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## An experimental study of liquid lines of descent in fore-arc basalts from the Izu-Bonin-Mariana island arc

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Fore-arc basalts (FABs), erupted immediately after subduction initiation, are generally considered to be MORB-like decompression melts with little or no involvement of subducted fluids in their genesis [1]. Modelling of fractional crystallization requires evolution of melts as a result of Ol+Plag followed by Plag+Cpx crystallization, however, natural FABs have no or only sporadically present Ol in a few less differentiated glassy samples [2].

We present results of our crystallization experiments conducted on 4 natural and synthetic compositions collected by IODP Expedition 352 [2]. Ol crystallization was observed only in the most magnesian FAB at 1 atm and FMQ. Changing the conditions to more oxidizing at 1 atm or to higher pressures results in destabilization of Ol due to enhanced Cpx (and Plag) crystallization. Natural compositional trends were reproduced well at 200 MPa, damp conditions or at 1 atm, FMQ+1.4.

[1] Reagan et al. (2017) Int. Geol. Rev 59, 1439–1450.
[2] Shervais et al. (2019) Geochem. Geophys. Geosyst. 20, 314–338.

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