Planning for the Exploration of Mars and Ocean Worlds

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New Kepler Planet Candidates
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Size Relative to Earth (Radius)

Orbital Period in Days

Total = 4,696
Venus

- Atmosphere
- Climate
- Core
- Crust
- Solar wind
All elements needed for a human Mars mission are in development now.

- **International and commercial partnerships**
- **EARTH RELIANT**
  - NOW - MID-2020s
  - International Space Station operation through commercial development of low-Earth orbit
  - Development of deep space systems
  - Life support and human health
- **PROVING GROUND**
  - 2018-2030
  - Regular crewed missions and spacewalks in cislunar space
  - Verify deep space habitation and conduct a yearlong mission to validate readiness for Mars
  - Demonstrate integrated human and robotic operations by redirecting and sampling an asteroid boulder
- **EARTH INDEPENDENT**
  - NOW – 2030s and beyond
  - Science missions pave the way to Mars
  - Demonstrate entry, descent, and landing and in-situ resource use
  - Conduct robotic roundtrip demonstration with sample return in the late 2020s
  - Send humans to orbit Mars in the early 2030s
After Lunine and Atreya,