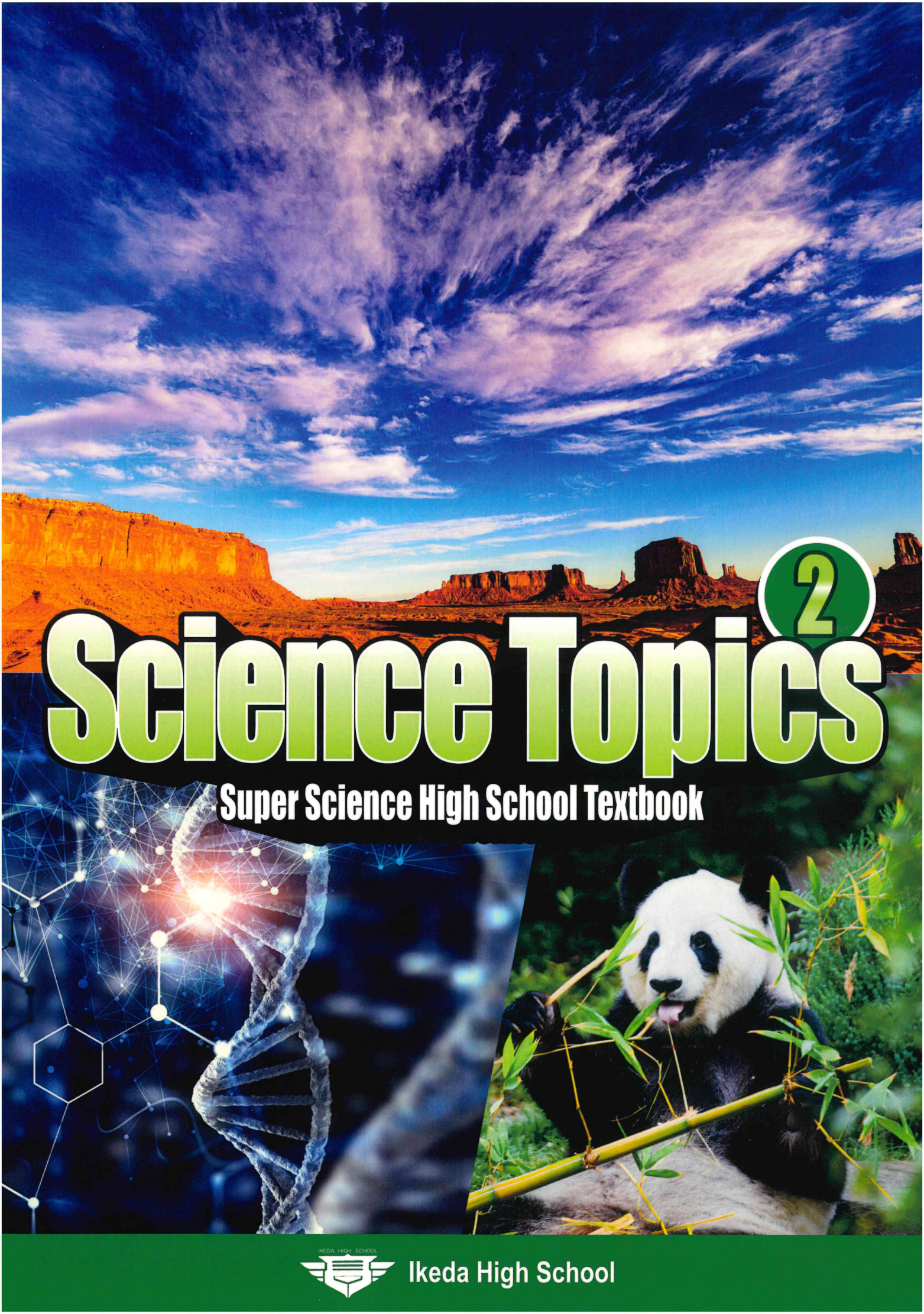

Science Topics 2

Super Science High School Textbook

Ikeda High School

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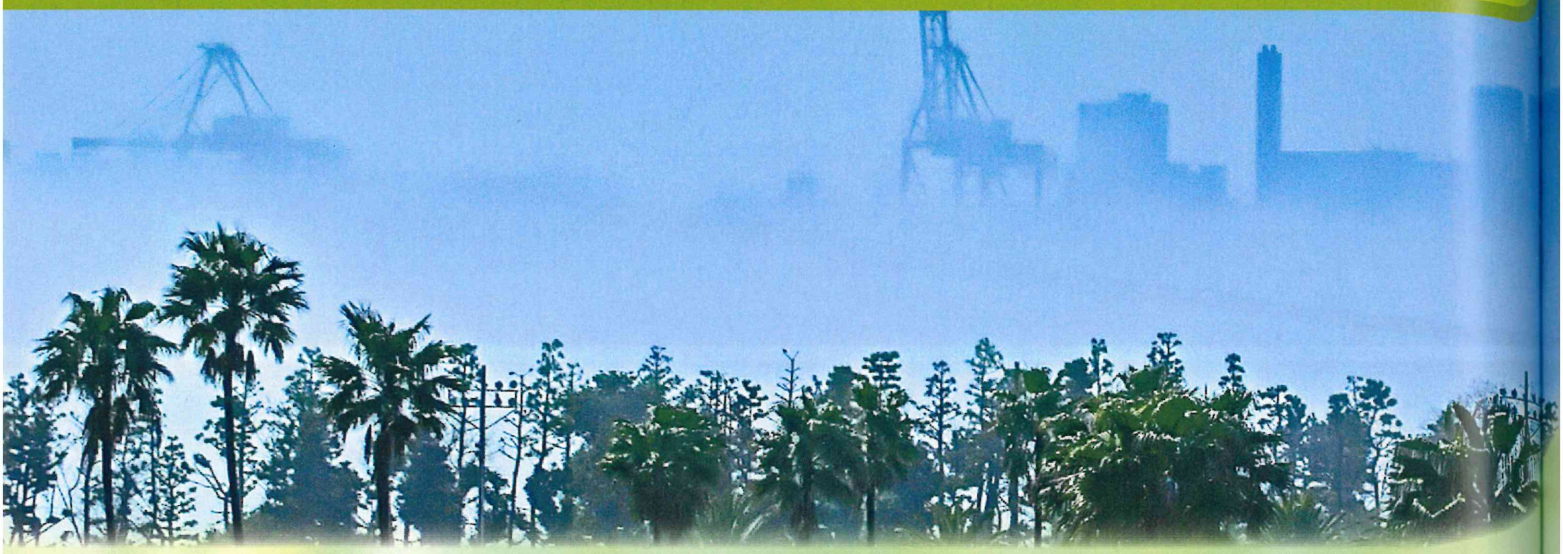
Contents

Why do mirages occur?



A mirage is a phenomenon caused by refraction of light in the atmosphere. When a mirage occurs, the scenery in the distance grows, becomes inverted, and looks different from what it actually is.

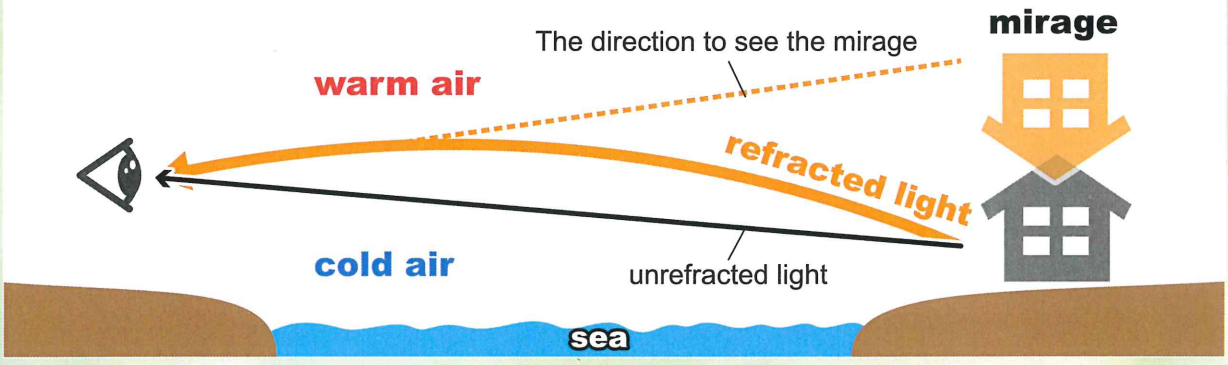
▲*Upper mirage*

▲*Lower mirage*

Objects reflect light in all directions, but what we see is part of that light. When there is no temperature difference in the air, the light travels straight, so the light on the straight line connecting the object and the eye is visible. However, if there is a temperature difference in the air, the direction in which the light travels will change. Between cold and warm air, the light curves towards cold air. This is because cold air has a higher density.

The upper mirage is caused by an air layer that is cold on the bottom and warm on the top. In such an air layer, part of the upward light is refracted and returns downward, reaching our eyes. We see an object in the direction of the light just before entering our eyes, so we see a virtual image in the upward direction.

The upper mirage (spring)



On the other hand, in the lower mirage, light is refracted by an air layer that is warm at the bottom and cold at the top. In such an air layer, the downward light is refracted, so that a virtual image is seen in the downward direction.

The lower mirage (winter)