

11. Exploring the Solar System - Formation of the Solar System

Edexcel GCSE Astronomy Course

11.2 Understand the structure of comets (nucleus, coma and tails)

11.7 Understand the main theories for the formation and current position of the gas giant planets in our Solar System

11.10 Understand the origin and structure of meteoroids and Meteorites

11.13 Understand the main theories for the origin of water on Earth

11.2 Understand the structure of comets (nucleus, coma and tails)

Follow this link to remind yourself of the different types of 'space rock': <https://www.jpl.nasa.gov/edu/learn/slideshow/whats-that-space-rock/>

The next slide reminds you about where comets come from as also discussed in Topic 5 Observing the Solar System...

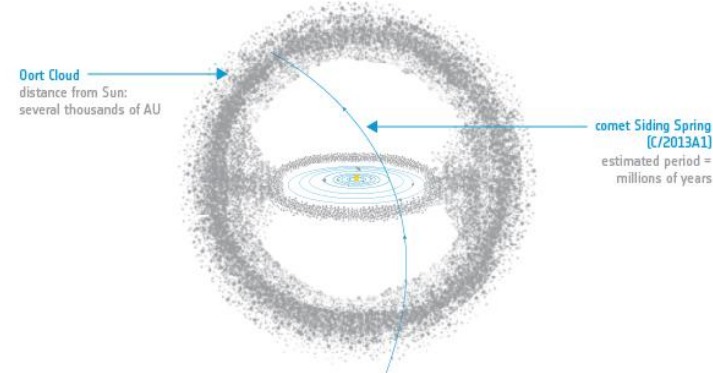
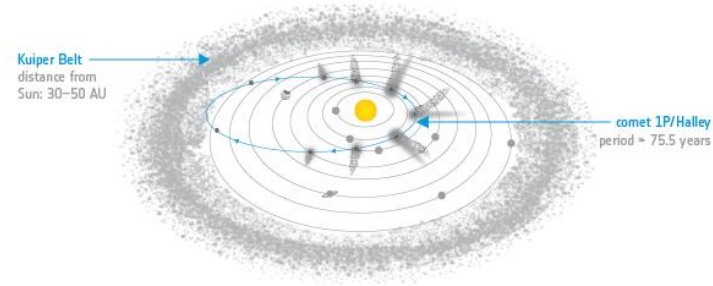
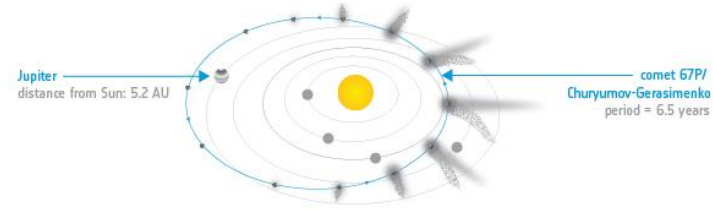
Where do comets come from?

The diagram opposite explains where different comets come from and was downloaded from this site:

https://www.esa.int/ESA_Multimedia/Images/2014/10/P06_Cooking_a_comet_Figure_2

Find out more here:

<https://spaceplace.nasa.gov/comet-quest/en/>



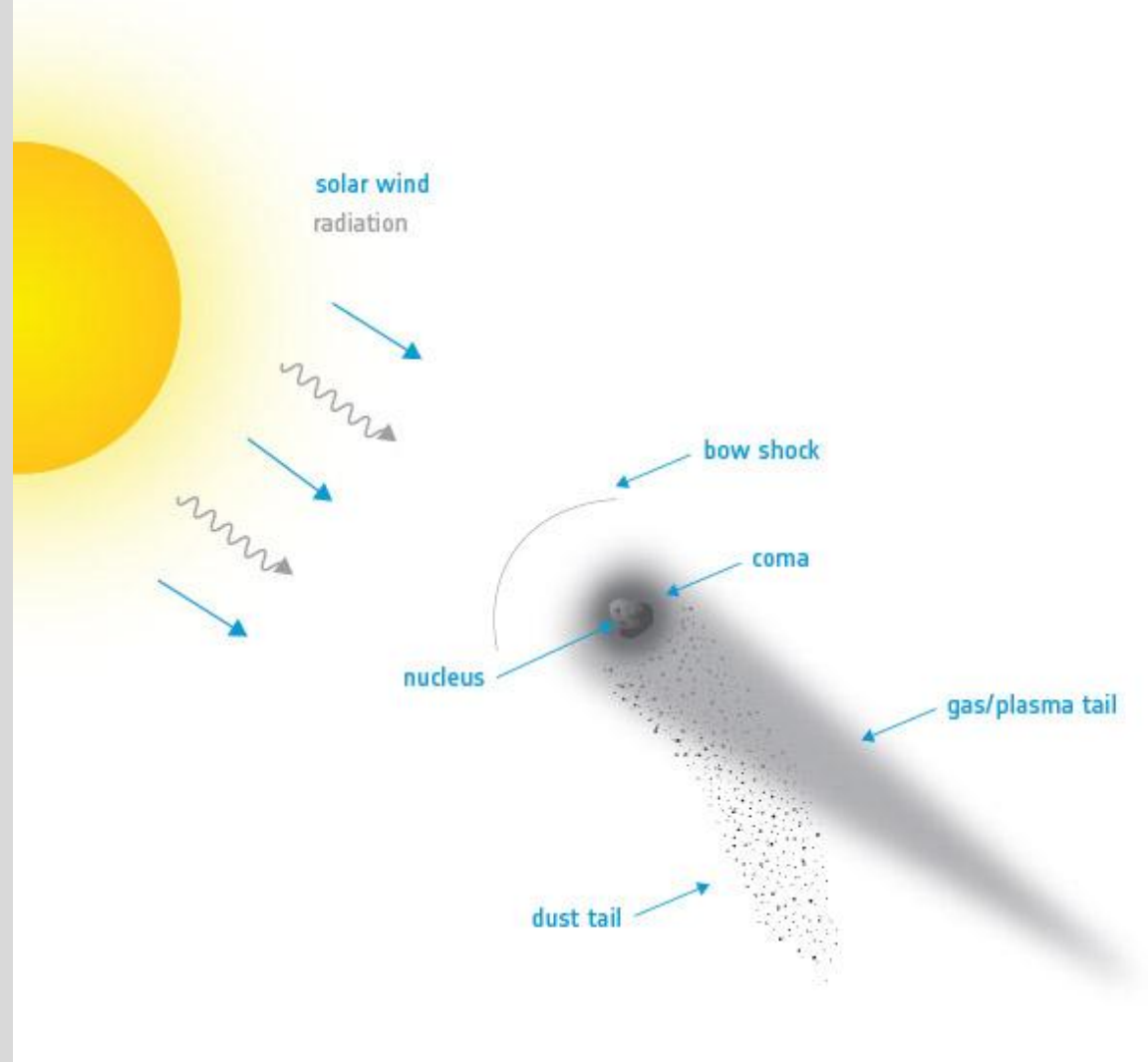
What is the structure of a comet?

The diagram opposite shows the main parts of a comet, nucleus, coma and tail.

Why does it have a dust tail and a gas/plasma tail?

From:

https://www.esa.int/ESA_Multimedia/Images/2014/10/P06_Cooking_a_comet_Figure_3



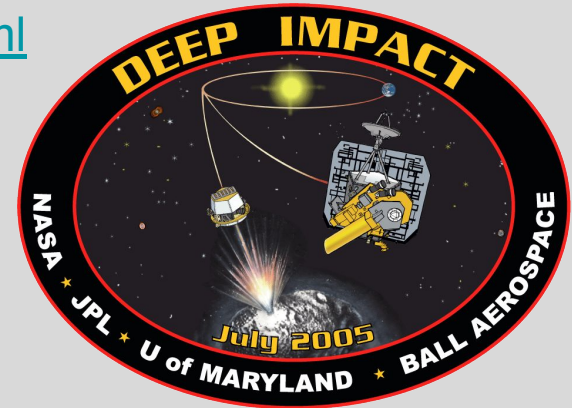
The structure of a comet in more detail:

Follow this link to find out what the Deep Impact space probe discovered about the structure of comets - make notes on the types of structure described:

<https://spaceplace.nasa.gov/comet-nucleus/en/>

Take this quiz to test what you have learned:

<https://www.space.com/23493-comet-quiz-space-trivia.html>



And finally - how to make a model comet:

https://www.youtube.com/watch?v=2lk874N7AjQ&feature=emb_logo&ab_channel=NASAVideo



SAFETY - this must be done by a trained teacher or scientist in a lab with appropriate PPE. Dry ice is VERY cold and will cause severe skin damage and pain. Some of the ingredients are hazardous.

11.7 Understand the main theories for the formation and current position of the gas giant planets in our Solar System

Go to this link for an explanation of the current theories of formation and position of the gas giants:

https://lasp.colorado.edu/outerplanets/solsys_planets.php

Copy and learn the flow diagrams which summarise 11.7 very nicely

The next slide is a useful summary of the interior structure of the gas giants that you could print out for your notes.

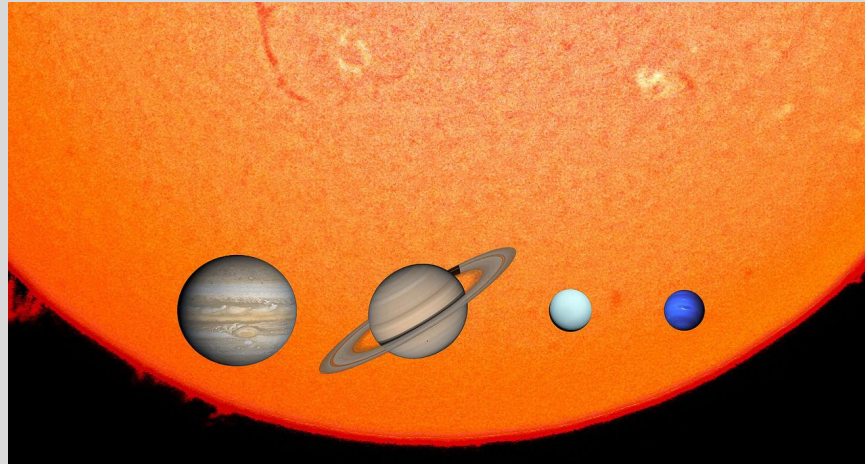
Try this quiz to test your general knowledge of the Gas Giants or Jovian planets:

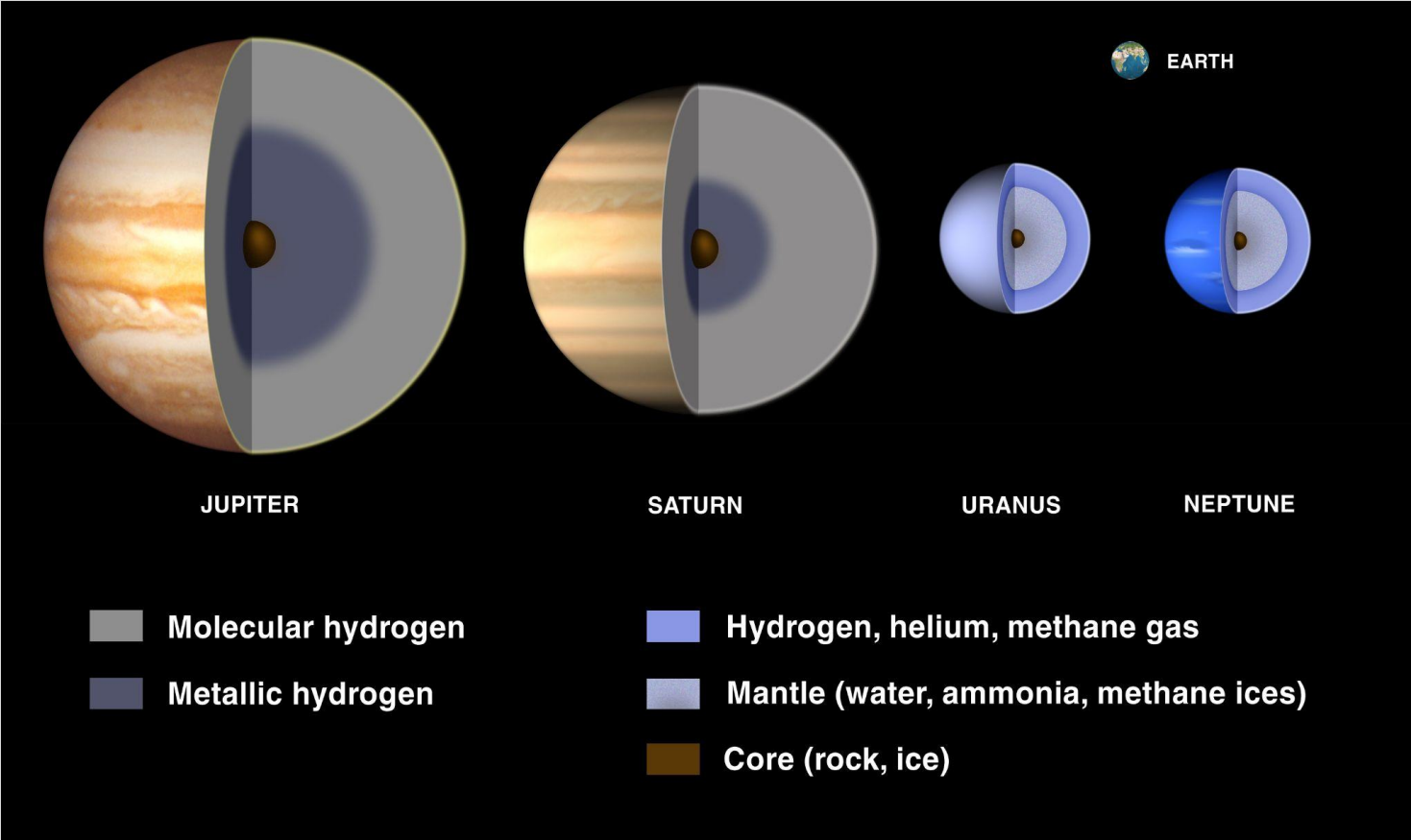
[https://www.britannica.com/quiz/giants-of-our-solar-system:](https://www.britannica.com/quiz/giants-of-our-solar-system)

Find out a lot more about solar system formation models here:

<https://blog.planethunters.org/tag/nice-model/>

This is well beyond the requirements of the GCSE course!





<https://solarsystem.nasa.gov/resources/677/gas-giant-interiors-2003/>

11.10 Understand the origin and structure of meteoroids and meteorites

There are THREE main sources of meteoroids. Read the information at this link to find out what they are and write them down in your notes:

<https://www.nationalgeographic.org/encyclopedia/meteoroid/>

Meteorites are meteors that make it to the Earth's surface. You can often see them in museums so a good place to find out about them is at the Natural History Museum - either by going there or through their website. Again, there are three main types so find out what they are and write down their descriptions:

<https://www.nhm.ac.uk/discover/types-of-meteorites.html>

11.13 Understand the main theories for the origin of water on Earth

This video explains that there is more than one source for the water that exists on Earth - watch the video and make a note of what the processes were:

https://www.youtube.com/watch?v=UdPpxljvu0I&ab_channel=It%27sOkayToBeSmart

What was the 'Late Heavy Bombardment' and when did it happen? Find out and make a note of the answers:

https://www.youtube.com/watch?v=JVboHupB8l0&ab_channel=NakedScience

<https://www.space.com/36661-late-heavy-bombardment.html>

Test your knowledge of the Solar System:

https://www.funtrivia.com/quizzes/sci_tech/astronomy/our_solar_system.html

