

EGI Energy & Geoscience Institute AT THE UNIVERSITY OF UTAH 50 YEARS

50 Years of the Energy & Geoscience Institute

1972 – 2022

Celebrating the science to find energy

10/25/22 11:16 AM

1970s

ESRI



1970s

ESRI



1970s

ESRI



1970s

ESRI



1970s

ESRI


AAPG - SEPM
OFFICIAL WATERING HOLE
AAPG - SEPM
OFFICIAL WATERING HOLE

1970s

ESRI



1970s

ESRI



1970s

ESRI



1970s

ESRI



1970s

ESRI



1970s

ESRI



1970s

ESRI



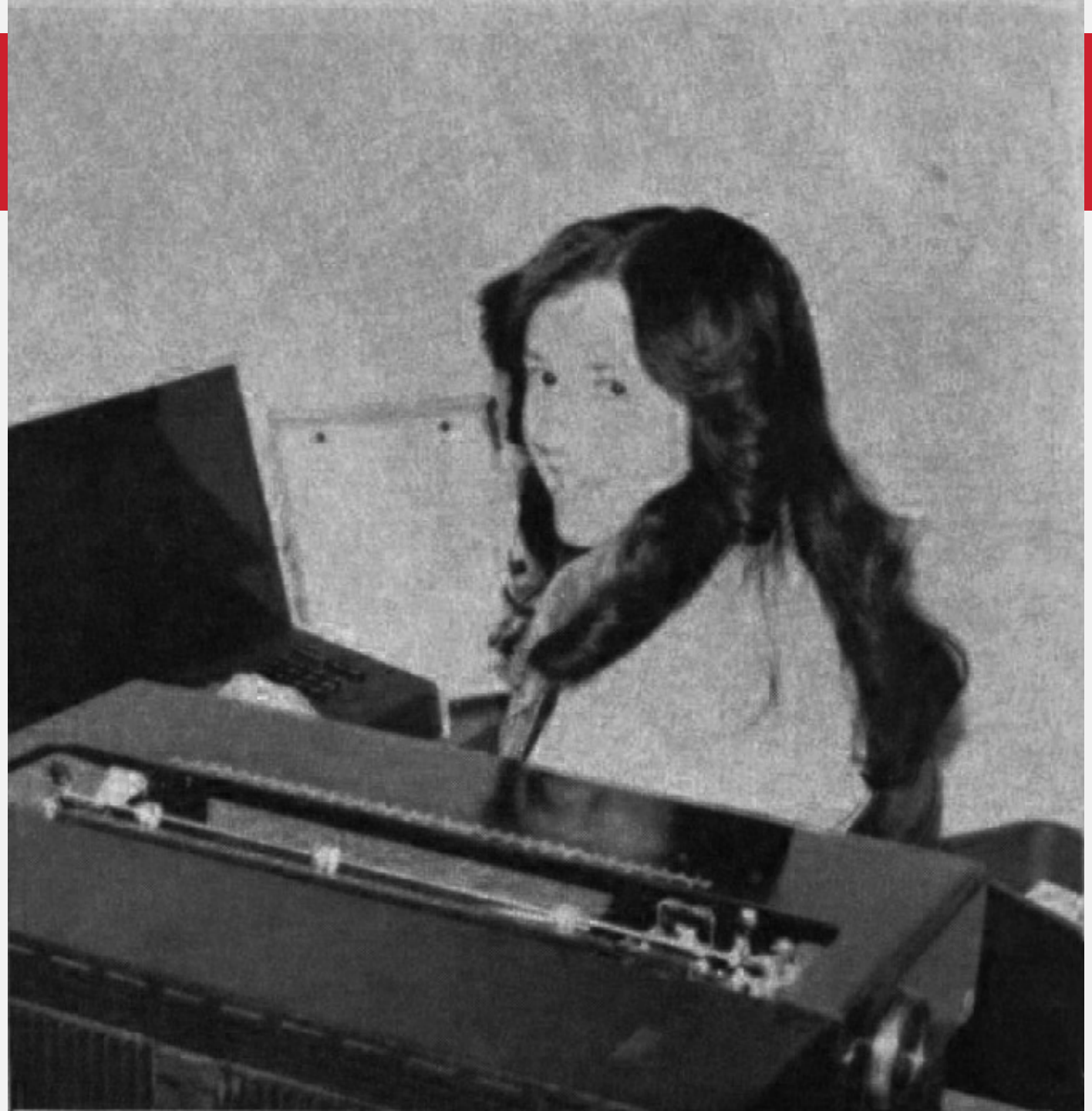
1970s

ESRI



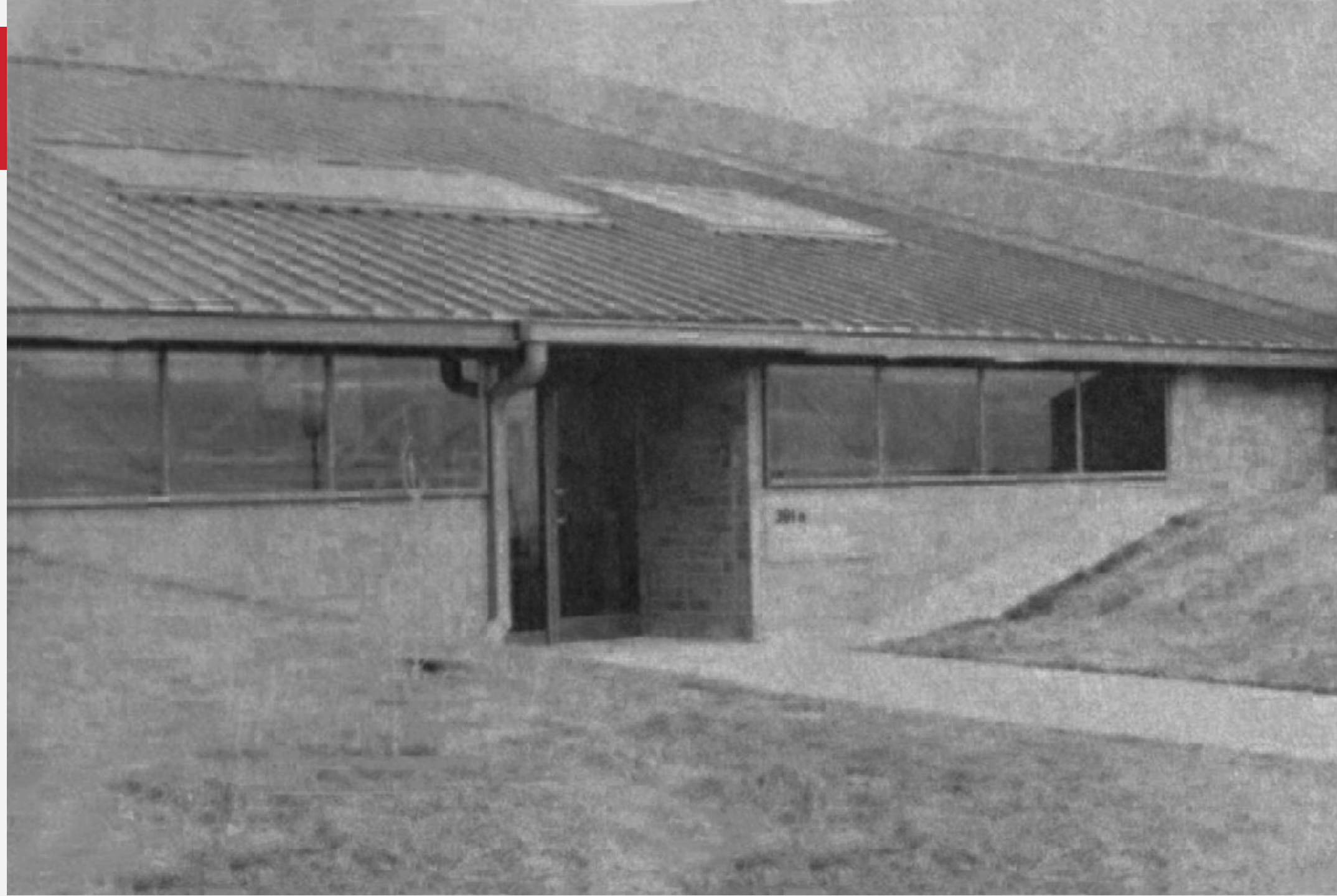
1970s

UURI



1970s

UURI



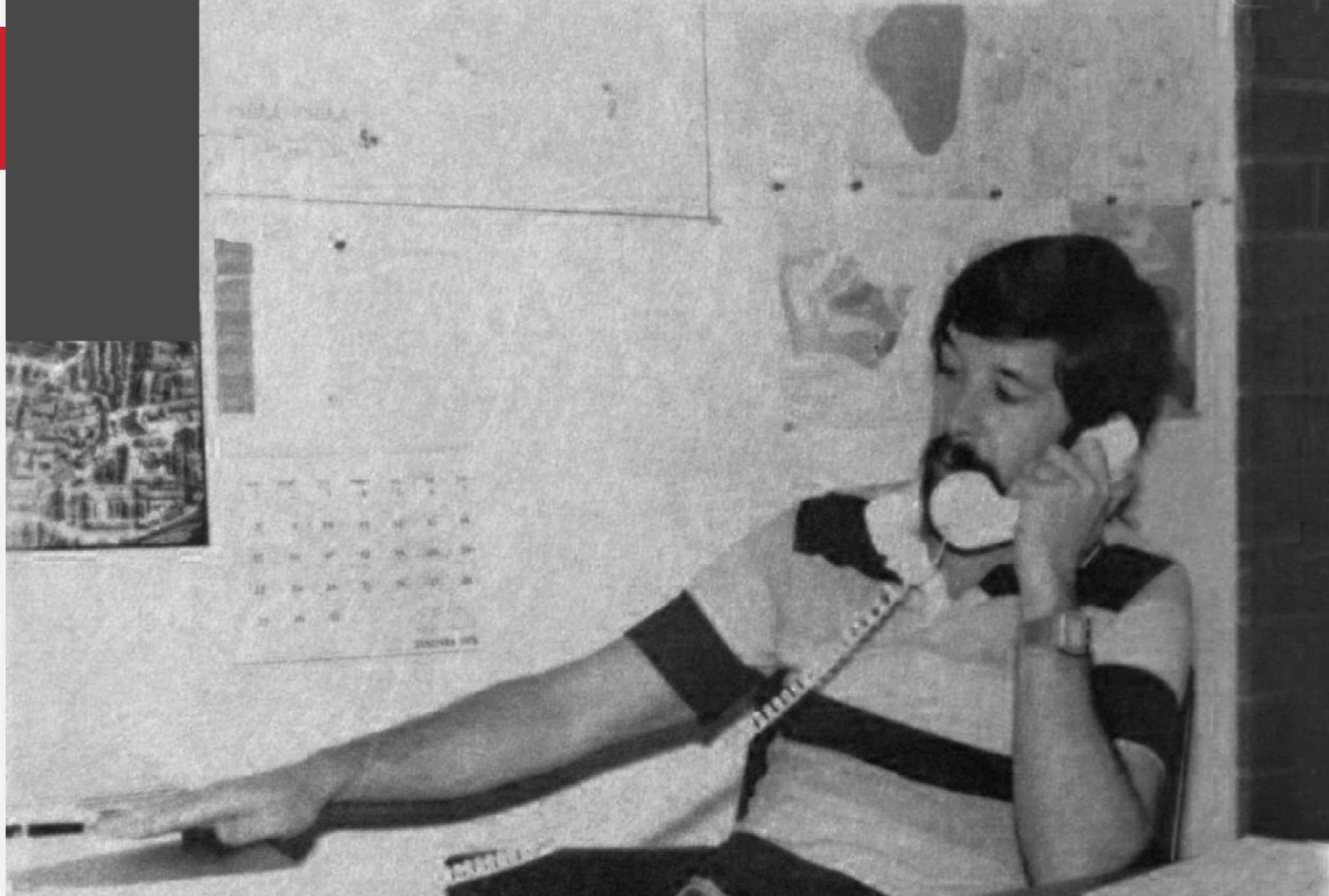
1970s

UURI



1970s

UURI



ESRI



ESRI



ESRI



ESRI



1980s

ESRI



1990s

ESRI



1990s

ESRI



1990s

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1990s

ESRI







1990s

