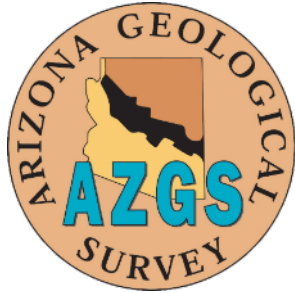


CUSP – Arizona Update

Arizona's CCUS Potential and Opportunities



by
Arizona Geological Survey
University of Arizona



as part of
Carbon Utilization and Storage Partnership
June 2nd, 2022, Las Vegas, NV



AZGS Basin Analysis Group



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Outline

1. Arizona in the CUSP ecosystem
2. Why Arizona? CCUS in AZ
3. Arizona's Tasks 1-4: status, setbacks and developments
4. Milestones and Next Steps



***“God
Enriches”***

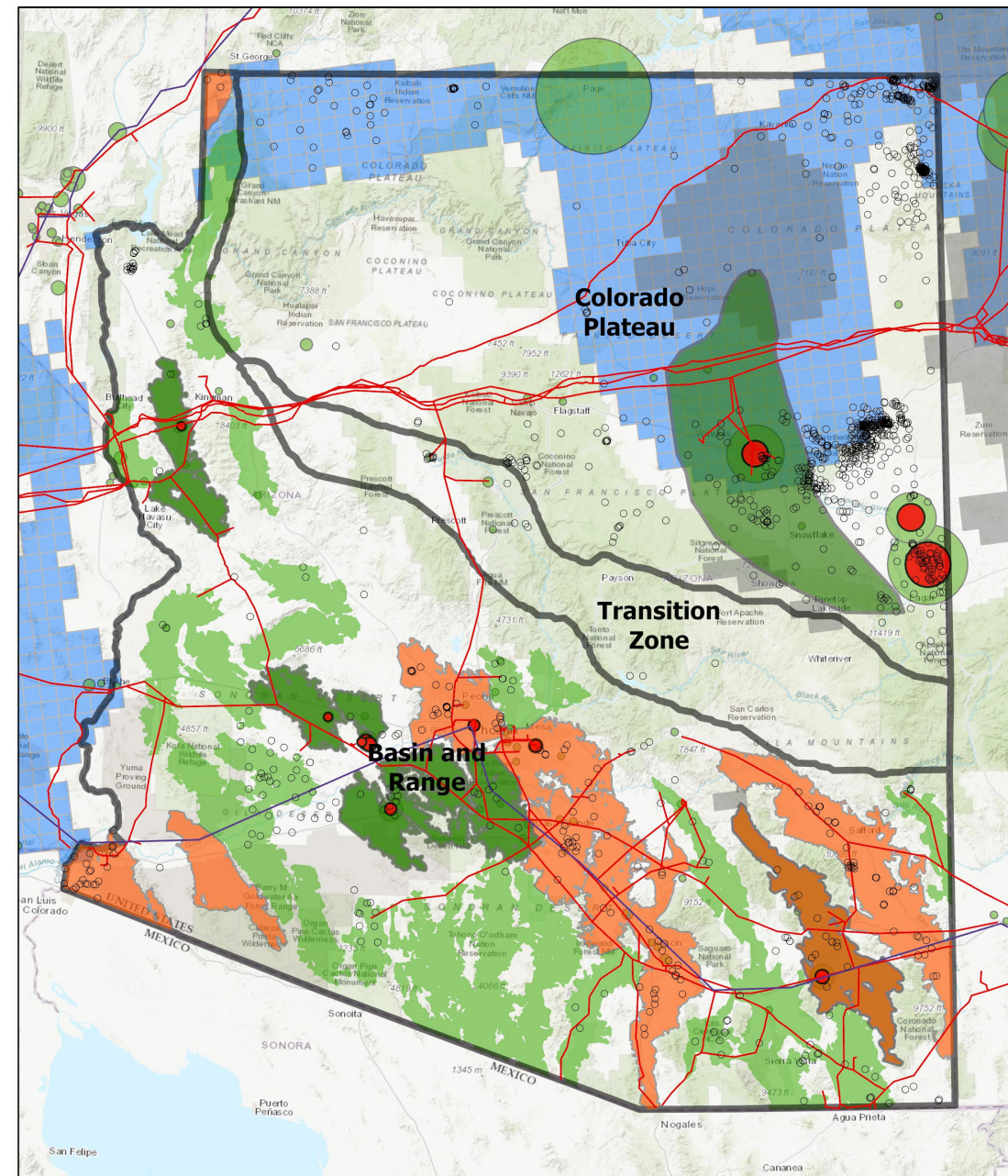
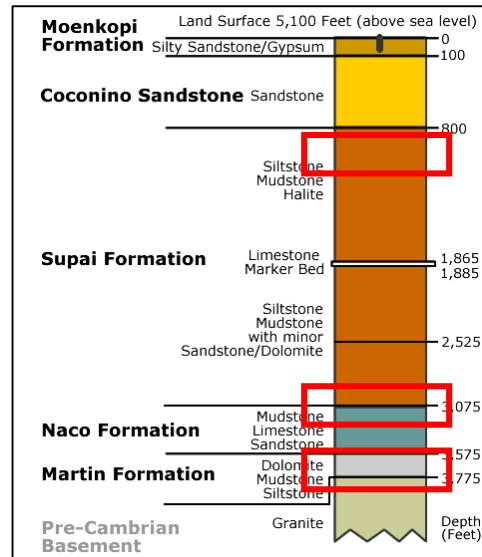
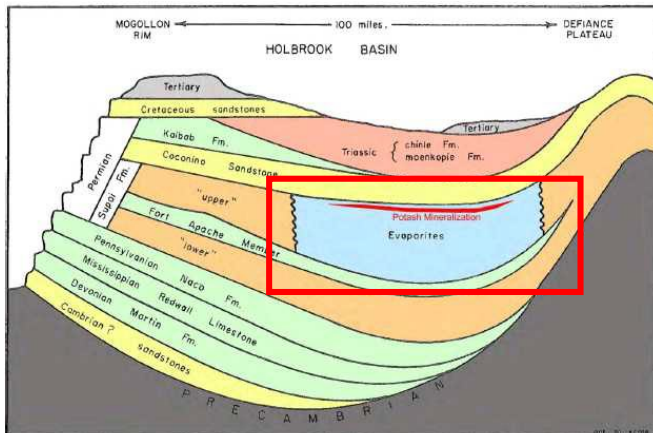
***AZ's 5C's: Copper, Cattle, Cotton, Citrus, and
...CCUS?***



