

Trace-element distribution and ore-forming processes in Au–Ag-rich hydrothermal chimneys and mounds in the TA25 West vent field of the Tonga Arc

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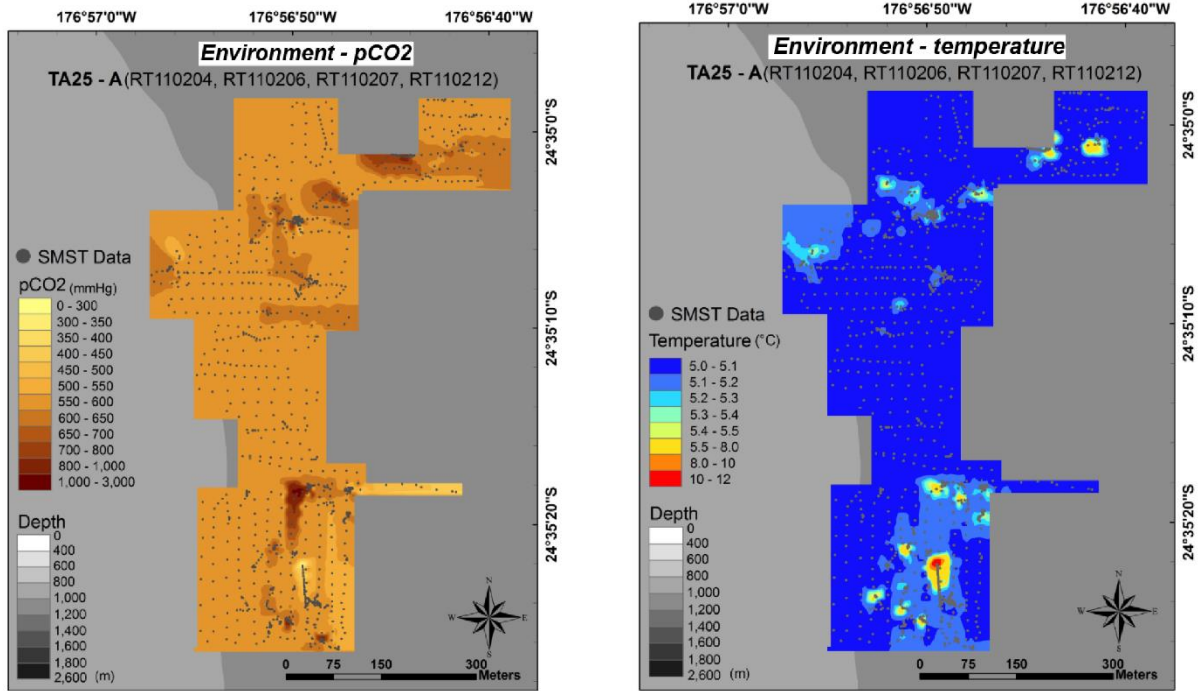


Fig S1 (ESM 1) Maps of CO₂-rich hydrothermal plumes and temperature distributions around active hydrothermal vents

