



The modern Gold Rush

Proposed Method for Locating and Identifying Terrestrial Pyroducts[®]

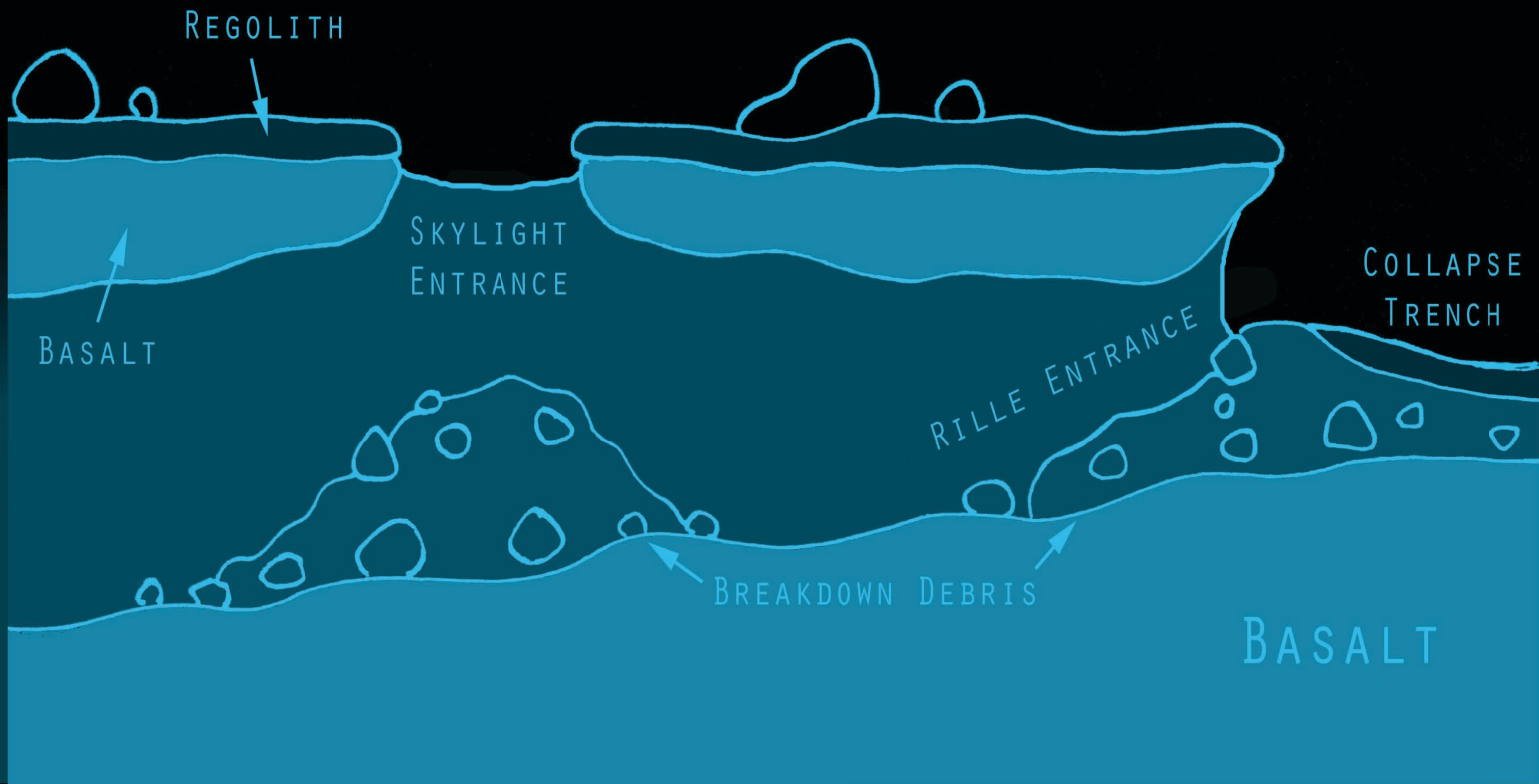
What is a Pyroduct?

py·ro·duct

/pīrō'dəkt/

noun

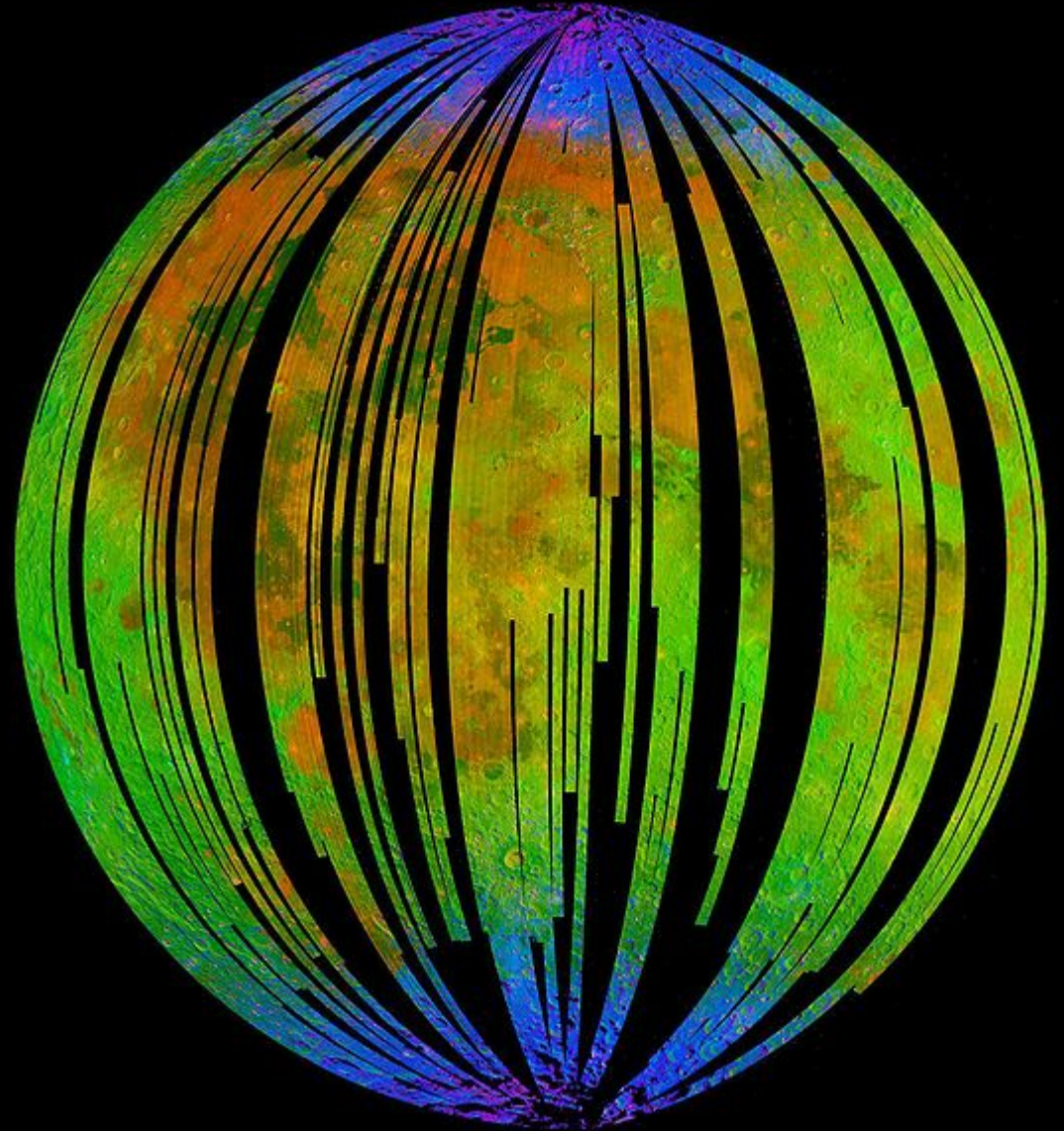
any internal lava conduit in a flow, irrespective of shape and size, regardless of whether it contains molten lava during eruptive activity or is preserved as an elongate cave after eruptive activity ends and molten rock drains away.



