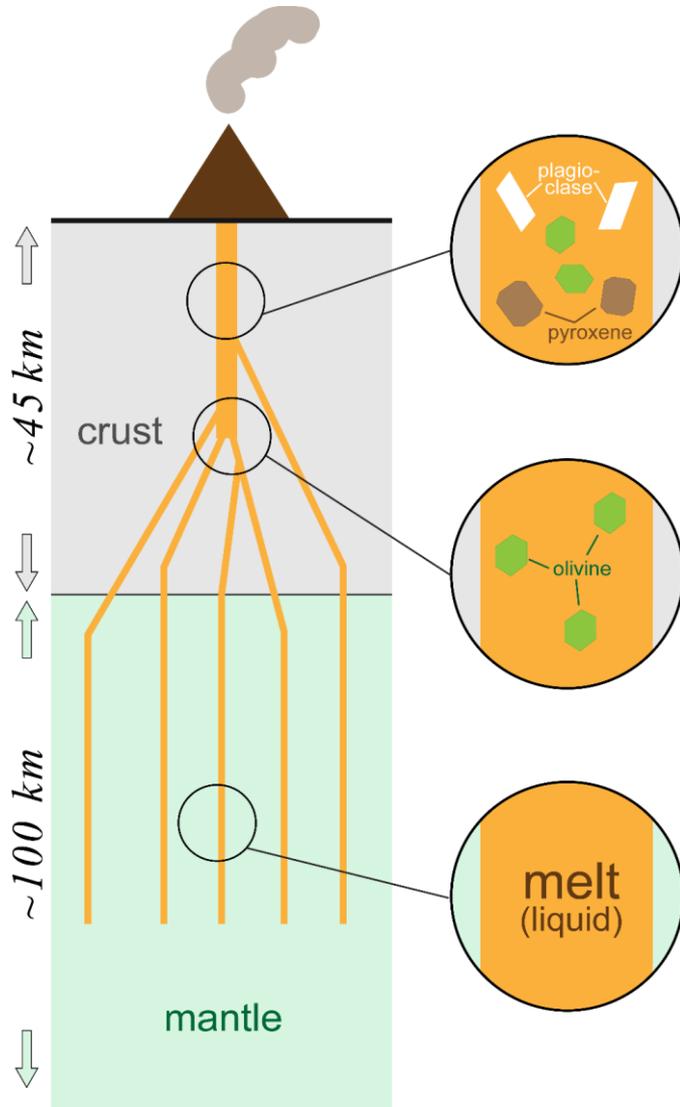


Primary arc melts tracked by magmatic olivines

SM Straub, V Batanova, A Sobolev, A Gómez-Tuena, R Espinasa-Pereña, I Bindeman, FM Stuart, E Widom, Y Iizuka

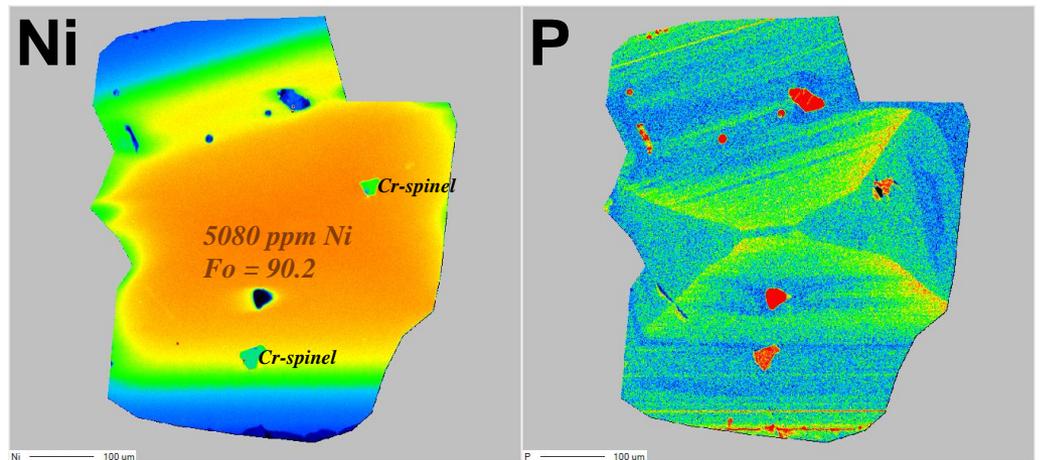


Electron microprobe

olivine: Si, Mg, Fe, Ca, Mn, Ni, Co, Cr, Al, Ti, P, Ti, Zn
Cr-spinel inclusions: Si, Ti, Al, Fe, Mn, Mg, Ni, V, Zn, Cr, V