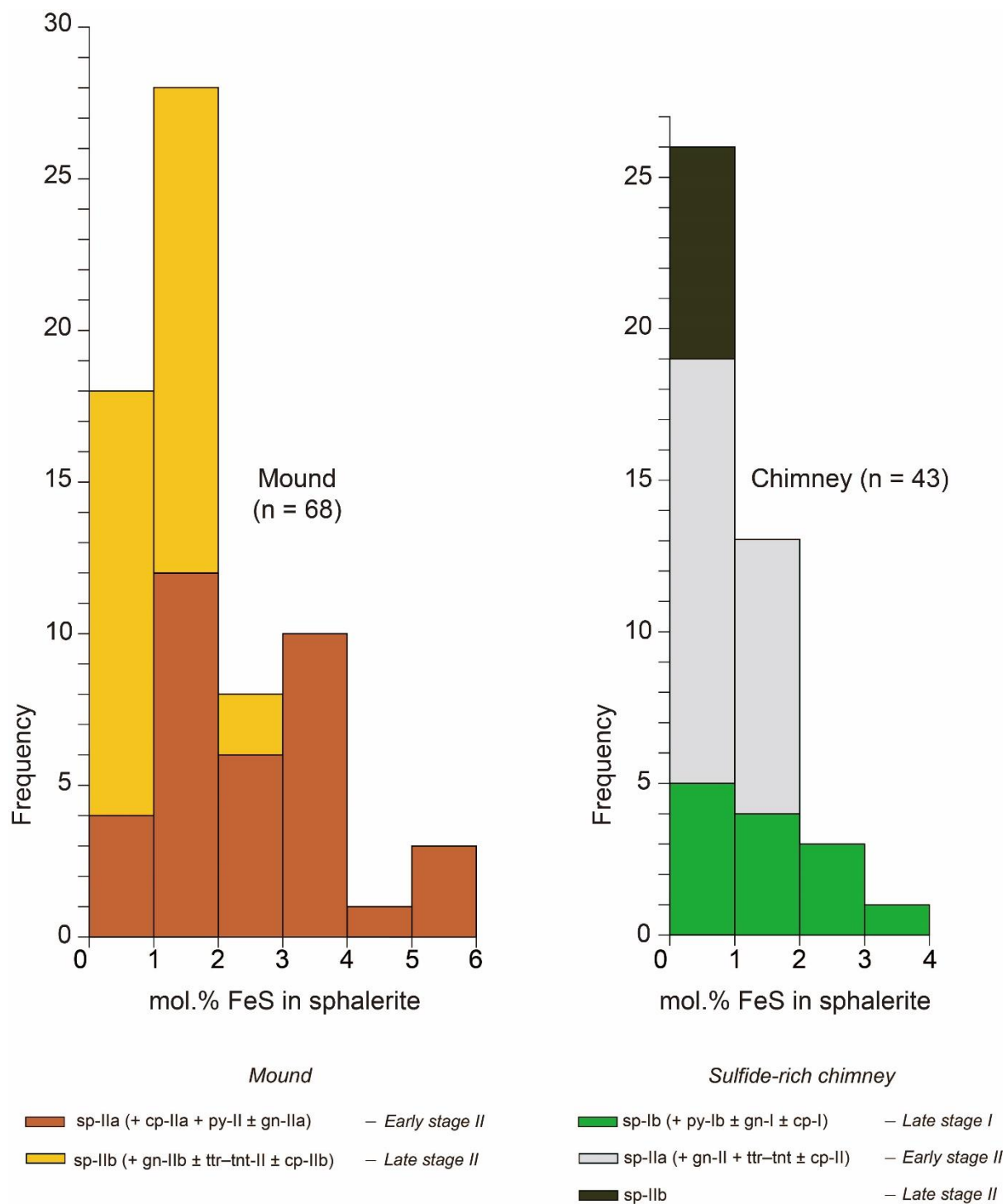


Fig S2 (ESM 1) Frequency distributions (mol.%) of FeS contents of sphalerite from the TA25 WVF.

