From Analog to Digital – Global Earth Observation and International Collaboration to Manage Mega Disasters

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The MITRE Corporation

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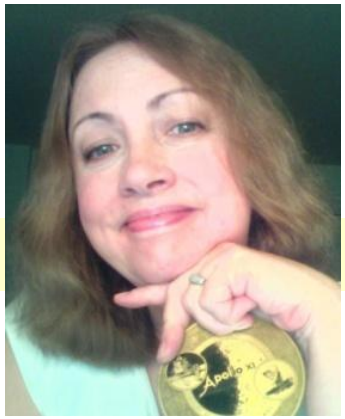

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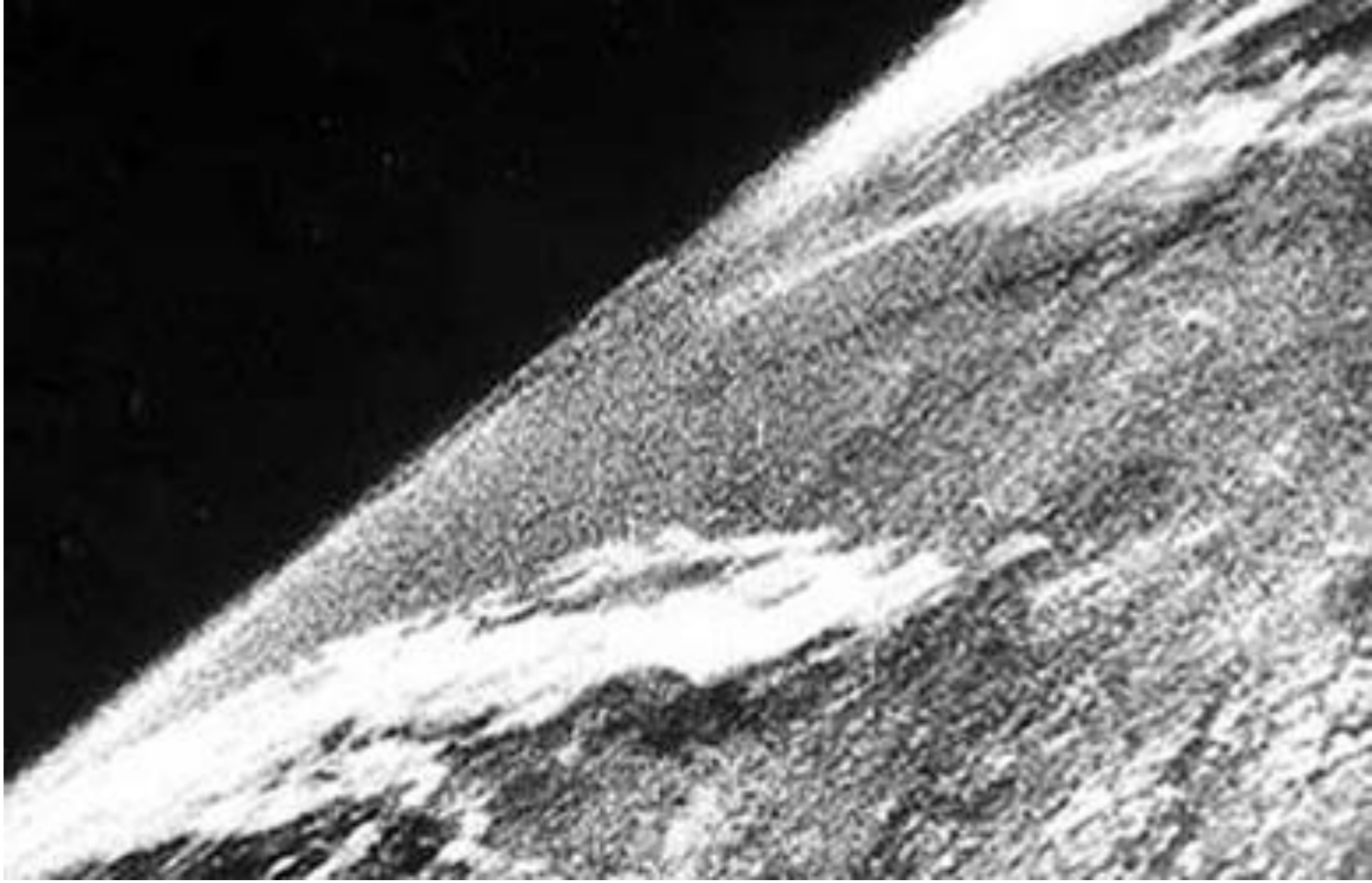
Dr. Ziarko is the MITRE Institute's Technical Program Asst. Manager, and the Program Manager for MITRE's Federal Employee Fellowship Program, SEworks Program, and on-site JHU MSSE Degree Program. The MITRE Institute is the corporate education, training, and professional development group operating under the auspices of Human Resources at The MITRE Corporation, which manages Federally Funded Research and Development Centers (FFRDCs). She is responsible for developing and delivering programs to meet the systems engineering and technological needs of the Corporation.

