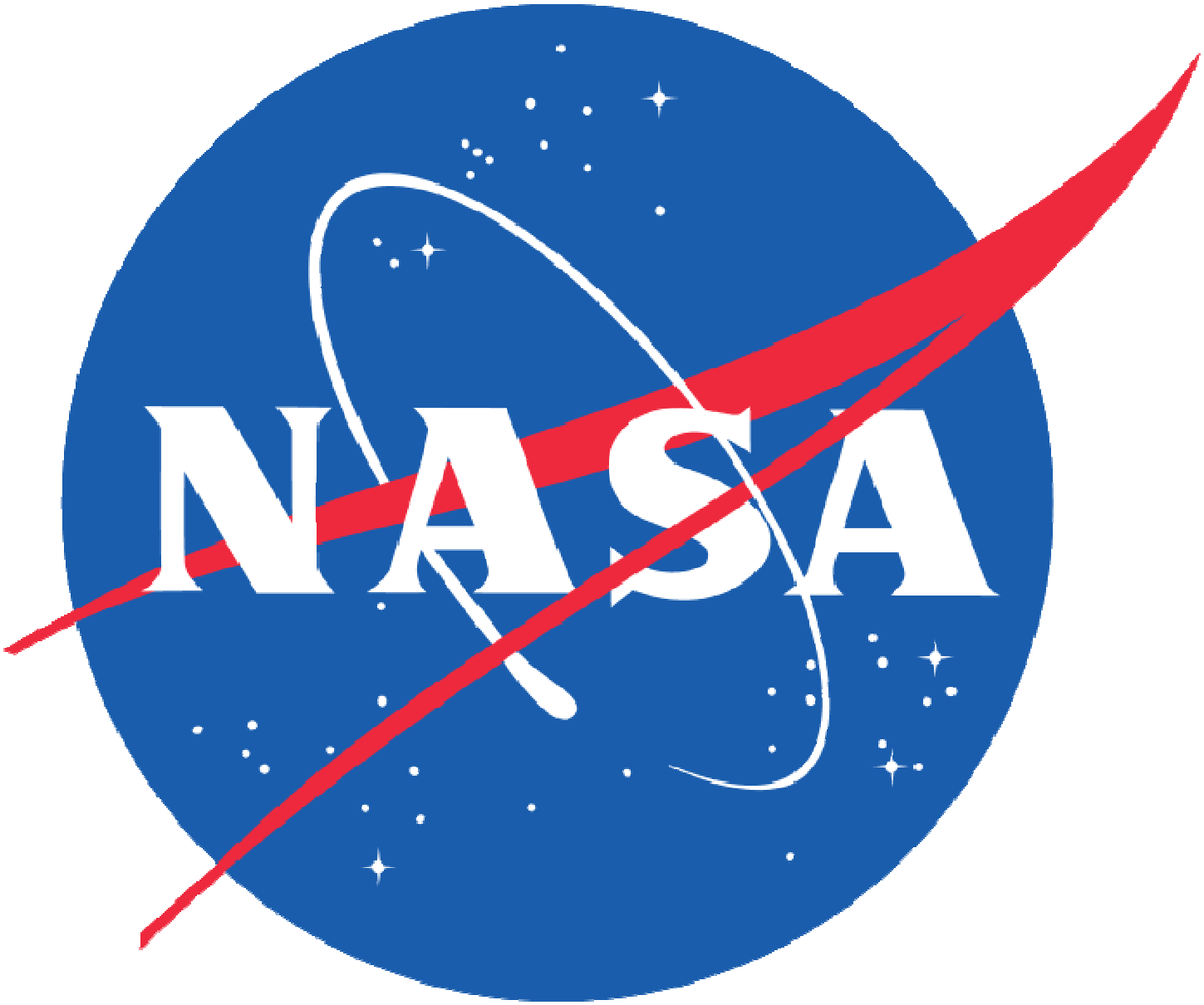
NASA SPACE APP CHALLENGE

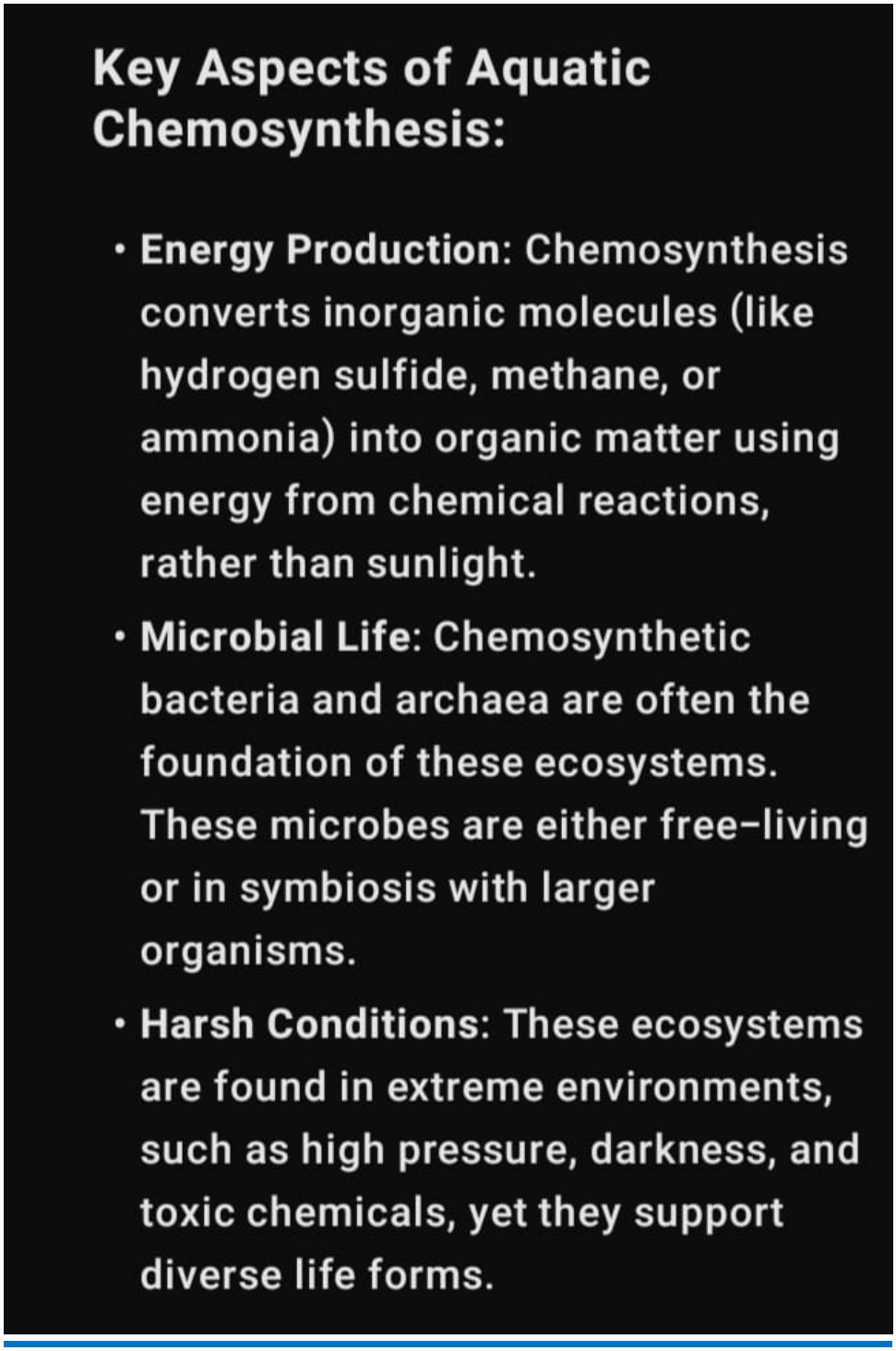


NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

2. Introduction

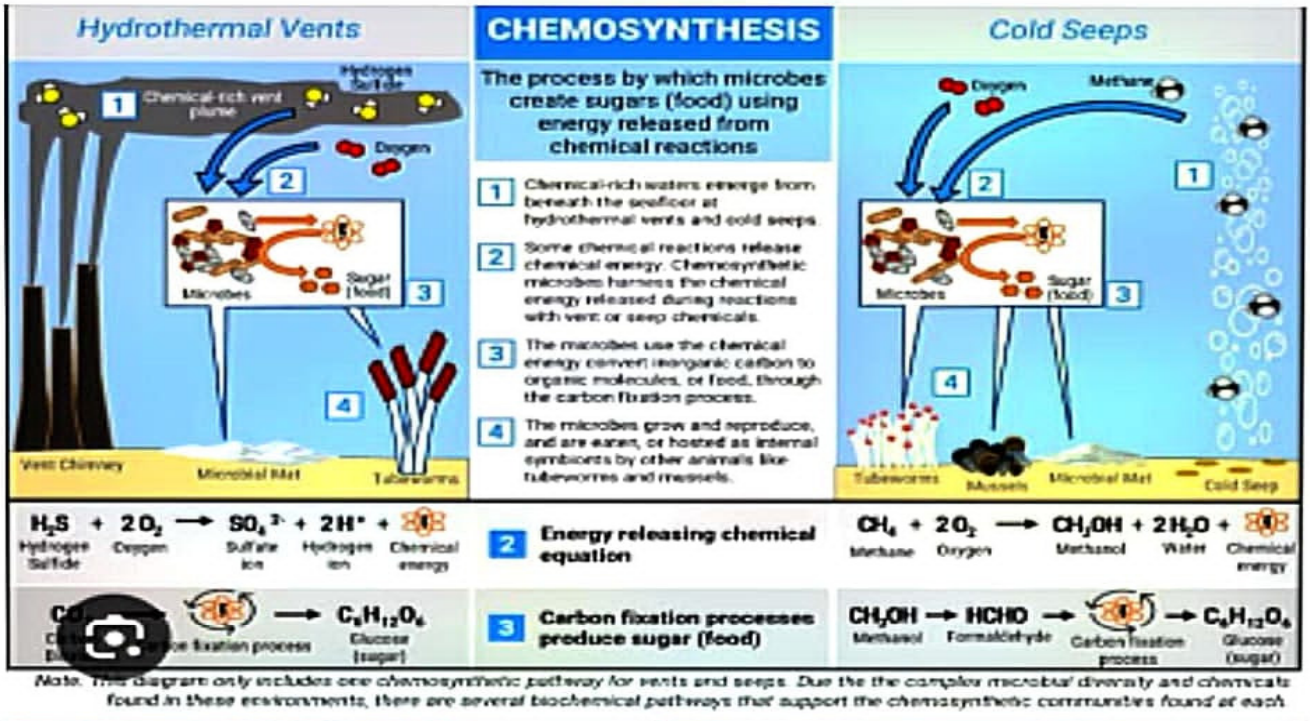
Presently, about 70 different space agencies exist in different countries that are owned by Government. Out of these 70 agencies, six government space agencies have satellite launch and recovery facilities. These include National Aeronautics and Space Administration (NASA), Russian Federal Space Agency (RFSA or Roscosmos), European Space Agency (ESA), Japan Aerospace Exploration Agency (JAXA), China National Space Administration (CNSA) and Indian Space Research Organisation (ISRO). Further, out of these six agencies, RFSA, CNSA and NASA are capable of human spaceflight currently.