Abbreviations are as in Figs 5 and 6

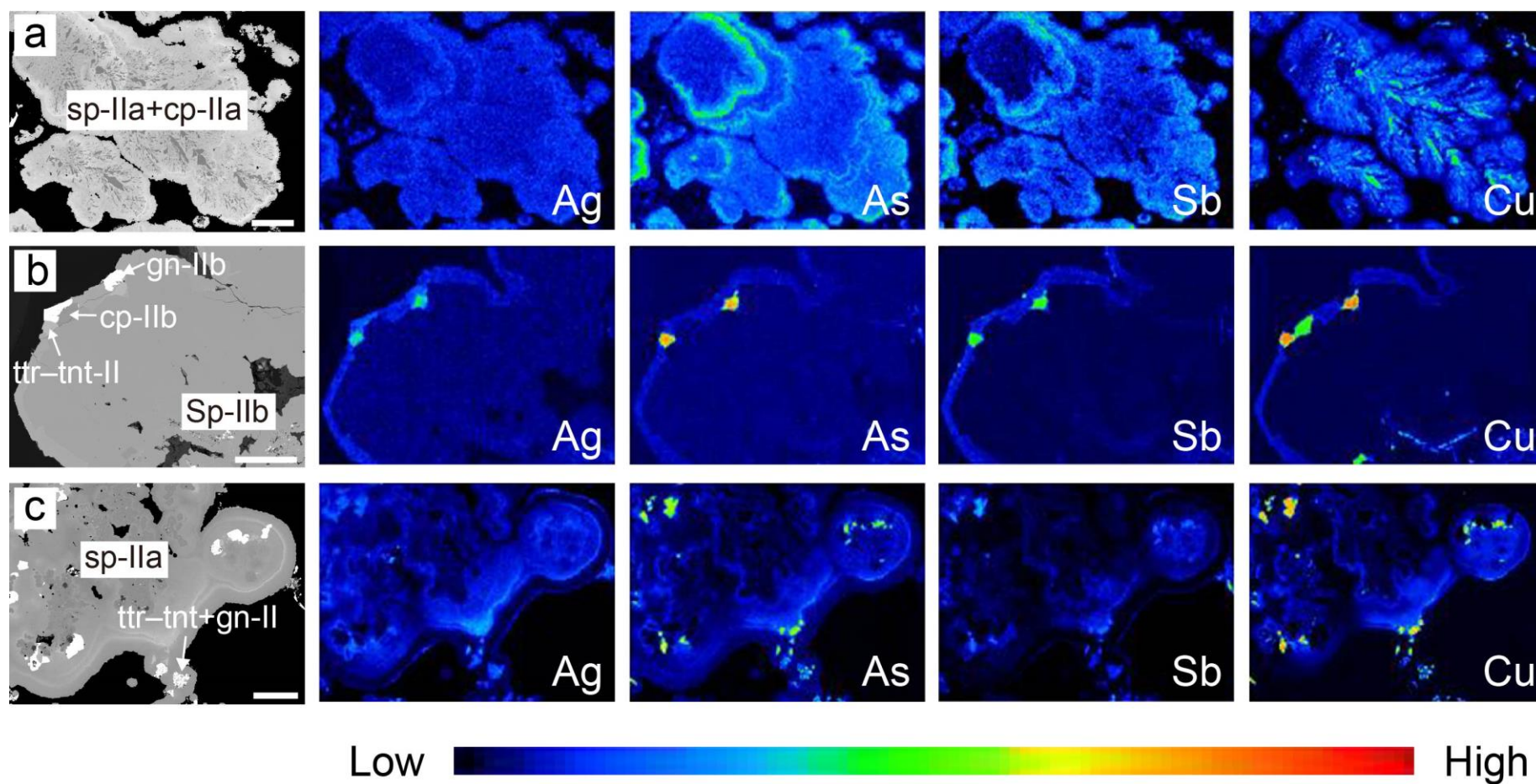


Fig S3 (ESM 1) BSE images and EPMA element maps for Ag, As, Sb, and Cu in sphalerite of (a and b) mound and (c) sulfide-rich chimney during Stage II. Abbreviation: cpy=chalcopyrite, gn=galena, sph=sphalerite, tet-ten=tetrahedrite-tennantite solid solution. Abbreviations are as in Figs 5 and 6