Electrolysis



Ten
Trillion
Tons



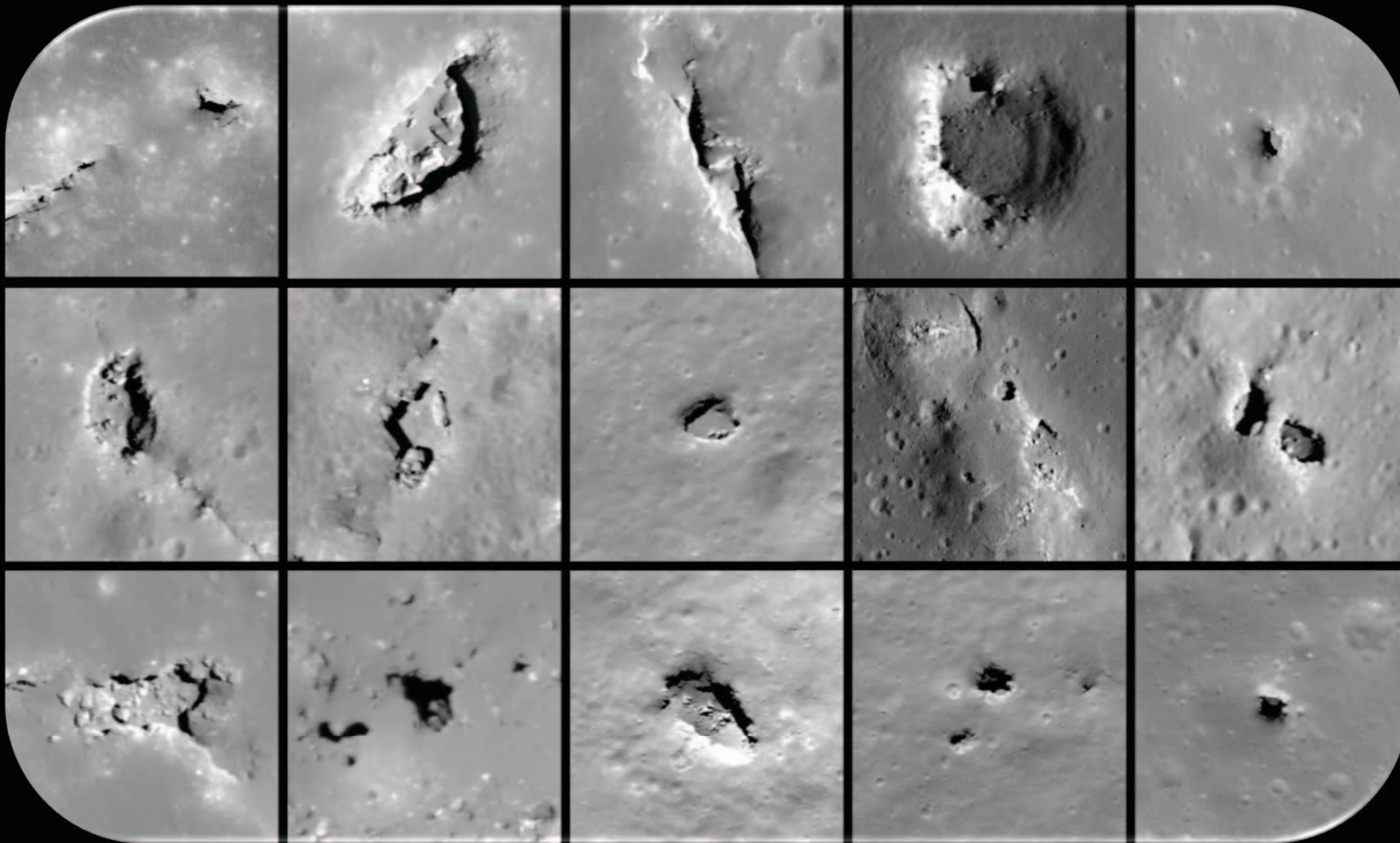


The background image depicts a dark, cavernous space. A bright, white, triangular light source is positioned in the upper left corner, casting a beam of light downwards. At the bottom center, there is a glowing, irregularly shaped light source with a blue-green hue. The surrounding walls and floor are dark and textured, with some vertical lines suggesting stalactites or cave formations. The overall atmosphere is mysterious and scientific.

“preservation of condensed volatiles”

“protection from radiation”

“astrobiologic implications”





How big?







