





Life in the Solar System 2: Exploring environments

Components

	NAME	DESCRIPTION	AUDIENCE
	<i>Exploring environments</i> teacher guide	The guide provides information about how to use the learning object in this resource.	teachers
	<i>Eco-explorer</i> learning object	Students interact with the learning object to Explore environmental conditions under which life might exist.	students
	<i>Exploring environments 1</i> worksheet	This detailed worksheet leads students through the activity below.	students
	<i>Exploring environments 2</i> worksheet	An open worksheet allows students to arrive at conclusions about planetary conditions.	students

Purpose

To **Explore** environmental circumstances under which life might exist.

Outcomes

Students:

- describe some similarities and differences between environments on Earth, and
- compare major environmental factors that support life on Earth, to conditions on Mars.

Activity summary

ACTIVITY	POSSIBLE STRATEGY
Students use the <i>Eco-explorer</i> learning object to explore images of Earth environments. Using output provided by <i>Eco-explorer</i> , students quantify similarities and differences while responding to questions posed on the worksheet.	individually or in pairs

Technical requirements

The learning object requires Adobe Flash Player version 8 or later (this is a free download from www.adobe.com). It can be placed on a web or file-server and run either locally or remotely in a web browser.

The guide and worksheets require Adobe Reader which is a free download from www.adobe.com. The worksheets are also provided in Microsoft Word format.

About the *Eco-explorer* learning object

Eco-explorer allows students to select from images of Earth environments and display information on atmospheric composition, pressure, temperature, moisture and gravity. It also provides a subjective measurement of the abundance of life. Environments include: Antarctica, cave, coastal, city, desert, mountain, rainforest and volcanic pool.

The abundance of life is affected by humidity, sunlight, and temperature. Lower readings for the abundance of life are in areas of low moisture and low light. The life reading for the volcanic pool is very low because of high water temperature and presence of toxic gases. Only highly adapted organisms can survive in this environment.

An unlabelled image of the surface of Mars is included to provide a contrast in readings. It also challenges students to account for differences within the context of the existence of life on other planets.

Associated SPICE resources

Life in the Solar System 2: Exploring environments may be used in conjunction with related SPICE resources.

DESCRIPTION	LEARNING PURPOSE
<i>Life in the Solar System</i> This learning pathway combines a number of SPICE resources to address the topic of the search for life in the Solar System.	
<i>Life in the Solar System 1: Conditions for life</i> A presentation challenges students to think about where life is found.	Engage
<i>Life in the Solar System 2: Exploring environments</i> Students explore different environments to compare surface conditions and abundance of life.	Explore
<i>Life in the Solar System 3: Planetary atmospheres</i> Students compare atmospheric conditions on various bodies in the Solar System.	Explain
<i>Life in the Solar System 4: Life under extreme conditions</i> Life exists in extreme environments on Earth, which suggests that it may also be found in unknown environments in space.	Elaborate

Acknowledgements

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List of images

- Lemaire Channel, Antarctica (photo by Frank Wheatley)
- Jenolan Caves, New South Wales (photo by Paul Ricketts)
- Namib Desert (photo by Tjeerd Wiersma, CC-BY-2.0, commons.wikimedia.org/wiki/Image:Namibian_Desert.jpg)
- Forest, New South Wales (photo by Paul Ricketts)
- Perth city skyline at night (photo by Paul Ricketts)
- Rottnest Island coastline (photo by Paul Ricketts)
- The Eastern Hills, Mars, photographed by Mars Rover *Spirit* (NASA/JPL, photojournal.jpl.nasa.gov/catalog/pia05593)
- Blue Mountains, New South Wales (photo by Paul Ricketts)
- A volcanic pool in Yellowstone National Park (photo by James Taylor, used under licence from Stock.xchng, www.sxc.hu/photo/800999)

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