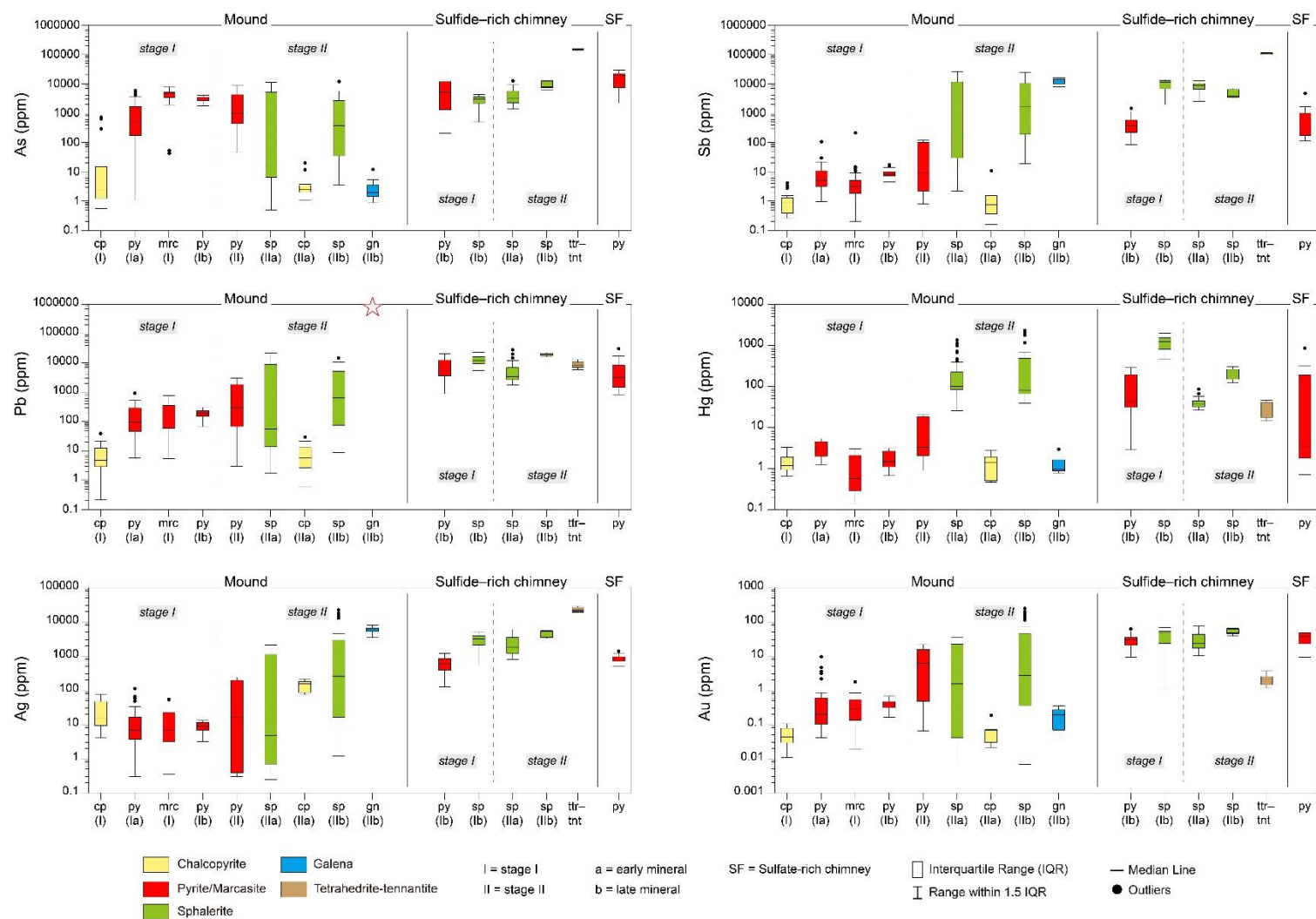


Fig S4 (ESM 1) Trace-element distributions of dominant sulfide and sulfosalt minerals, as determined by LA-ICP-MS. Red star indicates average Pb content determined by EPMA. Abbreviations are as in Figs 5 and 6