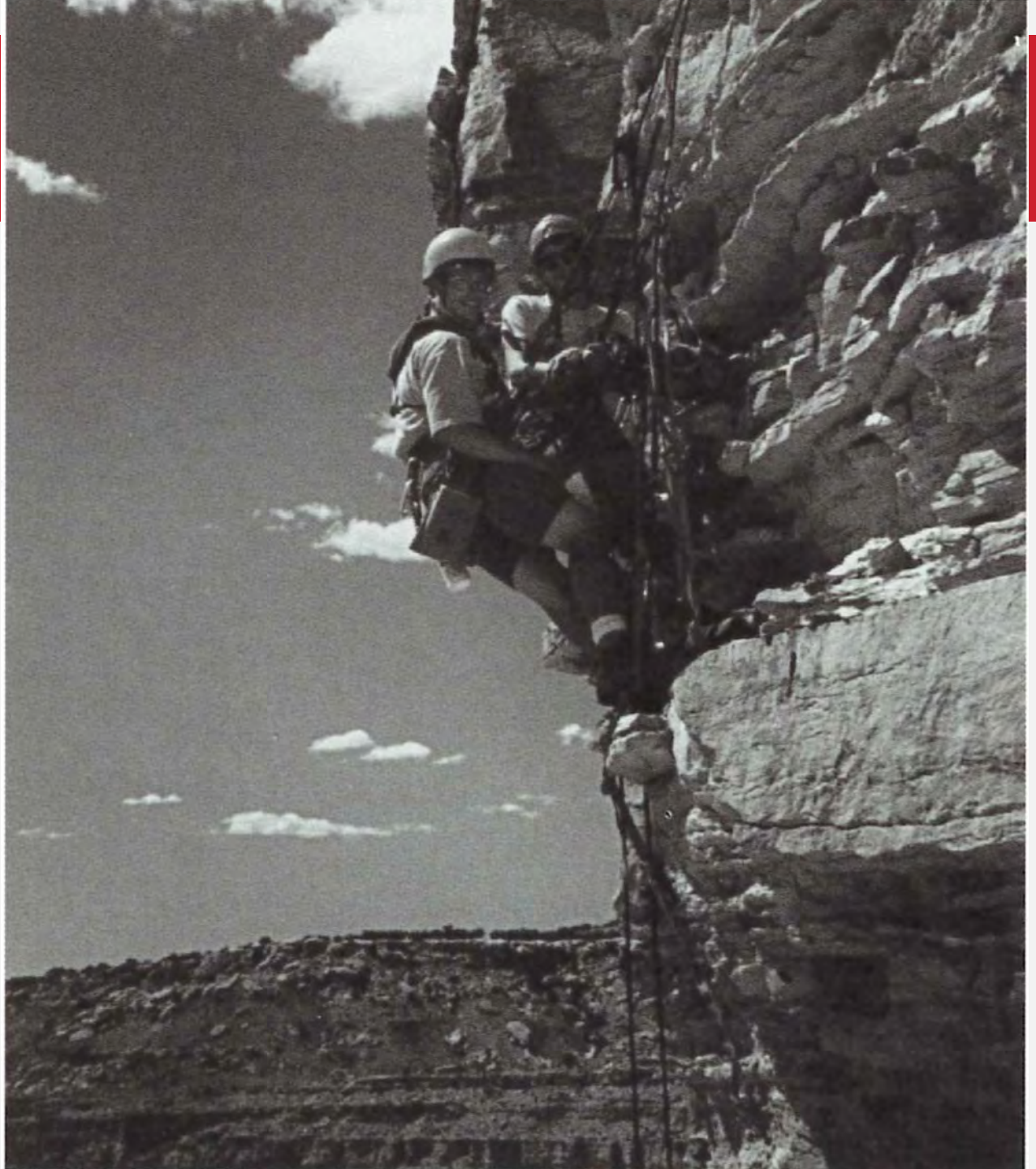




1990s



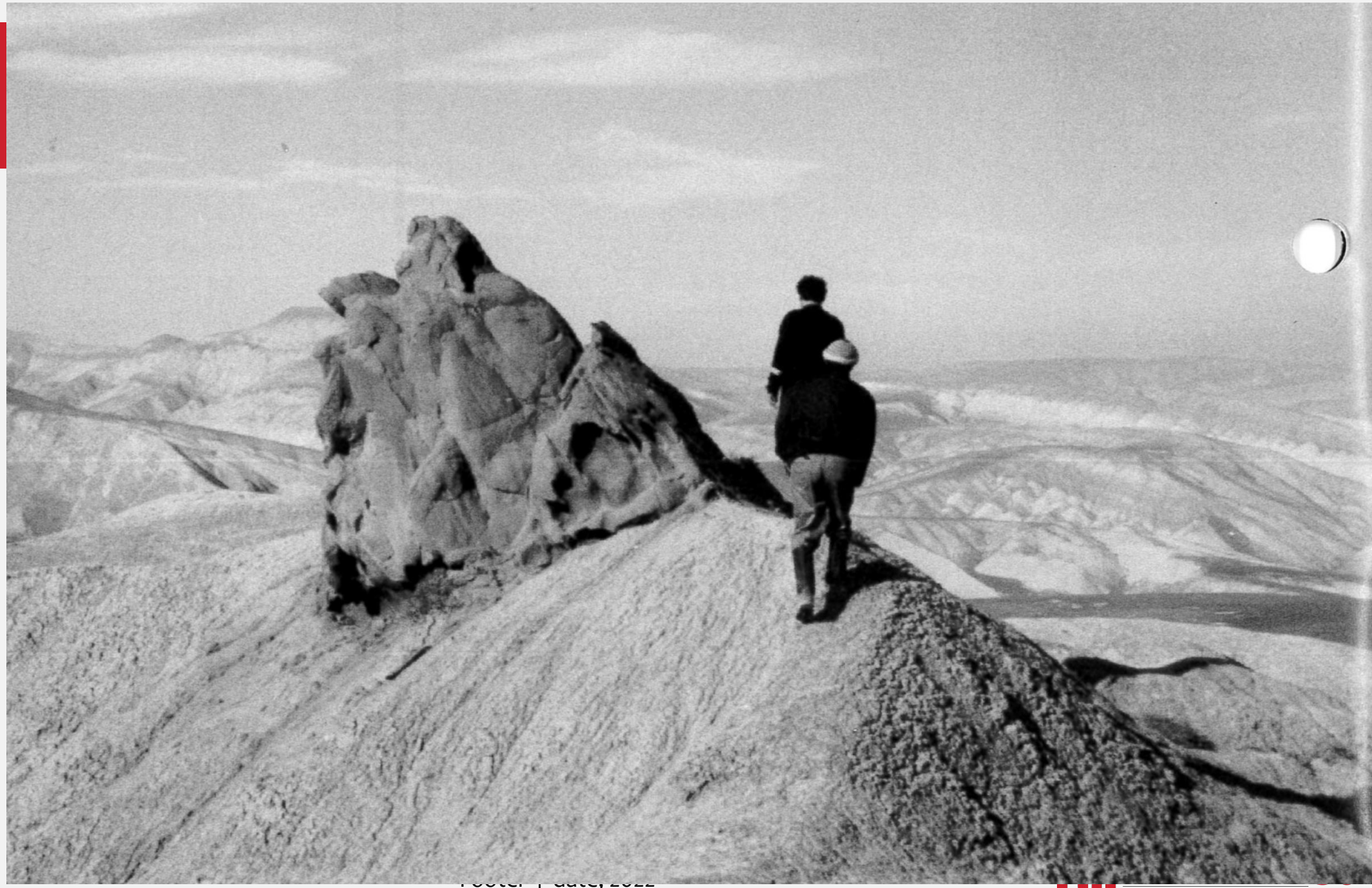
1990s



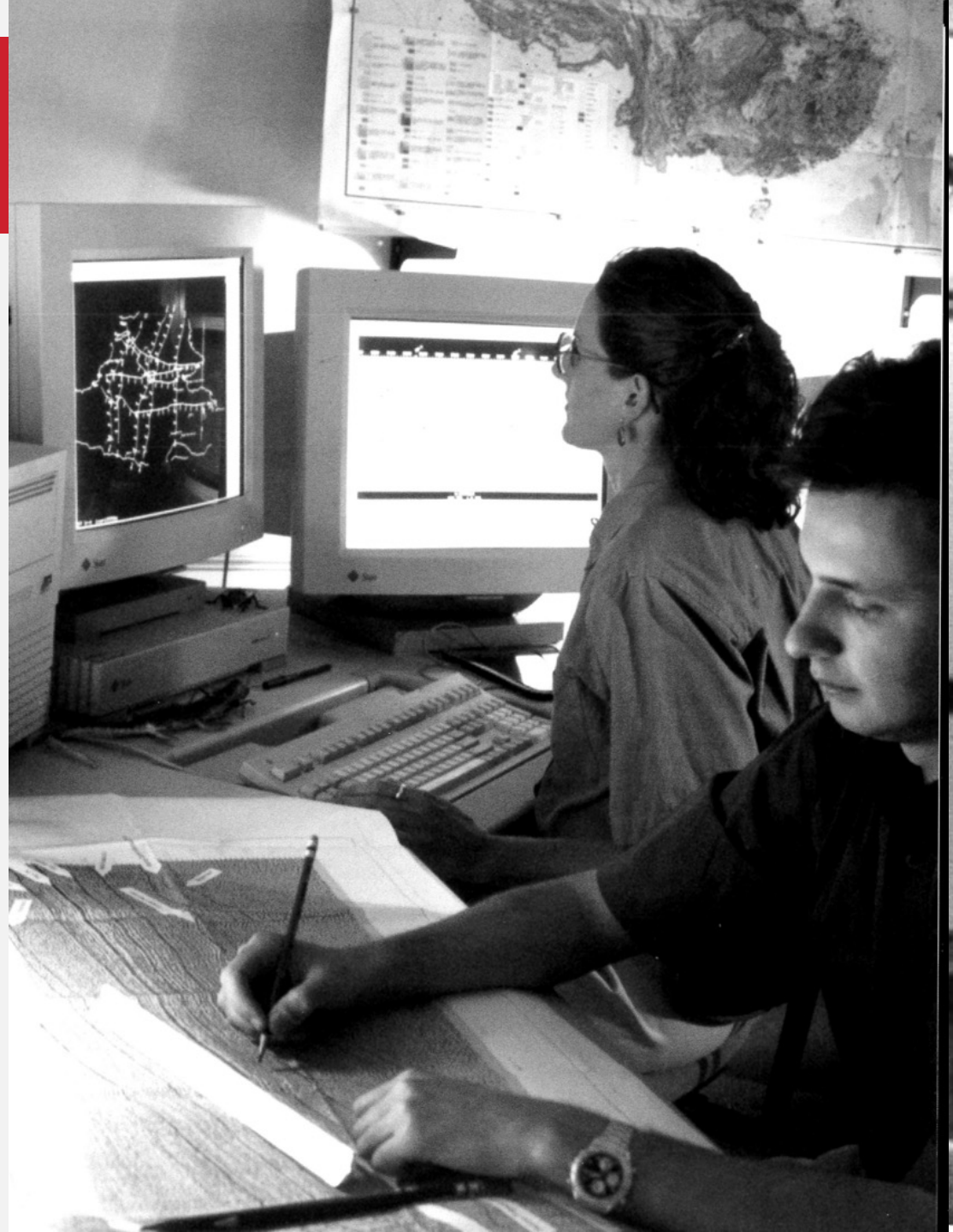
1990s



1990s



1990s





1990s



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2000s



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2000s



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2000s



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2000s



2000s



2000s


EGI Affiliate Scientists
Dr. D.S.N. Raju and Dr. Bindra Thusu
December 5, 20
UTAH: THE LIGHT FANTASTIC by Tom Till

2000s



2000s



2000s



2000s



2000s



2000s



2000s



2000s



2000s



2000s



2000s



2000s



2000s


EGI ENERGY INSTITUTE - UNIVERSITY OF UTAH
& Geoscience Institute
BENIN-TOGO SURFACE GEOCHEMISTRY
CANARY ISLANDS - MOROCCO
NIGERIA METOCEAN
EGI
IN
WEST
AFRICA