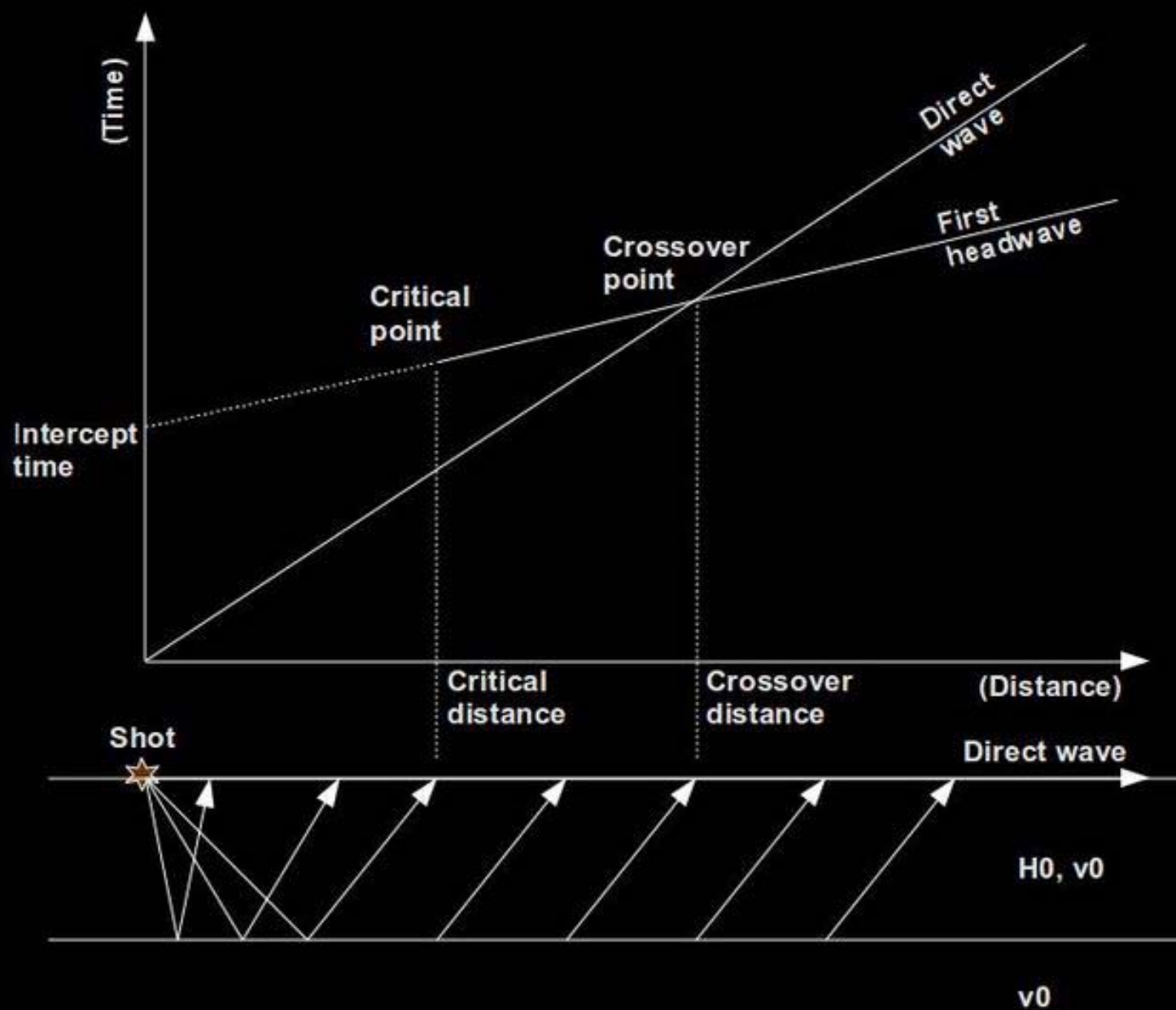
WARNING

NO WALKWAY

NO LIGHTS

**SHARP, LOOSE
ROCKS**











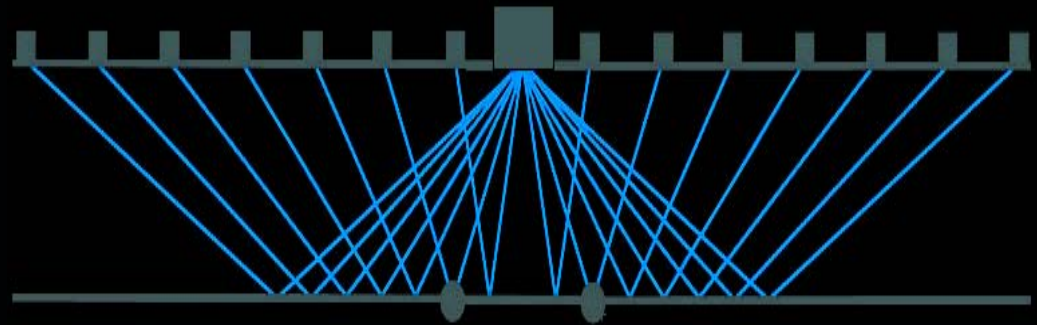
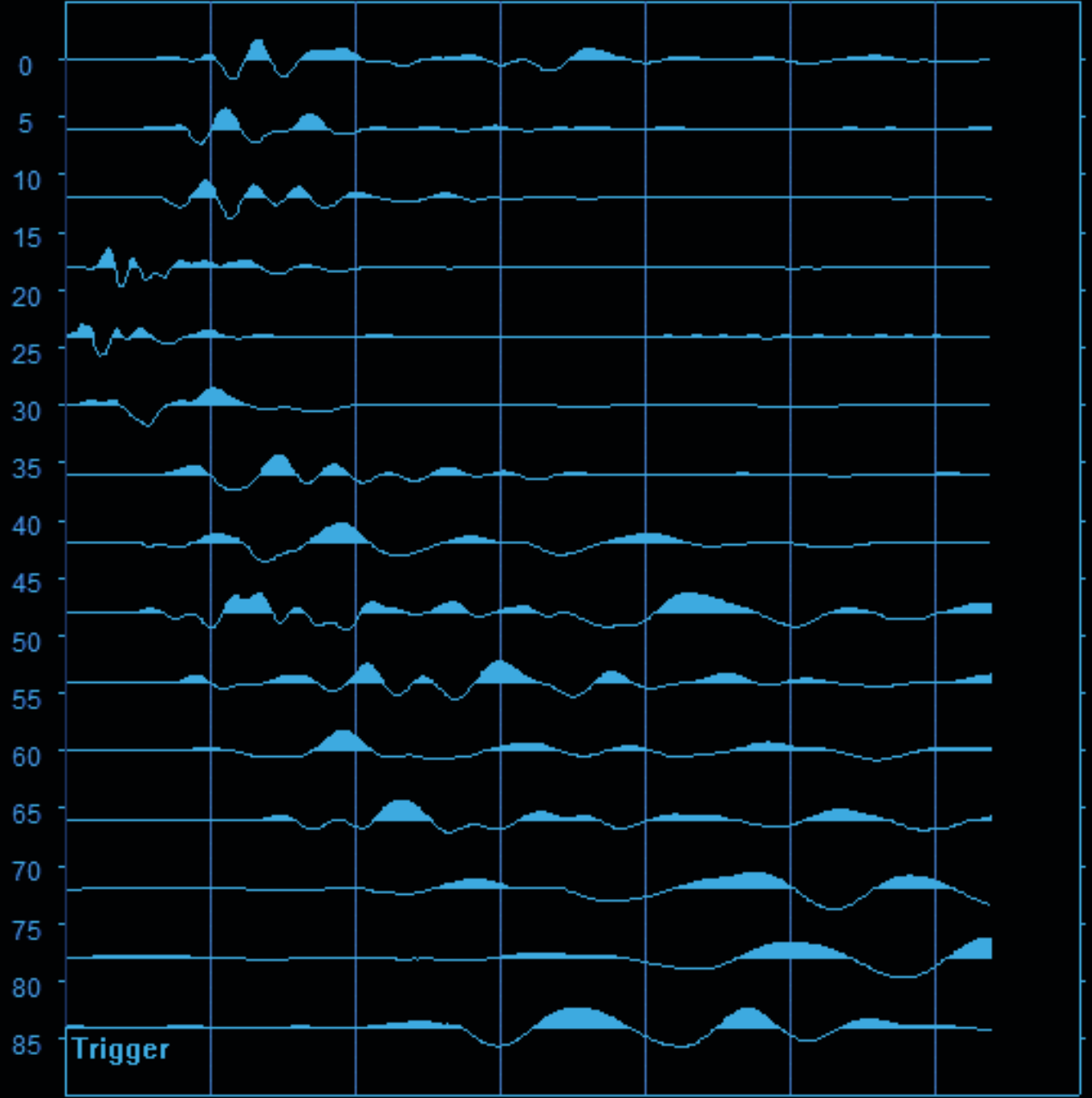


Source= 25.0m

Time (ms)

