GET KIDS INTO SURVEY™

Q&A

DARK WINTER/DEEP SEA

Q1: One of the most biodiverse regions in Europe is the Danube Delta, which is featured in this scene. Can you identify this landform and explain why it is so important?

A1: The Danube Delta can be found around the cells E4 and F4.

Deltas are created when rivers deposit large amounts of sediment into a body of water with slower or stagnant movement.

Delta landforms are vital due to their fertile soils, which support agriculture and food security. They harbour rich ecosystems with unique biodiversity and serve as natural buffers against storms and flooding, protecting inland areas. Deltas are also economically valuable, providing resources like fish, oil, and trade routes, while many communities depend on them for livelihoods. Historically, deltas have been centres of civilization and culture, and they continue to filter water and store carbon, helping mitigate pollution and climate change.

Q2: Geoscientists in cell 'A4' and 'B4' are busy working, but they're not actively surveying or collecting data. What other work might they be doing on their computers to get the job done?

A2: The great thing about being a surveyor is the varied work. Half of the day is spent gathering the data whether that be measurements, images or samples. The other half of the day is spent working with the data collected to make sense of all the information. Specific to geochemical surveys, the samples collected may need to go into a lab to be researched further.

If the surveyors didn't do their office work then there wouldn't be a clear picture of what the data is trying to tell us! The data they have gathered can be put together into a nice visual, or a report written up about the findings.

Q3: Before drilling for oil in the ocean, geoscientists and surveyors do several important checks to make sure everything is safe and in the right place. How do you think they might do that?

A3: Here's a simple look at the main steps:

Reservoir Modelling

Scientists make a 3D map of what's under the ocean floor to find hidden oil or gas. Using special programs, they figure out where it might be, how it flows, and if it's worth drilling–like finding the best spot for buried treasure!

Seafloor Mapping

Seafloor mapping creates a detailed picture of the ocean floor, showing any rocks, hills, or deep spots. This helps scientists choose safe places to drill and protect underwater life.

Positioning and Navigation for Finding Gas Reserves

Scientists use GPS and underwater markers to guide drilling machines to the exact spot. This prevents mistakes and makes sure they're drilling right where the oil or gas might be.

Q4: We can see examples of renewable energy and non-renewable energy sources. Do you know the difference between them?

A4: Renewable energy sources include wind, solar and hydropower.

Renewable energy sources are better for the environment as they do not cause many carbon emissions or use the world's finite resources.

They make use of energy from natural sources as mentioned above the wind, sun and water.

Non-renewable energy sources include oil, coal and gas.

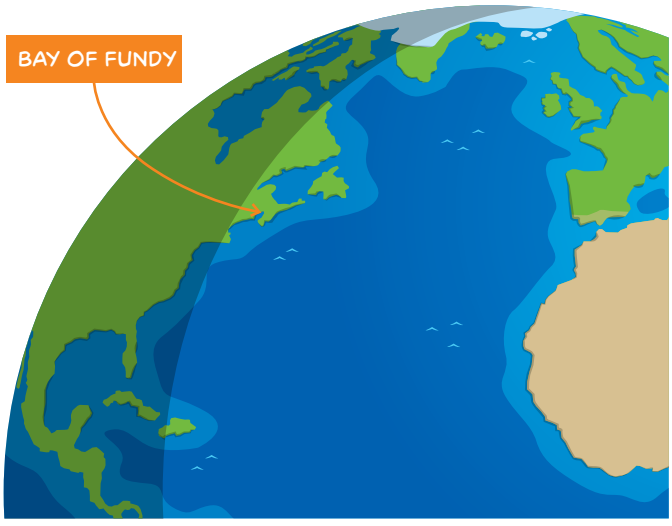
We still need non-renewable energy sources like gas and oil to generate enough energy for everyone. However, fossil fuels involve burning finite resources which release lots of carbon emissions into the environment, it is unknown how much of these materials are remaining.

Q3: Where can we find the largest tidal range in the world?

A3: The highest tides in the world can be found in Canada's Bay of Fundy at Burntcoat Head in Nova Scotia. A tide range of 16.6 m (54 ft 6 in) was recorded at springs in Leaf Basin in Ungava Bay, Quebec, Canada in 1953.

A tidal range is the difference in height between high tide and low tide at a specific location. It can vary significantly from place to place, and is influenced by a number of factors, including:

- Time of year: Tidal range is larger during spring tides, which occur when the gravitational forces of the sun and moon are aligned.
- Location: The shape of the coastline and ocean floor/depth affect the tidal range. Some tidal ranges can be as small as 30cm!



Q6: Why do surveyors monitor the underwater pipes and what equipment might they use to do so?

A6: Underwater pipeline route surveys are conducted to identify and report any potential hazards or obstructions that could impact the safety and performance of a pipeline or cable. Nobody wants to find a leaky oil pipe! These surveys can include a variety of methods, such as:

Geophysical Surveys:

These surveys look below and around the seabed to locate buried pipelines and assess geotechnical hazards. The key difference is these surveys can go below surface level to see what's happening underneath the ground. Use tools like sub-bottom profilers, side-scan sonar, and magnetometers to collect data on subsurface layers.

Bathymetric Surveys:

Give precise detail on the shape of the seafloor surface by measuring the depth, essential for monitoring pipeline above surface.

Primarily use sound based equipment like multibeam or single-beam echo sounders. This data is used to create precise maps and models of the seafloor surface, showing the pipeline's position relative to seafloor features.

Both methods mentioned above are rapidly improving and developing their technology. Various AUV's (autonomous underwater vehicles) and USVs (Unmanned surface vessels) can be seen on the poster! They are highly versatile and are often used in challenging environments where human divers cannot operate safely. A super exciting development!