2000s



2000s



2000s



50 YEARS

2000s



2000s


gy & Geoscience Institute
THE UNIVERSITY OF UTAH
I CORE STRENGTHS
Geochemistry
Chronostratigraphy
Structure
Metocean & Hazards
GIS & Satellite Analysis
Visualization
Carbon Management
Reservoir Geomechanics
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Premier Oil
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Reliance Industries
Remora Energy
RepsolYPF
ROC Oil
RWE Dea
Samson
Shell
Sipetrol
StatoilHydro
Talisman
Teikoku Oil
Terralliance
Total
TNK-BP
Tullow Oil
Wintershall
Woodside

2000s



2000s



2000s



2000s



2000s



2000s



2000s



2000s



2000s



2000s


GREAT VALUE
CHICKEN FLAVOR RAMEN
GREAT VALUE
BEEF FLAVOR RAMEN
Ramen
CHICKEN FLAVOR
GREAT VALUE
CHICKEN FLAVOR RAMEN

2000s


PEACHES
FRUIT COCKTAIL
PORK AND BEANS
CHICKEN SOUP
SANDERS
SUGAR
Campbells
VEGETABLE
GREAT VALUE
Ramen

2000s

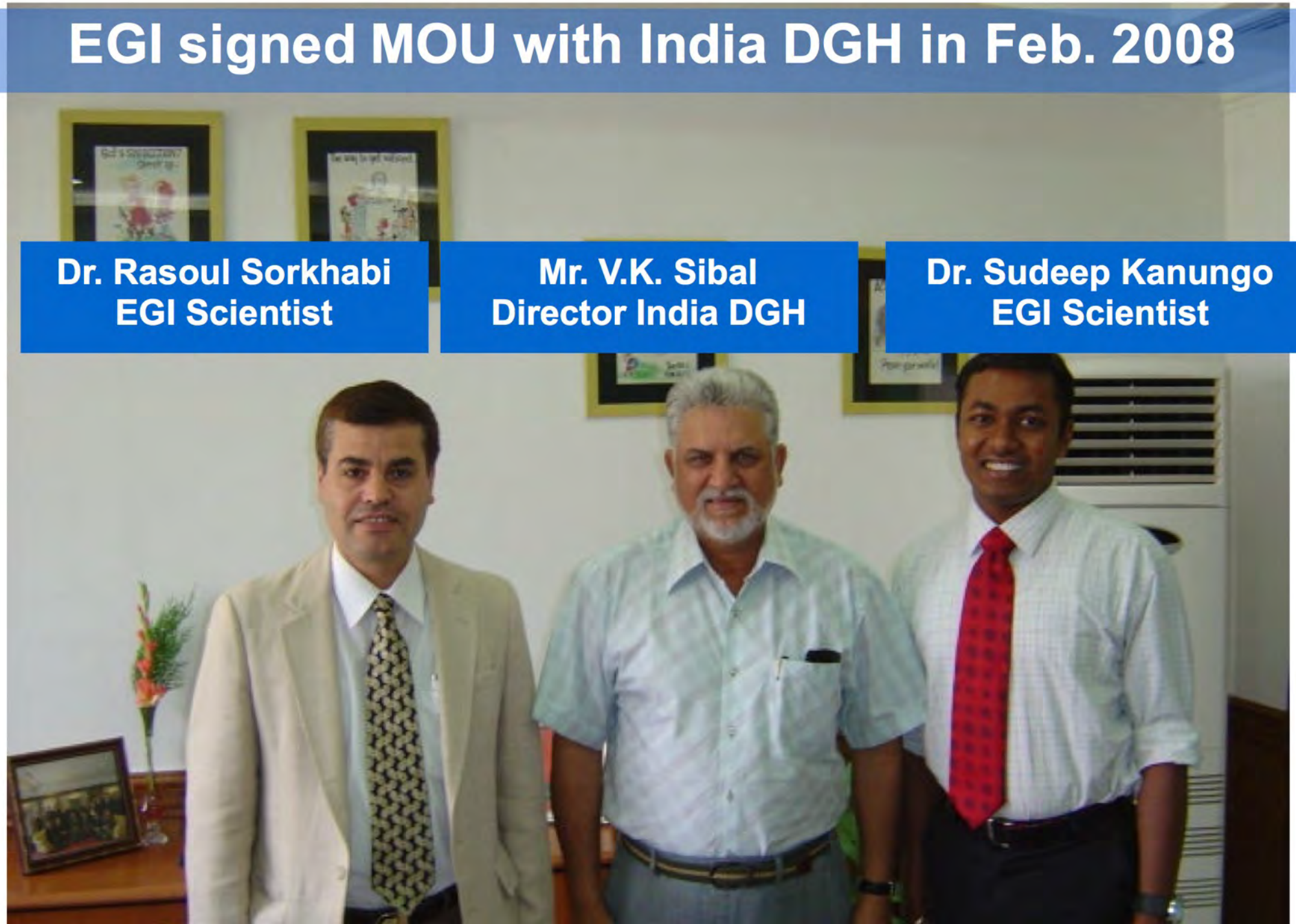


2000s



2000s

EGI signed MOU with India DGH in Feb. 2008



2000s



2000s



2000s



2000s



2000s



2000s



2000s



2000s



2000s



2000s



2000s



2000s



2000s


Dr. Ali Allak
790-269-036
@hotmail.com
ond the Visible Landscape
UTAH'S SPECTACULAR GEOLOGY

2010s



2010s



2010s



2010s


Energy & Geoscience Institute
EGI Technical Reports available to Corporate Associates
Technical Competencies
Structure
Geochemistry
Biostratigraphy
Deepwater
Topical Projects
Completed
Underway
Proposed
THE UNIVERSITY OF UTAH
EGI Corporate Associates
ADDA X
Anadarko
Apache
AWE
Beach Petroleum
BG Group
BHP Billiton
BP
Cairn Energy
Chesapeake Energy
Chevron
Cobalt International
ConocoPhillips
Devon
DNO
DONG
Eni
E.ON Ruhrgas E&P
Frontera
GDF SUEZ
Hess
Hunt Oil
INPEX Corp.
JAPEX
LUKOIL
Lundin Group
Maersk Oil
Marathon
Mitsui
Murphy Oil
Newfield
Nexen
Niko
Nippon Oil
Noble Energy
Occidental
ONGC
Ophir Energy
Parex Resources
Petrobras
Petro-Hunt
Petronas
Pioneer
Plains E&P
Questar
Raser Technologies
Red Leaf
Reliance Industries
Remora Energy
Repsol YPF
ROC Oil
RWE Dea
Samson
Santos
Shell
Southwestern
Statoil
Suncor
Talisman
Total
TNK-BP
Tullow Oil
EGI Advisory Board
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Energy & Geoscience Institute
Fluid Inclusion Technologies, Inc.
"The New Well Logs"
iTtulsa.com

2010s



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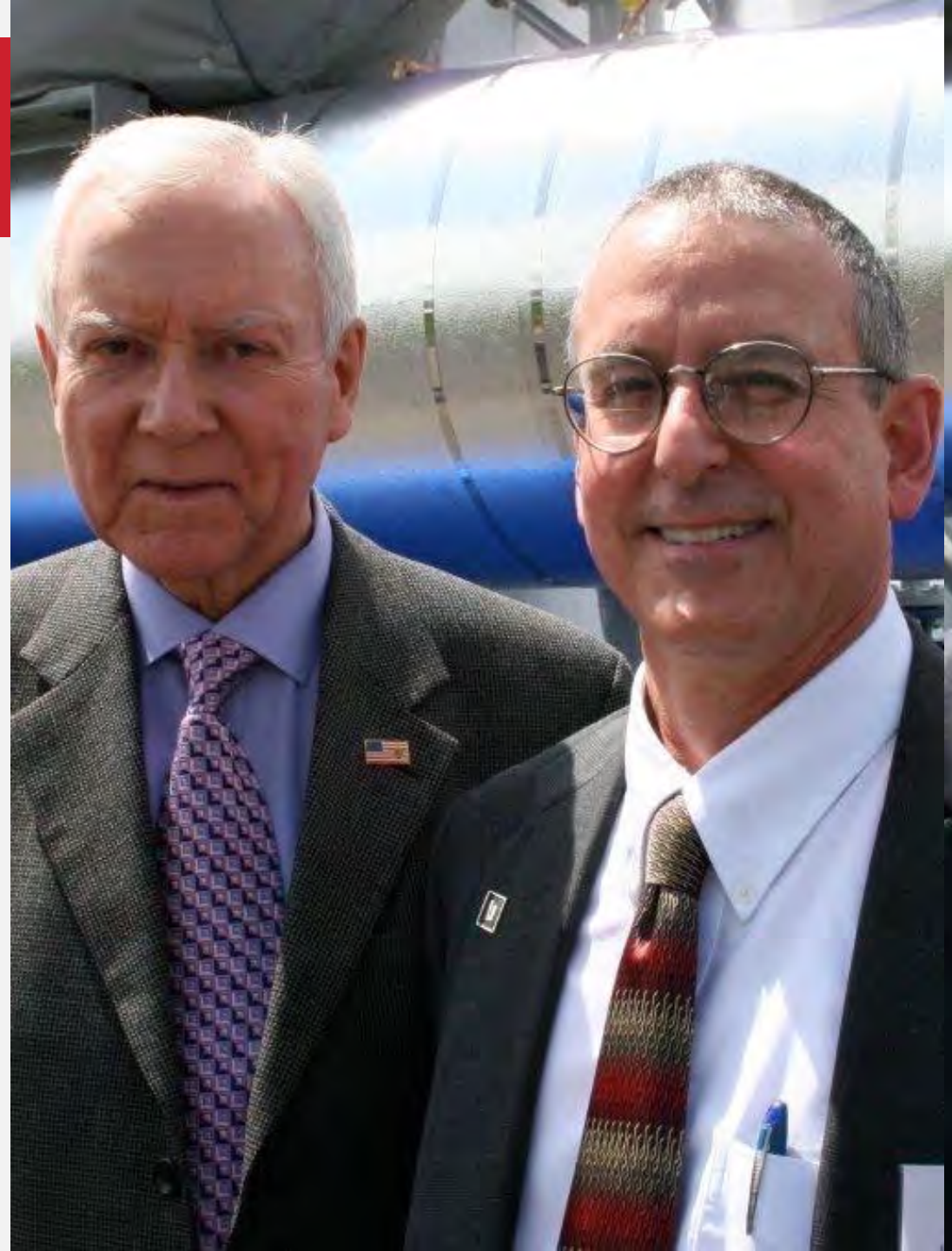
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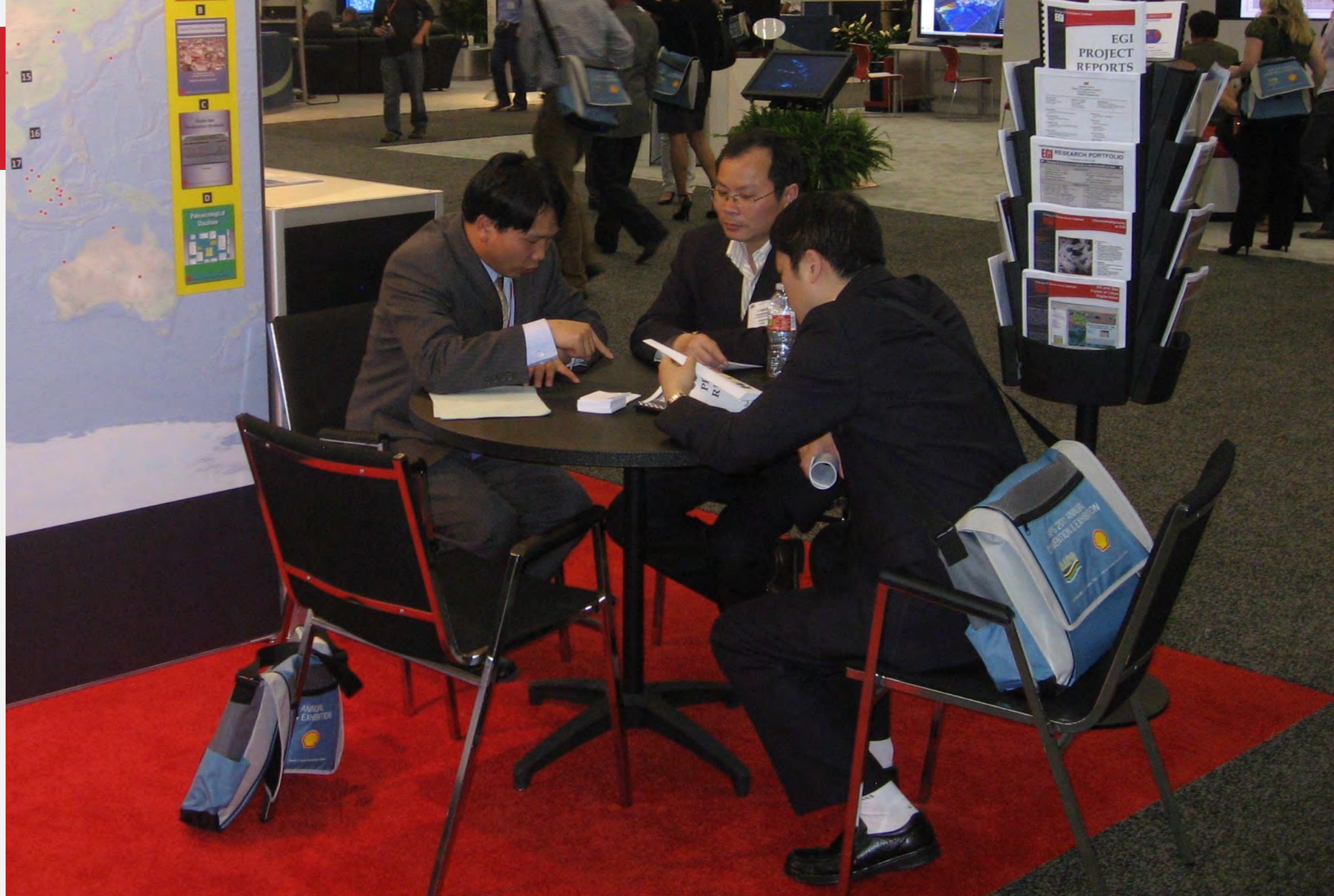




