

Expedition Antarctica!



Concordia's meteorology lab. Copyright: ESA/IPEV/PNRA-C. Possnig
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ESA have lots of missions in space, but did you know that ESA scientists also travel to Antarctica? Concordia research station is only 1670 km from the geographic South Pole. It is one of the coldest areas on Earth with Summer temperatures ranging from -25°C to as low as below -80°C ! The annual average air temperature is -54.5°C , with low humidity and little or no rain or snowfall throughout the year.

Why would ESA scientists want to work at Concordia? Simply put, it is the closest thing on Earth to interplanetary exploration. If you go to Concordia, you will be part of a small team, isolated from the rest of humanity for many months at a time. Conditions outside of your base are very hostile, and you need to survive with the supplies you have available, and the skills of your teammates. Studying the effects on people of living in Concordia is helping ESA to prepare for a mission to Mars!



Can you spot Paxi by the water recycling equipment? Copyright: ESA/IPEV/PNRA- C. Verseux
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Dr. Carmen Possnig is an ESA-sponsored medical doctor who spent 12 months at Concordia. She ran lots of experiments on how isolation, lack of sunlight, and extreme temperatures can affect the human body and mind. During the day, Carmen would spend time taking and analysing blood samples.

Meanwhile, her friends at Concordia would complete their own tasks, such as programming telescopes to search for exoplanets, or releasing weather balloons. Florentin, the plumber, looks after the water recycling system – this was designed by ESA as a prototype for future space missions!



It is important to have a healthy supply of food! Copyright: ESA/IPEV/PNRA-C. Possnig
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In the evenings everyone eats dinner together, and then they watch films, play games, and relax.

Carmen would often be woken up by alarms in the middle of the night, and hear the technical team rushing to fix whatever had broken!

Living and working at Concordia can be dangerous though, because of the extreme cold. Our bodies are designed to operate at a comfortable 37°C . If our core body temperature drops below 35.5°C , we can get an illness called hypothermia. Symptoms include sleepiness, confused speech, and clumsiness. It can even be fatal. To avoid hypothermia when outside, the Antarctica crew need the right kit! ESA's Dr. Nadja Albersten of Denmark, listed the 17kg of equipment she was given when setting off for Concordia:

- 1 jumpsuit
- 1 down jacket and down trousers
- 1 thin jumpsuit (which is actually quite thick!)
- 2 sets of ski underwear
- 8 pairs of gloves / mitts in different thicknesses
- 5 pairs of inner gloves
- 1 pair of polar boots, extra inner boots and extra soles
- 1 pair of slippers in grandfather design
- 2 pairs of cotton trousers
- 1 fleece jacket
- 1 wool sweater
- 5 pairs of socks
- goggles and sunglasses
- hat
- neck gaiter
- lip balm and sun screen



Dressing in layers is essential! Copyright: ESA/PNRA/IPEV-Marco Butto
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That is quite a list -- all just so that you can survive the weather! Would you like to work at Concordia research base? How do you think you would cope with the difficult conditions there? Can you think of any extra equipment you would take to help you on your mission?

Cool fact: You can read Dr. Carmen Possnig's blog posts about a typical day at Concordia here: [Part 1](#) and [Part 2](#).

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