Her work and academic experience includes more than 30 years of program management and advanced research projects for Treasury/IRS, DoD (OSD, Army, Navy), NASA, EPA, GSA, Department of Interior, and the USPS. She teaches systems engineering at the Johns Hopkins University Applied Physics Laboratory, Whiting School of Engineering. Dr. Ziarko holds a M.S. in Information Systems and a Ph.D. in Public Administration from American University in Washington D.C. concentrating on Technology Transfer, Open Systems, and Science and Technology Policy.

What happened to this civilization?


Was it drought?

The BIG picture today



First Photo from Space – October 24, 1946
V2, White Sands Missile Range, Applied Physics Lab

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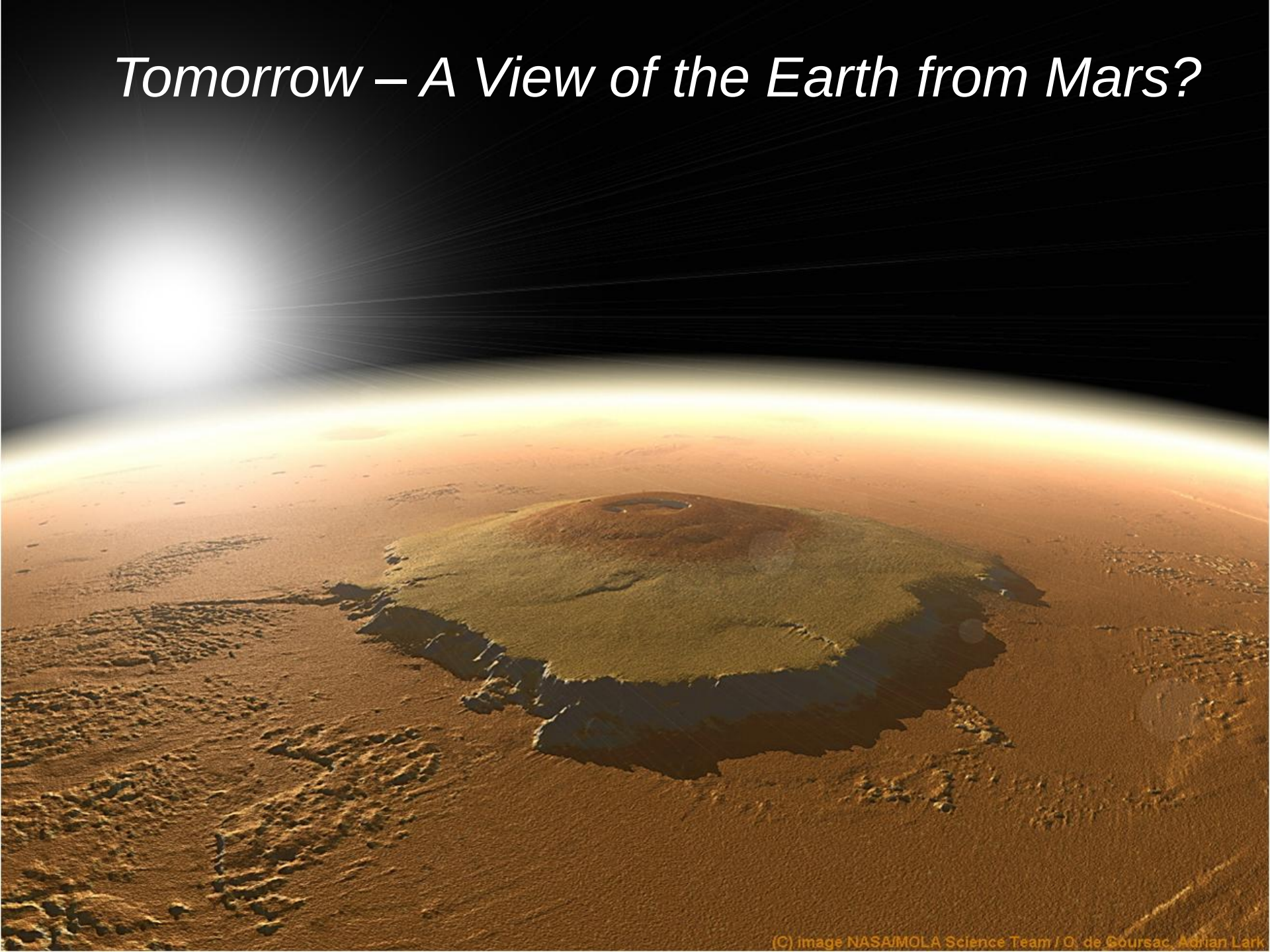
In the Last 50 Years…

