(a) Model schematic

(b) Flowchart of model components

In the schematic (a), the vertical axis is labelled "Progression through single timestep". The wedge shows, from top to bottom:

- Mixing into atmosphere
- P_{surf} updated
- Cooling
- Re-equilibration
- Melt return to mantle
- Melt decompression & gas release
- Batch mantle melting

In the flowchart (b):

- Isothermal atmosphere — Atmospheric mixing, cooling and equilibration (FASTCHEM)
- $\sum X_{i,gas}$, $P_{surf,\,new}$
- Volcanic degassing (EVo)
- X_i, $X_{i,\,bulk}$
- Batch mantle melting
$$X_i = \frac{X_{i,bulk}}{D_i + F(1 - D_i)}$$
- $X_{i,\,bulk}$
- $\sum X_{i,gas}$
- fO_2
- P_{surf}
- T
- Parameters — Variable / Fixed
- Mantle params: Volatile content, $X_{i,\,bulk}$; fO_2
- Melt production rate; Timestep size
- Atmospheric params: Initial pressure, P_{surf}; Initial composition; Temperature