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The colours of home

As hard as it might be to believe, this is the place we call home. Earth is the green ball glowing eerily on the right, and the galaxy where it – and the rest of the Solar System – resides, the Milky Way, is the swirling mass emerging from behind. This awe-inspiring image was captured by NASA astronaut Donald Pettit on 29 January 2025, during his stay on the International Space Station (ISS).

The ISS orbits 425km (265 miles) above Earth's surface and was passing over the Pacific Ocean off the coast of Chile when Pettit reached for his camera. It was just before sunrise, hence the white glow on the horizon. The green you can see is the abundant phytoplankton in the ocean being illuminated by the rising Sun.

Look closer, however, and you'll notice the faint purple haze in Earth's atmosphere. This is an effect known as airglow and it's happening all the time, all around the planet. Airglow appears 50–300km (approx 30–180 miles) above the planet's surface, but is easiest to see from above, especially when contrasted against the blackness of space.

It's caused by molecules (mostly nitrogen and oxygen) being energised by ultraviolet radiation from the Sun. Atoms in the lower atmosphere release that excess energy by bumping into one another. But the upper atmosphere is much thinner, so atoms are less likely to collide. Instead, they release their energy by emitting photons – the smallest particles of light – and producing this purple haze.

NASA/DON PETTIT

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