

Infrared Escape

EarthGames Teacher's Guide



Overview

Infrared Escape created by EarthGames at the University of Washington takes players through the journey of an infrared light beam avoiding greenhouse gases through the atmosphere to escape into space. Through this game, players learn about the different layers of our atmosphere and the impacts greenhouse gases have on warming our planet.

Additionally, players can see how greenhouse gases in our atmosphere have changed over time due to anthropogenic warming. Players are taken through levels in the pre-industrial past, and eventually a much more polluted future, causing it to be even more difficult for infrared rays to escape to space.

Players can also unlock tools like the 2016 Paris Climate Agreement to help slow the emittance of greenhouse gases and make the game easier to play. After players escape into the stratosphere, they help cool down the earth, and as a reward their energy (joules) is converted into jewels which they can use to purchase interesting science trivia in the game shop!

This game takes approximately 10 minutes to play through and is designed for players ages 8+.

Objective

Players must help their infrared ray escape to the stratosphere and avoid getting trapped by greenhouse gases on the way! Throughout the game, players can unlock science trivia and travel through different time periods and see how greenhouse gas emissions have changed since the pre-industrial era.

Learning Goals

Students will learn how greenhouse gases prevent infrared rays from escaping the different layers of our atmosphere, and how greenhouse gases have rapidly increased since the industrial

revolution. Additionally, students will understand how international cooperation efforts like the 2016 Paris Climate Agreement can help reduce the amount of greenhouse gases in our atmosphere in the future.

Next Generation Science Standards

Students who demonstrate an understanding can:

1. **ESS3D: Global Climate Change:** Human activities, such as the release of greenhouse gases from burning fossil fuels, are major factors in the current rise in Earth's mean surface temperature (global warming). Reducing the level of climate change and reducing human vulnerability to whatever climate changes do occur depend on the understanding of climate science, engineering capabilities, and other kinds of knowledge, such as understanding of human behavior and on applying that knowledge wisely in decisions and activities.
2. **MS-ESS3-5:** Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.
3. **MS-ESS3-4:** Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.