Homeland Security – Global Threats Are Local Threats

"Before me things create were none*, save things Eternal, and I endure.
All hope abandon ye who enter here."

Dante Alighieri

* Dante sees the uncommitted people who had done nothing during their life to avert consequential disasters!

DHS - HSARPA

- HSARPA, DHS S&T arm, supports the research to develop advanced systems that will assure future homeland security
- Mandated areas of research:
  - Borders and Maritime Security
  - Chemical and Biological Defense
  - Cyber Security
  - Explosives
  - Human Factors and Behavioral Sciences
  - Infrastructure Protection and Disaster Management
- It may be time to think of homeland security in a more global context since threats (man-made and natural) beyond the borders of the US are indivisible from local dangers in their effect on our nationals
- Broad remit would take in a global perspective – include extra-terrestrial – DHS provides single point leadership and coordination that is otherwise not presently clear in an ad hoc spread of responsibilities – HSARPA mandate would expand

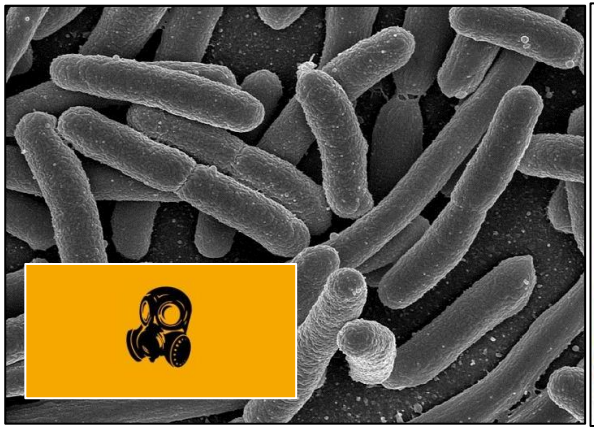
HSARPA – Saving The Homeland/Saving Humanity

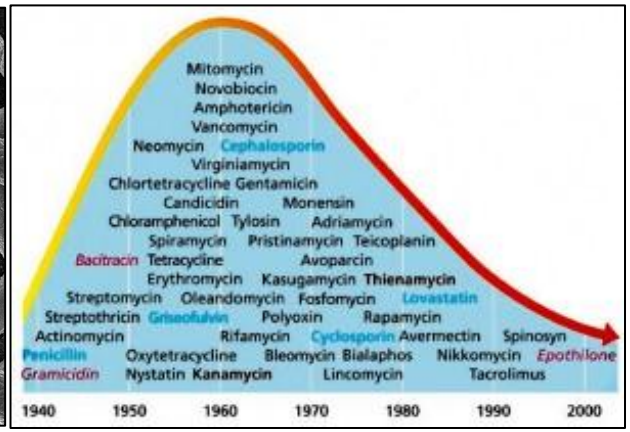
- HSARPA to provide advanced S&T leadership to anticipate potential menaces to our way of life and to develop technical solutions:
  - Man-made
  - Natural disasters
  - Anticipating changes to the present order/change management options
- International Atomic Energy Agency provides recognition of cross border needs, having statutory responsibilities without the weight of a pro-active S&T component (although Labs associated)
- Provide possible solutions and options for change:
  - Establish the nature, scope and likelihood of the threat or event
  - Technical solution options to counter, ameliorate or avert – programs and demonstrations
  - Understand the cost and practicability of technical solutions
  - Identify the need for political solutions
  - International S&T programs
  - Identify operational plans
- Twenty possible threats? Respond with a suite of S&T efforts and integrated strategic planning goals

Twenty Threats

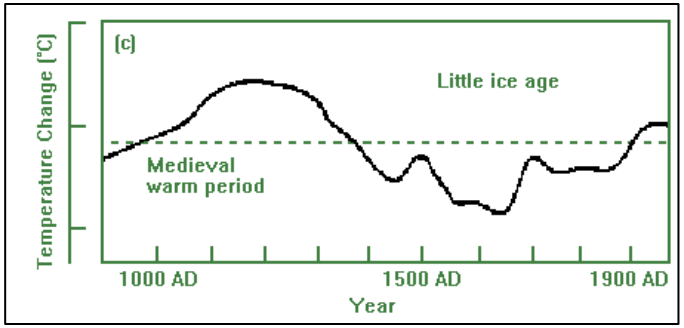
1. Asteroid impact

2. Natural micro-biological threat:
   - Anti-biotics no longer work
   - Pandemic





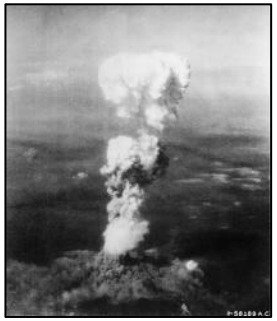
3. Climate change
   - Global warming
   - Rapid Ice Age onset
   - Massive methane release (say, off the coast of CA)