- We engineered space systems that changed the world
- We created a capability to observe the Earth as a complex, dynamic system
- We changed through seeing the Earth from space (Overview Effect)
- We built systems for Global Earth Observation
- We began to implement a collaborative System of Systems for Earth Observation

Tomorrow – A View of the Earth from Mars?



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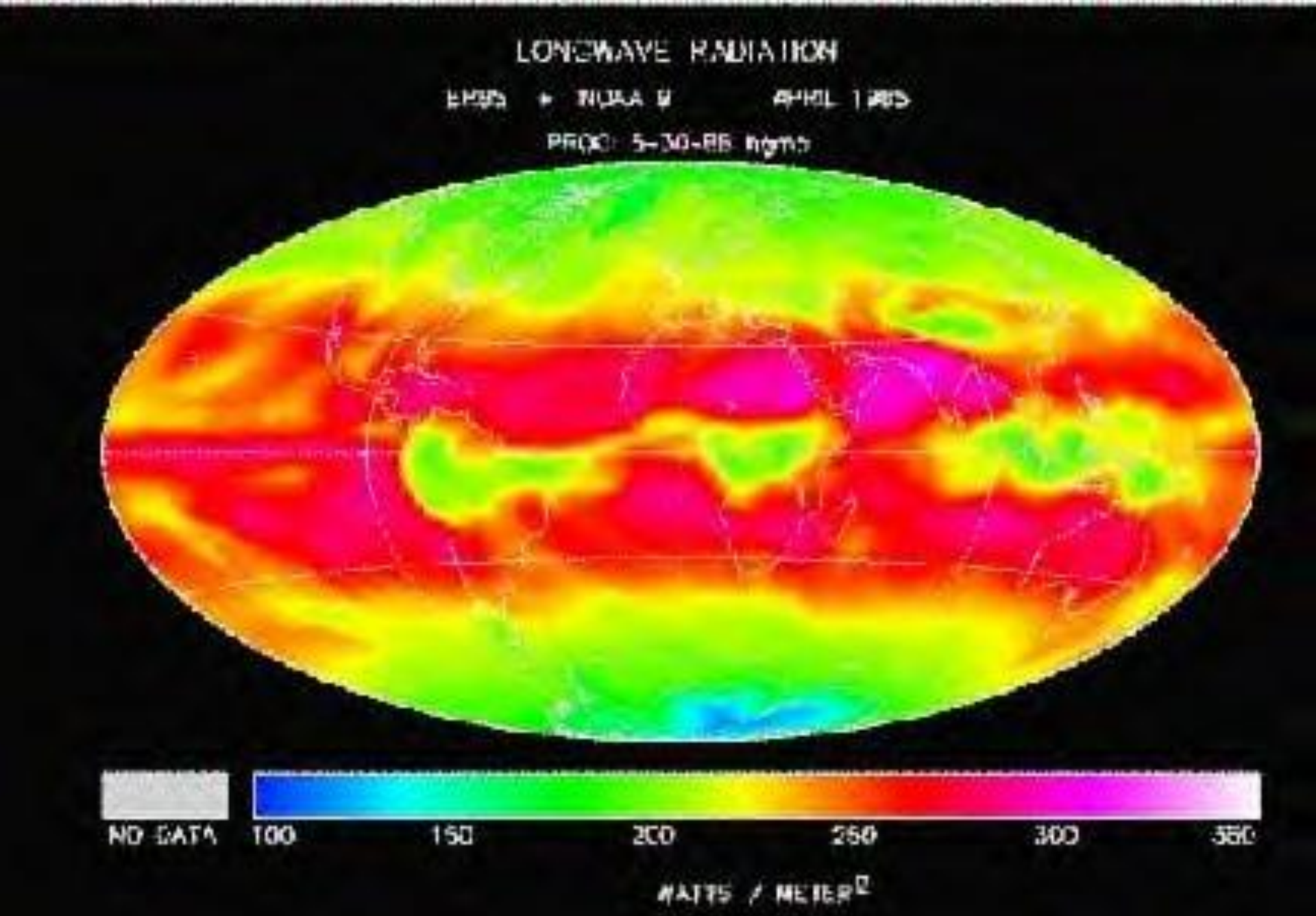
How can Earth Observation inform us?

Earth Observation – Image of the Japan 2011 Tsunami



Earth's Radiation

Natural Mega Disasters

Extinction Event

Global Ice Age


Asteroid Impact!

Yellowstone


Explosion


Super
Volcano!

Hypercane


Superstorms

1931 Yellow River Flood
400,000 up to 4 Million Lives Lost ???


Earthquake


2004 Indian Ocean
Mega Tsunami
250,000 Lives Lost

Mega Tsunami Today in Japan?


Future New York
Mega Tsunami?

