

# FLEXE: From Local to Extreme Environments

## Natural Bridge Caverns Texas' Largest Cavern System

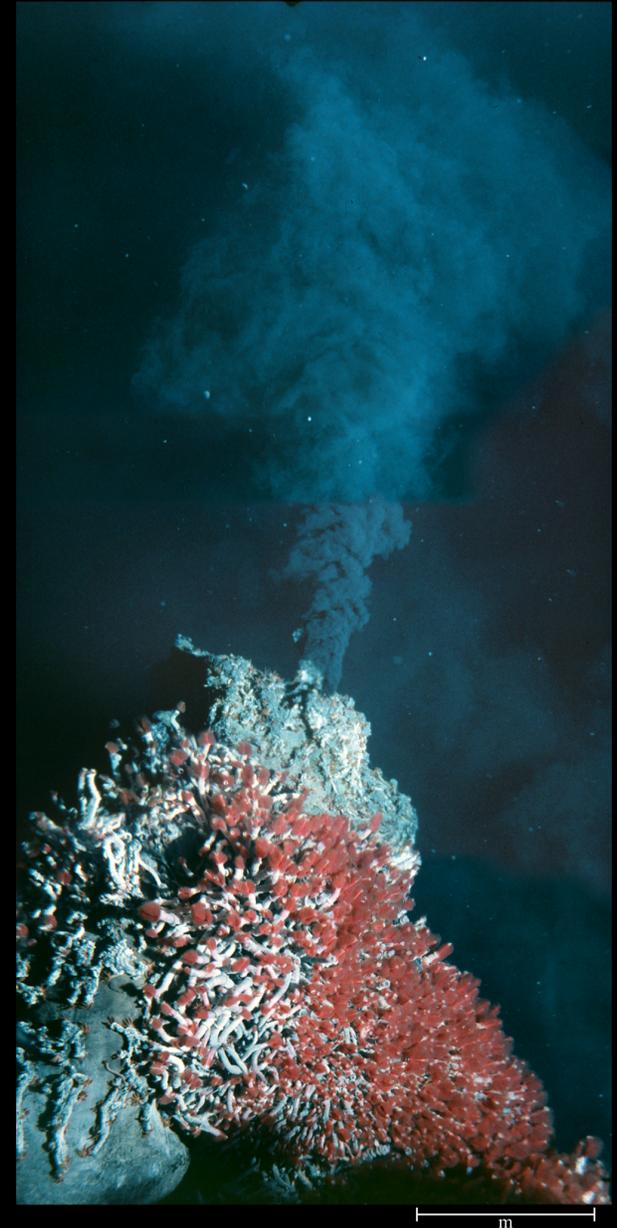
Going to “extremes”



# FLEXE: From Local to Extreme Environments

Why are hydrothermal vents extreme?

