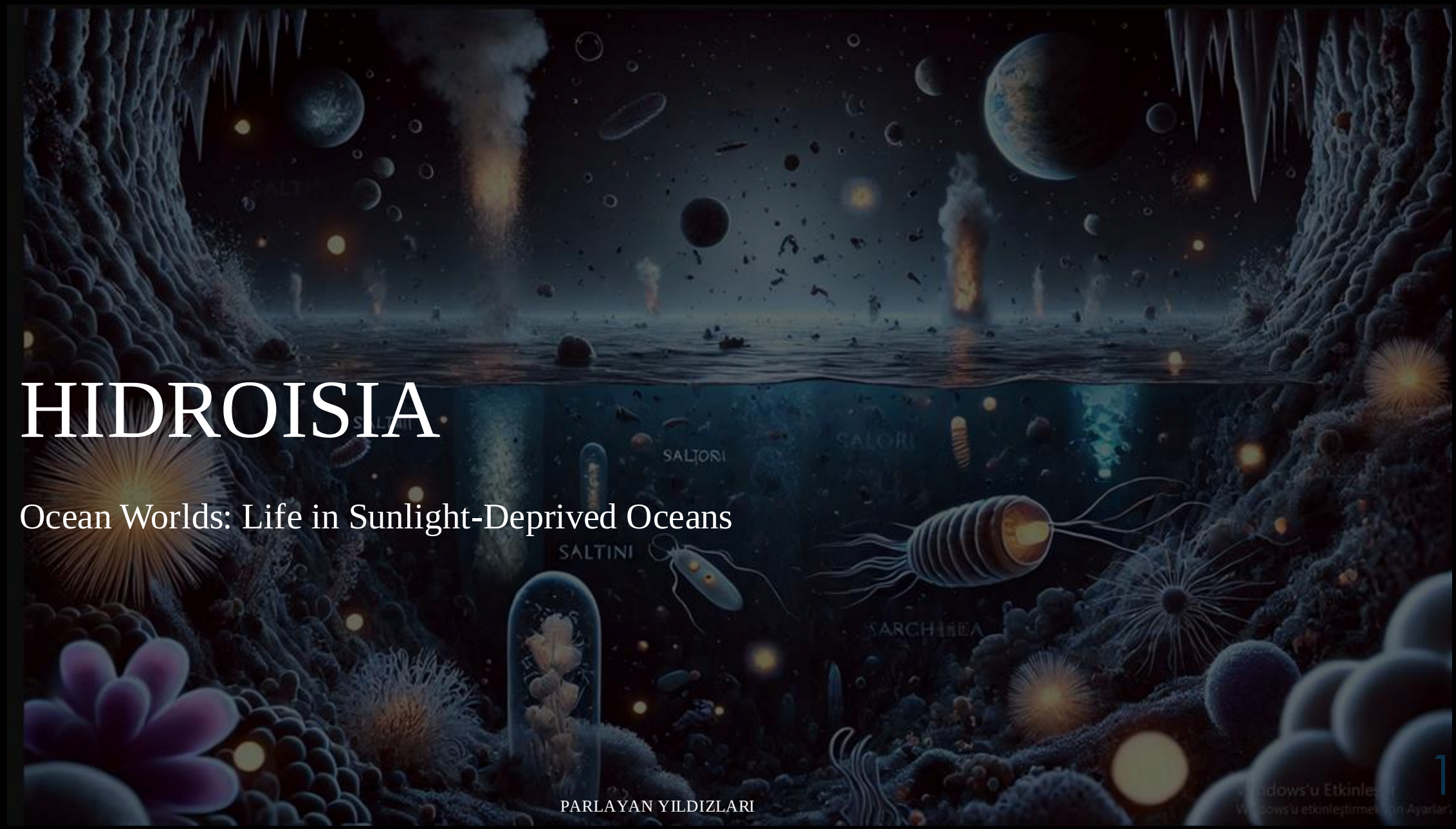


HIDROISIA

Ocean Worlds: Life in Sunlight-Deprived Oceans

PARLAYAN YILDIZLARI

Oceans cover the entire surface—no landmasses.