0 20 40 60 80 100 120 140

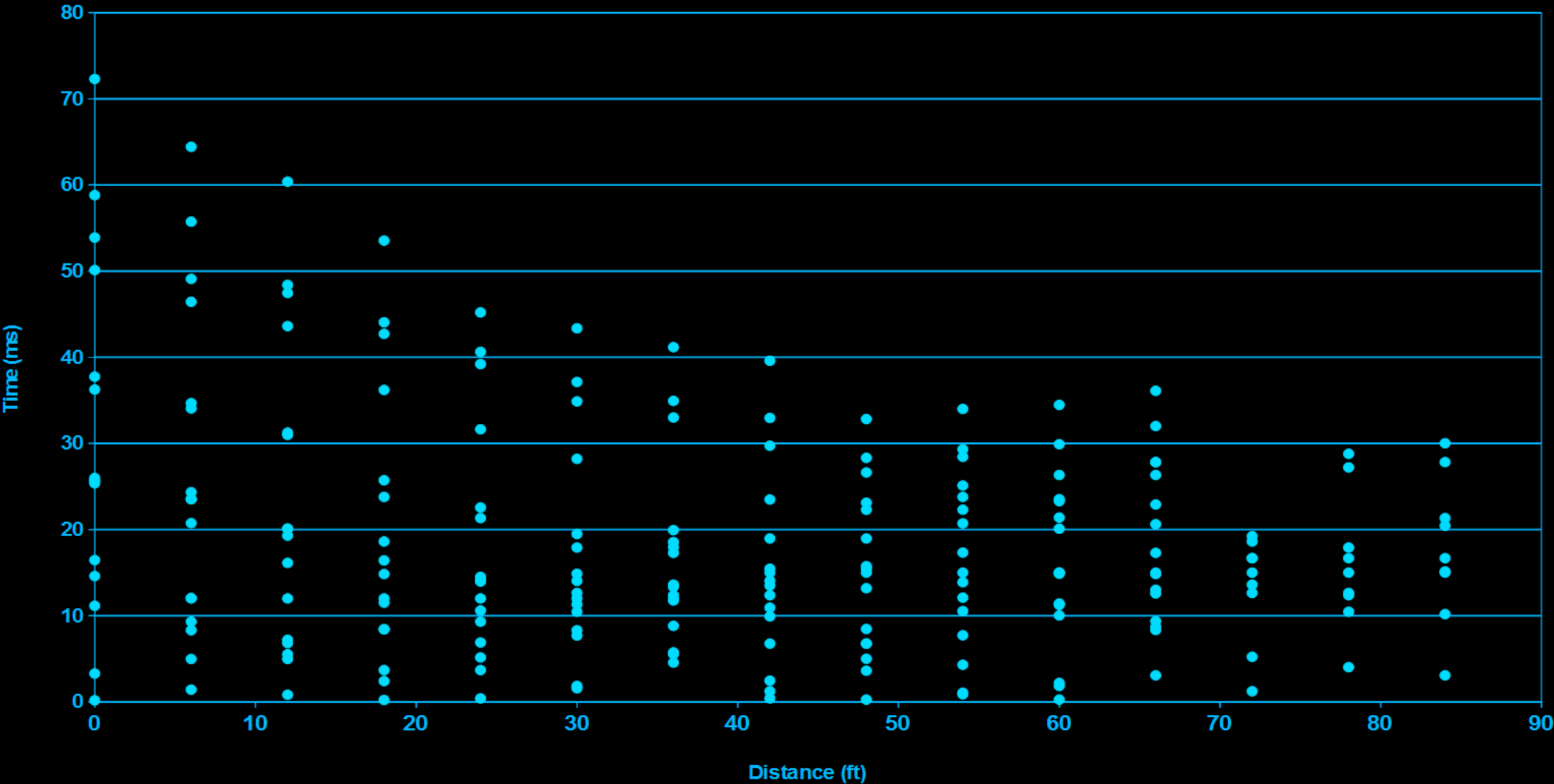
Distance (m)