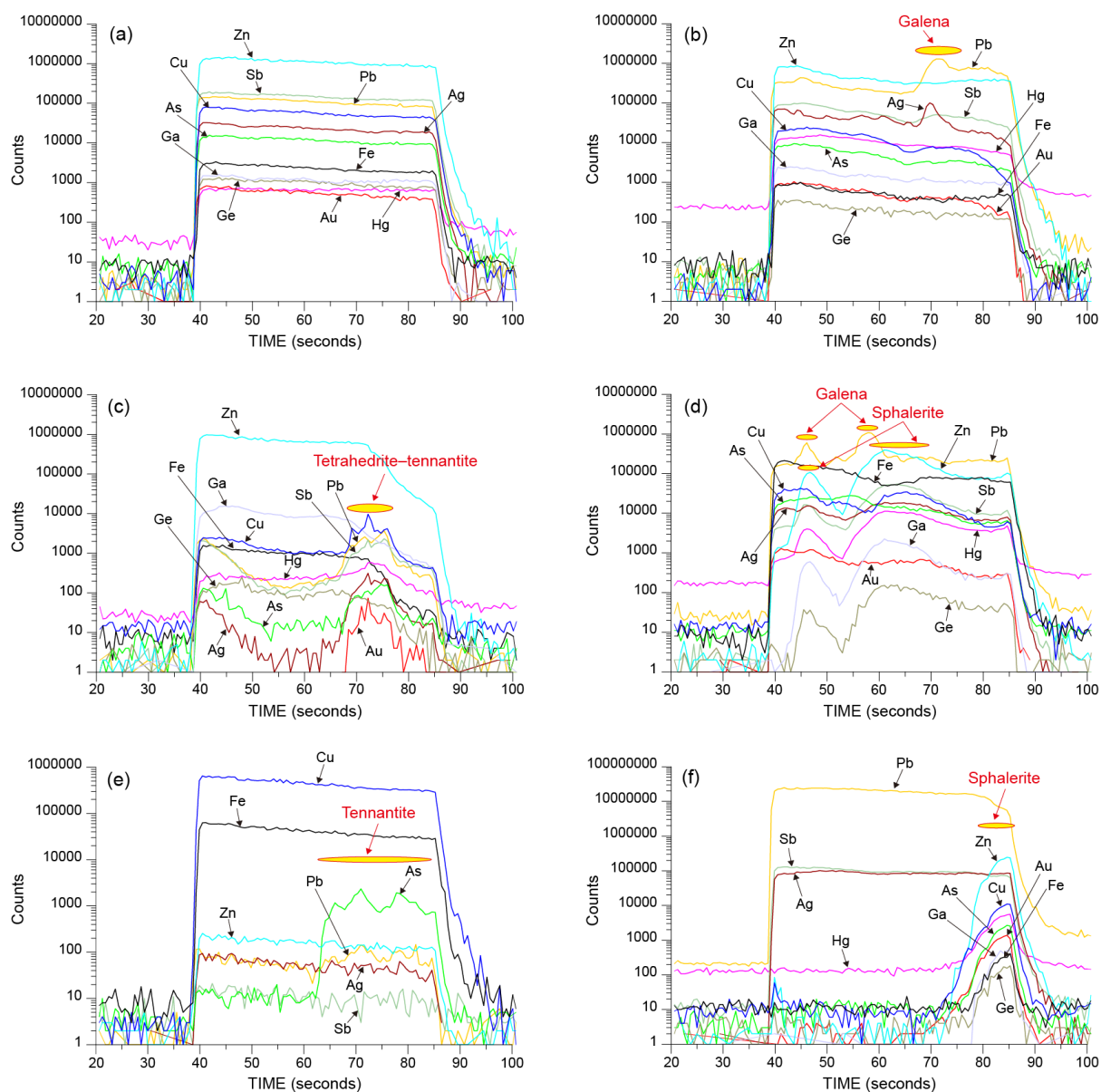


Fig S5 (ESM 1) Representative time-resolved LA-ICP-MS depth profiles in the dominant sulfide minerals. (a to c) Sphalerite, (d) Pyrite, (e) Chalcopyrite, and (f) Galena. Yellow circles indicate mineral inclusion

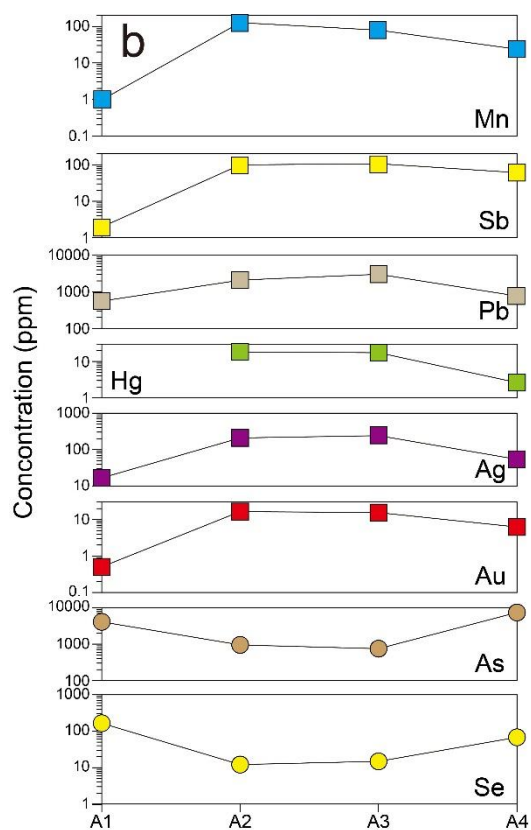
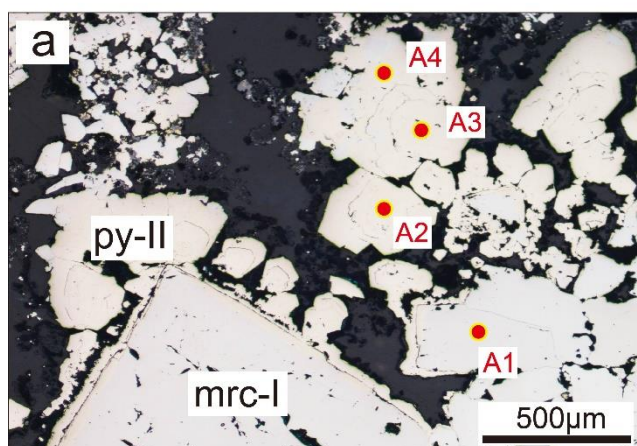