CCUS in Arizona

Colorado Plateau

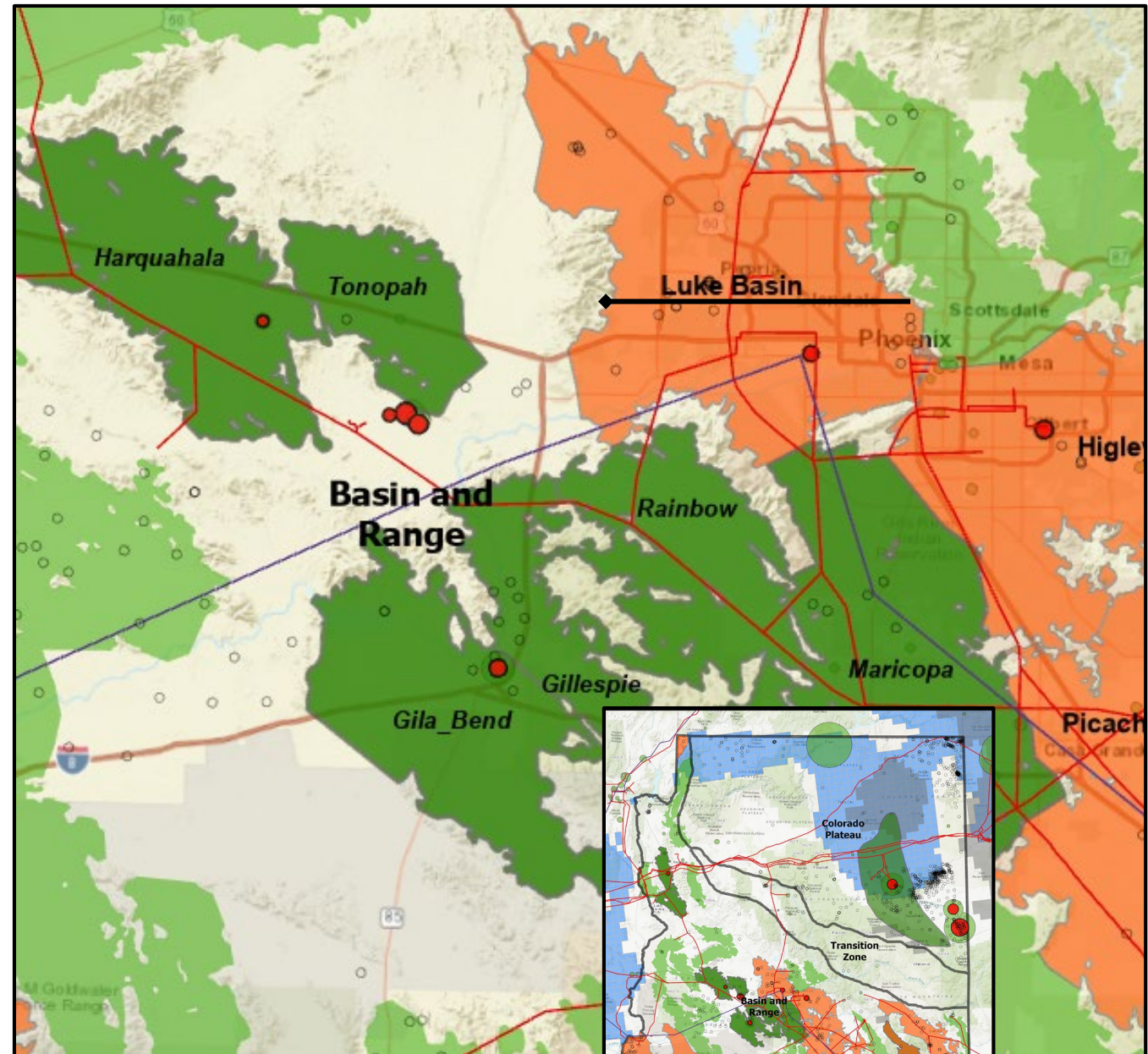
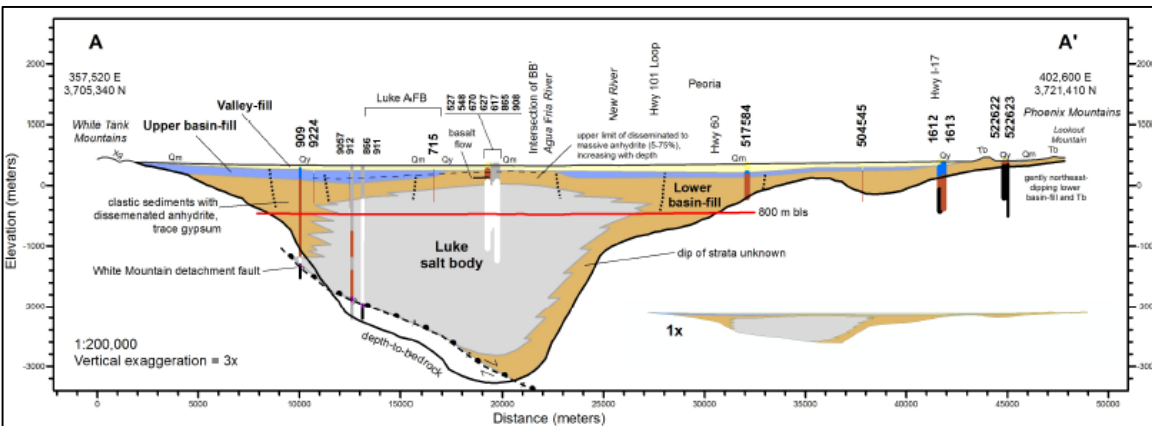
- I-40 corridor & ROWs
- 3 Power Plants, NGS offline 2019
- Stacked saline with seals
- CO2 & He gas fields
- Up to 5 USDW's