Kaumana Caves Pyroduct

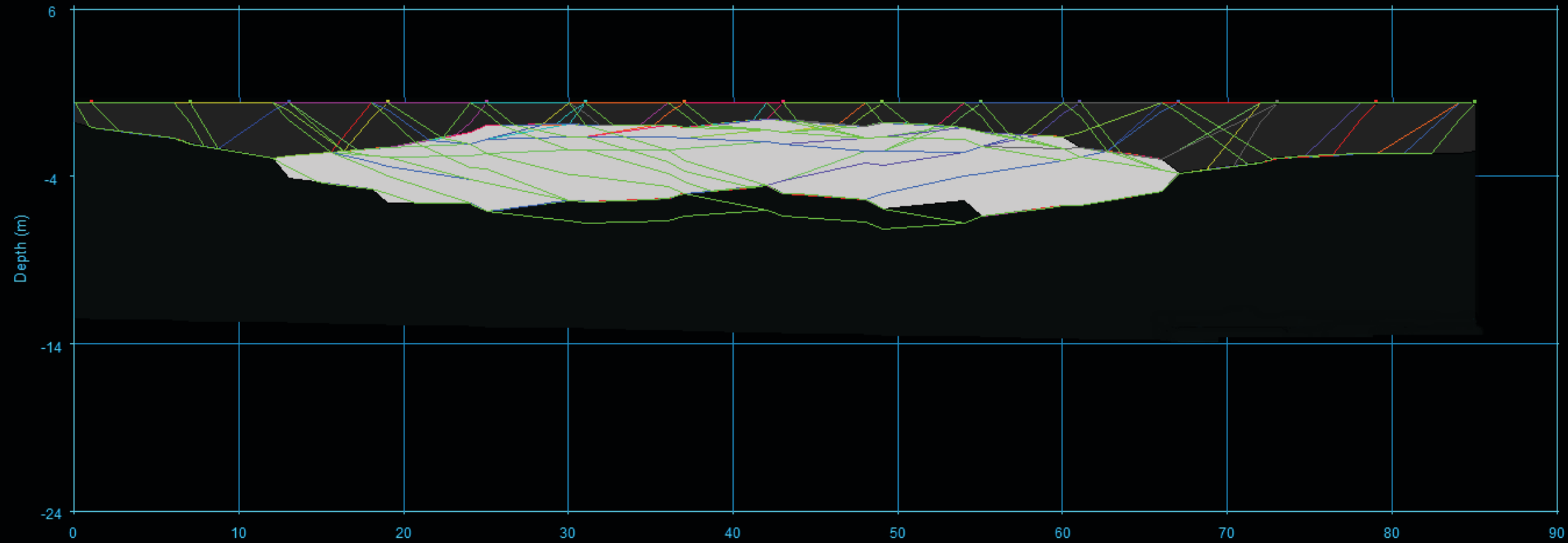
Velocity Plot of First Breaks





No editing

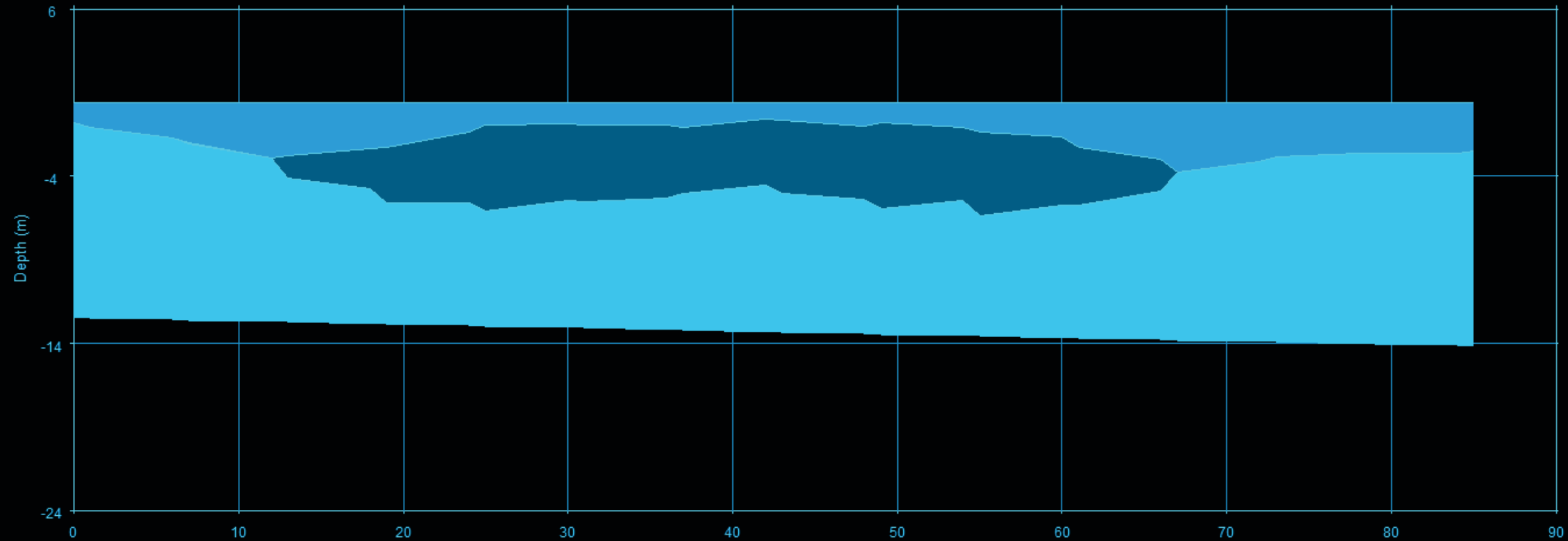
