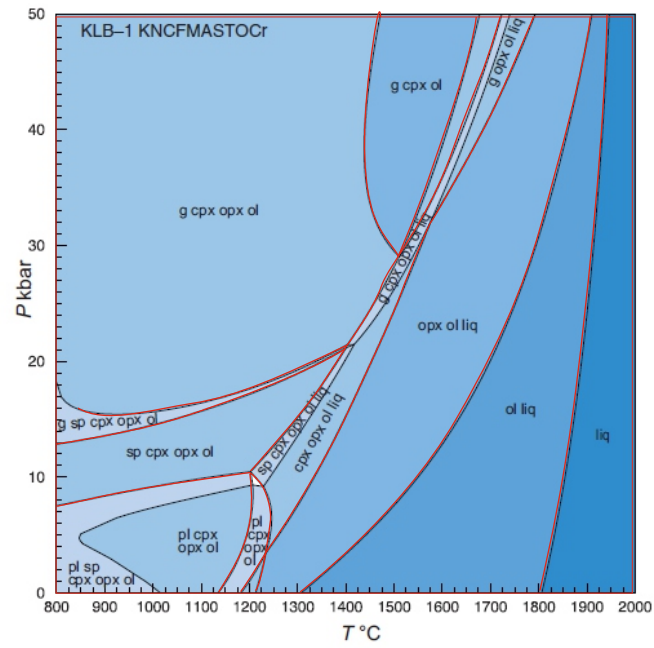


Holland et al. (2018) KLB-1 Benchmark Attempt (Dec 8, 2024)

Configuration:

- 1) The input file for the Perple_X calculation presented here is at www.perplex.ethz.ch/perplex/examples/example_holland_et_al_2018_melt_model/khgp.dat
- 2) **The Perple_X calculation was done with X/Y_nodes set to “40 80” and all other options set to default**
- 3) Holland et al. (2018) do not directly specify the bulk composition used. The composition used here was inferred by Debaditya Bandyopadhyay. It is unlikely that this is a major source of discrepancy in the benchmark.
- 4) Holland et al. (2018) do not specify which feldspar model is stable in the feldspar phase fields. The Fsp(HGP) model, formulated 3 years after the HGP publication, was used in all results here. It is unlikely that this is a major source of discrepancy in the benchmark.
- 5) The data used for the calculations presented in Holland et al. (2018) is not available. The THERMOCALC models attributed to Holland et al. (2018) were revised in March 2019 and again in October 2020. The latter revision was used for the Perple_X calculation presented here. The October 2020 revision eliminated the high-pressure Cpx+Gt+Ol field depicted in the published phase diagram section. Although incomplete documentation and post-publication modification of the THERMOCALC models precludes exact benchmarking, the agreement between the Perple_X result and the published section is generally good. The Opx+Sp+Ol+Melt and Sp+Ol+Melt phase fields present in the Perple_X result, but absent in the published section are attributed to oversight in the calculation of the published section.

THERMOCALC, Holland, Green, and Powell (2018)



The Perple_X calculation depicted here was done with X/Y_nodes set to "40 80" and all other options set to default.