Unintended Mega Disasters


Famine


Nuclear
Meltdown

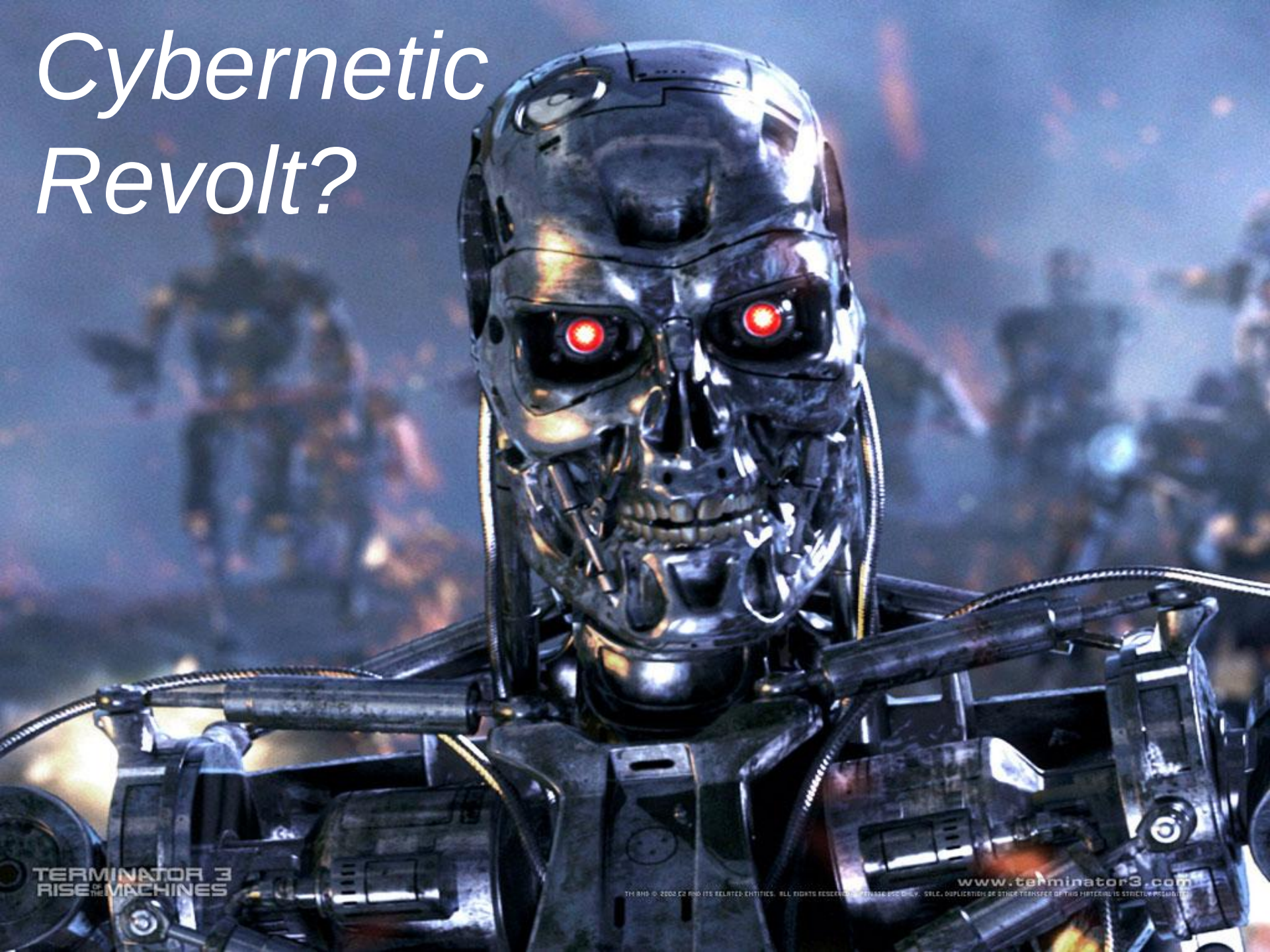

PANDEMIC

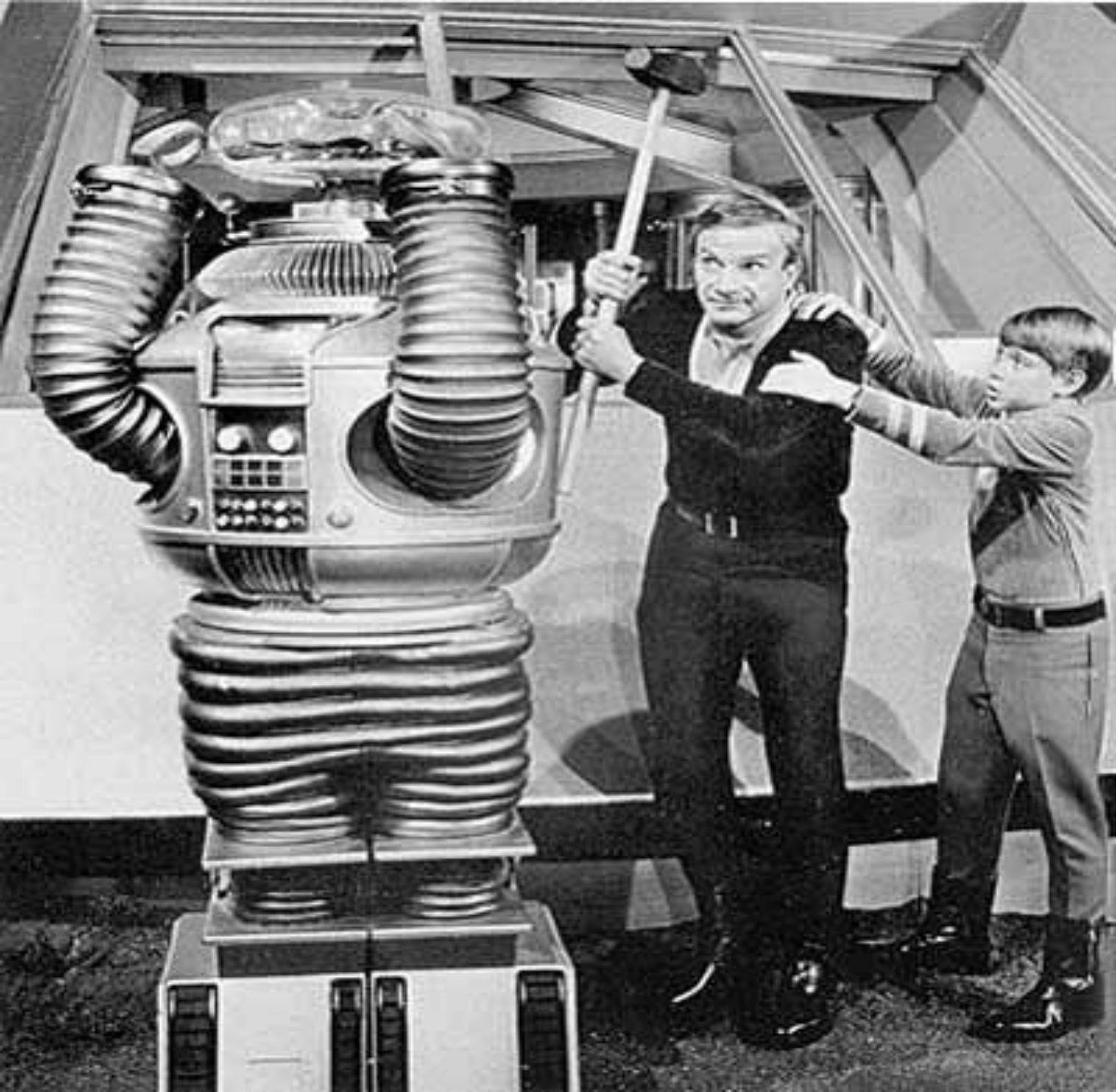
Man-Made Mega Disasters

Biological and Chemical Threats

Nuclear Bomb Threats


World War?


Cybernetic
Revolt?
TERMINATOR 3
RISE OF THE MACHINES
www.terminator3.com



Danger, Will Robinson !!!!!!!!!!!

