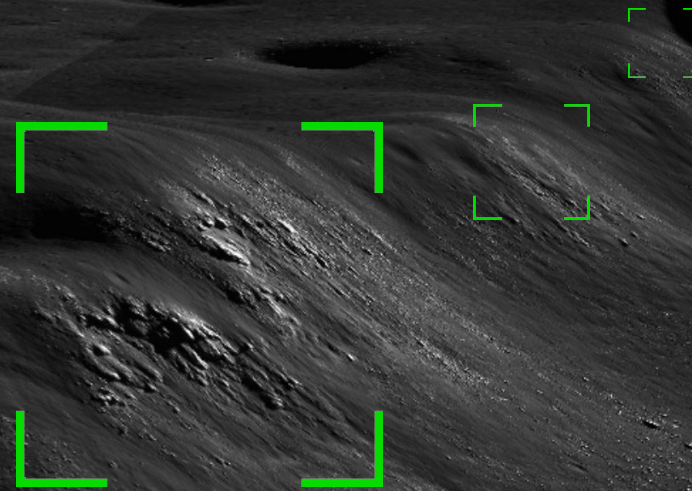


From Scavenging to Quarrying:

Massive Glass-Rich Deposits at Schrödinger Crater

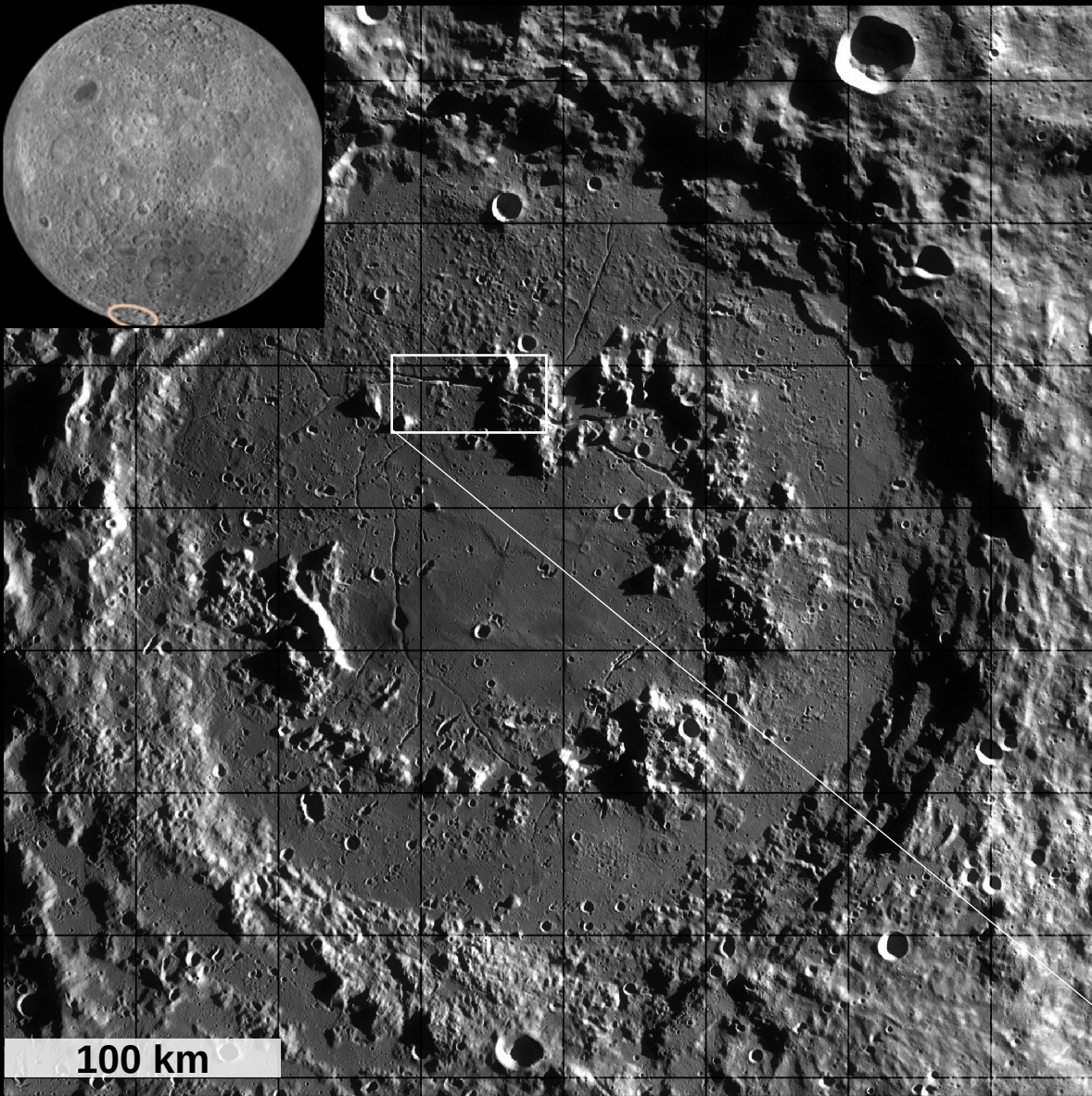
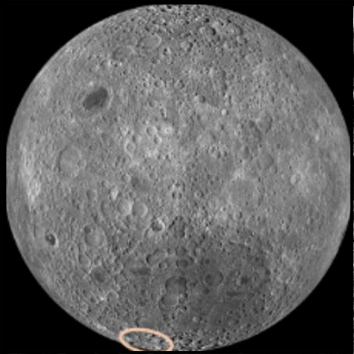
M. Prakash,
C. Grima,
S.P.S. Gulick,
M.T.K. Jordan,
G.Y. Kramer