2010s



2010s



2010s



2010s



2010s



2010s



2010s



2010s


Schlumberger
IC Innovation Center
ORLEN Upstream
EGI
Energy & Geoscience Institute
ental Picture of Tight Shales
SHALE
SCIENCE

2010s



2010s



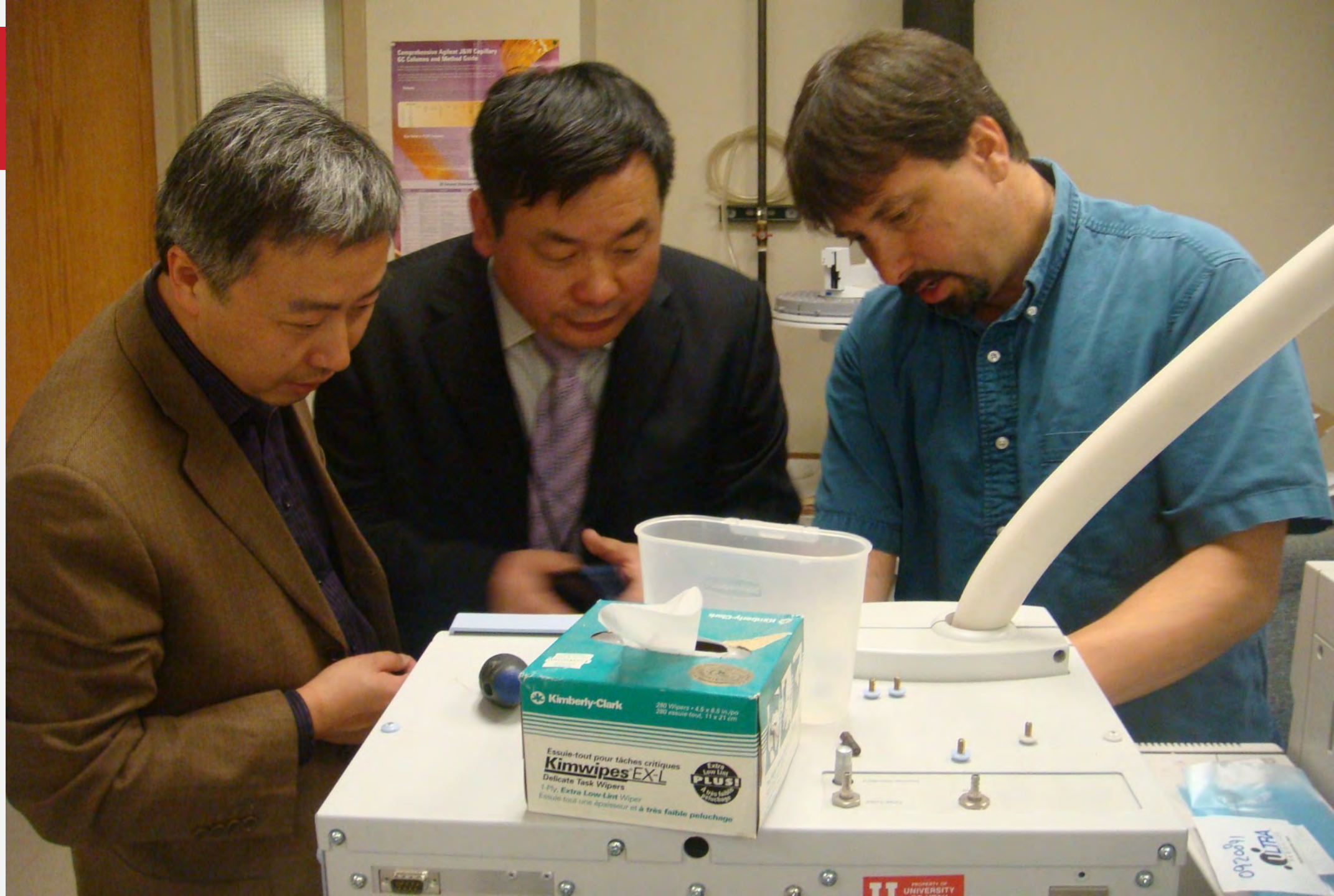
2010s



2010s



2010s



2010s



2010s


423 Wakara Way
ENERGY
& GEOSCIENCE
INSTITUTE
EGI
at the UNIVERSITY of UTAH

2010s



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2010s



2010s



2010s



2010s



2010s



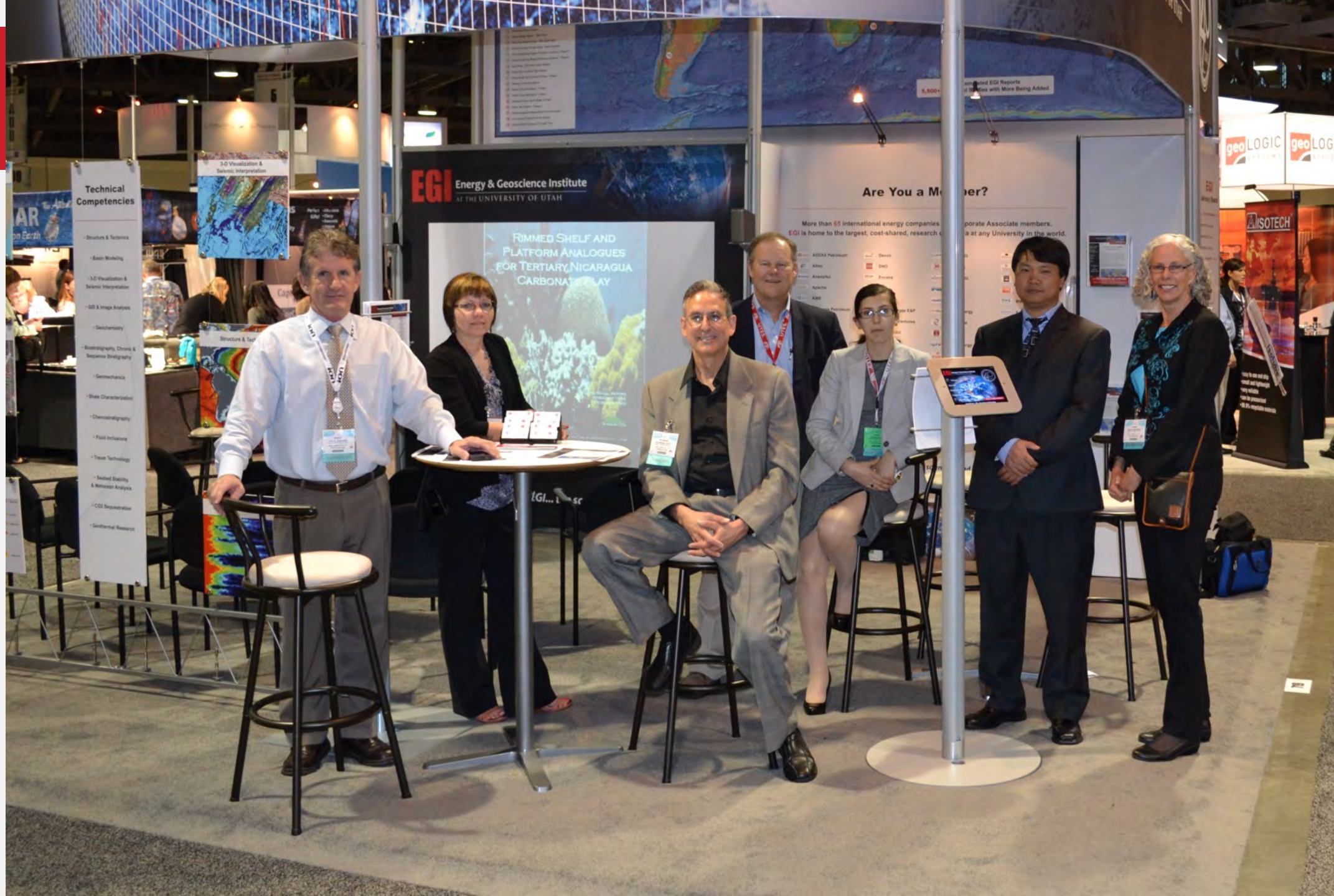
2010s



2010s



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Technical Competencies
EGI
Energy & Geoscience Institute
AT THE UNIVERSITY OF UTAH
RIMMED SHELF AND PLATFORM ANALOGUES FOR TERTIARY NICARAGUA
Are You a M ber?
ISOTECH

2010s



2010s



2010s



2010s



2010s



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2010s



2010s



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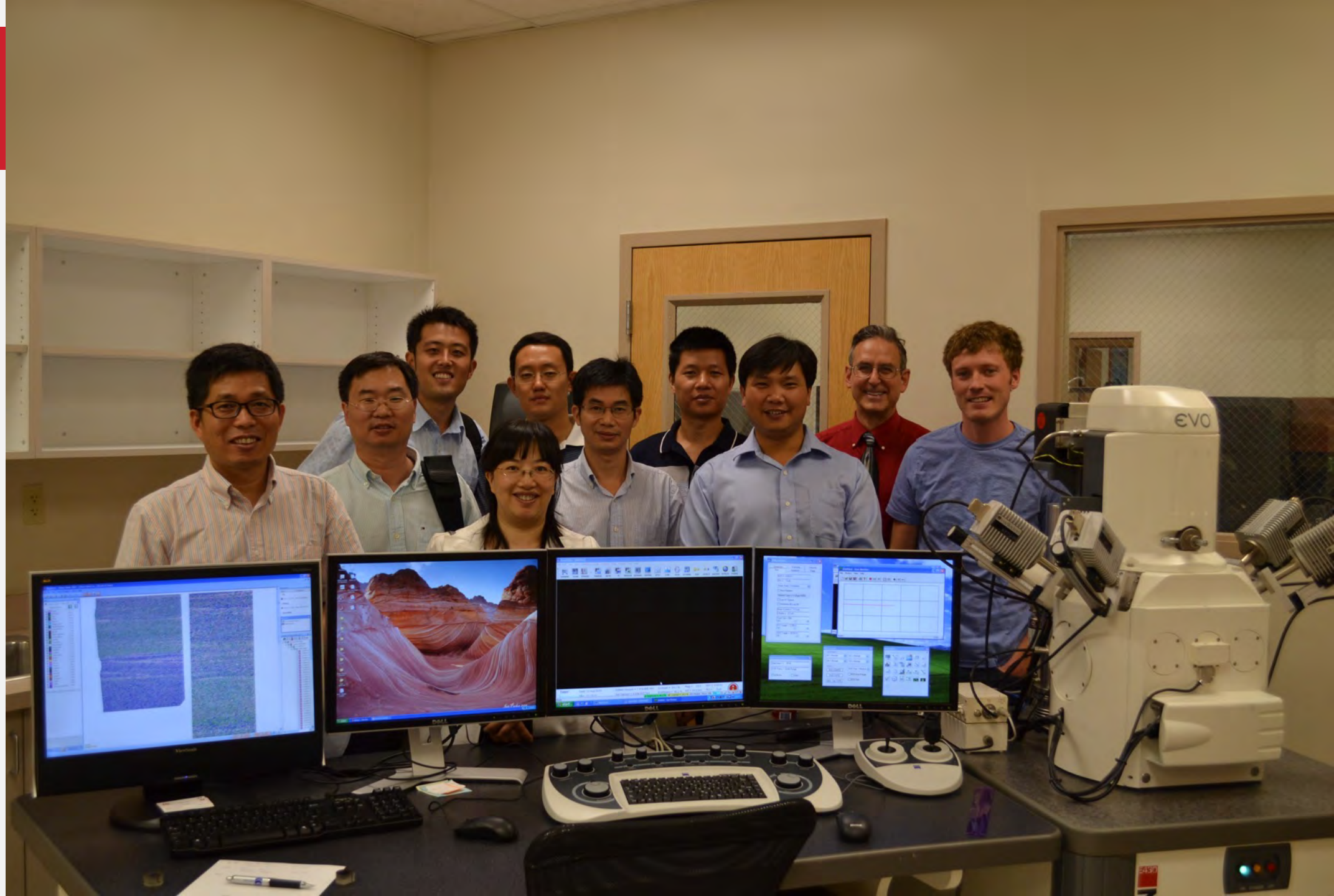
2010s