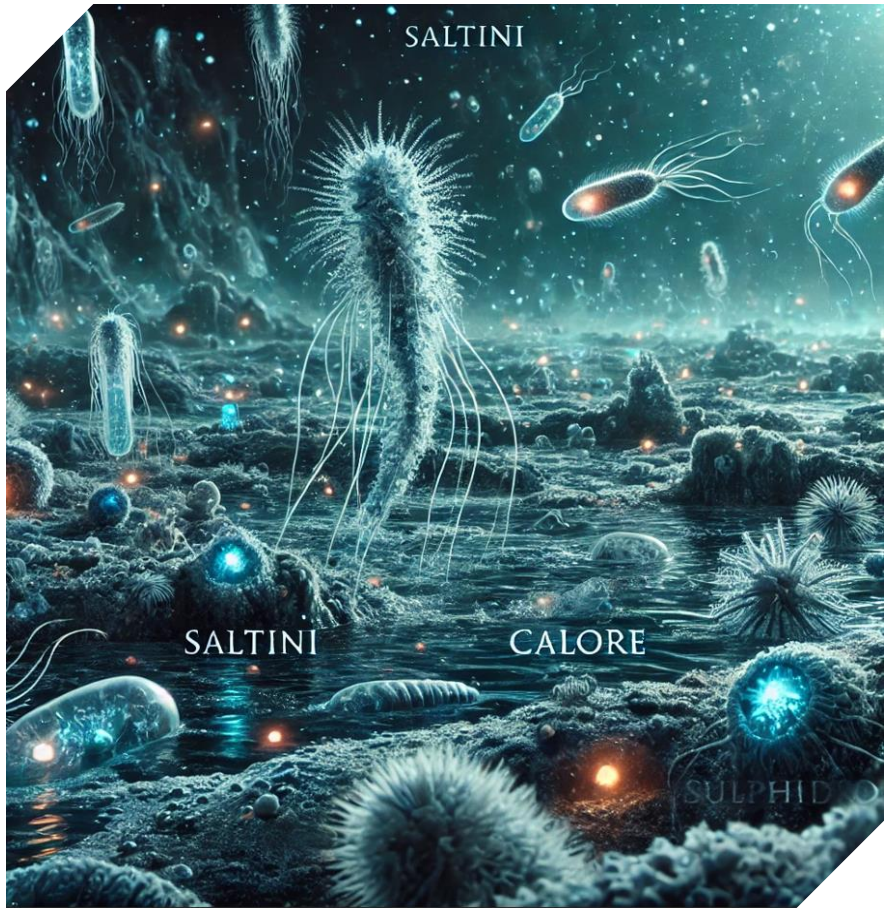
Essential elements, energy sources, and favorable temperature conditions allow life to thrive.

These worlds offer exciting opportunities for studying life’s potential beyond Earth.

WHAT ARE OCEAN WORLDS?

CHEMOSYNTHESIS – THE KEY TO LIFE IN DARKNESS

- **Chemosynthesis**: A process where organisms convert inorganic compounds (e.g., hydrogen sulfide, methane) into energy without sunlight.
- Common in deep-sea ecosystems like hydrothermal vents and oxygen-free environments.
- Provides the foundation for complex ecosystems in ocean worlds.



- The ecosystem is driven by **chemosynthetic bacteria** at the base of the food chain.
- Complex organisms evolve to form **symbiotic relationships** with bacteria.
- **Bioluminescent organisms** produce light through chemical reactions, enabling communication in the dark.

LIFE IN AN OXYGEN-FREE OCEAN

In a landless, oxygen-free ocean, life thrives around underwater vents and explosions, relying on chemical reactions to survive in cold, dark conditions.

ENVIRONMENTAL CONDITIONS OF THE OCEAN WORLD

UNIQUE SPECIES OF THE OCEAN WORLD

- **Saltini**: Extracts salt from seawater to create its own food.
- **Calore**: A bacterium that multiplies as the temperature drops.
- **Sulphidro**: Feeds on sulfur bacteria, coexisting with archaea.
- **Archaea**: Resilient organisms thriving in extreme conditions.

THE HARSH YET THRIVING ECOSYSTEM

Despite the lack of land and oxygen, life finds a way.

Evolution drives the development of diverse organisms and unique feeding strategies.

Example of life’s adaptability in extreme environments, even in the deep ocean.