Twenty Twenty Threats

4. Depletion of natural resources
   - Oil
   - Water
   - Minerals and all raw materials

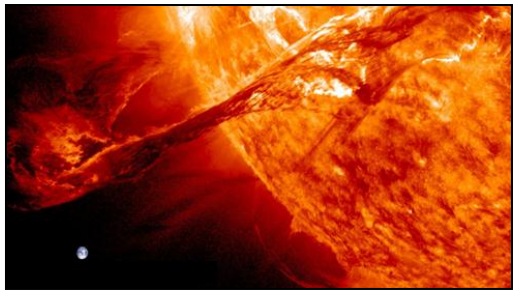
5. Nuclear proliferation – nuclear event
   - Initiated by natural disaster or human error (e.g. Fukushima, Japan)
   - Belligerent use - nuclear weapons

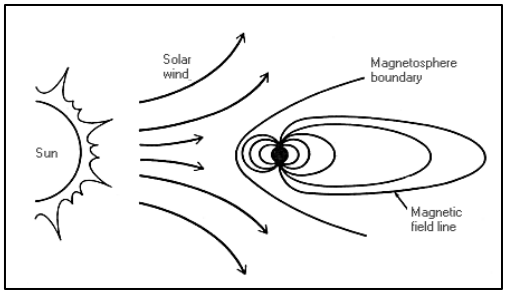


6. World population growth, competition and population collapse:
   - Distribution of wealth
   - Poverty – “have-nots”
   - Radicalism
   - Terrorism
   - Global agricultural failure

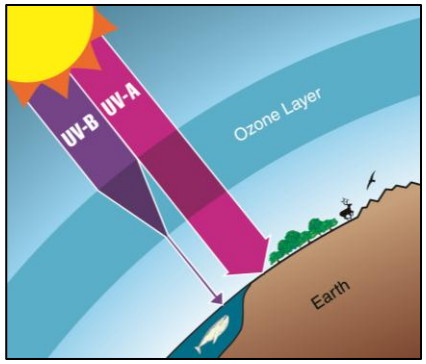
Twenty-One Threats

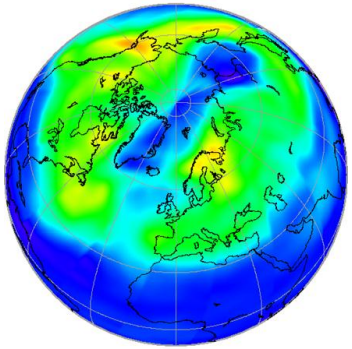
7. Solar flare
   - Radiation
   - Loss of atmosphere
   - Electronics
   - Space



