

16 September, 2026

New Models:

- Models of fluid-melt equilibrium from Hughes et al. 2024 (H₂O-CO₂ system) and Dixon et al. 1995
- Basalt Tetrahedron Normalisation Scheme (after Falloon and Green 1988)

Improvements to the algorithm:

- Further improvements to the algorithm for determining equilibrium fluid compositions during crystallisation to extend the range of fluid composition to very low CO₂ values (down to below 1 ppm).
- Further improvements to the algorithm for modelling fluid degassing during magma ascent for the case of H₂O-rich fluids.

Changes to the GUI:

- “Additional Options” subsection has been added to the Normative Mineralogy Tab to combine all available additional parameters.
- When choosing a model for Fluid, the allowed range of Pressure for the chosen model is now shown below the list of available models on the “Select a model for Fluid” window.

Bug fixes:

- Fixed behaviour of the ‘Fluid Saturated’ check box when changing from checked to unchecked.
- Fixed behaviour of the ‘Set volatile and trace elements’ label when only one volatile element is present in the starting composition.
- When the CO₂ content of the starting composition exceeded CO₂ solubility in the starting composition at the chosen calculation pressure for more than 3 times, the CO₂ content in the starting composition at saturation was calculated incorrectly for some fluid-melt equilibrium models (Alison et al., 2019; Dixon 1997; Holloway and Blank 1994). This is now fixed.
- When a chosen melt-phase equilibrium model included a trace or volatile element, but the user overrode the way the concentration of that trace element in the phase is calculated to instead use a constant D value, O stoichiometry was not followed correctly. This is now fixed.
- When a composition is chosen from the loaded data file using the ‘Select analysis’ form, if S concentrations were presented as SO₃, there were not converted to total S correctly. This is now fixed.
- An incorrect amount of Apatite was calculated under some modelling conditions. This is now fixed.
- Some of trace element concentrations in Apatite and Zircon were displayed incorrectly. This is now fixed.

- Calculations of multiple analyses from a data file did not work correctly when using Normative Mineralogy and Classification Diagram options. This is now fixed.
- The estimated melt H₂O content during Melt Liquidus Association calculations was not displayed correctly in versions 4.2.0 – 4.2.5. This is now fixed.