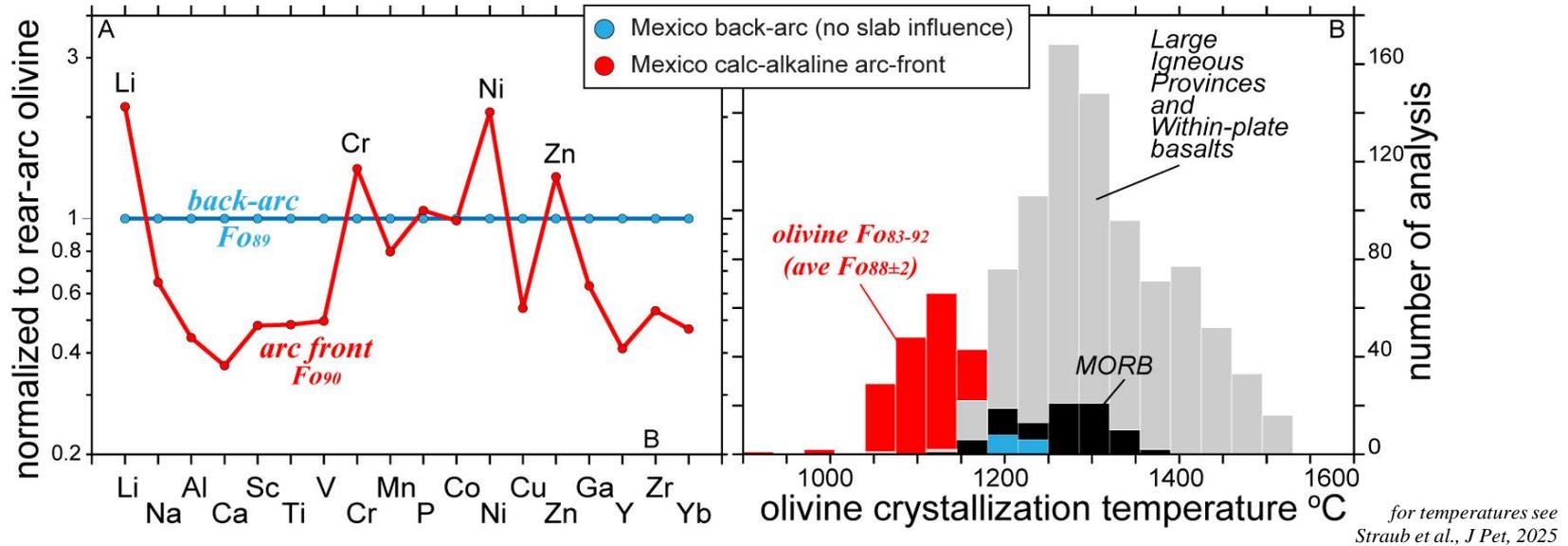
Laser-ablation-ICPMS:

olivine: Li, Na, Mg, Al, Si, P, Ca, Sc, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, Ga, Y, Zr, Yb



x-ray maps at 500 nA, 1 μm step size, 700 ms dwell time

What do olivine traces tell?



- Olivine trace elements sensitive to melt composition, temperature, water and oxygen fugacity
 → potential to inform on the characteristic of mafic mantle melts
- Track slab-mantle interaction, mantle heterogeneity, and the amount of slab materials in primary arc melts (*is the tholeiitic vs. calc-alkaline 'trend' in arc magmas inherited from mantle melts?*)
 → essential for understanding the recycled mass and elemental flux through arcs