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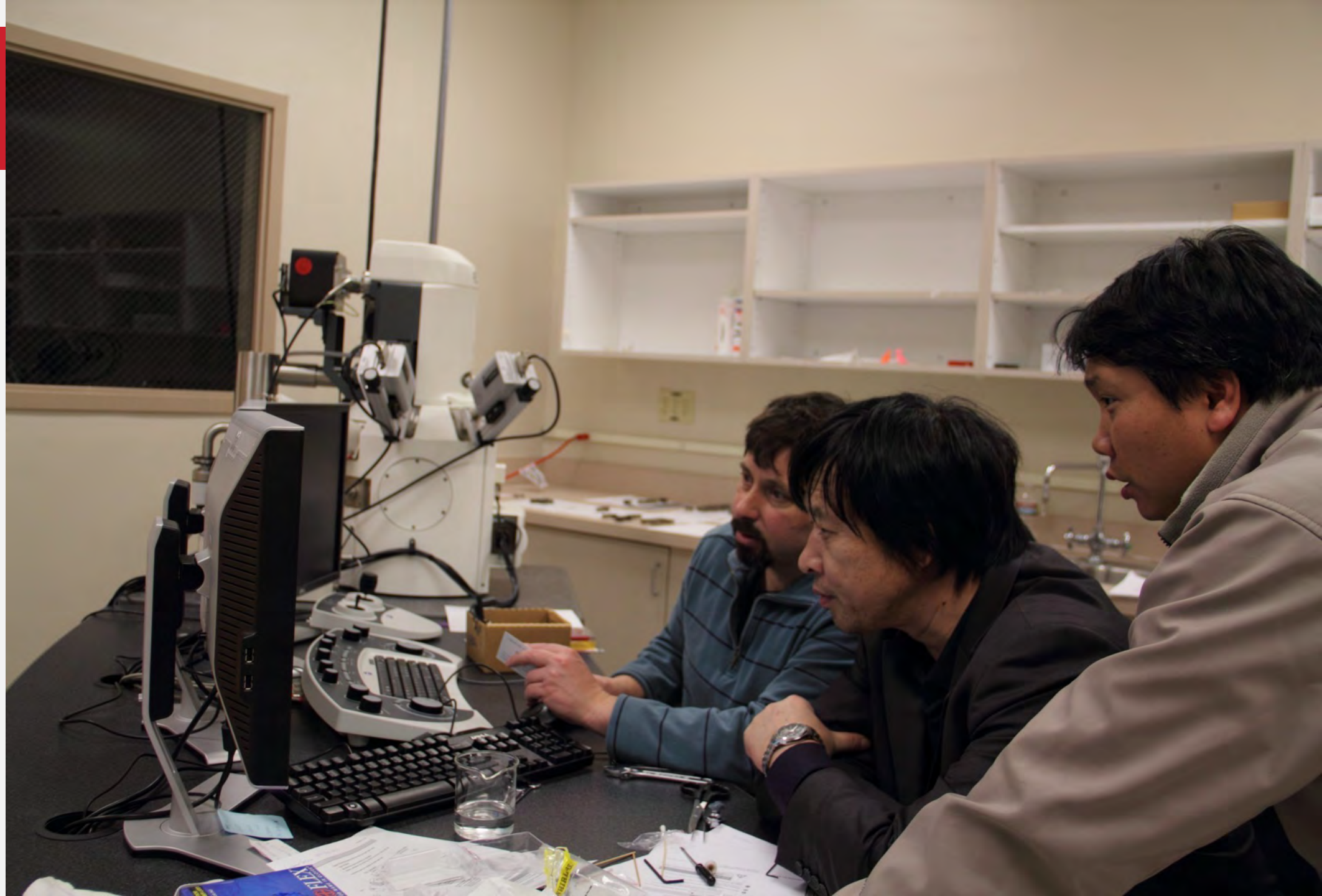
2010s



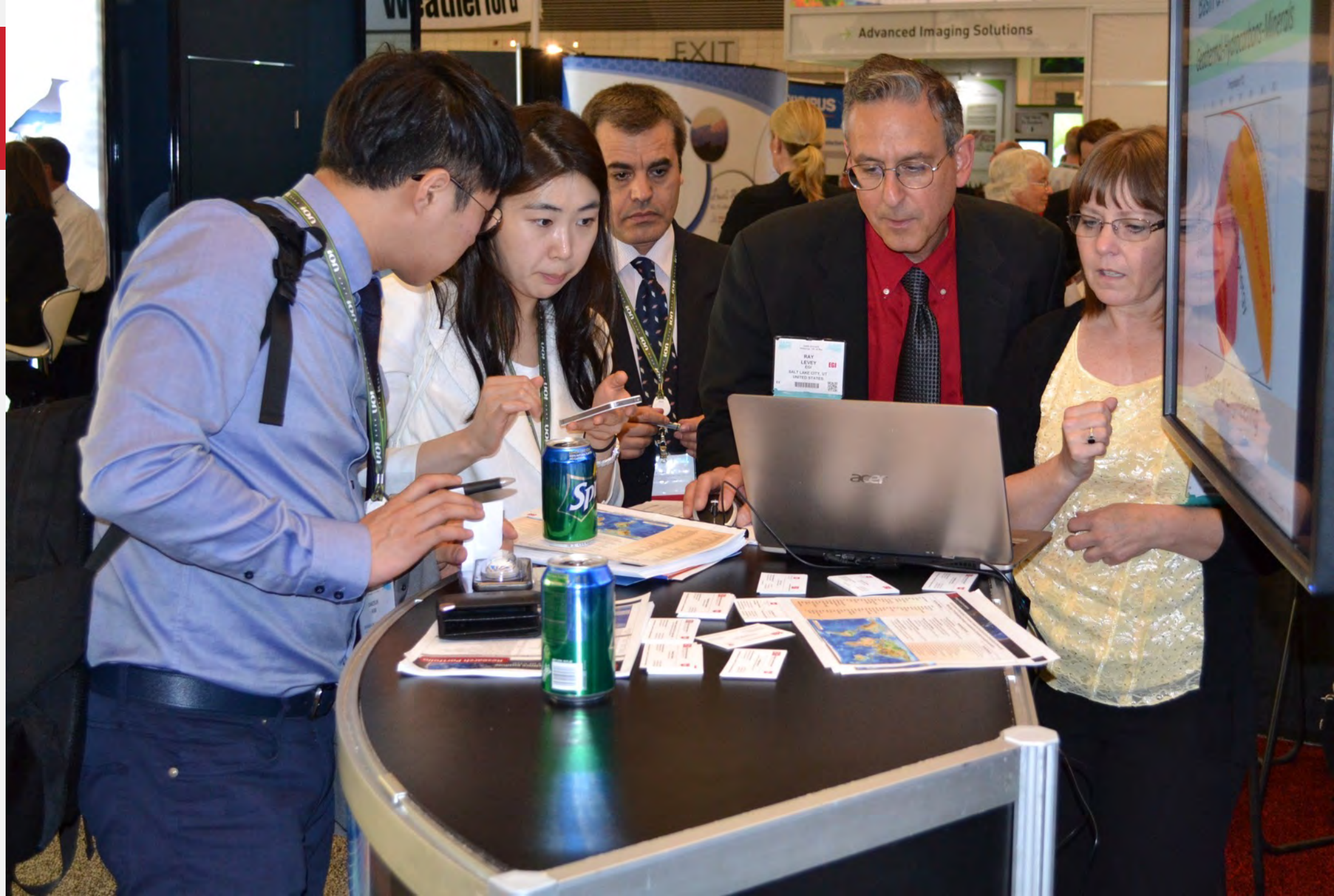
2010s



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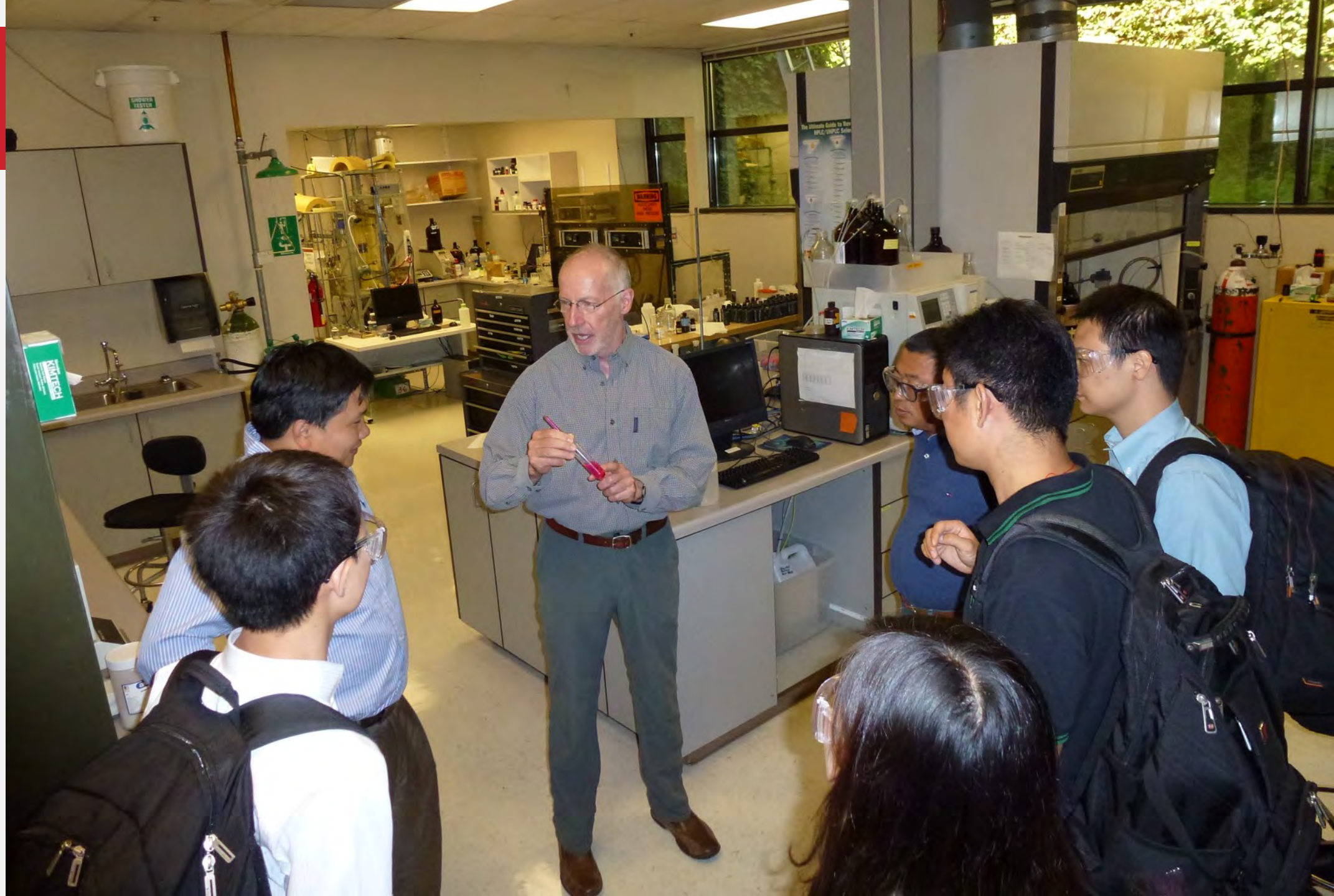
2010s



