

Solutions

2.1 Carbon dioxide, methane, water vapour.

2.2 Long-wave infrared radiation from the warm Earth.

2.3 Cattle farming; rice paddies; landfill decay.

3.1 Short-wavelength radiation from the Sun passes through the atmosphere and warms the surface; the warm surface radiates longer-wavelength infrared back out; greenhouse gases absorb some of this infrared; and re-emit it in all directions, including back to the surface – keeping it warmer than it would otherwise be.

3.2 Two variables rising together could share a third cause or coincide by chance; climate scientists test the mechanism – the greenhouse absorption of infrared is measured in laboratories and atmospheres; conclusions rest on systematic peer-reviewed reviews of many studies, not one correlation.

3.3 Melting ice caps and rising sea levels; more extreme weather – droughts, floods, storms; shifts in habitats and species distribution; uncertainty because the climate system is complex with feedbacks, so models give ranges rather than exact predictions.