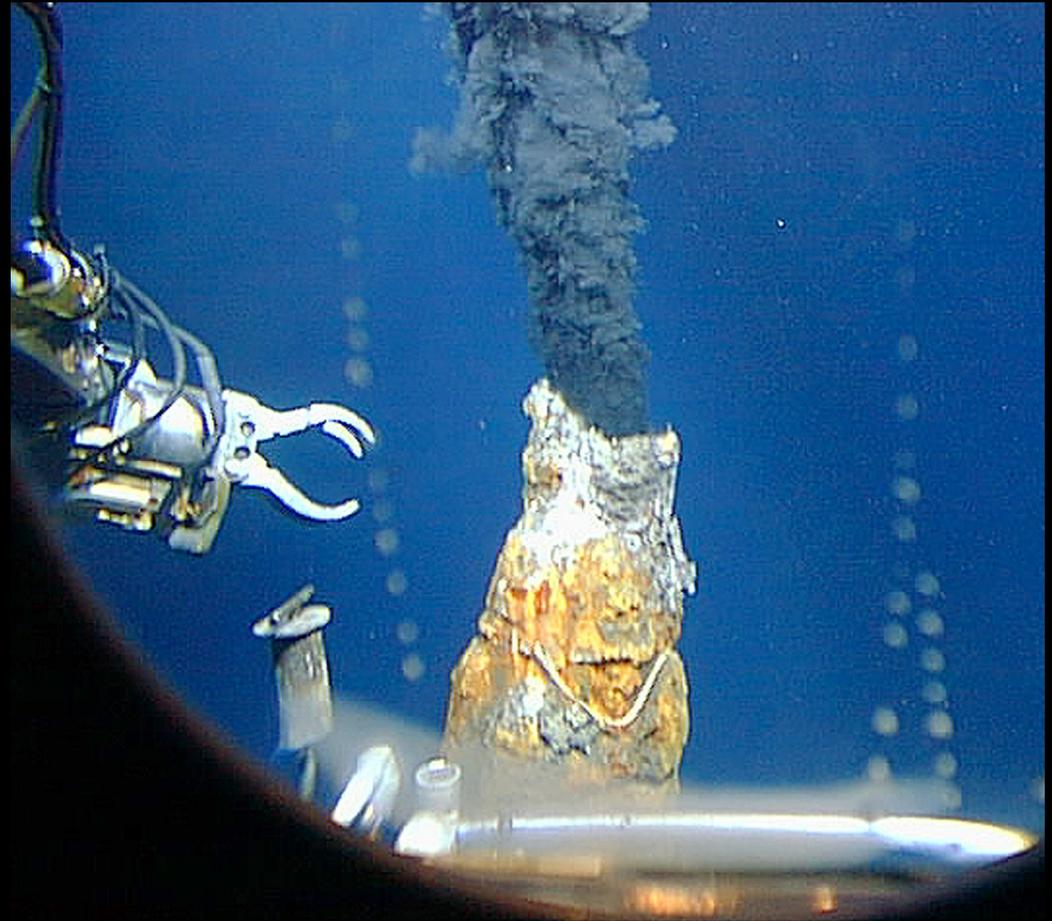
- So deep that no sunlight penetrates
- Immense pressure
- Toxic chemicals (e.g. sulfides) are often present in high concentrations
- There can be steep spatial gradients and rapid temporal fluctuations in temperature, pH and salinity (vents jet super-hot acidic fluid into near-freezing seawater)



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## But Extreme to Whom?

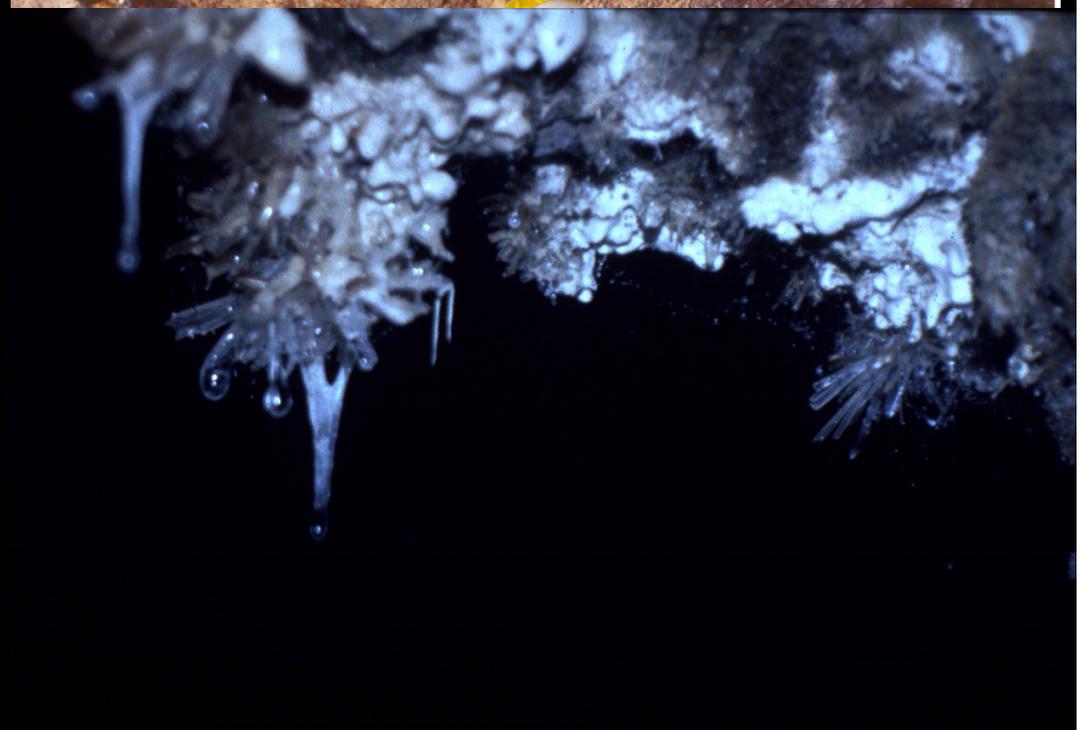
- Lots of life
- Diverse
- Multi-celled
- Single-celled
- All three domains (Archaea, Bacteria, and Eukaryota)
- Extreme to us!
- Message is: Life adapts...



