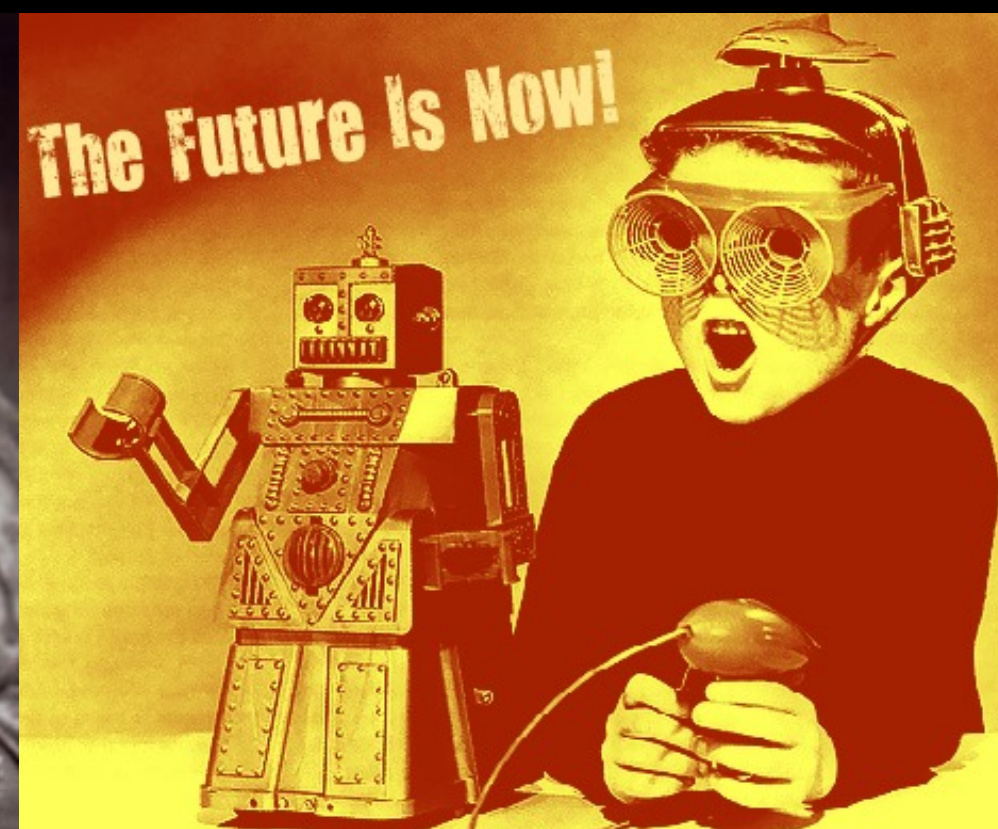




**MULTI-USE
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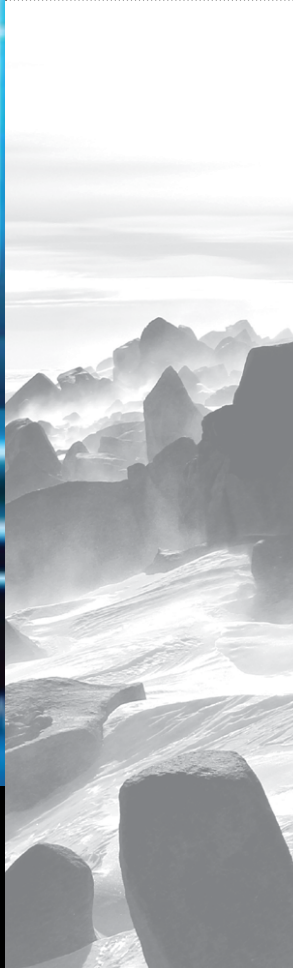
**FOR SCIENCE AND
EDUCATION**



SEISMOLOGICAL GRAND CHALLENGES

IN UND

A Foundation for Innovation:



