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The Magnesium isotope proxy in Earth surface research is still underexplored. Recently, field and laboratory experiments have shed light on the complex suite of processes affecting Mg isotope fractionation in continental weathering systems. Magnesium-isotope fractionation in speleothems depends on a series of factors including biogenic activity and composition of soils, mineralogy of hostrock, changes in silicate versus carbonate weathering ratios, water residence time in the soil and hostrock and disequilibrium factors such as the precipitation rate of calcite in speleothems. Furthermore, the silicate (here mainly Mg-bearing clays) versus carbonate weathering ratio depends on air temperature and rainfall amount, also influencing the soil biogenic activity. It must be emphasized that carbonate weathering is generally dominant, but under increasingly warm and more arid climate conditions, silicate weathering rates increase and release 26Mg-enriched isotopes to the soil water. Furthermore, as shown in laboratory experiments, increasing calcite precipitation rates lead to elevated delta26Mg ratios and vice versa. Here, data from six stalagmite time-series Mg-isotope records (Thermo Fisher Scientific Neptune MC-ICP-MS) are shown. Stalagmites from caves in Morocco, Germany and Peru are presented. The lowest mean Mg-isotope compositions are found in two Pleistocene Moroccan stalagmites (delta26Mg: -4.26 ± 0.07‰ and -4.17 ± 0.15‰. The cyclical shifts in both stalagmites are best explained by periods of increasing and decreasing aridity. In contrast, Holocene Peruvian stalagmites (0 to 14 ka) show a high mean delta26Mg-value of -3.96 ± 0.04‰ and a very low level of variability in time. This is probably due to the equatorial climate lacking significant variations in temperature and/or rainfall amount. Changes in precipitation rate show effects in stalagmites from western Germany and Peru resulting in a small variability exceeding the error of the delta26Mg-values. Stalagmites from Western Germany (BU 4 mean delta26Mg: -4.20 ± 0.10‰ $AH-1meandelta26Mg:-4.01\pm$ 0.07‰ are, in terms of the factors that control isotope fractionation, complex. This is because factors such as precipitation rate, changes in silicate versus carbonate weathering ratios, air temperature and rainfall amount interfere in a highly complicated manner.