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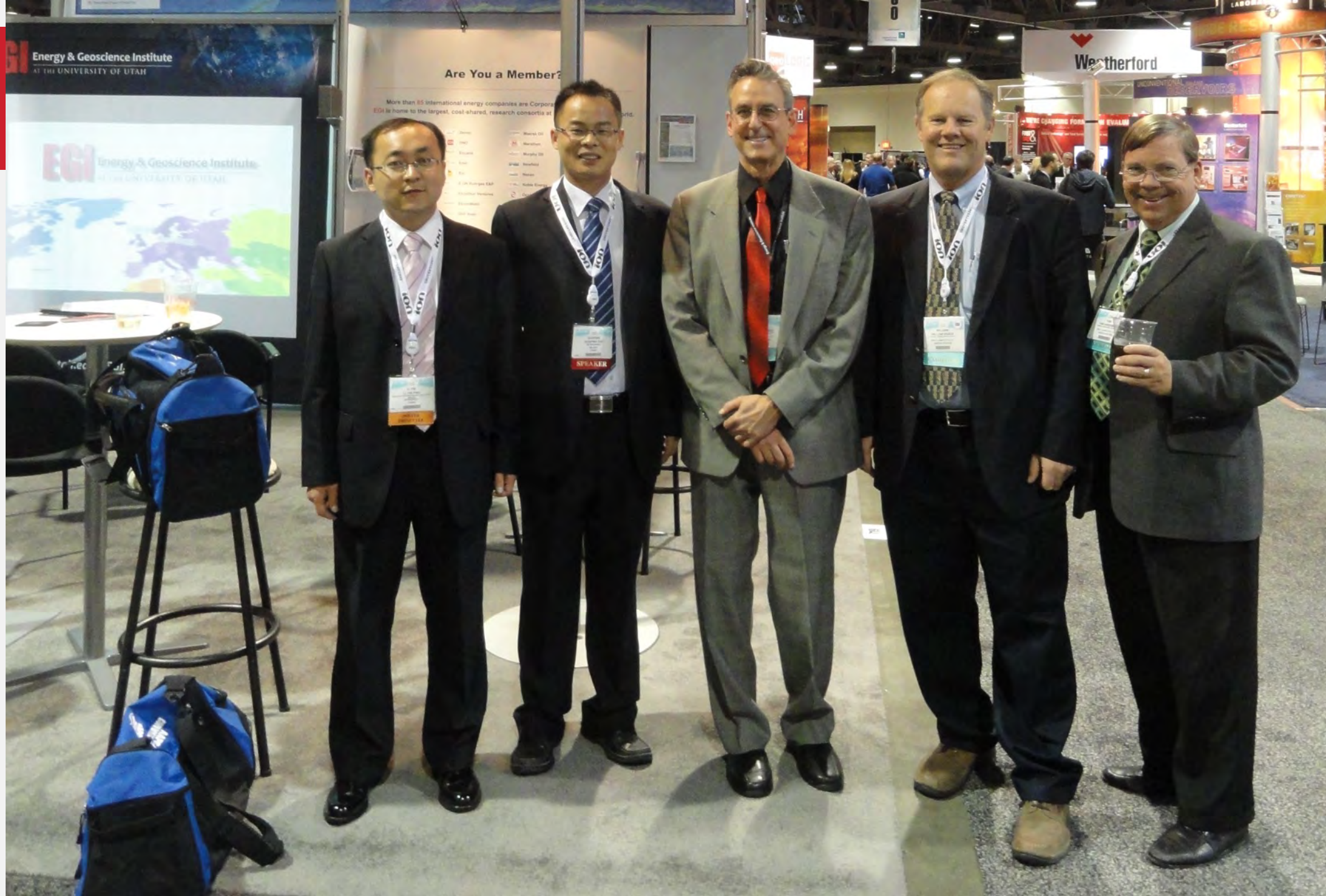
2010s



2010s



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Energy & Geoscience Institute
AT THE UNIVERSITY OF UTAH
Are You a Member?
SPEAKER

2010s



2010s



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RESERVOIR QUALITY
Upstream
EGI
Schlumberger
Shale Gas
Drill
Schlumberger
SHALE SCIENCE
SHALE SCIENCE
SHALE SCIENCE

2010s



2010s



2010s



2010s



2010s



2010s



2010s



2010s



2010s


Danube Basin
THE UNIVERSITY OF UTAH
VB
DB
Danube Basin play concept elements

2010s



2010s


Atlantic Margin Composite Standard
EGI
Energy & Geoscience Institute
2010
diadora
SINCE FORTY EIGHT
48

2010s



2010s



2010s



2010s



2010s



2010s



2010s



2010s



2010s



2010s



2010s



2010s


B30 Energy & Geoscience Institute (EGI)
B29 TransPerfect
... the science to find energy
Mission
Vision
Access Scientific Research
Thematic Research
Energy & Geoscience
You Are a Member
... the knowledge to train future geoscientist, engineers & leaders for the energy industry
Field & Short Courses Available to EGI Members & Government Organization
KNUST
COLLEGE OF ENGINEERING
FLUID PROPERTIES LABORATORY
DRILLING SIMULATOR, DRILLING FLUID AND CEMENTING LABORATORY

2010s


sity of Jammu, India &
UK
leum Research Group (MPRG),
epartment, University College
HDC); University of Kashmir;
Management, University of Jammu;
Institute, University of Utah
n Resources London (UK);
Sciences (MoES), Govt. of India;
versal Biopharma Inc., USA
UNIVERSAL
BIOPHARMA
Sustainable Resour
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2010s



2010s



2010s



2010s



2010s


Reservoir Permeability
Primary permeability: rock contacts, unconsolidated volcanic and sedimentary deposits
Secondary permeability: related to faults and alteration
2 3/4"
Productive Fracture
03 . 17 . 2014

2010s


Energy & Geoscience Institute
42
YEARS
Presentation Outline
New XRD data:
XRD analysis of the Los Molles Pbi-1 and BCE-1 wells
QEMSCAN® of the Los Molles BCE-1 well:
Fabric, texture characterization
Depositional setting evaluation
SEM analysis of the BCE-1 well:
Mineralogy and porosity characterization
Further and Continuing Work:
Segmentation anal
rosity using SEM Images
EGI

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Energy & Geoscience Institute
the science to find energy
EGI

2010s


Current Regional Research
Completed EGI Reports
Global Geoscience Reports & Documents
Mission
EGI…the science to insp
ideas to explore for & pr
the Earth's energy resou
Vision
Delivering high quality
research, knowledge & da
to solve subsurface probl
in global collaboration wi
academic, industry &
government organization
ASK
Access to over $650 millio
research for a fraction of th
Scientific collaboration w
Specialists & Corporate Ass
scientific innovation
Knowledge to lower cost
& enhance production

2010s


Energy & Geoscience Institute
AT THE UNIVERSITY OF UTAH
Welcome
Juan Carlos Pinzón
Ambassador of Colombia to the United States
43
YEARS

2010s


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2010s


Outcrop Image:
Drill Rig
Core Collection
Optical Microscopy
20.0kV
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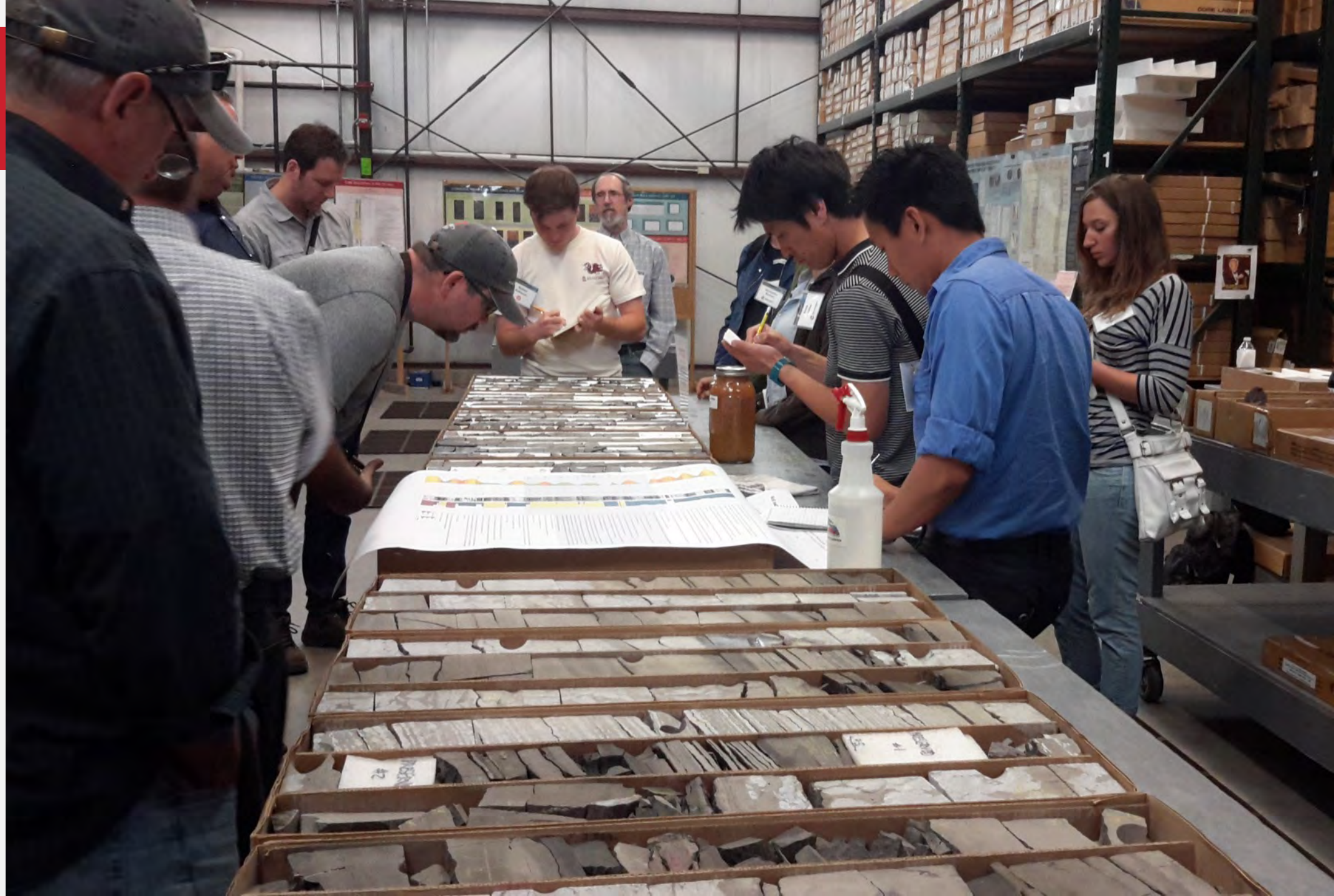
2010s



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Sheep Creek Overlook
300 Million Years at a Glance
Carving the Gorge
Chinle Formation
Moenkopi Formation

