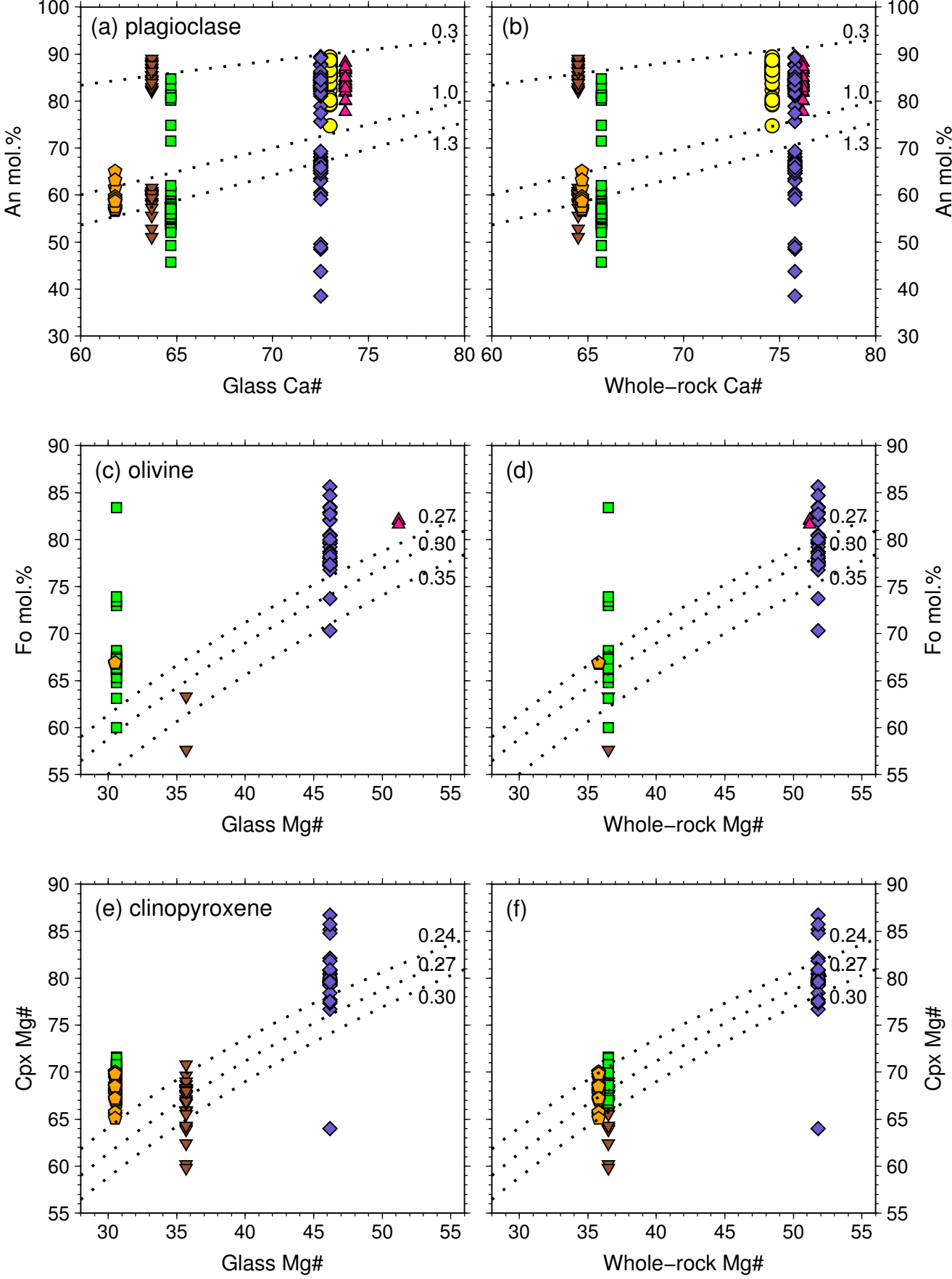

Supplementary Figure A. Mineral−melt pairs for different eruptions from the Askja volcanic system. (a) and (b): Anorthite content of plagioclase vs. Ca# (molar Ca/[Ca+Na]) of the carrier melt. The glass composition is taken as the carrier melt composition; the whole−rock composition is shown for comparison. The dotted lines show different Kd values based on Ca and Na partitioning between the plagioclase and its host melt, with equilibrium plagioclase−melt pairs expected to have Kd values between 1.0 and 1.3 (Grove et al., 1992). The phenocrysts with Kd down to 0.3 are not in equilibrium with their carrier melts at the time of eruption. (c) and (d): Forsterite content of olivine vs. Mg# (molar Mg/[Mg+Fe^T]) of the carrier melt (glass) and whole−rock. Equilibrium olivine−melt pairs are expected to have Kd values between 0.27 and 0.35 (e.g. Roeder & Emslie, 1970). The large olivine phenocrysts in Holuhraun and Nýjahraun are not in equilibrium with their carrier liquids at the time of eruption. (e) and (f): Clinopyroxene Mg# vs. Mg# of the carrier melt (glass) and whole−rock. Equilibrium clinopyroxene−liquid pairs are expected to have Kd values of 0.27±0.03 (Putirka, 1999). The Kd lines shown are calculated on the basis of equilibrium Fe−Mg exchange assuming that all iron is present as Fe^{2+}; however, this does not necessitate Fe^{2+}−Fe^{3+}, Na−Al or Ca−Na exhange equilibrium. When calculated according to the method of Putirka (2008), a number of clinopyroxene microphenocrysts have equilibrium Kd values between 0.24 and 0.30, and are therefore suitable for clinopyroxene−liquid thermobarometry.