CCUS in Arizona

Basin & Range

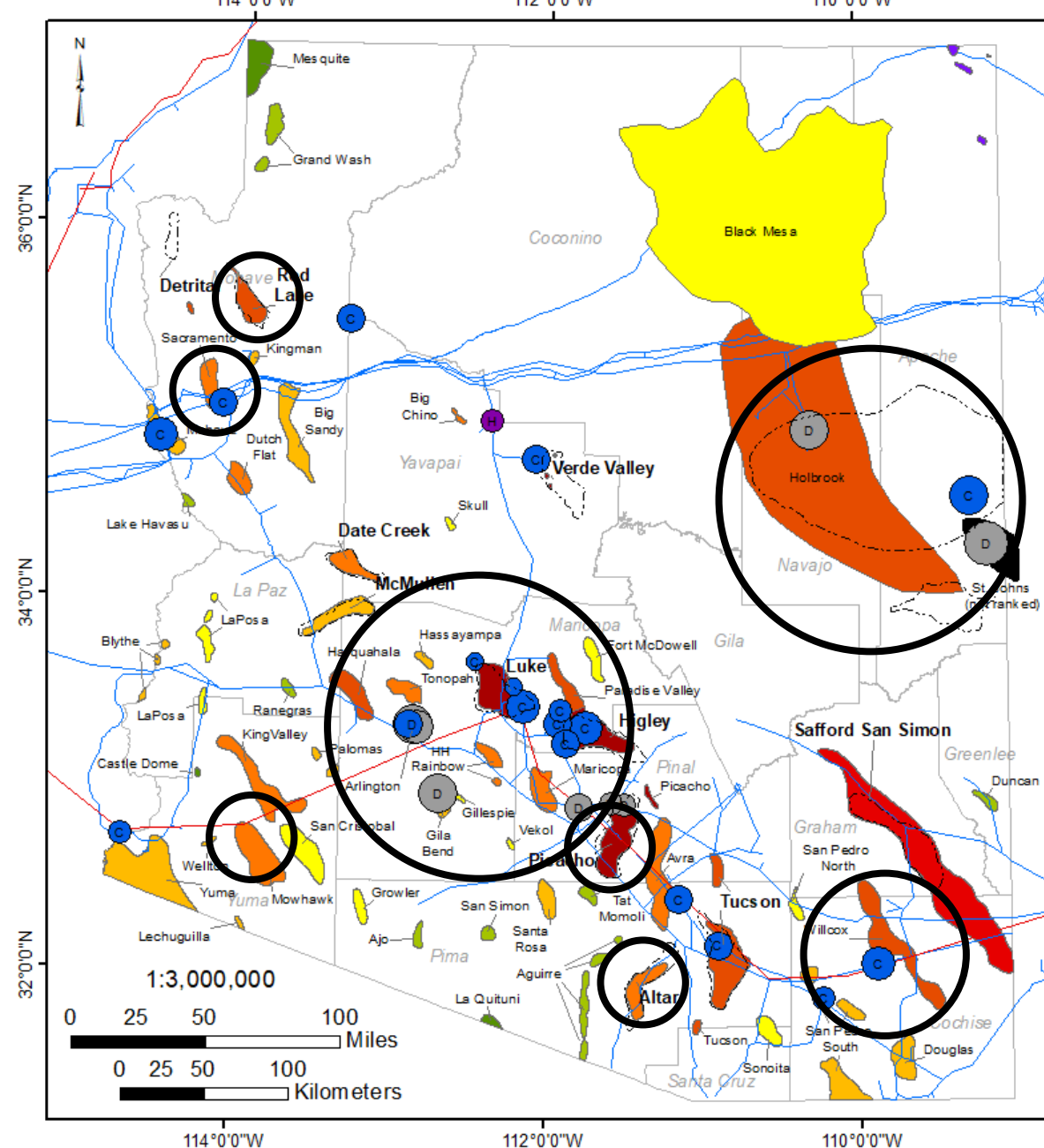
- 56 basins w/storage potential
- USDW and stacked saline
- Sediment-basalt-salt
- Geothermal potential
- Critical minerals
- I-10 corridor and ROWs