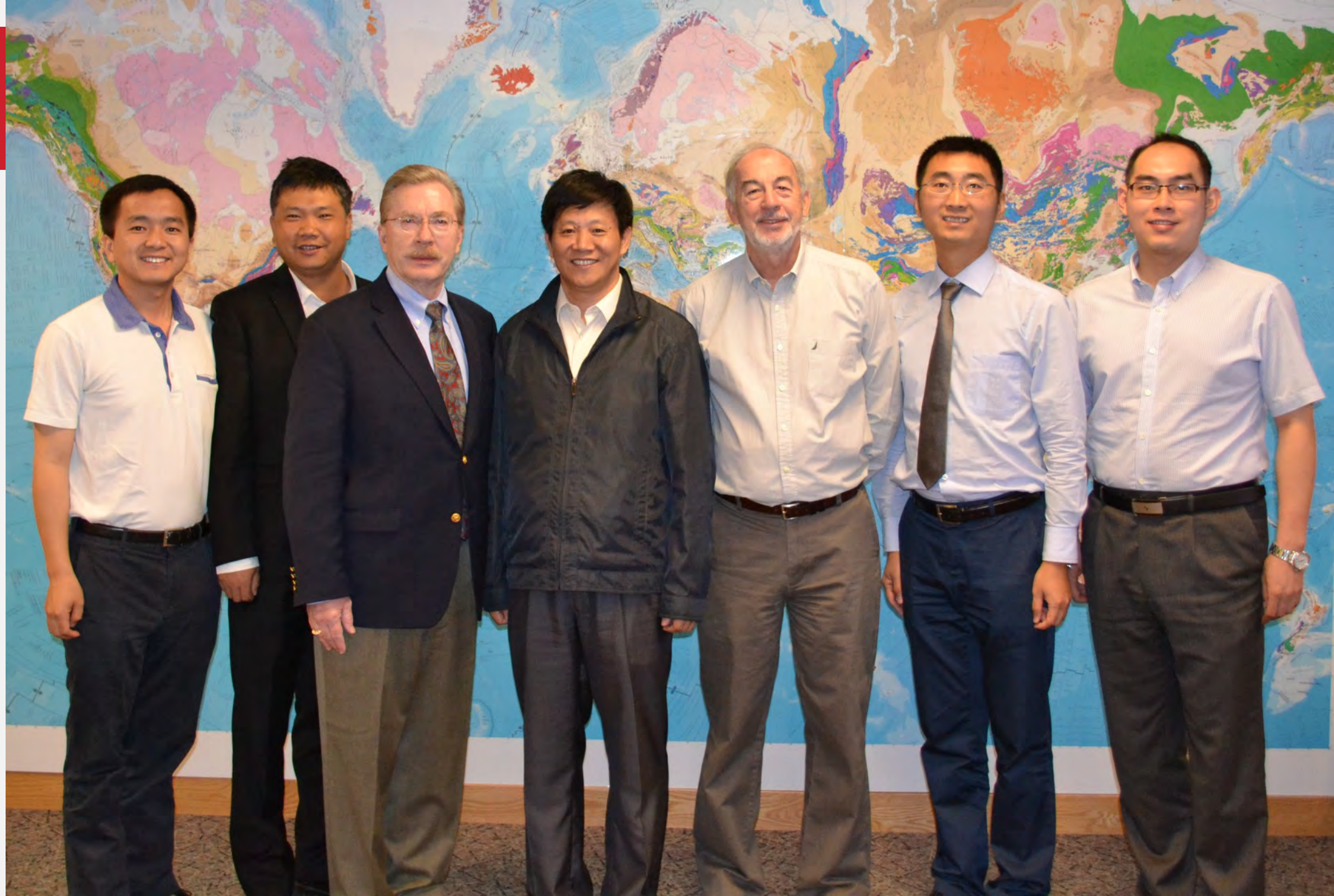
2010s



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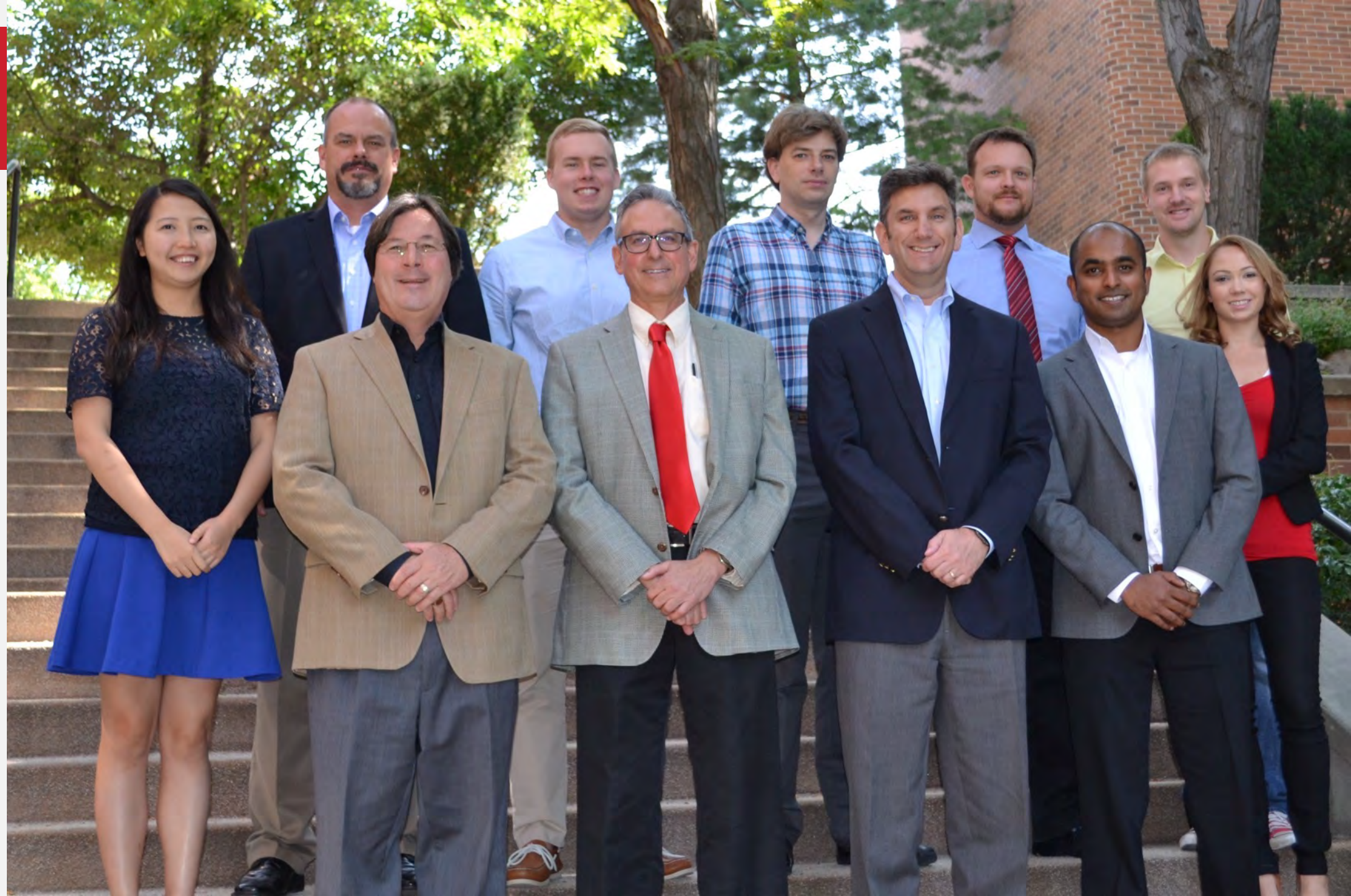
2010s


Energy
& Geoscience
Institute
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... the knowledge to train future geoscientist, engineers & leaders for the energy industry
Field Courses & Training Available to
EGI Members & Government Organizations
Utah-Nevada Deep Plays
Frontier Basins of Mexico: Gulf of California
Liquids from Shales
Petroleum Systems Atlas of Mexico
Shale Gas Production Analysis
South American Shales
UK Shale Gas
Central Eurasia Shales
Northwest African Margins
Current Regional Research
Completed EGI Reports
Global Geoscience Reports & Documents

2010s



2010s



2010s



2010s


Mission
EGI... the science to inspire new ideas to explore for and produce the Earth's energy resources
Energy & Geoscience Institute
43
YEARS
1972 - EGI... the science to find energy - 2015
Vision
Delivering high quality research, knowledg
solve subsurface problems in global collab
academic, industry and government org
BONNEVILLE BALLROOM II
Arnis Judzis
EGI

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ACCESS
SCIENTIFIC
KNOWLEDGE
Energy & Geoscience Institute
... the science to find energy
D&L OIL TOOLS
dloiltools.com
D&L OIL TOOLS
dloiltools.com
EGI
Vision
ASK

2010s


陕西中核裕泰油气技术服务有限公司
鼎兴（宁夏）环境监测中心有限公司
合作签约仪式
Signing Ceremony for Collaboration
Ray Levey
Runzhe Cheng
EGI Energy & Geoscience Institute
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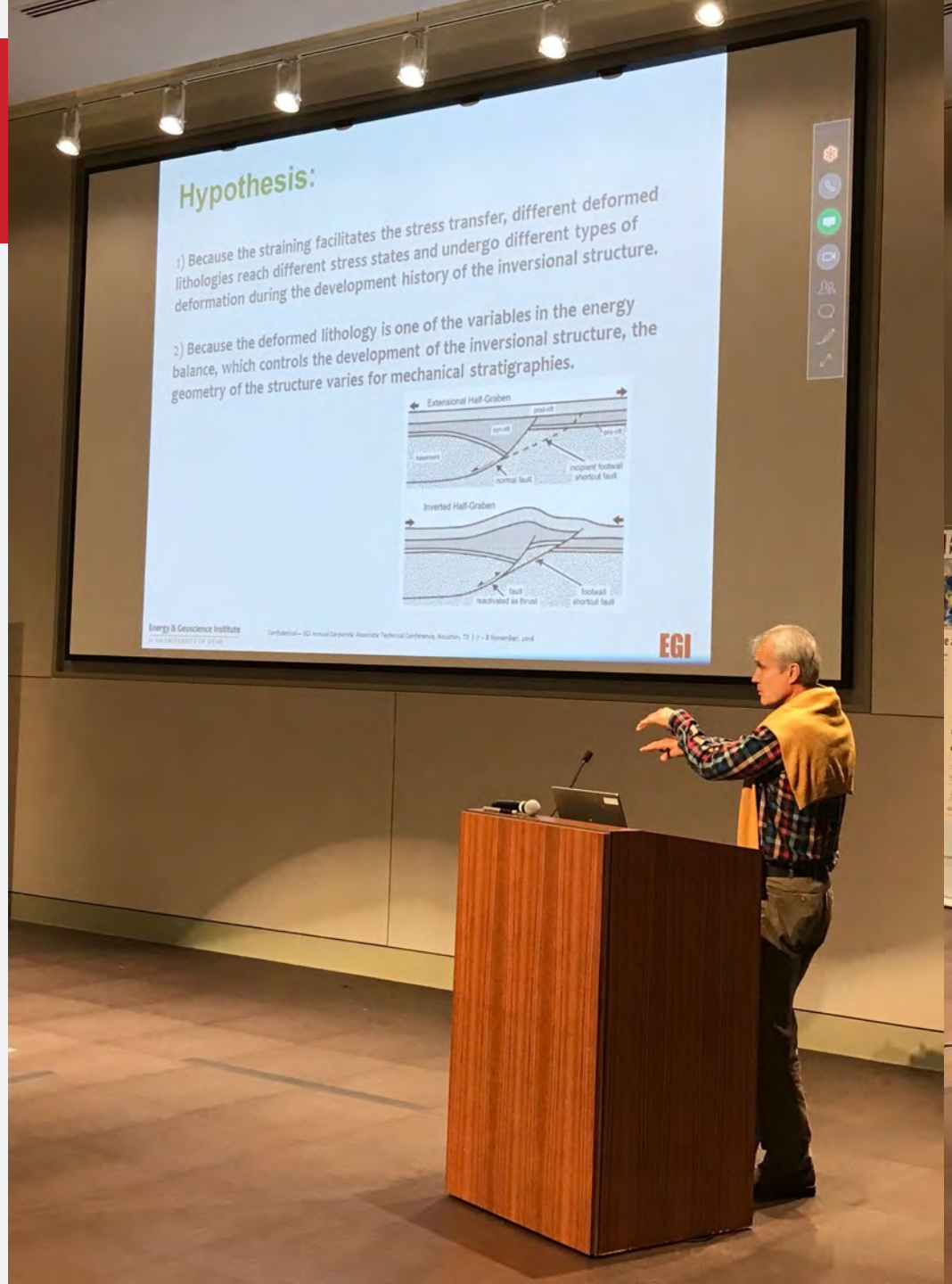
2010s