Fig S6 (ESM 1) Trace element distribution in continuous growths of pyrite and marcasite. (a) Spots of LA-ICP-MS analysis are marked by red circles. (b) Trace element concentrations in each analytical point. Abbreviations are as in Figs 5 and 6

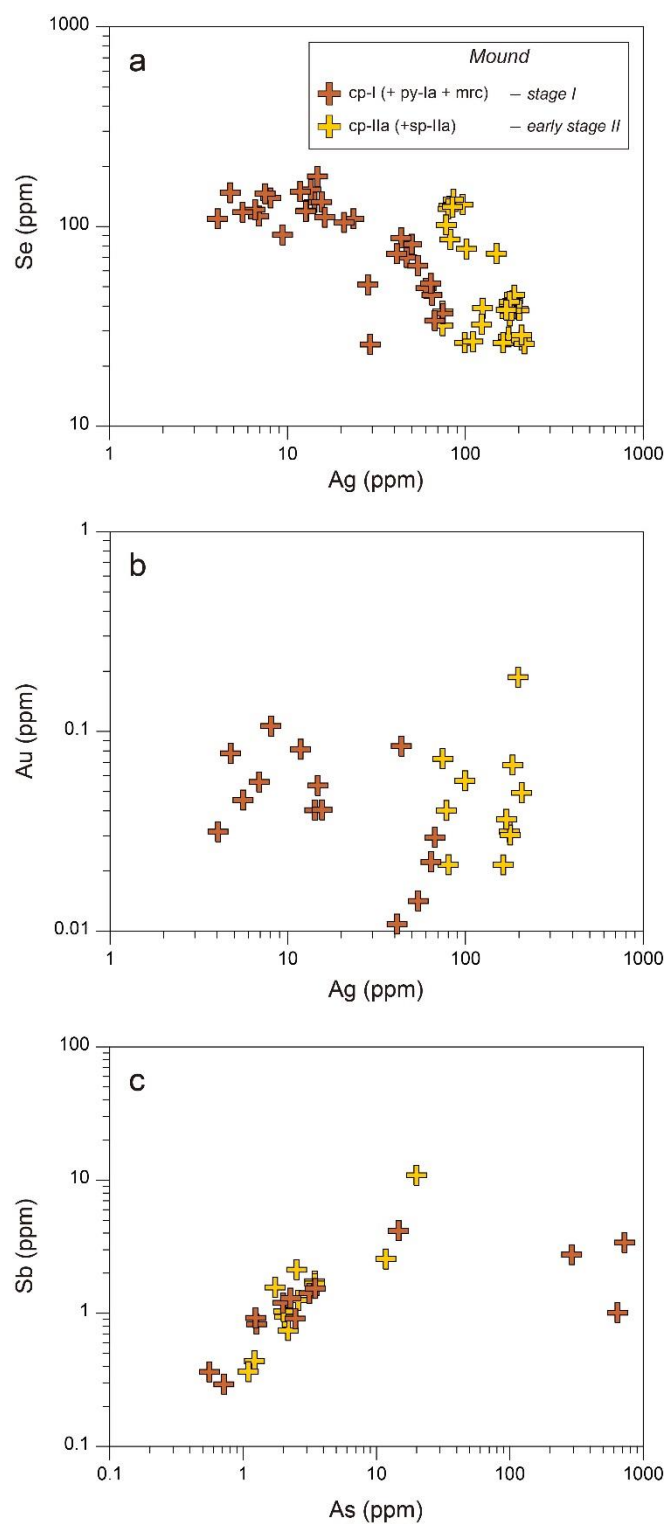


Fig S7 (ESM 1) Trace element abundances in chalcopyrite determined by LA-ICP-MS. (a) Ag versus Se, (b) Ag versus Au, and (c) As versus Sb. Abbreviations are as in Figs 5 and 6