Arizona SOPO

Task 2 Characterization/Challenges

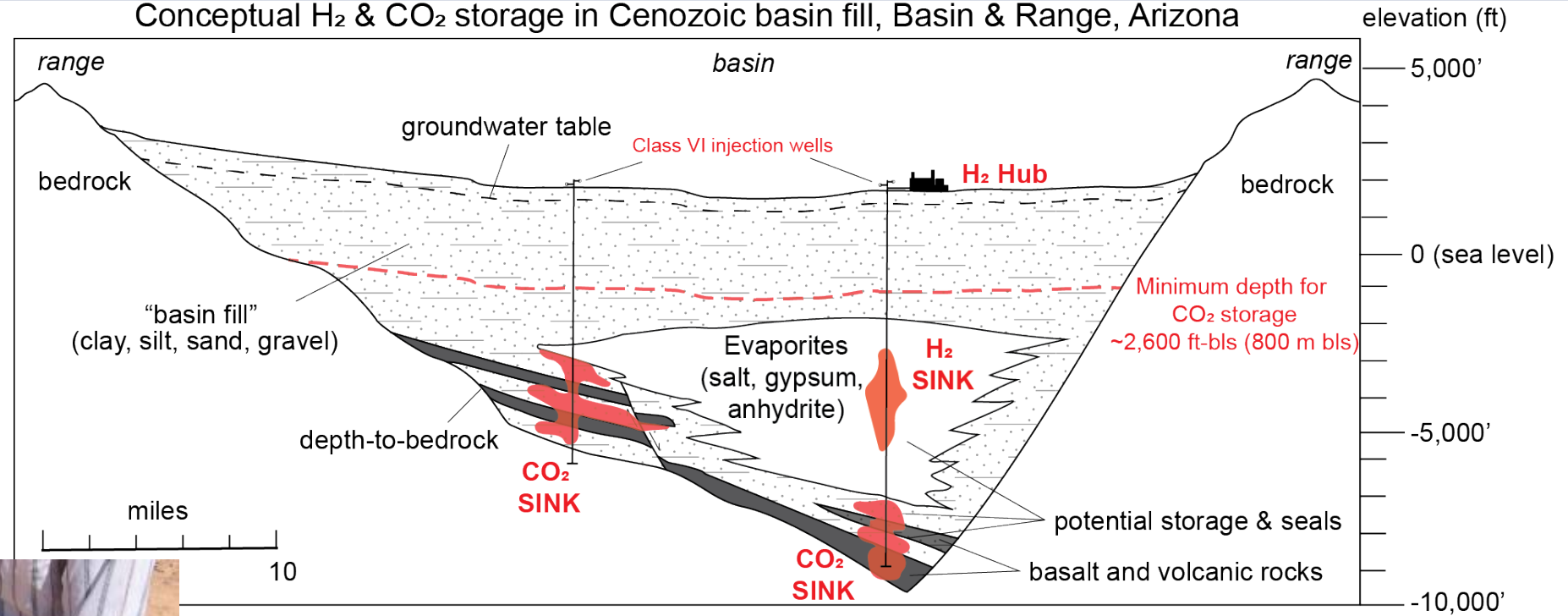
1. Statewide CCUS potential with basin ranking (3 CP/56 B&R)
2. Important targets: Holbrook, Harquahala, Luke, etc. 1 to 2 on Plateau, ~10 Basin & Range
3. Site characterization ongoing (poro/perm, DTB, private datasets*, isopachs, layers, granularization)
4. Industry engagement: Nikola Motor, energy companies*, SRP, APS, TEP, SWGas. Two coalitions on carbon and hydrogen.