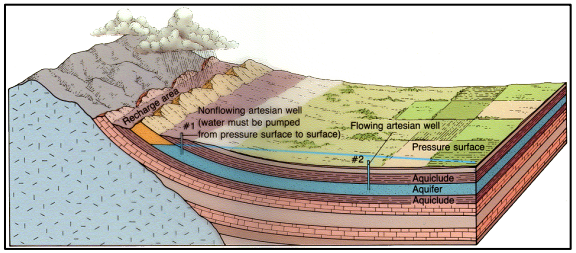


8. Ozone depletion:
   - Flora/fauna die-off



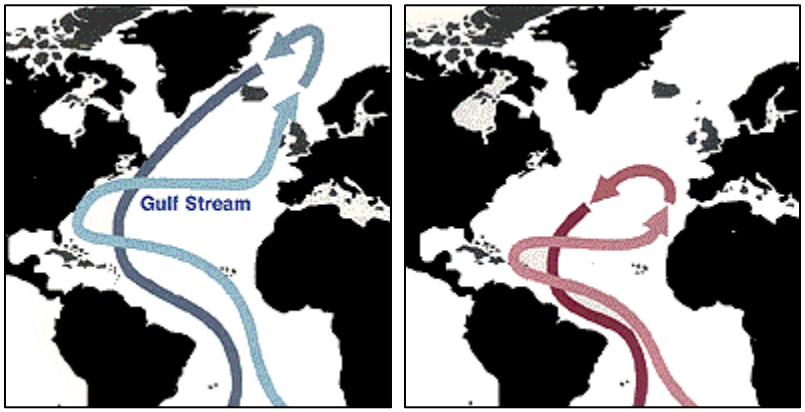


9. Pollution:
   - Oil spill
   - Mining spill
   - CO_2
   - Arctic disruption -
   - Artesian contamination

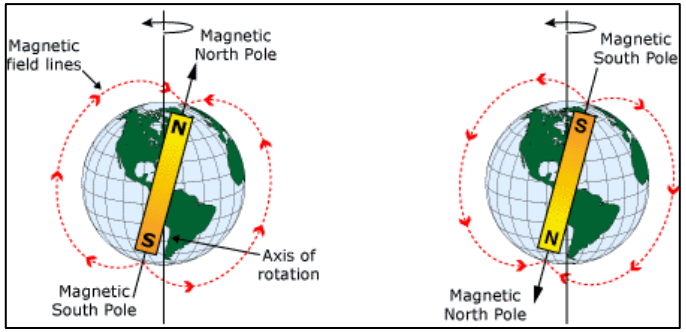


Twenty Threats

10. Shift in ocean currents (e.g. Gulf stream/North Atlantic Drift)



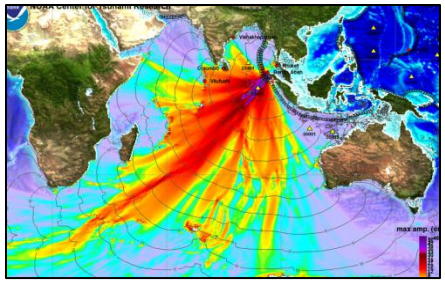
11. Reversal of the magnetic poles
    - Weakening field (radiation exposure)



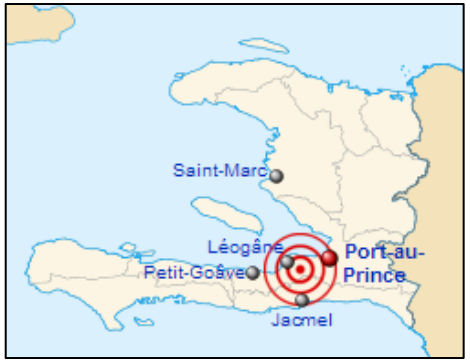
12. WMD – Chemical/Biological first use (e.g. Anthrax)

Twenty Threats

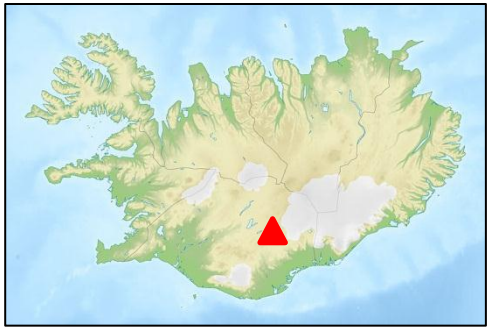
13. Tsunami



14. Earthquake – Haitian event – 300,000 killed



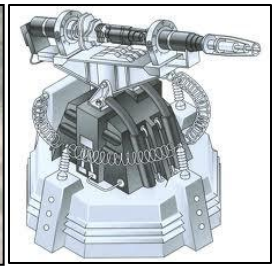
15. Volcanism (1793 Laki Iceland event or Deccan Flats, India)
    - Casualties (Laki – ~25% Iceland population die)
    - Immediate world climate change
    - Geographical change



