

Tim gets his feet wet

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NEEMO 11 crewmember in 2006 during a 'waterwalk' for NASA's Extreme Environment Mission Operations project (NEEMO). A permanent underwater base almost 20 m below the waves off the coast of Florida allows astronauts to get a feeling of how it is to work and live in space, learning to cope as individuals and as a team in stressful situations. Credits: NASA

ESA astronaut Timothy Peake will soon dive to the bottom of the sea to learn more about exploring space. A permanent underwater base almost 20 m below the waves off the coast of Florida will be Tim's home for more than a week in June.

The NASA Extreme Environment Mission Operations, or NEEMO, allows space agencies to test technologies and research international crew behaviour for long-duration missions.

[Astronauts](#) get a feeling of how it is to work and live in space, learning to

cope as individuals and as a team to stressful situations.

During their 10-day stay in the underwater base, the aquanauts will conduct ‘waterwalks’ to perform repairs simulating real spacewalks.

They will have to solve problems on their own. Even in an emergency, they will not be able to come up to the surface immediately.

Spending only a few hours deep underwater requires a safety stop and decompression before coming back up. There is no quick emergency exit from the NEEMO base.



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“NEEMO is the best space exploration analogue used in official

astronaut training, followed tightly by ESA’s cave training program,” says astronaut trainer Loredana Bessone from the European Astronaut Centre.

“When I dived down to the underwater habitat, it looked exactly how I imagine a lunar base will look like.

“Aquanauts were ‘floating’ around in slow motion, performing repairs and mounting equipment. I could not take my eyes off the scene.”

Tim’s training starts on 11 June and will center on exploring asteroids – communication delays, anchoring to the surface and crew size.

Training astronauts for space requires remote and inhospitable places to test their reactions to stress and their ability to work in an international team. ESA and international partners also send astronauts underground in Sardinia in Italy for cave training.



Caves are not only humid - they can be very wet. ESA’s cave training prepares astronauts to work as an international team in real exploration conditions. Sending astronauts underground to survive and explore Sardinian caves in Italy for almost a week is just one element of their long training. The Sardinian caves are isolated from the outside world. Astronauts need to get used to confined spaces, minimal privacy, technical challenges as well as limited equipment and

supplies - just as in space. Credits: ESA-V. Crobu

The astronauts have to adjust to this extreme environment, where life depends on their equipment and how they use it. They must show team ingenuity in resolving issues and overcoming obstacles.

Learning to work as a team in isolation, with no outside help and only limited rescue capabilities, is part of becoming an effective astronaut. The ‘right stuff’ can be learned, with the right instruction.

This is the first time that an ESA astronaut is joining a NEEMO mission and, in exchange, NASA will send astronauts to participate in ESA’s cave training later this year.

The base will hold an international crew of six. Tim will work with crew leader Dottie M. Metcalf-Lindenburger, a NASA astronaut who flew on the [Space](#) Shuttle. Kimiya Yui of the Japan Aerospace Exploration Agency will complete the astronaut line-up.

From today Tim Peake will be tweeting about his training in addition to making entries in the astronaut blog. See the links to the right.

Provided by European Space Agency

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