“70% Slide” e.g. Luke basin, AZ



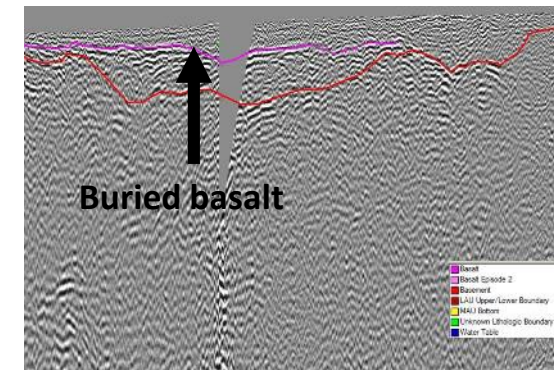
Conceptual H₂ & CO₂ storage in Cenozoic basin fill, Basin & Range, Arizona



Picacho basin (K. Murraray)



Bumstead, Glendale, AZ (Towne, D.)



Southern AZ basin with interbedded basalt

Arizona SOPO

Task 3 Data Collection, Sharing, and Analysis

1. Data and data gaps identified
2. Basin volumes, tops and bottoms ID'd
3. Depth-to-bedrock can be improved locally
4. USDW for some targets ongoing
5. Geothermal data exhausted
6. 2020 EPA data, but not refined at plant level
7. NRAP/SCO2 tools not being used thus far



Arizona SOPO

Tasks 4 and 5 Regulation, Policy, Outreach & Transfer

1. Discussions with Environmental Quality (ADEQ), Water Resources (ADWR) & State Land (ASLD)
2. Discussions with ADEQ Oil and Gas Conservation Commission (OGCC)
3. Outreach (ongoing on all)
 1. Website pages
 2. Coalitions (2) and workshop development
 3. Interactive Subsurface Viewer and data portal
 4. Stratigraphic mapping
 5. Story Maps





ARIZONA
GEOLOGICAL SURVEY

Arizona Subsurface Viewer

Layers

- ▶ Geothermal
- ▶ Hydrogeology and Groundwater
- ▶ Surface Geology
- ▶ Subsurface Geology

Stratigraphic Columns

Location Information

Stratigraphic Column Centroid*

Please enter in WGS84 decimal degrees

Find address or place



Earthstar Geographics | Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, Bureau of Land Management, etc. Powered by Esri



Lat: 35.52549

Lon: -113.99814

Nomeclature

Gila Bend



Esri, CGIAR, USGS | City of Glendale, Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, Bureau of Land Management, etc.

Next Steps

1. Ongoing projects & developments

- Hydrogen Hub coalition
- Direct Air Capture
- DOE FOA's in 2022
- Basalt working group?
- Acquiring proprietary assets (core, geophysical surveys)

2. Next Steps

- Finalize layers and granularization for CCUS targets
- Outreach to AZ tribes, social scientists, regulators, energy companies, stakeholders and general public
- Collaboration, partnerships and relationships



Thank You

To CUSP Team, DOE, Labs and
states!

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DA SCIENCE

**ARIZONA
GEOLOGICAL SURVEY**

Havasu Canyon, Grand Canyon, AZ