Earth (Temperate Region)

Temperature: 10–25°C

Atmosphere: Balanced O■/N■

Weather Challenge: Increasing heat waves

Task: Build an automatic cooling system using the temperature sensor that activates a fan/motor at >25°C.

Mercury

Temperature: 200–430°C (extreme heat)

Atmosphere: Almost none

Hazard: Direct solar radiation

Task: Use the light sensor to detect intense light → servo deploys a shield.

Venus

Temperature: ~460°C

Atmosphere: CO■-dominant, acidic

Weather Challenge: Zero visibility

Task: Create a proximity navigation system using sonar to avoid obstacles.

Mars

Temperature: –60°C

Atmosphere: Thin, dusty

Weather Challenge: Dust storms

Task: Use the light sensor detecting dimming → warning indicator.

Jupiter (Upper Clouds)

Temperature: –145°C

Wind Speed: 300+ mph

Task: Use the accelerometer + servo to simulate stabilizing a structure.

Europa

Temperature: –160°C

Surface: Ice layer

Task: Use temperature + moisture sensor to simulate searching for subsurface water.

Saturn

Temperature: –140°C

Weather: Rapid pressure changes

Task: Build pressure-alert prototype (simulate with light/temp).

Titan

Temperature: –179°C

Atmosphere: Nitrogen + methane

Task: Use humidity/temp as methane proxy → servo closes vent.

Uranus

Temperature: –195°C

Weather: Low sunlight

Task: Use light sensor to trigger heating or insulation behavior.

Neptune

Temperature: –214°C

Winds: Fastest in solar system

Task: Use accelerometer → stabilizing servo or alert.

Pluto

Temperature: –230°C

Light: Extremely low

Task: Build a low-light explorer using light + temperature.

Kepler-186f

Light: Red dwarf (low spectrum)

Weather: Solar flares

Task: Light spikes → servo shade deployment.

TRAPPIST-1e

Temperature: –20 to 5°C

Atmosphere: Moist

Task: Soil moisture sensor simulates flood detection→ servo barrier.

Proxima b

Environment: Unstable climate

Radiation: High

Light: Unpredictable

Task: Multi-sensor adaptive system reacting to changes.