2010s



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Hypothesis:
1) Because the straining facilitates the stress transfer, different deformed lithologies reach different stress states and undergo different types of deformation during the development history of the inversional structure.
2) Because the deformed lithology is one of the variables in the energy balance, which controls the development of the inversional structure, the geometry of the structure varies for mechanical stratigraphies.
Extensional Half-Graben
Inverted Half-Graben
Energy & Geoscience Institute
EGI


Continuous Versus Cyclic Injection for Carbon Dioxide
Based on 40 acre well spacing
1 mile long horizontal well, 330 feet extended in y-direction
120 feet fracture spacing, total fractures 44
Simulation
Three wells simulated to study the interference effect
4 fractures simulated to reduce run time
Total project time 20 years
Primary Production : 5 years
Secondary Production: 15 years
Secondary Recovery (%)
Total Recovery @ 20 yrs (%)
Continuous 4.9 13.2
Cyclic 0.1 8.4
No Injection 3.8 12.1
Our simulation studies did not show that level of increase primarily because of the pressure gradient between injection and production point
480 ft.
990 ft.
P1
P2 / 12
P3 / 13
Energy & Geoscience Institute
EGI

2010s



2010s



2010s



2010s



2010s


Geology in 3D
The Utah Robotic Mining Project ... Creating Solutions for Extreme Conditions
THE UTAH ROBOTIC MINING PROJECT
FODERE PROFUNDIOR
Design
Build
Compete
Robotic Mining Project

2010s


UTAHFORGE
U.S. Department of Energy
Viable, clean, domestic sources of energy for future generations
FORGE CENTER OF EXCELLENCE
Why the University of Utah & EGI?
USGS
TEMPLE
INL

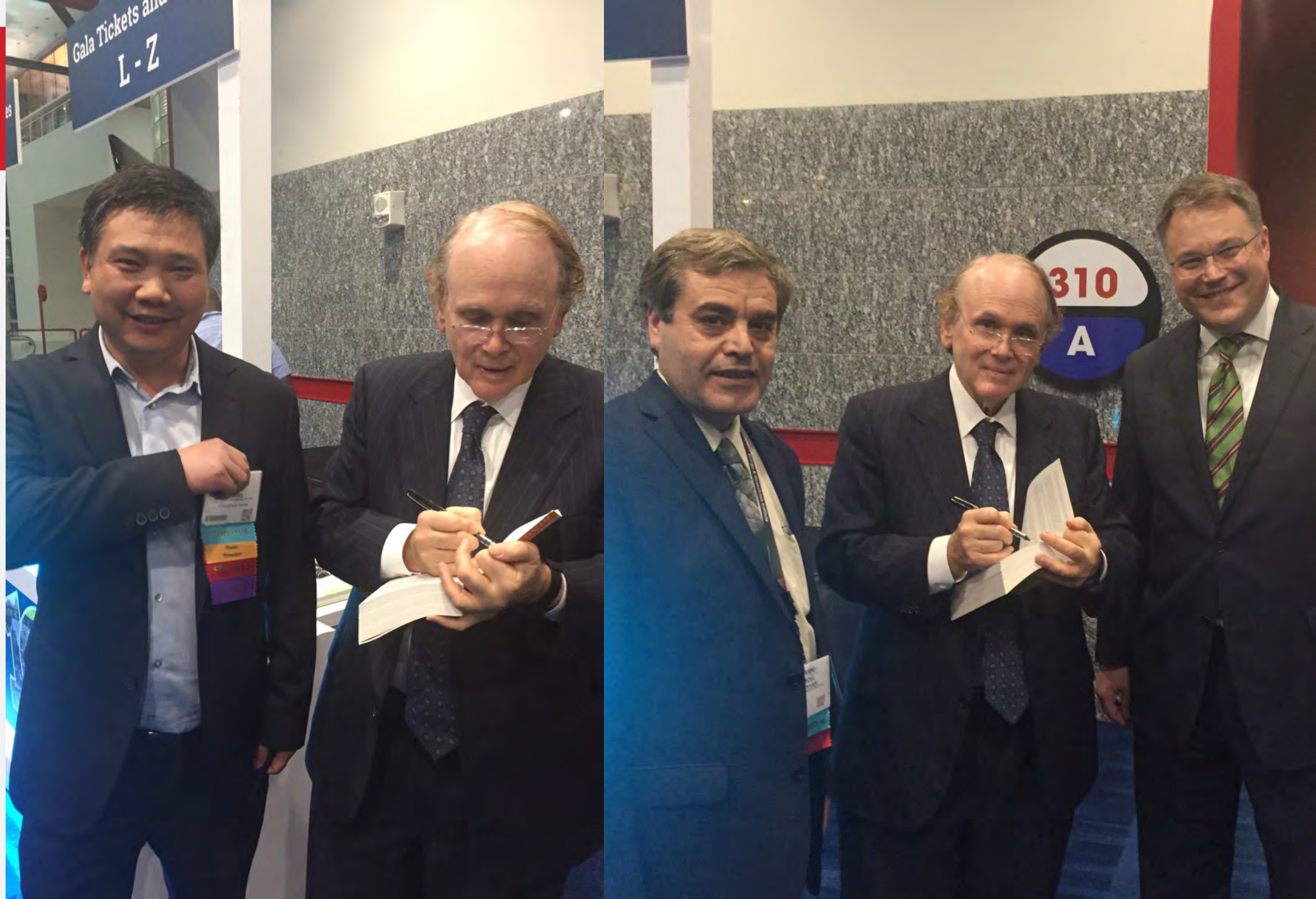
2010s



2010s


100TH AAPG ANNIVERSARY
ACE 2017
ANNUAL CONVENTION & EXHIBITION
2-5 April 2017 • Houston, TX • George R. Brown Convention Cente
discovery starts here
ACE.AAPG.org
with:
SEPM

2010s



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THE UNIVERSITY OF UTAH
AT THE UNIVERSITY OF UTAH
1972
Completed EGI Projects
Weatherford
GI OCEAN

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2010s



2010s


Glass
Rock-Eval or HAWK Parameter
in TOC Model context
TOC (wt.%)

2010s



2010s


WYOMING
DINOSAUR GRAVEYARD
WYOMING
ALBANY
LOUISIANA
COWBOYS
hurley

2010s



2010s


The Utah Frontier Observator
Geothermal Energy (FORGE):
Laboratory For Enhanced Geot
March 4, 2019
EMERGENCY
EXIT
AQUAFINA

2010s



2010s



2010s



2020s


EGI
Energy & Geoscience Institute
AT THE UNIVERSITY OF UTAH
Since 1972
RESTROOMS
iCORDS
Analytics-Ready Geoscience Data
image

2020s


2500
2600
LEADING TECHNOLOGIES
DEFENSE
ANTI-SUBMARINE WARFARE
MINE COUNTER MEASURES
WATERSIDE SECURITY
EGI
Energy & Geoscience Institute
AT THE UNIVERSITY OF UTAH
Since 1972
Discover YOUR Deepwater Advantage
the science to find energy
The Industry's Favou
Energy Geoscience M
GEO ExPro is an interdisciplinary worldwide energy magazine and online publication.
geoexpro.com

2020s



2020s



2020s



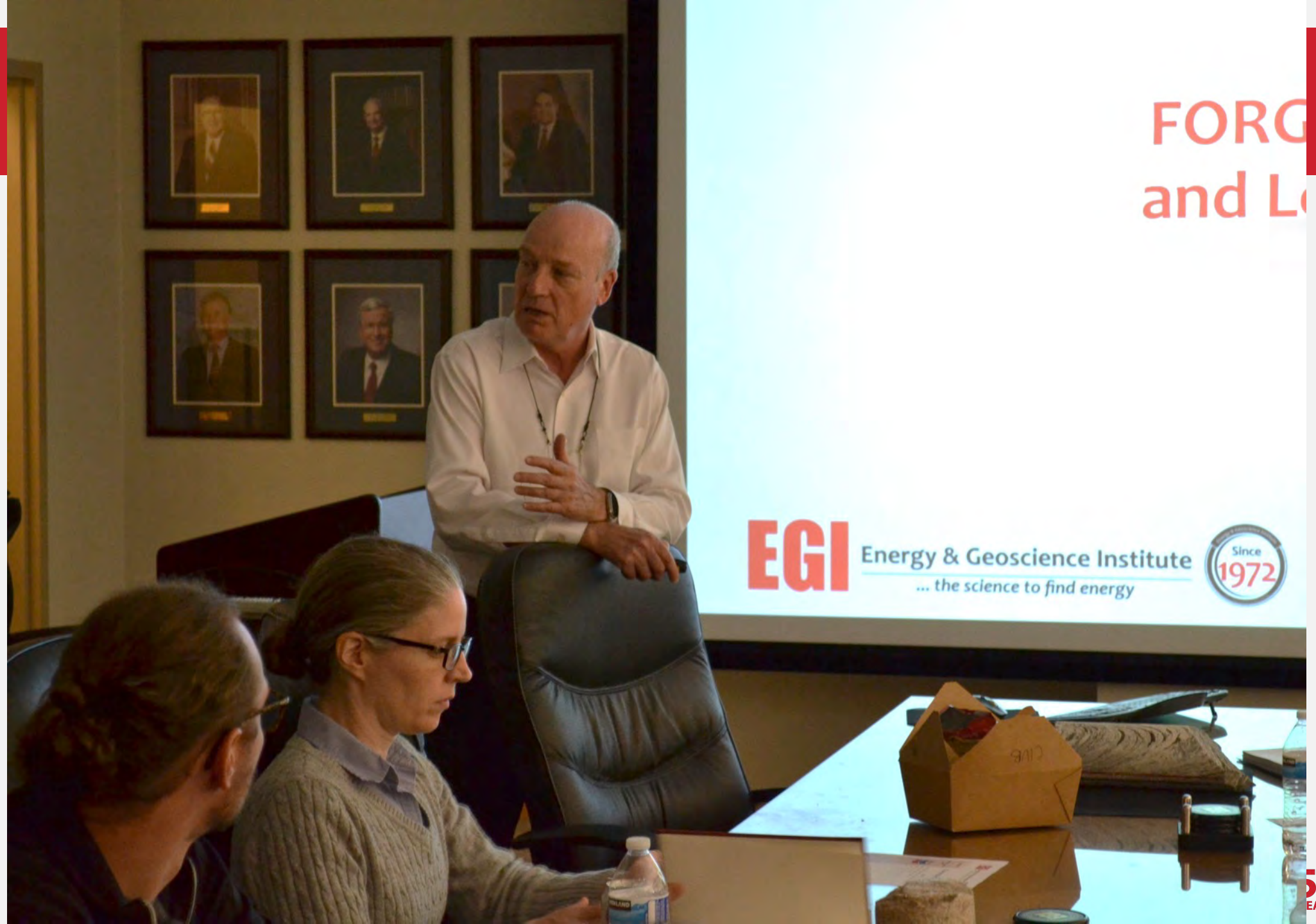
2020s


Potential Pilot Projects
Company
Problem
Solution
Expected Outcome
Annual Savings
Copper concentrate production company (Ely, NV)
Company wants solar panels, but output does not align with facility's peak demand, resulting in poor investment metrics.
Use AI to predict peak. Use predictive automation to schedule pumping from wells during off-peak times.
Peak demand reduced by up to 1.5 MW using pumping and water storage as a "battery".
$371,000
Power generation facility (Castle Dale, UT)
Cooling tower's energy performance varies, depending on environmental and operating conditions.
Use machine learning to predict optimal operating conditions. Use real-time optimization to minimize power draw.
Energy consumption reduced by 7% with optimized operation compared to normal operation.
$149,700
Hospital (Blanding, UT)
Company struggles to manage energy with variation in occupancy.
Implement continuous, real-time commissioning to optimize building automation system.
Electricity and gas usage decreased by 25%.
$35,000
Biosolids treatment facility (Tooele, UT)
A solar biosolids dryer swings between using too much or too little natural gas to optimally dry product.
Implement model predictive control using AI models to optimize economics considering production and energy.
Product moisture specs met with minimal natural gas usage.
$45,000
A rotary kiln producing lime from limestone must hit product specs, but uses too much coal and electricity.
Implement model predictive control to meet specs with minimal energy usage. Include peak pricing on electricity from ind
Coal usage minimized while hitting product specs. Process also takes advantage of time-of-use electricity rates.

2020s



2020s


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