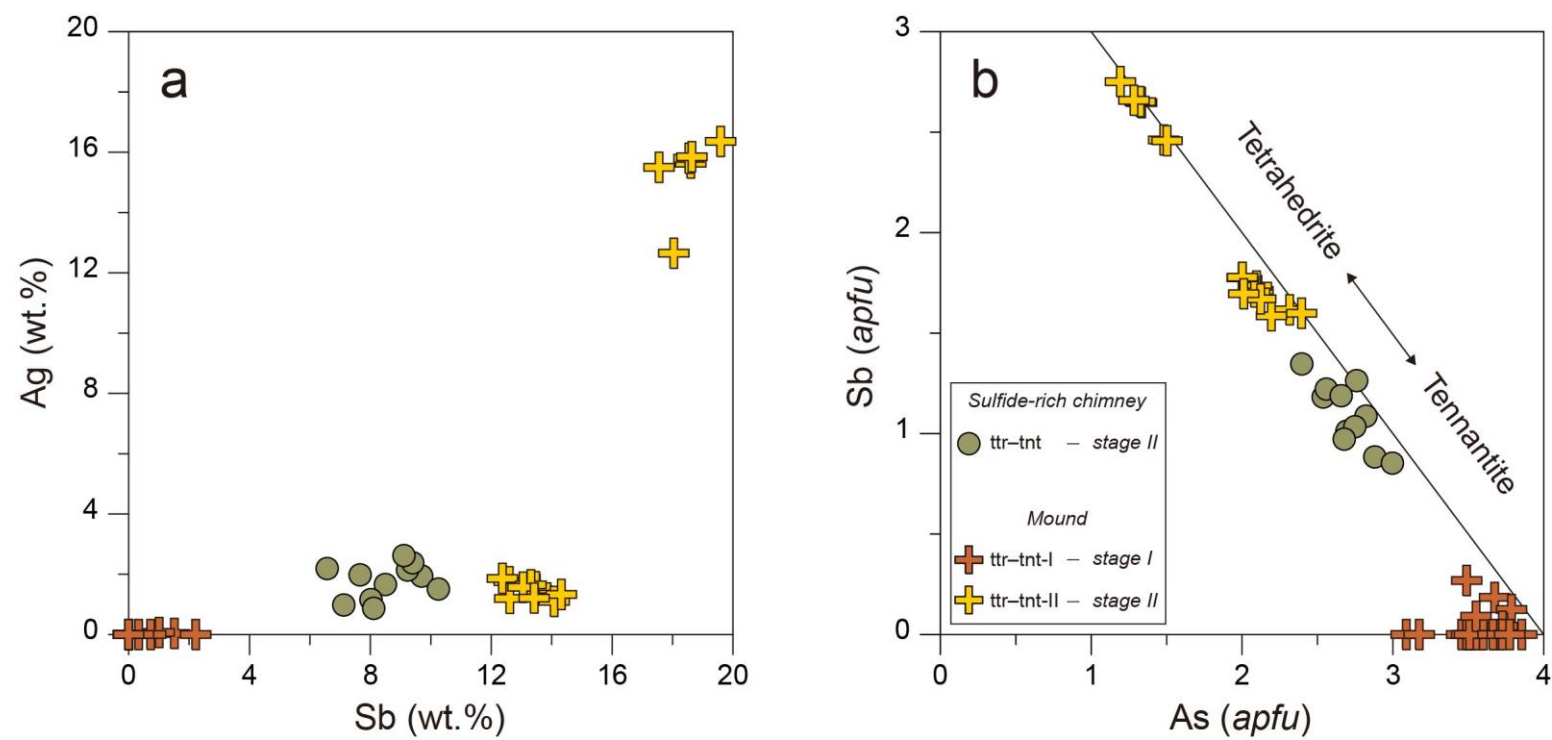


Fig S8 (ESM 1) Compositional variations of tetrahedrite-tennantite solid solution; (a) Sb-Ag (wt.%), and (b) As-Sb (apfu). Black solid line in (b) indicates ideal stoichiometry $(AsSb)_4$. Abbreviations are as in Figs 5 and 6