INSTITUTE FOR GEOPHYSICS
The University of Texas at Austin

200 m

The Schrödinger Crater



The Setting:

3.8 Billion-Year-Old Peak-Ring Basin.

The Location:

Borders the South Pole-Aitken (SPA) basin.

The Window:

Deep graben walls expose the lunar subsurface.



Observations

[Prakash et al., in rev.]

Albedo:

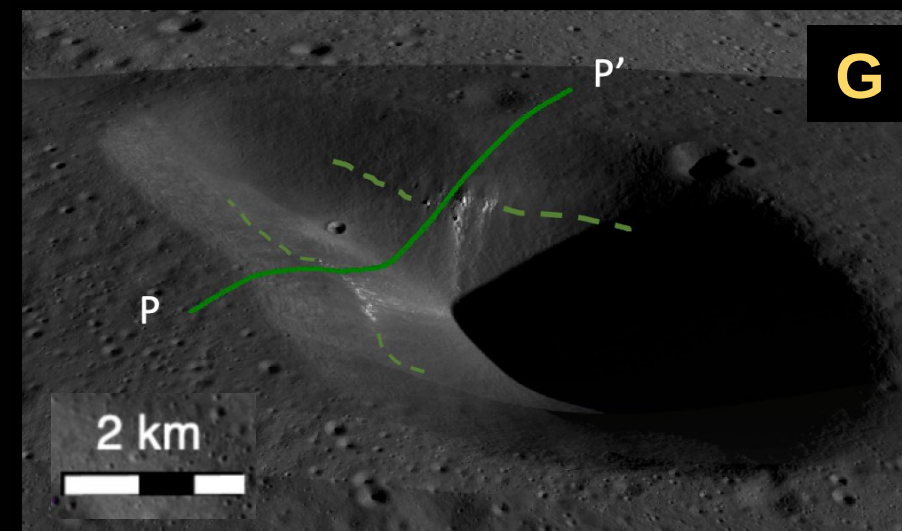
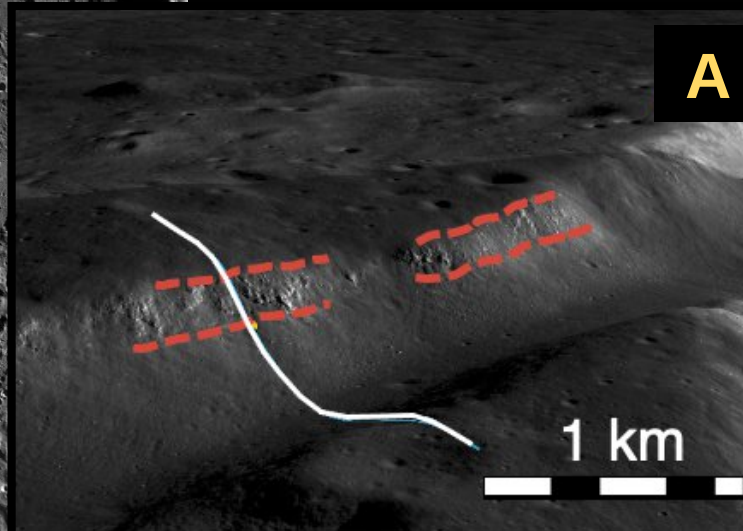
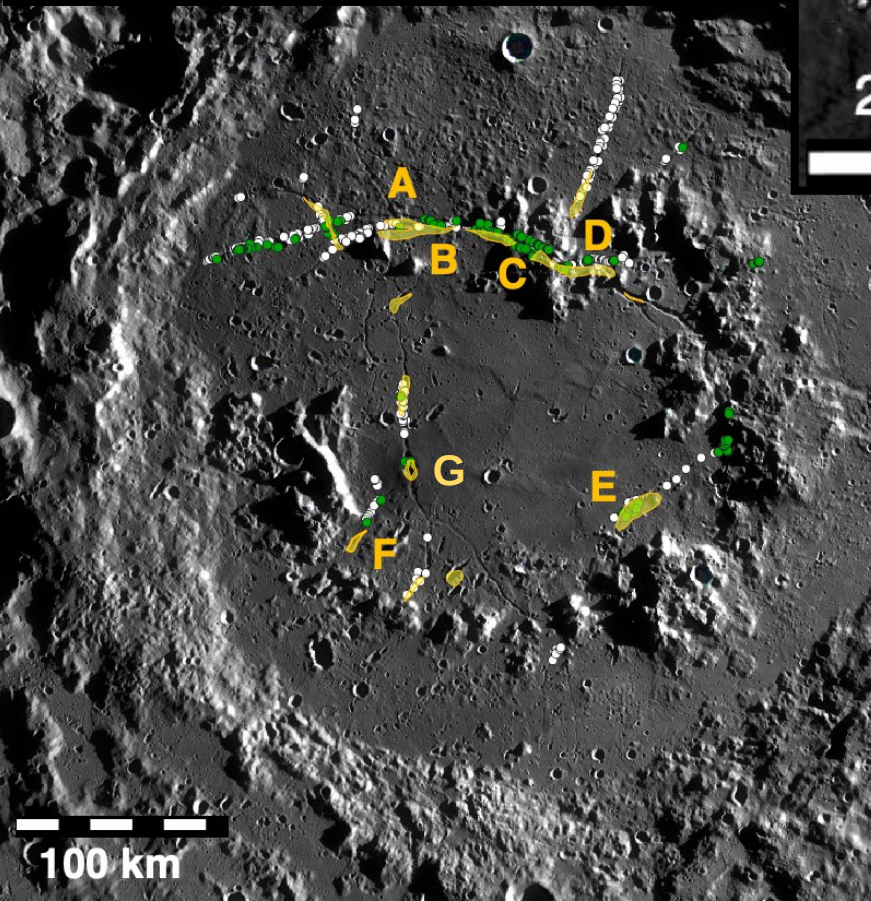
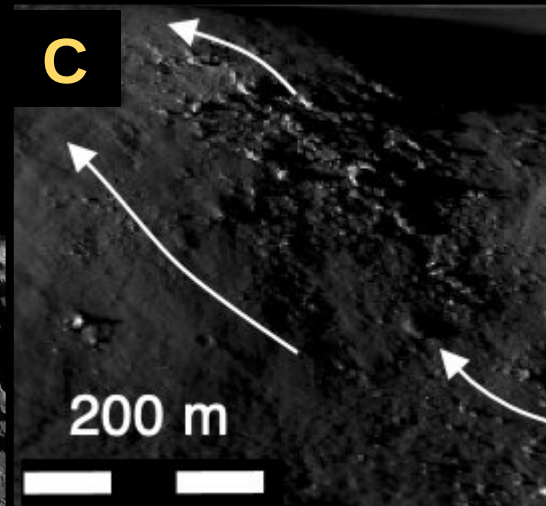
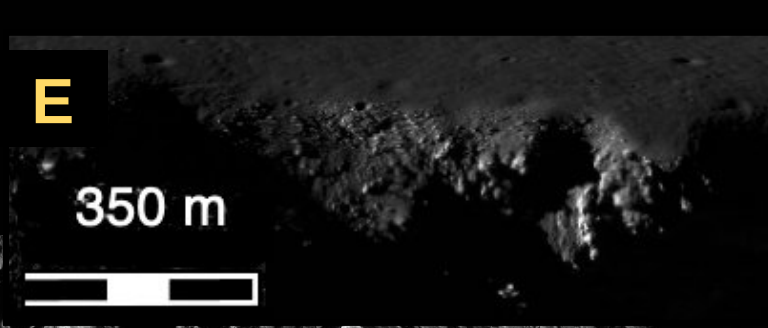
- Highly reflective, bright material.

