

# NATIONAL SCIENCE EDUCATION STANDARDS

## **A. Science as Inquiry**

Understanding about scientific inquiry

## **D. Earth and Space Science**

### **K–4**

Properties of earth materials

- o Fossils provide evidence about the plants and animals that lived long ago and the nature of the environment at that time.

Objects in the sky

- o The sun, moon, stars, clouds, birds, and airplanes all have properties, locations, and movements that can be observed and described.

Changes in earth and sky

- o The surface of the earth changes. Some changes are due to slow processes, such as erosion and weathering, and some changes are due to rapid processes, such as landslides, volcanic eruptions, and earthquakes.
- o Objects in the sky have patterns of movement.

### **5–8**

Earth in the solar system

- o Most objects in the solar system are in regular and predictable motion.

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Publishing services by South Pacific Press

Designed by ThinkSpace Design

Art Director: Moonhee Pak

Editorial Director: Stacey Faulkner

Published in the United States of America by

Creative Teaching Press Inc.

P.O. Box 2723

Huntington Beach, CA 92647-0723

[www.creativeteaching.com](http://www.creativeteaching.com)

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ISBN 978-1-59198-707-9

CTP 5736

Printed in the United States of America.



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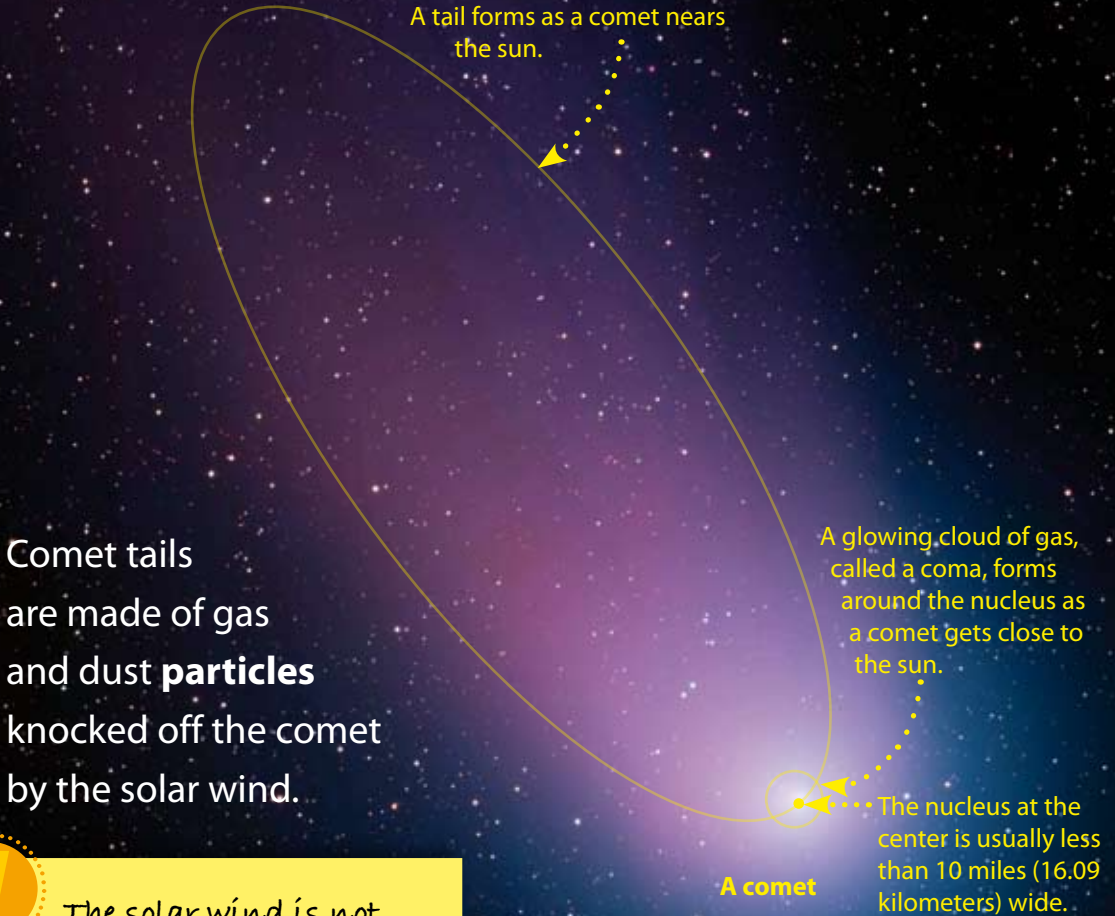
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Comets glow because they reflect the sun's light.



Comet tails  
are made of gas  
and dust **particles**  
knocked off the comet  
by the solar wind.



The solar wind is not moving air like wind on earth. It is a high-speed stream of charged particles coming from the sun. Comet tails always point away from the sun. Can you figure out why?

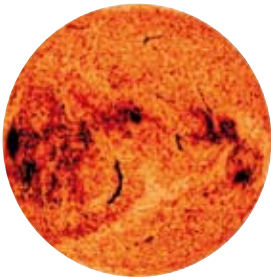


Comet tails can be hundreds of millions of miles long.