# FREXE: From Riverwalk to Extreme Environments

How are caves extreme?

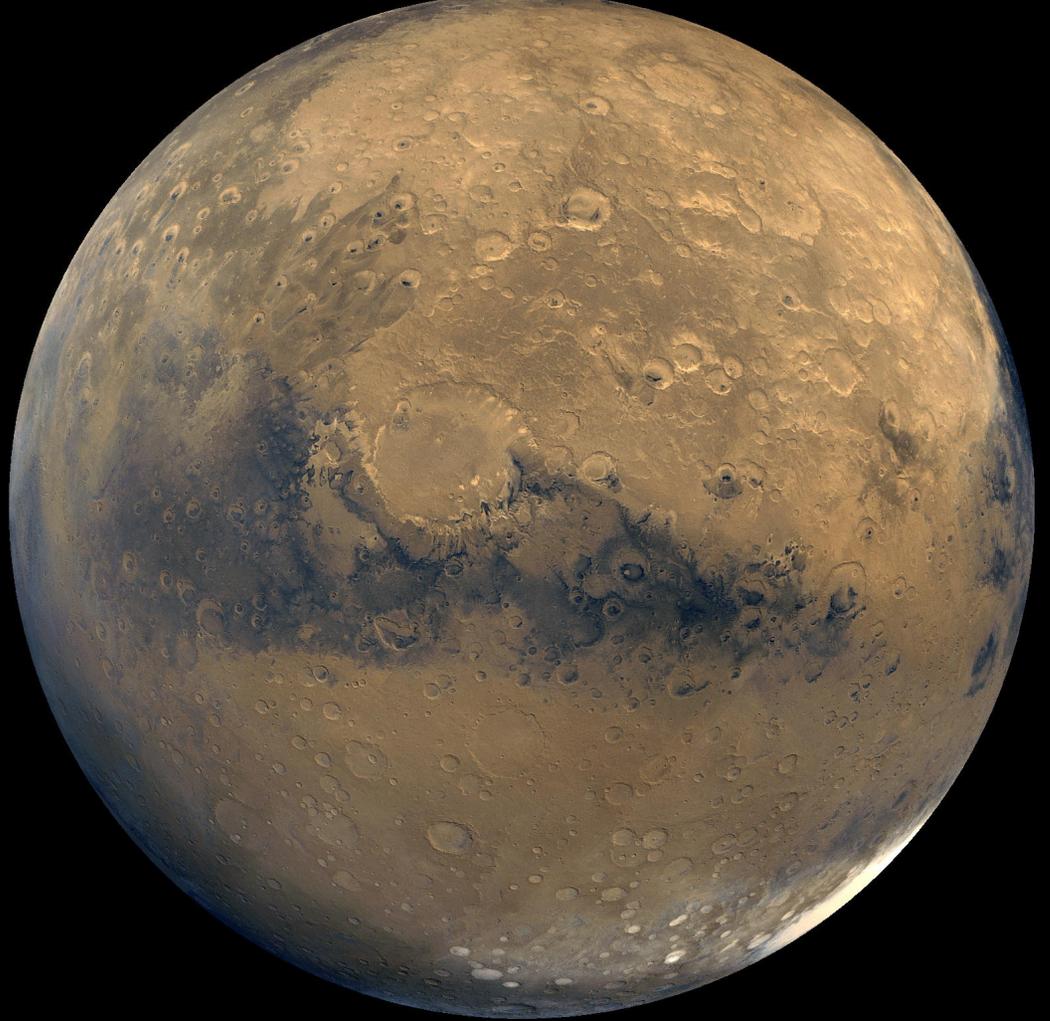
- Lack light
- Carbon monoxide
- Hydrogen sulfide
- Sulfuric acid (pH 0.5!)
- Again, extreme to us!
- Message is: Life adapts...



# FREXE: From Riverwalk to Extreme Environments

So, why are we interested?

- For FLEXE, a great way to get kids to inquire and learn about their local environment
- For scientists, to understand the limits of life on Earth, and...
- Beyond!



# FREXE: From Riverwalk to Extreme Environments



So, how will we study our “extreme” environment?

- Vernier probes for pressure, temperature, and humidity
- Collect data outside and at points along the way
- Compare results and discuss challenges of the environment
- Relax and share with friends our “extreme” adventure into Texas’ largest cavern system...