Geometry:

- Steep cliff-forming ($\leq 45^\circ$)
- Thick exposure (≤ 138 m)
- Onlapping structures
- Peak-ring draping

Texture:

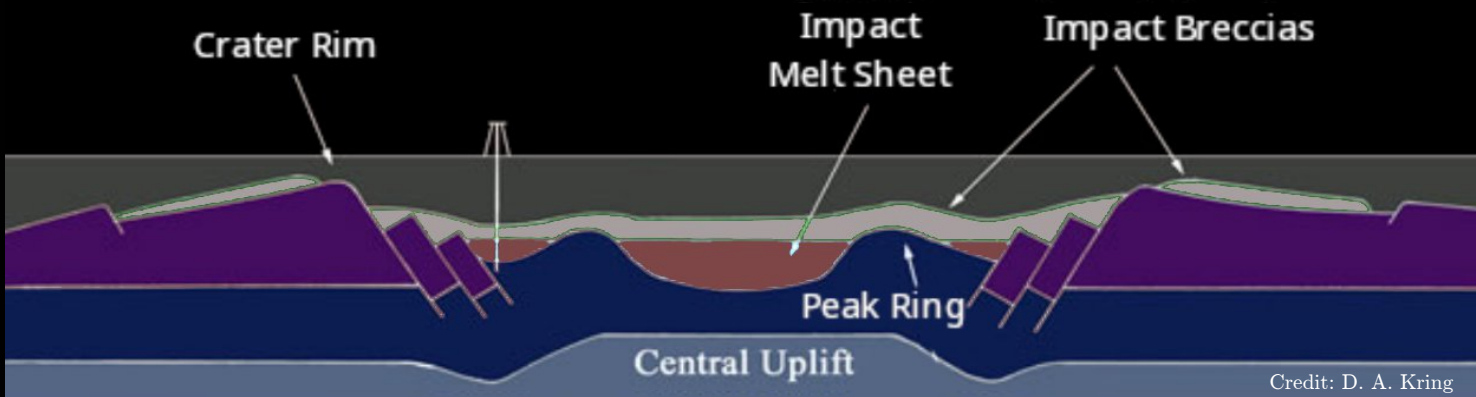
- Rubbly & blocky
- Boulder falls (> 0.5 m)



Interpretation

[Prakash et al., in rev.]

