

Satellites and MARINE CONSERVATION

How does space work for us?

How hot is the sea?

How deep do
whales dive?

Where do sea
turtles sleep?

Activity

The ocean is an awesome place, but we don't know much about it – or the plants and animals who live there. Luckily, there are lots of scientists who want to find out more. And they are using space to help them here on planet Earth!

It's time to meet Ali and Alexios, a pair of whale sharks who spend most of their time down under, in Australia! In this activity you'll learn all about satellites and how we can use them to protect the people and animals (like our lovely whale sharks) around us.



For school



For home



Guidance for teachers, parents and guardians



During this activity children will learn about marine animal tracking: which animals scientists track, how they are tracked and why.

Activity: Track and monitor real sea creatures.

Approximate time: 60 minutes.

Target age: 11-14 year old, KS3.

Specific Learning Outcomes:

- I can name some marine animals that scientists track with satellites.
- I can explain why scientists use satellites to track animals e.g. to help tackle climate change and make informed decisions about marine conservation.

Activity Resources/ materials

- Computers with internet access – **to watch some of the video material** (noted in instructions). Children will also need access to a computer for research.
- Activity sheet – one printout per child.
- Pencils and markers.
- If making posters, then extra paper and coloured markers would be useful.

Extra guidance for those in the classroom

All activities are focused on making the role of the space industry relevant to everyday life. The aim is to inspire students towards an interest in STEAM subjects and build ongoing engagement with STEAM activities.

Curriculum subjects

- Science: Physics and Biology
- Space

This resource will help students to “develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them.”

Some **crossover curricula** links include: English, Geography, Maths, Computing and Citizenship.

Children will engage **skills** such as: Researching, Problem Solving, Working Scientifically, Written Transcription and Composition, Exploring ideas, Using New Vocabulary, Creative Thinking; Collecting, Presenting, and Analysing Data.

Activity resources / materials

- Projector and computer with internet access – **to show whole class videos** (noted in instructions).
- If making posters, then extra paper and coloured markers would be useful.
- Computers with internet access – each group of children will need access to a computer for research.
- Activity sheet – one printout per group.
- Pencils and markers – enough to go around the class.
- Please note that children will need to be sat in groups of 2 or 3.

Instructions



Starter

1. Show this [whale shark video](#) to the young person/ whole group.
2. **Watch a live tracking feed of a whale shark called Ali** on [The Great Barrier 'Reef Tracks'](#) website. Draw children's attention to the tracking data: female, 600cm, 1325kg, endangered, average travelling speed 1.95km/h.
3. Watch a live tracking feed of **another whale shark called Alexios** and ask children to verbally name some differences in their data and the movements they can see on the feed.

Main Lesson

1. Briefly introduce children to satellites and Earth Observation: in groups of 2 or 3 ask them to think about what 'satellites' and 'Earth Observation' means to them, and then get them to write down any words that immediately come to mind.
2. Play [this video](#) to give the children an accurate definition of satellites and their role in Earth observation.
3. Now tell them we are going to focus on **how we use satellites to collect data about the ocean**. As a whole group, ask them to think of 6 things they could measure in the sea – they can say their ideas out loud and you can write them on the whiteboard. Model the answers with this example:
 - a. "We can use satellites to..." e.g. monitor ocean currents.
 - b. Other answers can include: measuring sea surface temperature, precipitation, sea level, sea surface colour, marine animal tracking.



Instructions

Activity

1. Explain that you are now going to focus on marine animal tracking and satellite tagging. Hand out one activity sheet per group of 2 or 3 children.
2. Remind them of Ali and Alexios, the whale sharks they tracked at the start of the lesson and say there are 3 other marine animals to track. Watch these 3 short videos to give children a brief overview of each animal: [mantaray](#), [sea turtles](#) and [sharks](#).
3. In Task 1 ask the groups to decide, and then circle, which animal they would like to research.
4. Each group will then need to use a computer to watch a live tracking feed of their chosen animal.
5. Now ask them to research and answer the questions (some examples are provided on the activity sheet) in **Task 2**:
 - a. What animal are you tracking?
 - b. What makes this a good animal to track?
 - c. What data could you measure?
 - d. Why would this be helpful to us?
6. Move onto **Task 3**. Depending on time, the groups can either make a poster with their findings, or present it to the class verbally.

Resources for teachers or parents/guardians



Here you will find all the links and background information you will need to support you, plus further resources if time/interest allows.

Setup resources

4 short videos to answer “What is a...?” Videos include details about the animals’ size, what they feed on and where they’re found)

- [Whale shark?](#)
- [Sea turtle?](#)
- [Mantaray?](#)
- [Shark?](#)

Citizens of the Great Barrier Reef

- This is the general webpage for [The 'Reef Tracks'](#) live marine life tracker, which has information on: biodiversity in the reef, why we track marine life, how we add the trackers/tags, how they work and the benefits it can have on our conservation efforts.
- View the live feed for [Ali the whale shark](#) here and [Alexios the whale shark](#) here.

Earth Observation: how does it work?

- [This video](#) offers a very quick overview of why and how we use satellites for Earth Observation e.g. they can help us “identify problems and protect the natural environment, provide help after natural disasters and monitor our planet’s systems”.

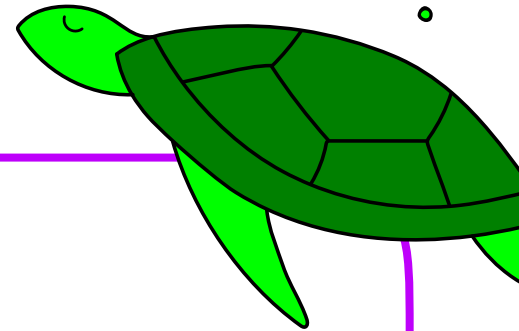
How are satellites used to observe the ocean?

- This is a good resource to inform yourself (before the lesson) about the ways we use satellites for [ocean monitoring](#) and what kinds of information we are trying to find out.



Activity sheet

Satellites and Marine Conservation



Task 1: Choose your animal



Whale Shark



Manta Ray



Turtle



Shark



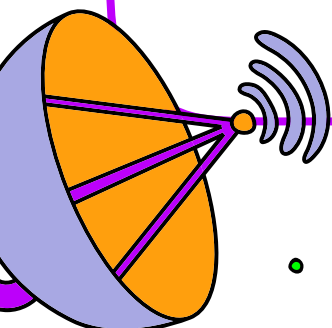
Task 2: Create your mission

Now it's time to create your tracking mission. Read these questions and then use your computer skills to research the answers. Don't forget to write it all down!

1. What animals are you tracking?

2. What makes this an interesting animal to track? Think of as many reasons as you can...

For example: does it travel in a group like a dolphin, swim through the deep sea like a blue whale, or migrate regularly like a sea turtle? Does it prefer warm or cold water?





3. What different types of data will you measure? Write down at least 3 types.

1.

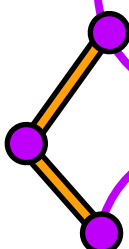
2.

3.

4.

5.

6.



4. How is this information helpful to you?
Write down some benefits.

Task 3: Poster or presentation?

You decide! Present your mission to the class or at home.