Layered model : # of layers = 3



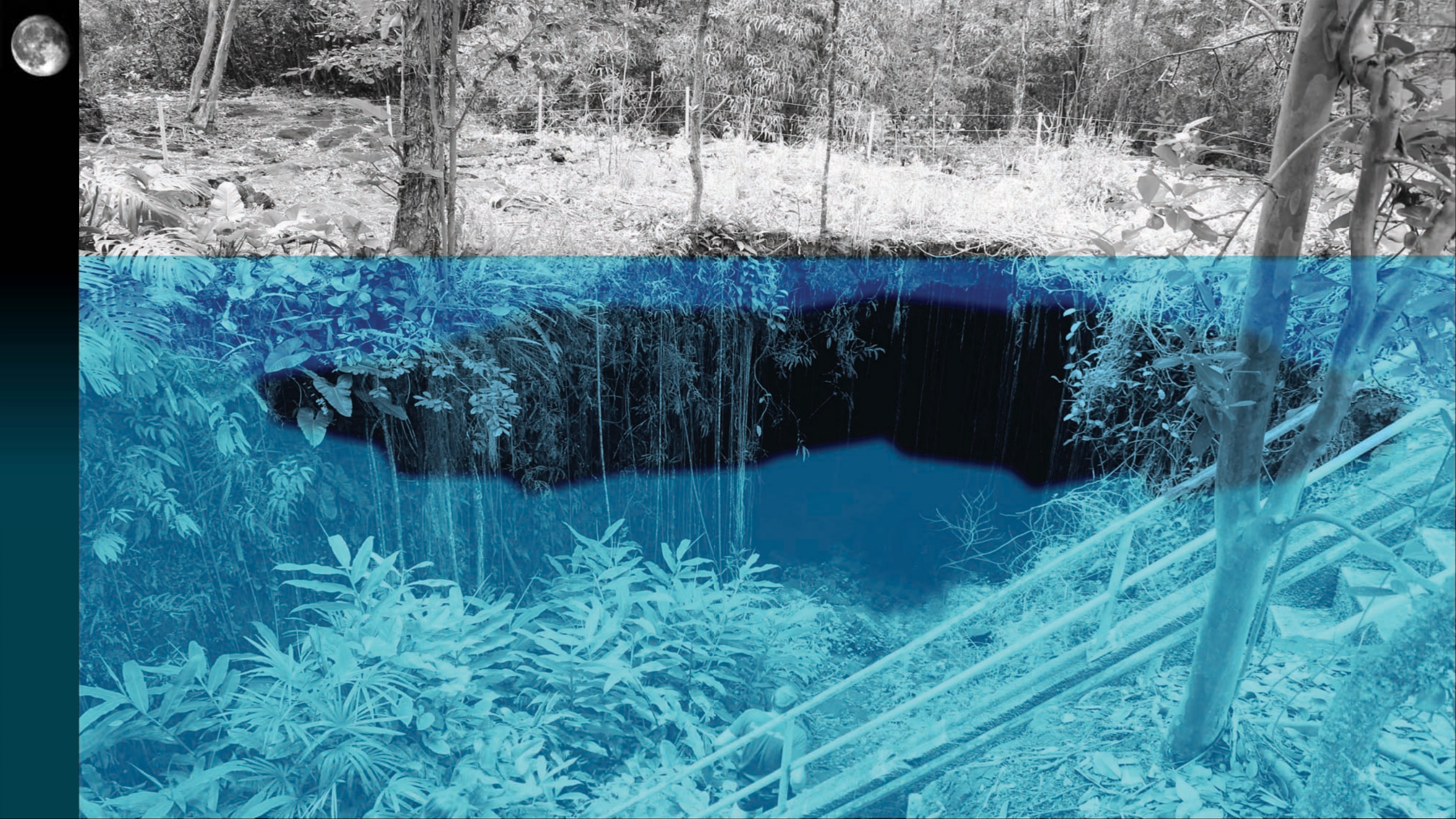


No editing

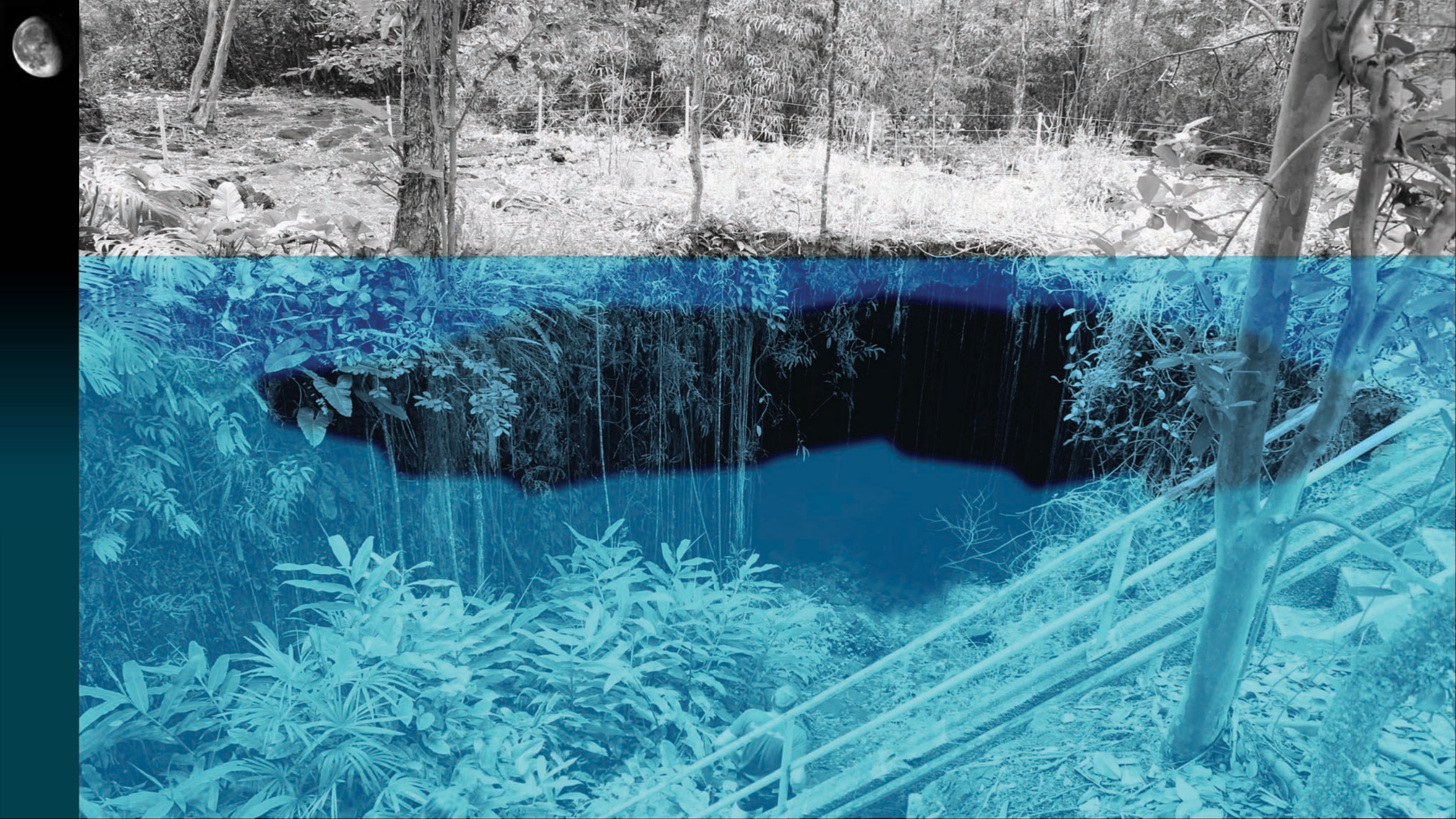
Layered model : # of layers = 3