FEATURES OF AQUATIC CHEMOSYNTHETIC WORLD

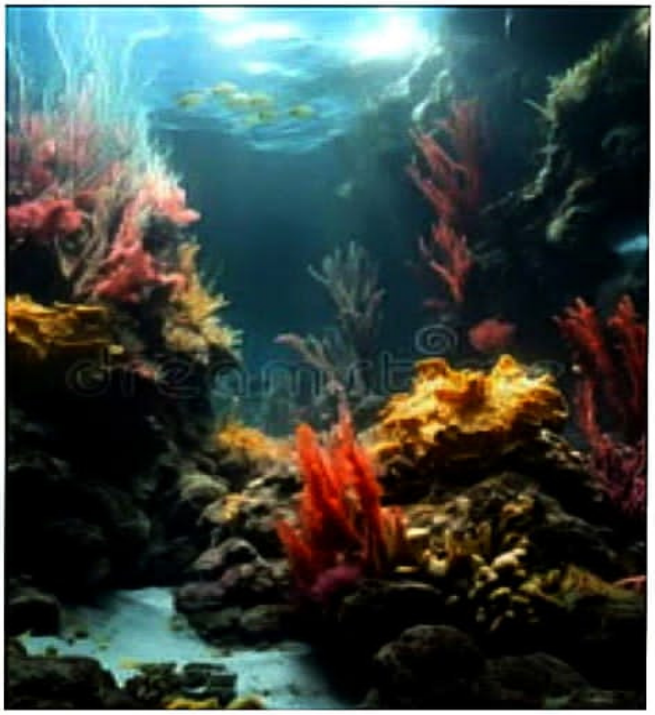


An aquatic chemosynthetic world refers to environments in the ocean or other water bodies where life is sustained by chemosynthesis rather than photosynthesis. Chemosynthesis is the process by which certain organisms produce energy by using chemicals from their environment, usually in the absence of sunlight.

NASA INTERNATIONAL SPACE APP CHALLENGES



Note: This diagram only includes one chemosynthetic pathway for vents and seeps. Due the the complex microbial diversity and chemicals found in these environments, there are several biochemical pathways that support the chemosynthetic communities found at each



PROJECT DEMO:-

PROBLEMS RELATED TO AQUATIC CHEMOSYNTHETIC WORLD

Problems-

- **Temperature regulation => These in Aquatic Chemosynthetic Ecosystems. Such as those found around hydrothermal rents etc.**
- **Slow recovery and Fragility=> [long lifespans and slow growth]:- Many species in chemosynthetic ecosystems, like gaint tube worms, have very slow growth rates and long lifespans.**
- **Pollution=> Mining activities can release toxic substance into water, affecting the delicate balance of chemicals that chemosynthetic organisms rely on.**
- **Limited distribution=> Many chemosynthetic species are distributed over the same area.**

PROJECT DETAILS

Solutions:-

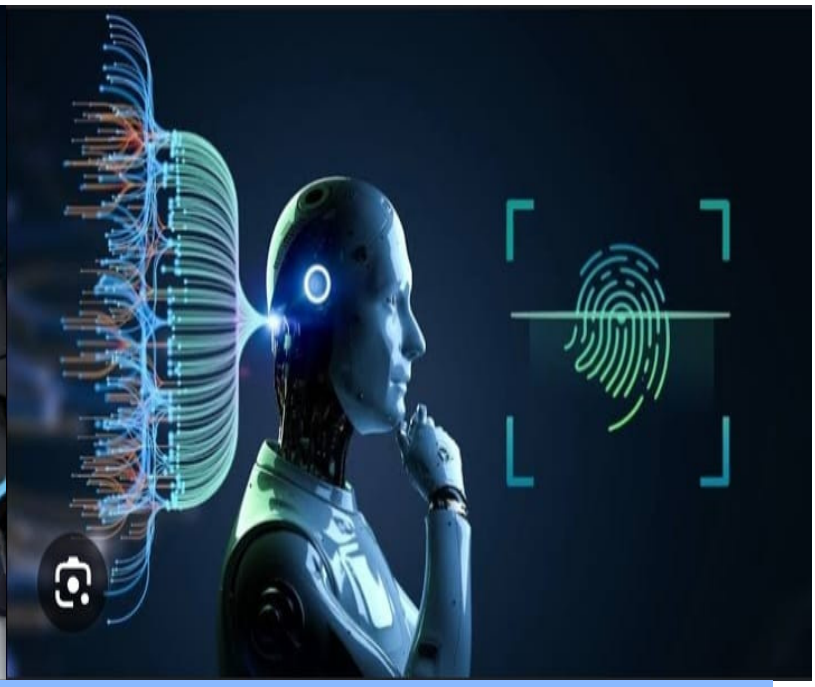
- ✓ **Temperature regulation:- Many chemosynthetic species produces heat shock proteins in them which helps to adopt to that temperature environment. If we take those species and produce 'n' number of species in lab and then shift to those environments it would be helpful in clearing those problems.**
- ✓ **Slow recovery and Fragility:- Here, the organisms have long lifespans and slow growth. We can do experiment by injecting a growth hormone related to organisms results in fast growth and safeguard them by the method of MPAs[Marine Protected areas].**
- ✓ **Pollution:- Humans are doing mining which creates too much of pollution leads to green house effect, acid rain, acidification of rivers. So if we control those mining, Old vehicles or if we use electric vehicles it would be more usefull to chemosynthetic organisms to survive.**
- ✓ **Limited Distribution:- Over a Period of time, number of organisms are distributed over same area if we shift those to different levels of area based on their characters.**