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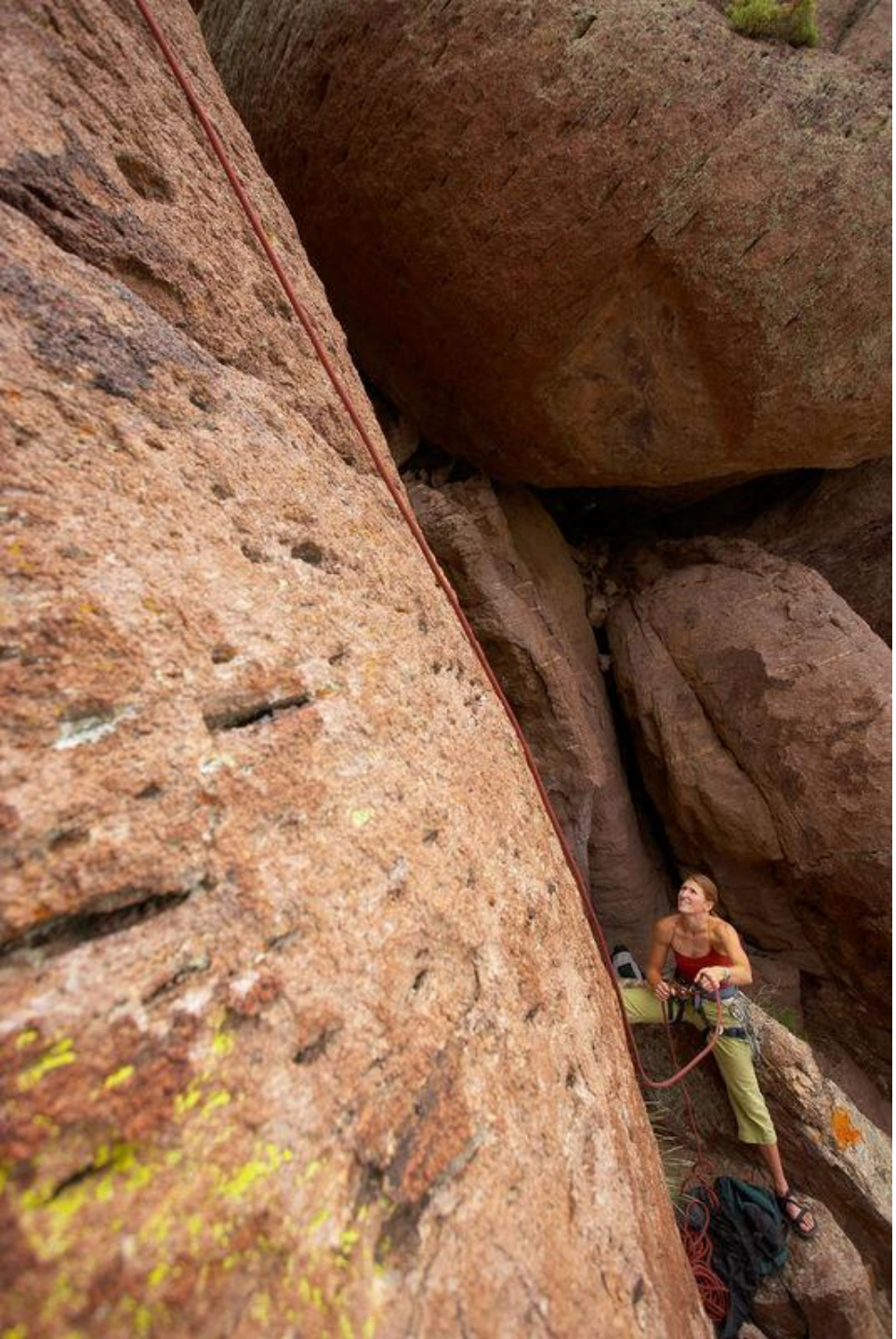
For the Future…



Challenges in the Face of Mega Disasters

- Complex Socio-Technical Problems
- International, National, and Regional Politics
- Small Budgets, Tight Schedules, and other Priorities
- Complex Operational Issues
- Technical Maturity
- Modeling Complexity and Causal Networks
- Managing Global Catastrophic Risk
- And more…

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New Models and Thinking

What do we value?

How will we change the way we do things?

Collaborate to Manage Disasters and Build Earth Observation Systems

- For government, businesses, and individuals, mindsets can be changed
- For Earth observation, a mosaic of interconnected and interoperable complex systems can be engineered and matured
- For humanity, we can invest in worthwhile efforts to save lives and mitigate the impact of socio-economic disasters

We will create innovative practices to predict and manage mega disasters

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