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Deep ocean circulation by acoustic-gravity waves: from snowball to greenhouse earth

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Acoustic-gravity waves are compression-type waves propagating with amplitudes governed by the restoring force of gravity. They are generated, among others, by wind-wave interactions, surface waves interactions, submarine earthquakes, and movements of ice-blocks. We show that acoustic-gravity waves contribute to deep ocean water transport through different climate timelines: from snowball to greenhouse earth; they cause chaotic flow trajectories of individual water parcels, which can be transported up to a few centimetres per second.