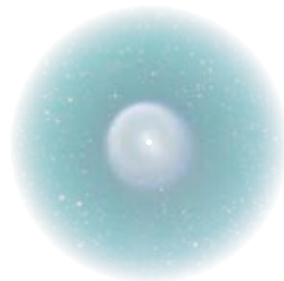
Many comets have two tails. This photo of Comet West shows its blue tail, made of gas, and its yellow tail, made of dust particles.



It's 238,900 miles (384,472 kilometers) from the earth to the moon, so a hundred million miles (160,934,400 kilometers) is about the same as two hundred round-trips to the moon. That's a long tail!



Sun's diameter—  
864,400 miles  
(1,391,921 kilometers)



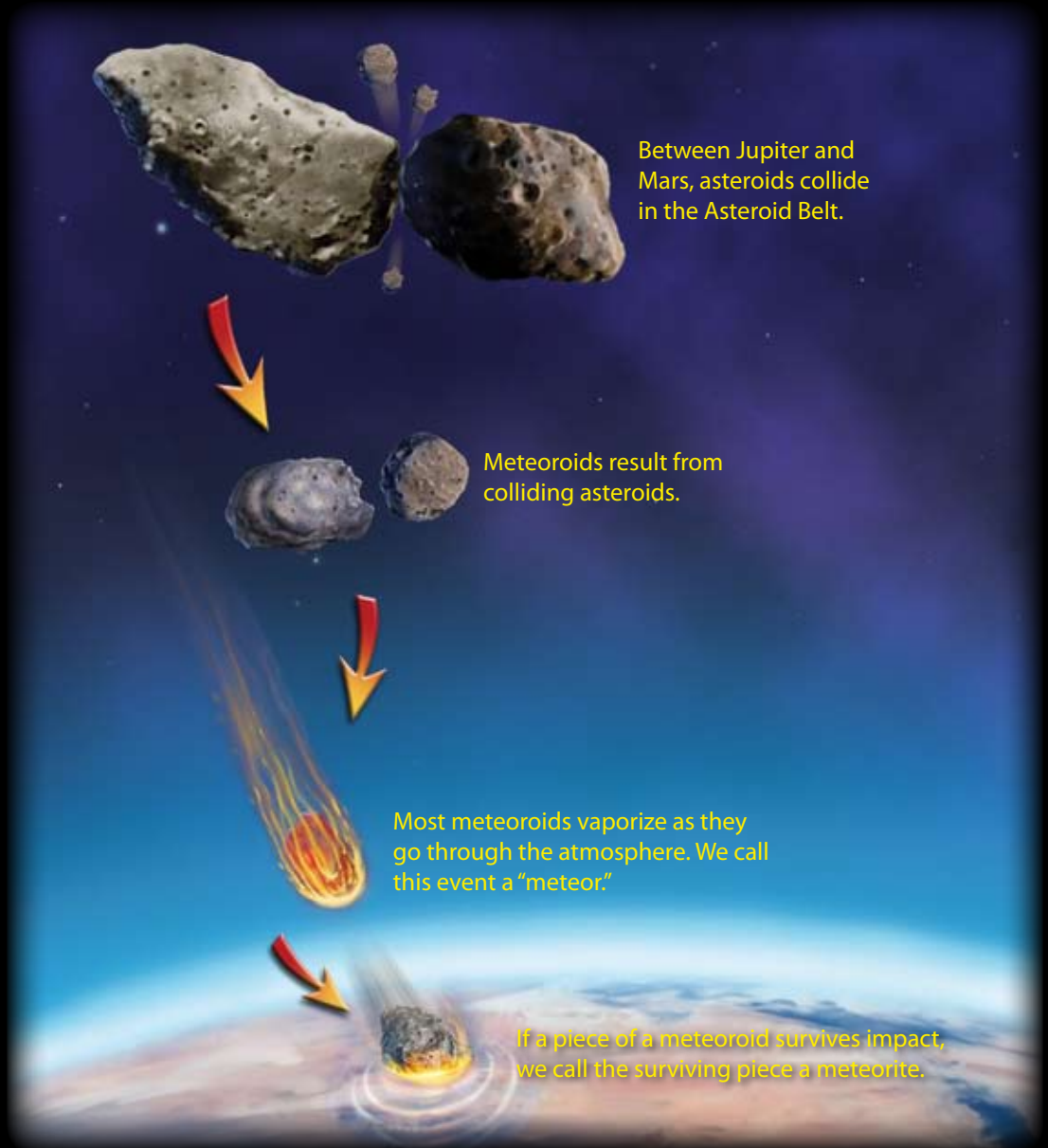
Comet Holmes's coma's diameter—  
869,900 miles  
(1,399,968 kilometers)



Earth's diameter—  
7,926 miles  
(12,755 kilometers)

# Meteorites

A meteorite is a piece of a meteoroid that has reached the earth's surface.



Before you head for an underground shelter, let's think about those craters on the moon. It's true that there are lots of them, but that's because all the craters from millions and millions of years are still there! Unlike on the earth, there's no wind and rain on the moon to wear and wash craters away.



If you go to the moon, you'll see the footprints of the astronauts who first walked there in 1969—unchanged since they left.

Also, more meteorites hit the moon's surface than hit the earth's surface. This is because the moon doesn't have a thick atmosphere to **vaporize** meteoroids like the earth does!