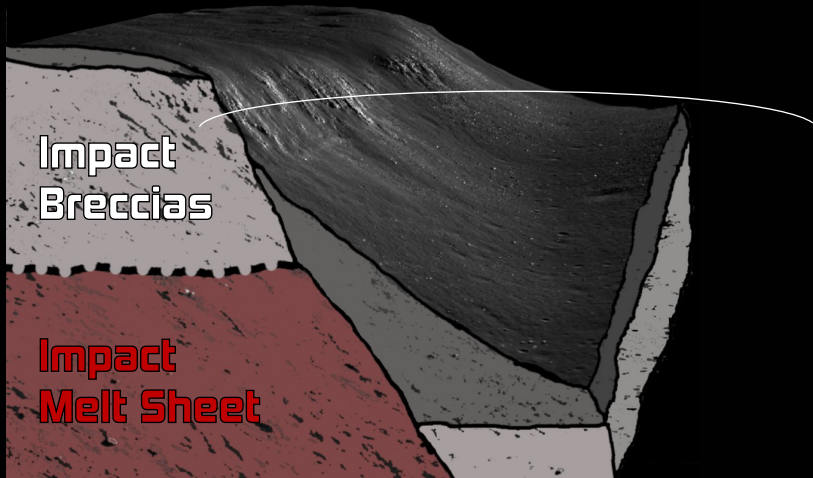
OBSERVATIONS ↓	H1: Impact Breccias	H2: Impact Melt Sheet	H3: Volcanic Flow	H4: Distal Basin Ejecta
Bright Material	✓	✗	✗	?
Cliff-forming (up to 45° slope)	✓	✓	✗	✗
Thick Unit (≥ 138m)	✓	✓	✗	✓
Onlapping Geometries	✓	✗	✓	✗
Peak Ring Draping	✓	✗	✓	✓
Rubbly/Blocky Textures (No Jointing)	✓	✗	✗	✓



Chicxulub Crater, Earth

Credit: D. A. Kring

ISRU Potential



Processing Advantages



High Grade/Yield:

30-50% glass-rich (from Earth analogs)
10,000 km³ (supposedly ~300 km large).

Minimized Mass Sorting

Quarrying blocks directly from cliff walls or boulders

Chemical Reduction?

Disordered (amorphous) glass matrix [Stoffler et al., 2017]

@ModelProAcademy

Industrial End-Products



Structural Blocks:

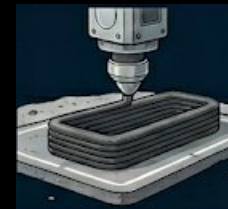
Habitat building blocks w/
radiation shielding.



Glass Fibers & Ceramics:

Anhydrous glass stronger
and lighter than alloy
steel

[Blacic, 2001]



"Mooncrete" Reinforcement:

Raw material for waterless
concrete and landing
pads.