Unlo

New Research
EARTH



EARTH SCIENCE LITERACY PRINCIPLES



The Big Ideas and Supporting Concepts of Earth Science

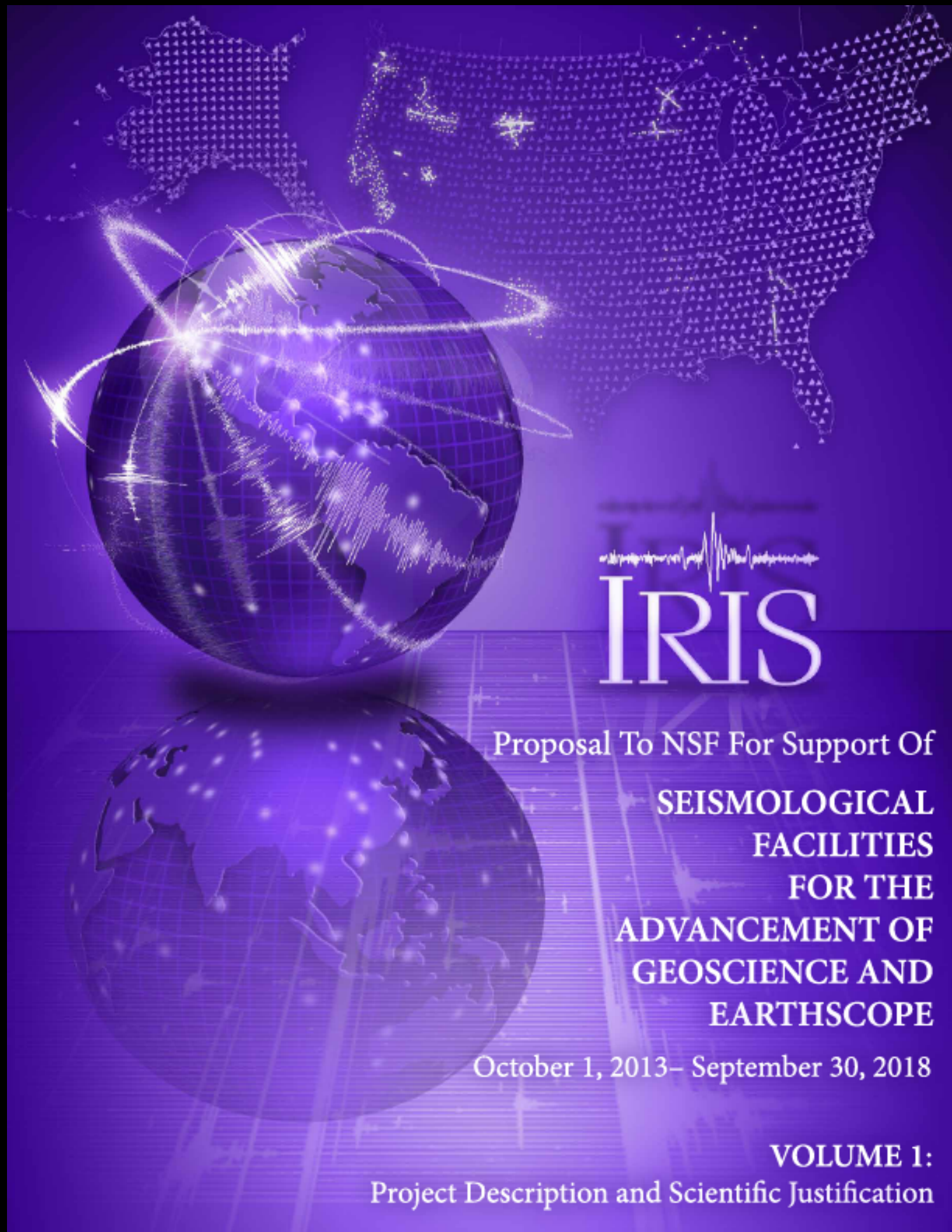
SEISMOLOGICAL GRAND CHALLENGES IN UNDERSTANDING EARTH'S DYNAMIC SYSTEMS

LONG-RANGE SCIENCE PLAN FOR SEISMOLOGY WORKSHOP
SEPTEMBER 18-19, 2008, DENVER, CO

JANUARY 2009

broad
multidisciplinary
themes

Long Range Science Plan for Seismology	
	LRSPS Workshop September 18-19th in Denver, CO
Executive Summary.....	1
Introduction: The Seismological Discipline.....	4
Grand Challenges for Seismology.....	10
Grand Challenge 1. How Do Faults Slip?.....	11
Grand Challenge 2. How Does the Near-Surface Environment Affect Natural Hazards and Resources?.....	17
Grand Challenge 3. What is the Relationship Between Stress and Strain in the Lithosphere?.....	24
Grand Challenge 4. How Do Processes in the Ocean and Atmosphere Interact With the Solid Earth?.....	28
Grand Challenge 5. Where Are Water and Hydrocarbons Hidden Beneath the Surface?.....	32
Grand Challenge 6. How Do Magmas Ascend and Erupt?.....	36
Grand Challenge 7. What Is the Lithosphere-Asthenosphere Boundary?.....	40
Grand Challenge 8. How Do Plate Boundary Systems Evolve?.....	45
Grand Challenge 9. How Do Temperature and Composition Variations Control Mantle and Core Convection?.....	50
Grand Challenge 10. How Are Earth's Internal Boundaries Affected by Dynamics?.....	55
Sustaining a Healthy Future for Seismology.....	59
Summary.....	67
Appendix: Key Seismological Practices.....	68
Monitoring Dynamic Processes in Earth's Environment.....	68
Multiscale 3D and 4D Imaging and Modeling of Complex Earth Systems.....	70
Recommended Reading.....	73
Acronyms and Titles.....	74



SAGE

Seismological Facilities
for the Advancement
of Geoscience and
EarthScope

additional funding

OBSIP

Polar

GLISN

CEUSN

EarthCube

International Development

SAGE - Grand Challenges

Thermo-chemical internal dynamics and volatile distribution

How do Earth's temperature, composition, and internal boundaries control mantle and core dynamics and the changing morphology of our living environment? How do the lithosphere and plate boundary systems evolve over Earth history?

Faulting and deformation processes

What is the relationship among stress, strain, and deformation as expressed in earthquakes, slow slip, volcanic eruptions, and movement of fluids within the crust?

Change and interactions among climate, hydrology, surface processes, and tectonics

How do Earth dynamics and structure relate to the distribution of freshwater and energy resources? How do the coupled systems respond to natural and anthropogenic forcing?

Science Advisory Committees

to ensure alignment of facilities and service with science goals

Thermo-chemical internal dynamics and volatile distribution

Ed Garnero (Co-Chair) Arizona State University

Greg Hirth (Co-Chair) Brown University

Jeroen Ritsema (Board Liaison) University of Michigan

Faulting and deformation processes

John Vidale (Co-Chair) University of Washington

Roland Burgmann (Co-Chair) University of California, Berkeley

Jeff McGuire (Board Liaison) Woods Hole Oceanographic Institution

Change and interactions among climate, hydrology, surface processes, and tectonics

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