MIT</i>)</p>	<p>Political Reach, State Fragility, and the Incidence of Maritime Piracy: Explaining Piracy and Pirate Organization, 1993-2012 (<i>Lead: U Tennessee</i>)</p>
<p>Dynamics of Sacred Values + Social Responsibilities (<i>Lead: New School for Social Research</i>)</p>	<p>Who Does Not Become a Terrorist, and Why? Towards an Empirically Grounded Understanding of Individual Motivation in Terrorism (<i>Lead: NPS</i>)</p>
<p>Moral Schemas, Cultural Conflict, and Socio-Political Action (<i>Lead: U Iowa</i>)</p>	<p>Neural Bases of Persuasion and Social Influence in the U.S. and the Middle East (<i>Lead; UCLA</i>)</p>
<p>Homeownership and Societal Stability: Assessing Causal Effects in Central Eurasia (<i>Lead: U Wisconsin</i>)</p>	<p>Forecasting civil conflict under different climate change scenarios (<i>Lead: U Maryland</i>)</p>



FY14-16 Awards

(Research began June-Dec 2014; bold indicates possible five yrs)



Lead Institution	Title
Australian National Univ	Thailand’s Military, the USA and China: How the Thai Military Perceives the Great Powers and Implications for the US Rebalance
Columbia Univ	Culture in Power Transitions: Sino-American Relations in the 21st Century
Cornell Univ	Tracking Critical-Mass Outbreaks in Social Contagions
Texas A&M U	Household Formation Systems, Marriage Markets, and Societal Stability/Resilience
Univ of Denver	Taking Development (Im)balance Seriously: Using New Approaches to Measure and Model State Fragility
Univ of Maryland	Aiding Resilience? The Impact of Foreign Assistance on the Dynamics of Intrastate Armed Conflict
U Mass – Lowell	Preventing the Next Generation: Mapping the Pathways of Child Mobilization into Violent Extremist Organizations
U Mass – Lowell	American Muslim Converts in the Contexts of Security & Society
Univ of Memphis	Political Crisis and Language
U of Washington	Understanding the Origin, Characteristics, and Implications of Mass Political Movements
UC San Diego	Deterrence with Proxies
UT Austin	Complex Emergencies and Political Stability in Asia