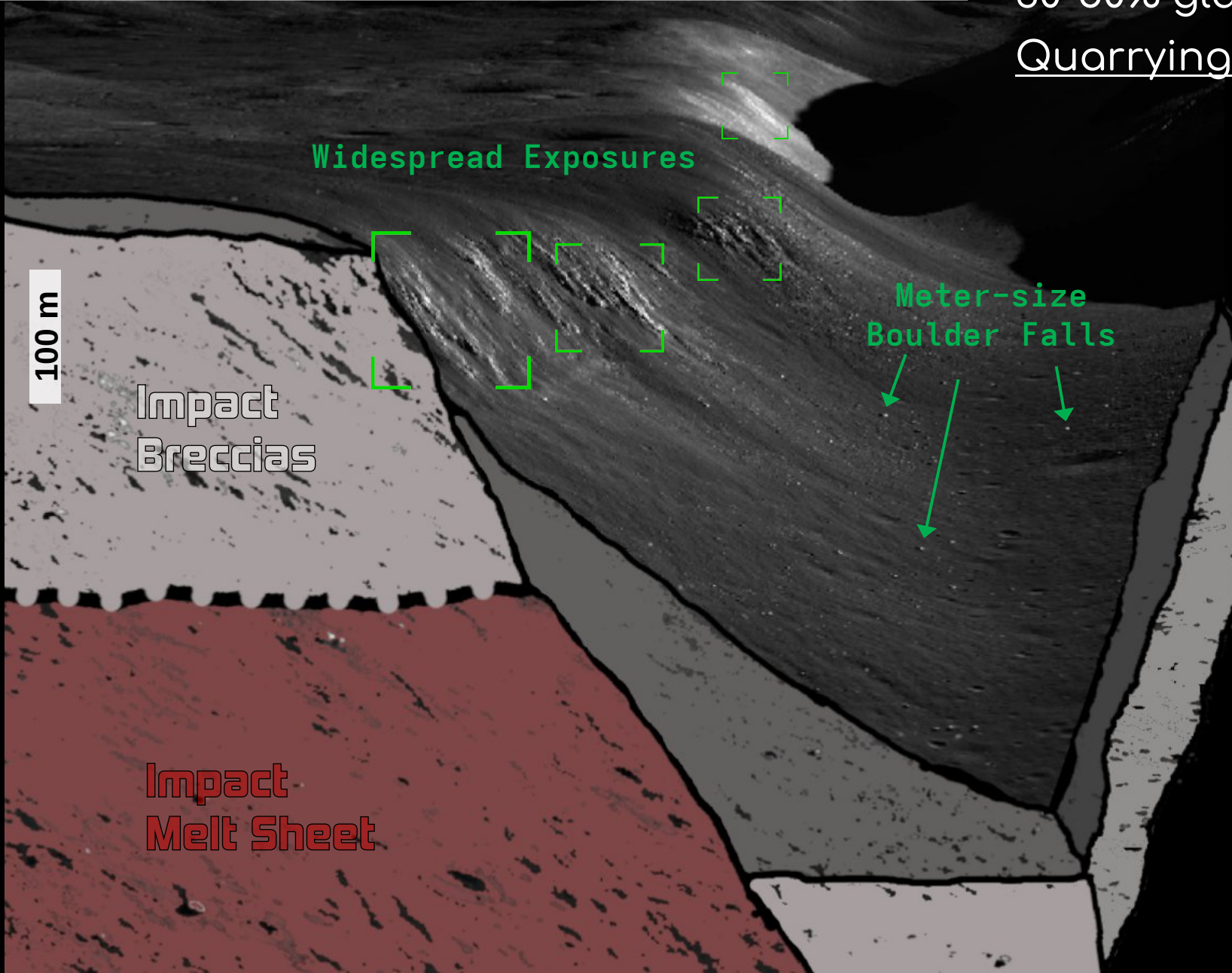
[Ruess, 2006]

Conclusions

~10,000 km³ cohesive impact breccia

30-50% glass-rich (on Earth)

Quarrying Rocks vs. Scavenging Regolith



Resource Model at Reach?

Volumetric Homogeneity

GPR and seismic (e.g. Draper SERIES-2) to confirm spatial continuity.

Geotechnical Properties

Measurement on returned samples or Earth analogs of compressive and tensile strengths to design extraction machinery.

Petrography

Microscopic spectro-imagery and CT-scan to verify composition and grade.

Chemical Reduction Baselines

Utilizing impact glass from Earth analogs to run bench-scale reduction.

Suevite impact breccias exposure
Rochechouart, France
2025

