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Inflation at Askja, Iceland. New and revisited relative microgravity data.

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In August 2021 Askja caldera in Iceland started to show uplift after decades of subsidence. The uplift signal is centered at the northwestern edge of lake Öskjuvatn and an order of magnitude larger than the subsidence in the last decade. In September 2021 a geodesy campaign was carried out at Askja, including relative microgravity measurements acquired with the use of two Scintrex CG-5 instruments. Relative microgravity campaigns at Askja are not straightforward due to the long walking distances between sites, which makes a “double loop” procedure impossible. We revisit existing Scintrex relative microgravity data sets (2015 onward) and analyse data using the same joint weighted least squares inversion routine. We define recommendations for future relative microgravity campaigns at Askja which will be important to establish the cause of the ongoing uplift. The density of subsurface magma is only identifiable with microgravity data. Knowledge of the type of magma accumulating under Askja is vital to assess possible hazard implications.

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