

Mesosphere

Dana Desonie, Ph.D.

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Printed: August 26, 2016

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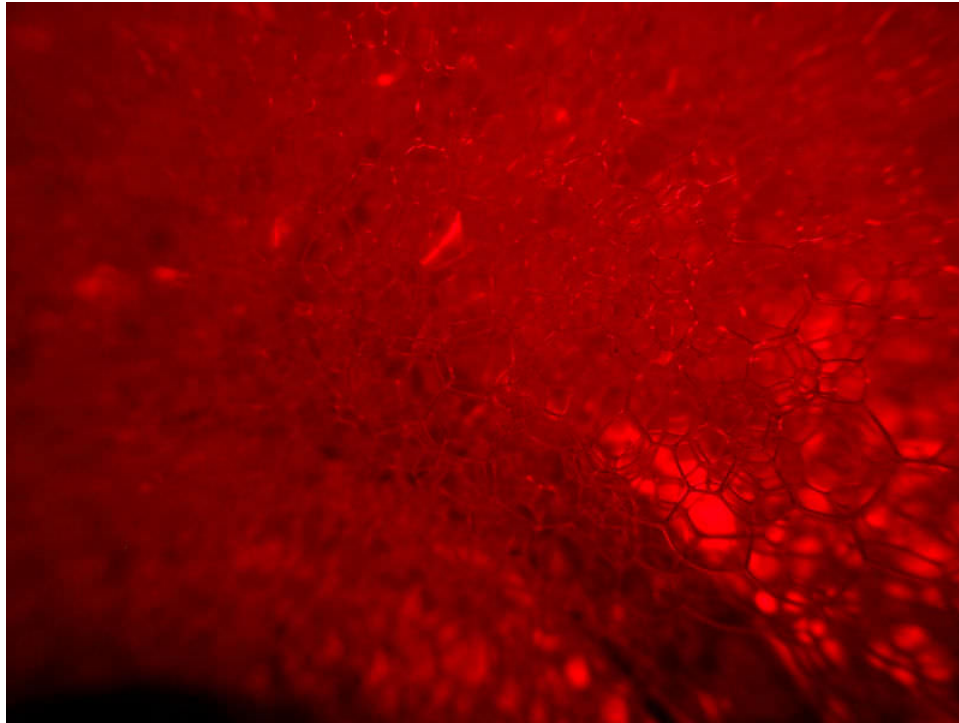
AUTHOR

Dana Desonie, Ph.D.

CHAPTER 1

Mesosphere

- Describe the mesosphere.



What can make your blood boil?

Believe it or not, if you were in the mesosphere without a space suit, your blood would boil! This is because the pressure is so low that liquids would boil at normal body temperature.

Mesosphere

Above the stratosphere is the **mesosphere**. Temperatures in the mesosphere decrease with altitude. Because there are few gas molecules in the mesosphere to absorb the Sun's radiation, the heat source is the stratosphere below. The mesosphere is extremely cold, especially at its top, about -90°C (-130°F).

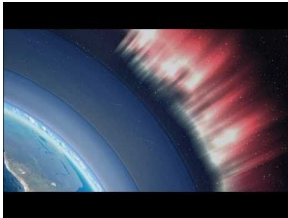
Air Density

The air in the mesosphere has extremely low density: 99.9% of the mass of the atmosphere is below the mesosphere. As a result, air pressure is very low (**Figure 1.1**). A person traveling through the mesosphere would experience severe burns from ultraviolet light since the ozone layer, which provides UV protection, is in the stratosphere below. There would be almost no oxygen for breathing. And, of course, your blood would boil at normal body temperature.



FIGURE 1.1

Although the mesosphere has extremely low pressure, it occasionally has clouds. The clouds in the photo are mesospheric clouds called **noctilucent clouds**.



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Summary

- The mesosphere has a very low density of gas molecules.
- Temperature decreases in the mesosphere with altitude because the heat source is the stratosphere.
- The mesosphere is no place for human life!

Review

1. Why would a person get severe burns in the mesosphere?
2. Why would a person's blood boil in the mesosphere?
3. How can meteors burn in the mesosphere when the air density is so low?

Explore More

Use this resource to answer the questions that follow.



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1. Where is the mesosphere?
2. What is the temperature gradient of the mesosphere?
3. What happens to a rock falling through space in the mesosphere? Why don't this happen in the thermosphere?

References

1. Jan Erik Paulsen. [Noctilucent clouds in the mesosphere](#) . CC BY 2.0