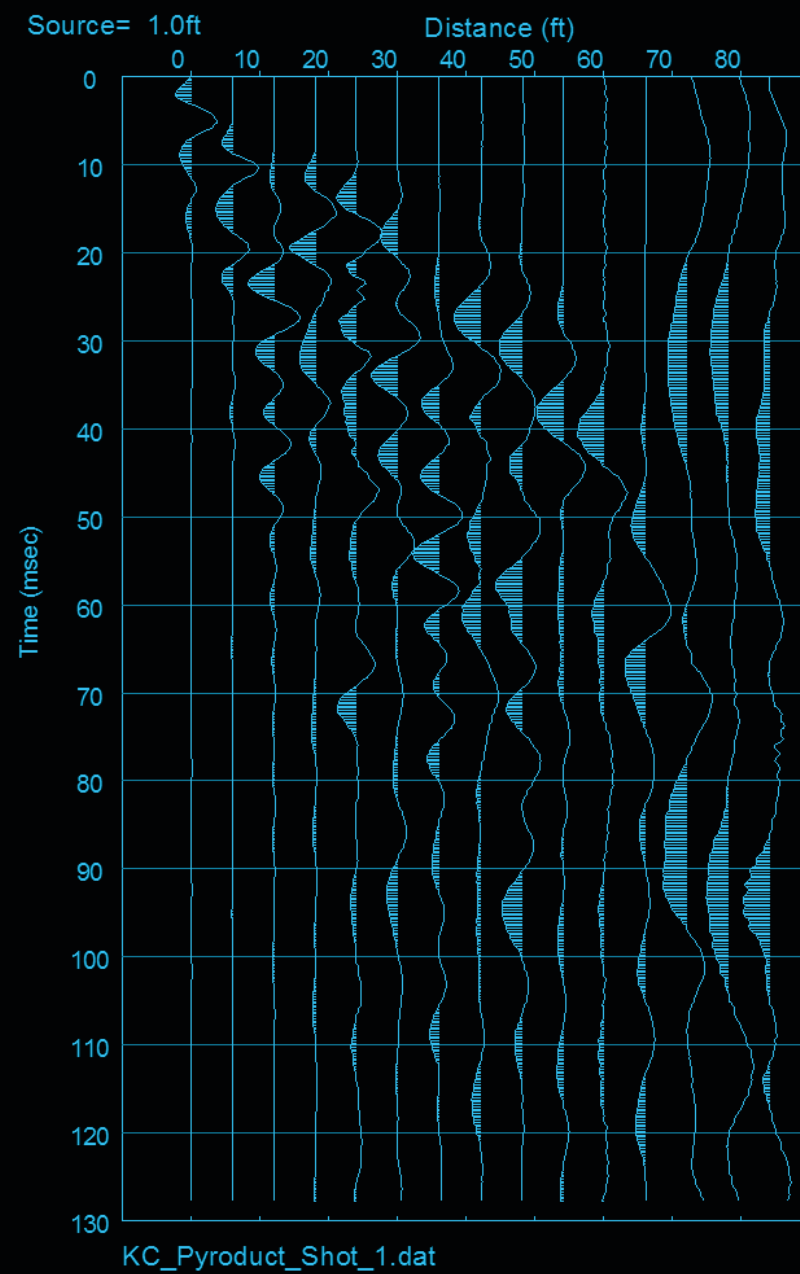


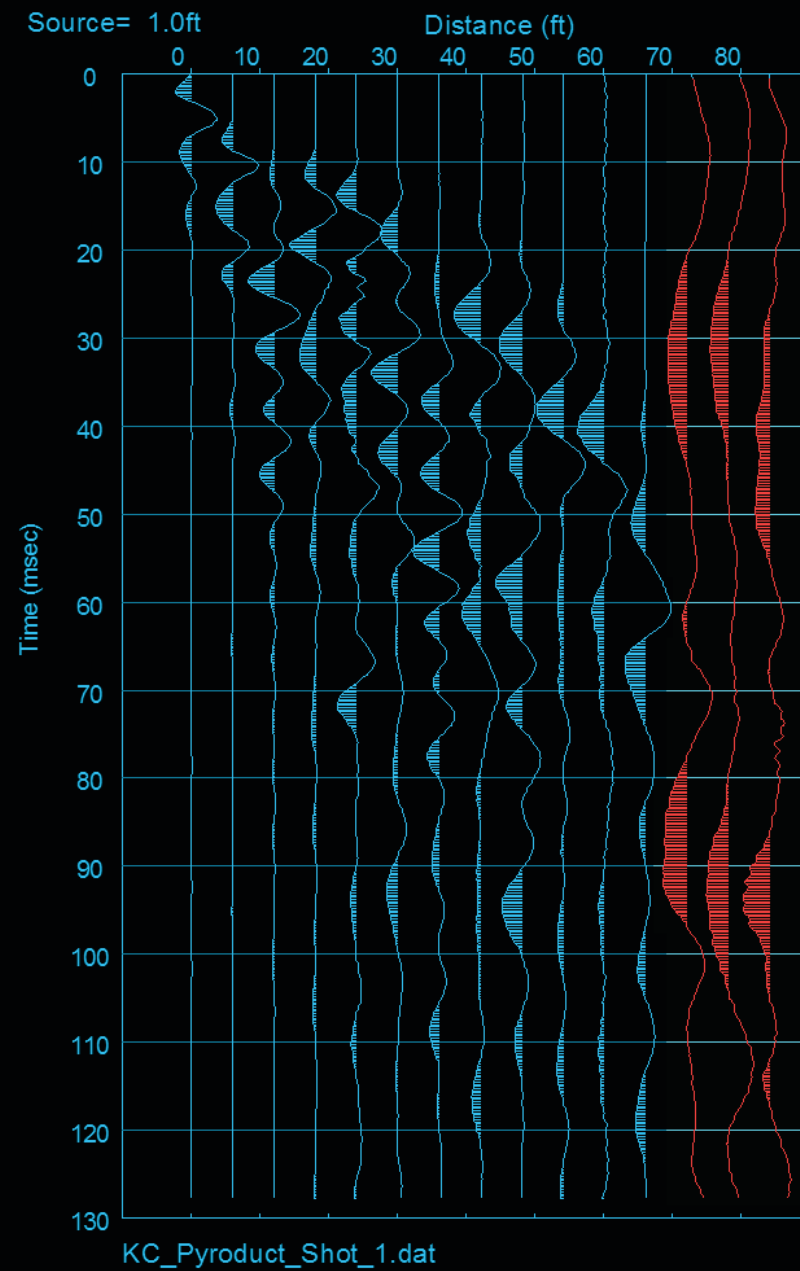




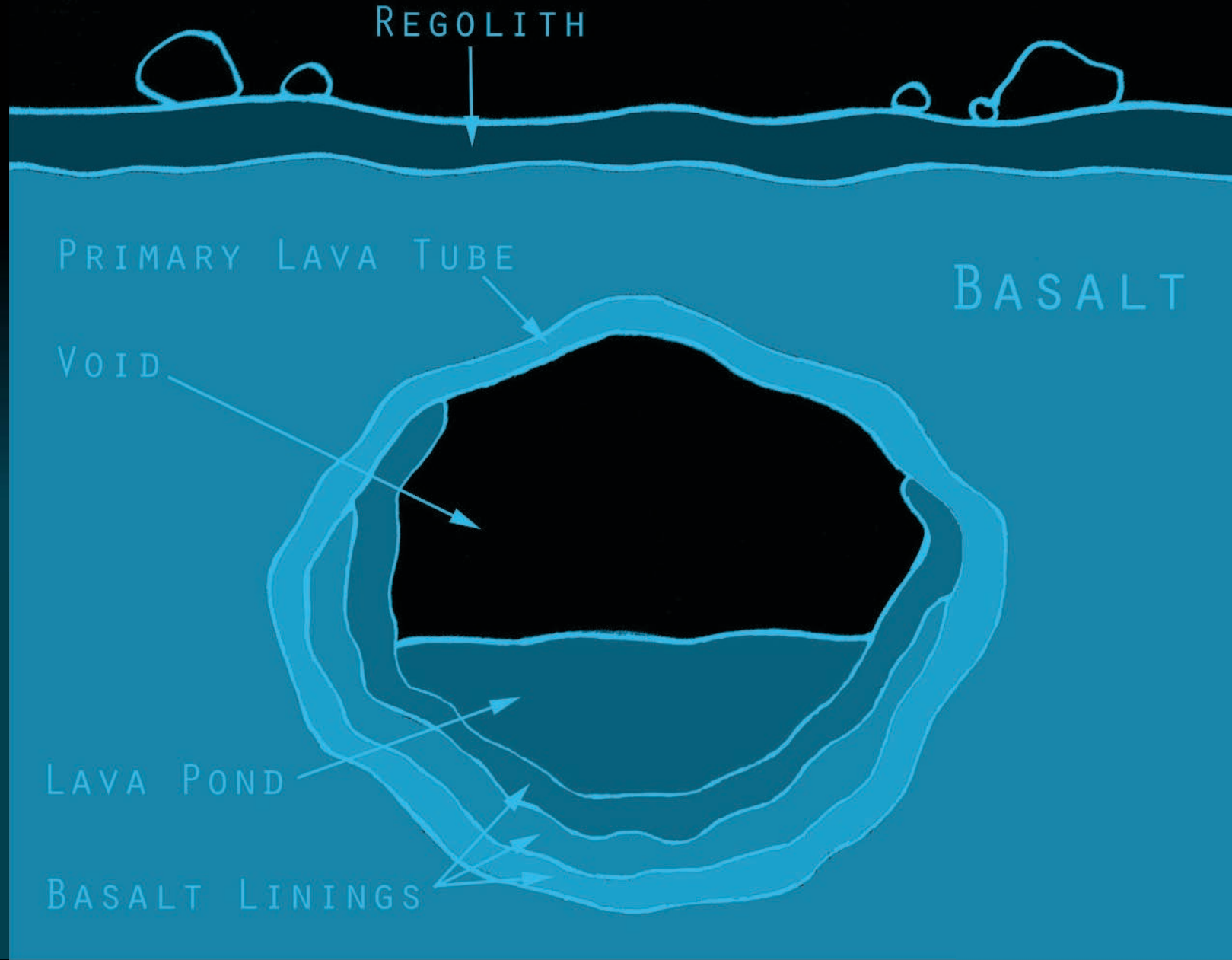












Why this method
is so important:

_____Low Cost

Resources

Shelter

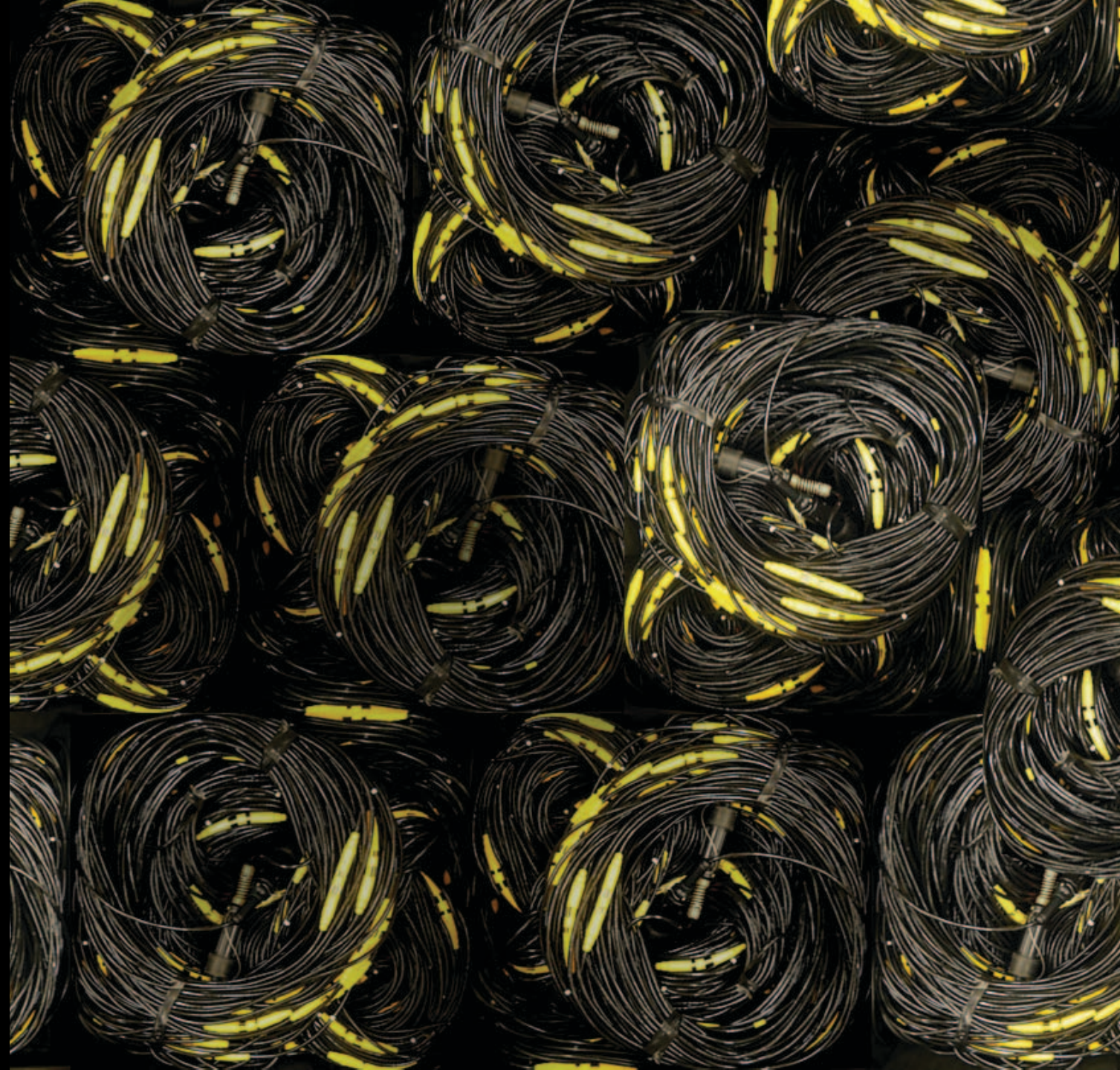
Life

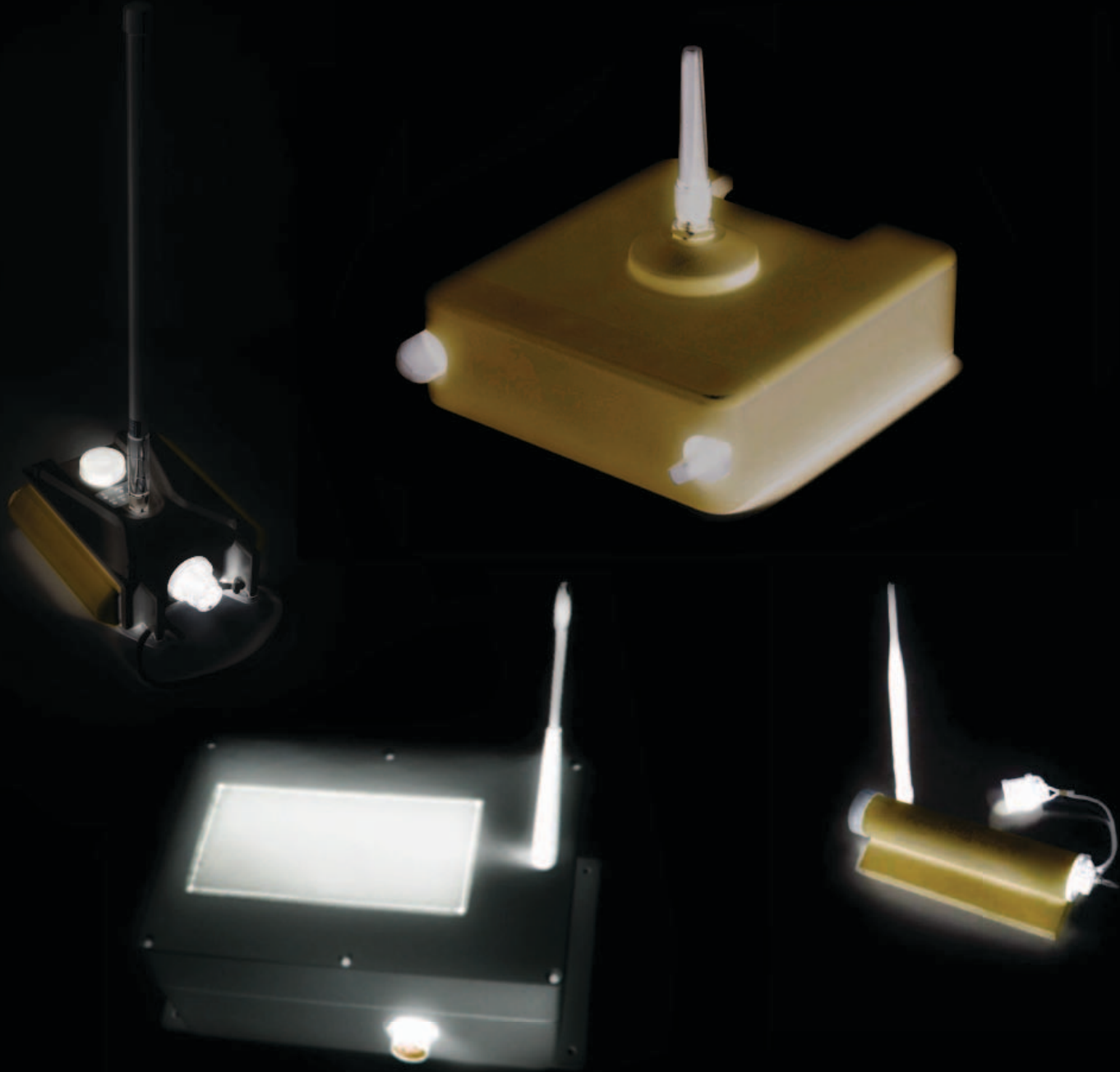
Transition to space:

Cable weight is an issue

Cables are difficult to deploy and redeploy

Wireless alternatives are available





Transition to space:

**Robotic deployment
of wireless geophones**

Minimal power usage

**Detection process can
be partially or fully
automated**

- Pyroducts are potential sources for volatiles and astrobiologic research
- We have the ability to accurately detect and map pyroducts on Earth.
- This experiment can be done outside of Earth with wireless technology
- Once we locate an ideal pyroduct, the modern Gold Rush begins.

Now is your chance to be a part of it!



Special Thanks to: Terrestrial Seismic Team,

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UH Hilo Dept of Physics & Astronomy, PISCES

Dr. Kenneth Hon

UH Hilo Dept of Geology

SRR

PTMSS

PISCES

(Pacific International Space Center for Exploration Systems)

References:

Day, Brian; Lowes, L. American Astronomical Society, AAS Meeting #214, #256.03; Bulletin of the American Astronomical Society, Vol. 41, p.757

Hon K, Kauahikaua J, Denlinger R, Mackay K., Emplacement and inflation of pahoehoe sheet flows: Observations and measurements of active lava flows on Kilauea Volcano, Hawaii. Geological Society of America Bulletin. 106(3):351-370.

Kempe S., Bauer I., Bosted P., Coons D., Elhard R., Inflationary versus Crusted-over Roofs of Pyroducts (Lava Tunnels) Proceedings 14th International Symposium on Vulcanospeleology, 2010

Lockwood, J.P. & Hazlett R.W. 2010 Volcanoes, Global Perspectives. Wiley-Blackwell: Chichester. 541pp.

National Aeronautics and Space Administration internet resources relating to LCROSS and LRO, and Apollo data.

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