Twenty Threats

16. Global cyber collapse (e.g. scale of GPS loss to everything)

17. Emergence of a dominant disruptive weapon technology (e.g. Steppe Mongols; new Iron Dome; sci-fi Death Ray)

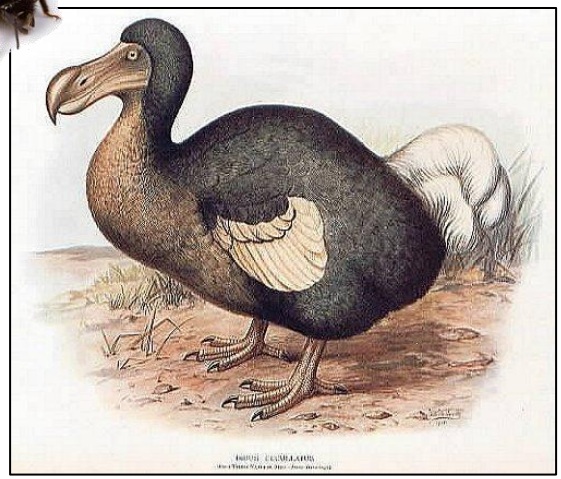


18. Human dignity – developing the American way of life – countering regressive human institutions – slavery, piracy, war-on-women

Twenty Threats

19. Collapse of the world economy

20. Extinction of animal species – and fauna diversity
    - Loss of Bees
    - Collapse fish stocks
    - Loss of bio-diversity



What To Do?

- Identify key threats – natural and belligerent-based
- Strategy-to-task options to address threats:
  - Non-technical
  - Technical
  - No solutions
- HSARPA possible technical solutions:
  - Degree of potential effectiveness
  - Practicability
  - Affordability
  - S&T and Demonstration path
  - Development timeframe/On-the-shelf persistence
  - Use strategy
  - Foreign participation
- In the first instance, the main objective is to provide more mature options for political consideration

Preparing For The Worst

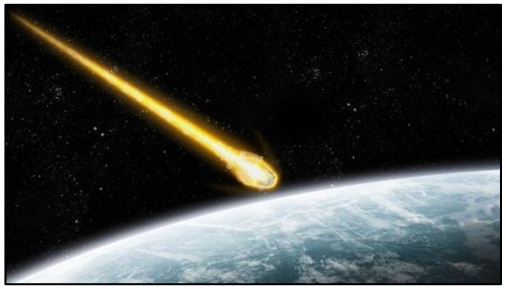
- Homeland security cannot dodge the challenge of global context – many threats exist without borders
- In a political arena, there is a problem concerning giving credit to a number of threats…and yet they exist (e.g. global pollution and the climatic impact)
- We need a forum that can “second guess” possible outcomes and identify and demonstrate technical solutions – under the aegis of DHS
- The scale of some of the challenges is enormous and addressing them has hitherto been left in abeyance – nevertheless, we need options
- The likely options will involve new technologies – will need to pave a way to provide political solutions
- HSARPA can provide S&T leadership – other agencies will provide operational support

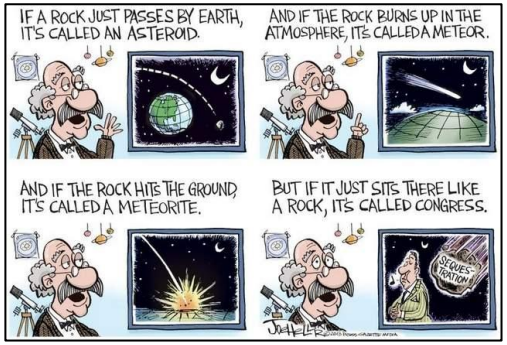
In A Shrinking World, Homeland Security Is Subject To Threats And Effects Sourced Beyond The National Border – While Our Luck Still Holds, We Need Coordinated Security Strategies And To Prove New Technologies, In Areas Not Presently Well Served, To Afford Realistic Homeland Protection

BACKUP

All hope abandon ye who enter here…

- Congressional hearing on meteor threat, 3/19/ 2013
- When asked by Rep. Bill Posey what the US could do if one was headed for New York City, NASA Administrator Charles Bolden said, "The answer to you is if it's coming in three weeks - pray."
  - Congress' directive to detect 90% of city destroyer sized asteroids by 2020 is proving challenging
  - Current budget sighted as being too low for the task
- Congress is interested – are there lower cost…practicable and affordable cost options? Make the question a homeland security issue for innovative alternatives
- Is NASA structured to provide this security?





Aware That A Risk Exists – Likelihood Is Rare But Consequence Is Potentially Catastrophic – Affordability Issues, Not A Ticket To Nothing But A Challenge To Find New Approaches Through S&T