USE OF ARTIFICIAL INTELLIGENCE

Artificial intelligence (AI) has many uses in a variety of industries and applications, including:

- Online shopping and advertising: AI can provide personalized recommendations based on a user's search history, purchases, and other online behavior.
- Web search: Search engines use AI to learn from user data and provide relevant results.
- Digital assistants: AI-powered digital assistants can provide personalized services 24/7.
- Machine translation: AI can translate written or spoken text.
- Smart homes and cities: AI can be used in smart thermostats to learn from behavior and save energy.
- Cars: AI-powered safety functions are already used in cars, and self-driving vehicles are becoming a reality.
- Cybersecurity: AI can help identify and fight cyberattacks by recognizing patterns and backtracking attacks.
- Education: AI can personalize lesson plans for each student based on their strengths and weaknesses.

- Healthcare: AI can potentially lower costs and expand access to services.
- Finance: AI can help prevent fraud in online banking by analyzing transaction patterns and identifying irregularities.
- Agriculture: AI can help farmers monitor crops, predict yields, and keep pests at bay.
- Manufacturing: AI can be used in various processes, from design to production.



Artificial Intelligence

[ˌär-tə-ˈfi-shᵊl in-ˈte-lə-jən(t)s]

The simulation of human intelligence by software-coded heuristics.

Investopedia

Space Agency Data

Space agency data has many uses, including:

- Earth observation: Space agencies collect data and imagery from Earth to help understand the Earth's environment. This data can be used for weather forecasting, monitoring natural resources, and responding to natural disasters.
- Agriculture: Farmers use satellite data to grow crops.
- Mining: Mining companies use space data to map emissions, monitor shipments, and identify mineral-rich areas.
- Telecommunications: The commercial sector uses space data for telecommunications.
- Ozone layer: Scientists use satellite data to monitor the state of the ozone layer.
- Ecosystem health: Experts use satellite data to assess the health of ecosystems.
- Bridge stability: Engineers use satellite data to monitor ground movement and bridge stability.

REFERENCE

- Chatgpt
- Our own ideas for giving solutions to problem.
- Stephwn Hawking Black Holes- book
- Wikipedia
- The Mysteries of Universe-Book

4.Conclusions

At the end of this module, the reader would have gained an insight into some of the space agencies working in the field of artificial satellites, launch vehicles, carriers and other domains of aerospace technology in the world. This module is meant to acquaint the reader with these space agencies; and the knowledge base can be extended further to other space agencies of the world. The Indian space agency, namely, Indian Space Research Organisation (ISRO) headquartered in Bangalore, Karnataka; shall be dealt elsewhere.

THANK YOU