Underwater James Bond

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The Aquarius underwater base where equipment and techniques are tested for future space exploration. Credit: ESA–H. Stevenin

NEEMO – NASA Extreme Environment Mission Operations – trains astronauts for life in space. Living and working in an underwater base is similar to being on a space station. This year, NASA has two NEEMO missions planned with three ESA astronauts and a trainer taking part.

NEEMO's underwater habitat off Florida acts as makeshift a space base for astronauts to make regular 'waterwalks' in full scuba gear. Both underwater missions plan sorties for the astronauts to simulate spacewalks. Different gravity levels will test tools that could be used when humans land on the Moon, Mars or even asteroids.

The waterwalks will also test ways of communicating between mission control and the astronauts during the excursions.

NEEMO 18

NEEMO 18 astronaut crew from left to right: Japanese commander Aki Hoshide NASA astronauts, Mark Vande Hei, Jeanette Epps, ESA astronauts Thomas Pesquet and Paolo Nespoli. Credit: ESA

The 18th underwater mission saw ESA astronaut Thomas Pesquet take part in a nine-day mission, starting his underwater session on 21 July under the command of Japanese astronaut Akihiko Hoshide, along with NASA astronauts Jeanette Epps and Mark Vande Hei. ESA astronaut Paolo Nespoli is also onsite for crew communications, functioning as capsule communicator for 'ground control'. Training started on 14 July.

NEEMO 19

ESA astronaut trainer Hervé Stevenin at NEEMO base

ESA astronaut trainer Hervé Stevenin on a first dive to the Neemo underwater base. Credit: ESA–Jason Poffenberger

The 19th mission starts its seven-day underwater adventure on 8

September. ESA astronaut Andreas Mogensen is joined by Canadian astronaut Jeremy Hansen and ESA astronaut trainer and spacewalk instructor Hervé Stevenin under the leadership of NASA astronaut Randy Bresnik.

This mission focuses on wearable computers and remotely monitoring the crew, and will test an ESA voice-command 'mobiPV' prototype using smartphones, tablets and screen glasses. This approach will be used on Andreas' space mission next year.

Provided by European Space Agency