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On the fate of impact-delivered metal in a rotating terrestrial magma ocean.

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Impacts on Earth crucially influenced core formation and may have contributed to late accretion of material. However, to what extent the present-day geochemical signature of the Earth's mantle reflects the processes of core formation and late accretion, and how much of the material delivered by giant impacts and during late accretion was incorporated into the core remains unclear. To improve the insight into these processes, it is of key importance to comprehend how impact-delivered metal is mixed and settles in a terrestrial magma ocean. Settling and mixing are potentially strongly influenced by the convective and rotational state of the magma ocean.
Therefore, by means of numerical experiments in spherical geometry, we study how the convective state of the magma ocean and the potentially strong planetary rotation affect the settling of impact-delivered material in a global magma ocean. We reveal crucial differences in metal dispersion, in settling history and in the degree of metal-silicate equilibration depending on the impactor's target latitude.

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