

Passage 1. Listen to the ocean

1. **True** The oceans cover more than 70 per cent of the planet's surface, yet until quite recently we knew less about their depths than about the surface of the Moon. The Moon has been far more accessible to study because astronomers have long been able to look at its surface, ... The Moon has been far more accessible to study because astronomers have long been able to look at its surface, first with the naked eye and then with the telescope, both instruments that focus light. ... (Pa B) It turns out that for penetrating water the best instrument is sound. Curious
2. **False** ... The Moon has been far more accessible to study because astronomers have long been able to look at its surface, first with the naked eye and then with the telescope, both instruments that focus light. ...
3. **Not given** Thousands of sound paths in the ocean can be pieced together into a map of global ocean temperatures, and by repeating measurements along the same paths over time, scientists can track changes in temperature over months or years.
4. **True** Since 1985, Nystuen has used hydrophones to listen to rain over the ocean, acoustically measuring not only the rainfall rate but also the rainfall type, ranging from drizzle to thunderstorms.
5. **C** A number of factors influence how far sound travels under water and how long it lasts, including particles, salinity, temperature and pressure.
6. **F** of heat transfer between the ocean and the atmosphere. The ocean plays an enormous role in determining air temperature - the heat capacity in only the upper few meters of ocean is thought to be equal to all of the heat in the entire atmosphere.
7. **C** Particles in seawater can reflect, scatter and absorb certain frequencies of sound, just as certain wavelengths of light may be reflected, scattered and absorbed by specific types of particles in the atmosphere.
8. **G** Since 1985, Nystuen has used hydrophones to listen to rain over the ocean, acoustically measuring not only the rainfall rate but also the rainfall type, ranging from drizzle to thunderstorms.
9. **B** you will hear ships at a great distance from you.' It was not until 1826 that two scientists, Colladon and Sturm, accurately measured the speed of sound in water.
10. **C** In 1943, Maurice Ewing and JL Worzel conducted an experiment to test the theory that low-frequency waves, which are less vulnerable than higher frequencies to scattering and absorption, should be able to travel great distances, if the sound source is well placed correctly. The researchers set off an underwater explosion and learned that it was detected easily by receivers 3,200 kilometers away. In analyzing the results of this test, they discovered a kind of sound 'pipeline', known as the 'deep sound channel'. Sound introduced into this channel of water could travel thousands of kilometers with minimal loss of signal.

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11. **A** . But by using SOSUS, scientists can track the whales and position them on a map. Moreover, they can track not just one whale at a time, but many creatures simultaneously.

12. **B** They can also learn to distinguish whale calls; researchers have detected **changes in the calls of finback whales as the seasons change**,
13. **D** and by repeating measurements along the same paths over time, **scientists can track changes in temperature** over months or years.

