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Corrigendum to "Driven magmatism and crustal thinning of coastal southern China in response to subduction" published in Solid Earth, 15, 1133–1141, 2024

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In the abovementioned paper, some typos were identified in Eqs. (2) and (3). The correct equations are as follows:

$$\nabla \cdot [\eta(\nabla \boldsymbol{u} + (\nabla \boldsymbol{u})^T)] - \nabla P + \rho \boldsymbol{g} = 0, \tag{2}$$

$$\rho C_p(\frac{\partial T}{\partial t} + \boldsymbol{u} \cdot \nabla T) = \nabla(k \nabla T) - \alpha \rho \boldsymbol{v}_z T. \tag{3}$$

Some typos were also identified in Eq. (4). The correct form of the equation is

$$\eta = (\frac{d^p}{A \cdot f_{H_2O}})^{\frac{1}{n}} \cdot \dot{\varepsilon}_{\parallel}^{\frac{1-n}{n}} \cdot \exp(\frac{E + P_{lit} \cdot V}{n \cdot R \cdot T}). \tag{4}$$

$\dot{\varepsilon}_{\parallel}$ is the second invariant of the strain rate tensor.

Some typos were finally identified in Eq. (5). The correct form of the equation is as follows:

$$\phi_a + \phi_b + \phi_c = 1. \tag{5}$$

The sentence "The crustal material has a power law stress–strain rate relationship" contains a technical issue. The correct form is "The crustal viscosity is a dislocation creep-type rheology".

The dependence of viscosity is not clearly stated in the sentence "The viscosity was calculated at each time step using the temperatures returned from the model". It has been rephrased to "The viscosity of the crust was calculated at each time step using the temperatures and strain rate returned by the model".

The phrase "The strain applied in the modeling takes a 2D approximation" is not clear and has been rephrased to "The strain rate applied in the modeling takes a 2D approximation".

The assumption of surface tension has been explicated with the sentence "The effect of surface tension is considered negligible in this study, as supported by findings in Peng et al. (2024)."

The adoption of the Cahn–Hilliard equation has been justified as follows: "The method of three-phase flow is utilized to study the evolution of three non-miscible fluid phases and to track their interfaces. The three-phase flow model with a phase field interface is a method used to simulate the flow of three separate fluids that do not mix. It focuses on how the boundaries between these fluids behave, taking into account surface tension, contact angles, and buoyancy, all of which affect the shape of the phase boundaries and the velocity of the fluids. In this model, the system is described using three variables. These variables represent how much of each phase is present at any point in space. The sum of these three phase fields always equals 1. The model uses a free energy function that depends on the phase field variables and the surface tension between pairs of phases. The equations that govern this system, known as the Cahn–Hilliard equations, describe how the phases evolve to minimize the system's free energy. These equations also account for the interaction at the boundaries, including contact angles, which are set as fixed values at the walls. These contact angles help determine how each phase behaves near surfaces, and they are calculated based on the phase field value of 0.5. Additionally, the effect of surface tension is considered negligible in this study, as supported by findings in Peng et al. (2024)."

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The sentences "Three-phase flow is automatically computed via a phase initialization study step by solving for the geometrical distance to the initial interface. The initialized three-phase flow function is then defined from the analytical steady state solution for a straight fluid–fluid interface" have been rewritten for clarity to "The method of three-phase flow is utilized to study the evolution of three non-miscible fluid phases and to track their interfaces."

The phrase "The resolution of the model is physically controlled but generally represented by a triangular mesh" has been clarified by adding "The resolution of the model is physically controlled with a varied triangular mesh. Physics-controlled meshing adjusts the mesh based on the physics settings, walls, and size of the geometry. For simple models, this automatically generated mesh is often sufficient and serves as a good starting point for more complex models. By using mesh-controlled domains, the total number of mesh elements can be kept nearly constant while improving resolutions in specific areas such as wakes. The free triangular operation is a fast and straightforward way of creating high-quality meshes that cover the entire geometry. However, unstructured triangular meshes, while flexible, tend to introduce more numerical diffusion compared to structured meshes. This means that solutions on unstructured meshes might appear more smeared or less sharp compared to those from structured meshes of similar element sizes."

Some ambiguous citations of pre-existing papers have been removed, and the new paragraph reads as follows: "In this study, u represents the velocity field, η denotes the viscosity, T is the temperature, P corresponds to the pressure, ρ signifies the density, g is the gravitational acceleration, C_p refers to the specific heat capacity, t is time, k indicates the thermal conductivity, α is the thermal expansion coefficient, and v_x is the vertical velocity component (Rodríguez-González et al., 2012). The specific heat capacity is assigned a constant value of $1000\,\mathrm{J\,kg^{-1}\,K^{-1}}$, the specific heat ratio (gamma) is set to 1, and the thermal conductivity is uniformly defined as $2.5\,\mathrm{W\,m^{-1}\,K^{-1}}$ across all the model domains (Chapman, 2021). The density of the continental crust increases linearly with depth, starting at $2600\,\mathrm{kg\,m^{-3}}$ at the surface and reaching $2900\,\mathrm{kg\,m^{-3}}$ at a depth of 30 km. In contrast, the mantle lithosphere is assigned a constant density of $3400\,\mathrm{kg\,m^{-3}}$, while the density of molten magma is fixed at $2800\,\mathrm{kg\,m^{-3}}$ (Chapman, 2021; Su, 2023).

Here, "A" represents the pre-exponential factor, while E and V denote the activation energy and activation volume, respectively. P_{lit} is the lithostatic pressure, R is the gas constant, and n is the stress exponent. The dynamic viscosity was determined using the wet quartz flow law proposed by Hirth et al. (2001). Viscosity values were updated at each time step based on the model-derived temperature field. For the calculations, a quartz material parameter (A) of $1.36742 \times 10^{-5}\,\mathrm{MPa^{-n}\,s^{-1}}$ was employed, with a stress exponent (n) of 4, an activation energy (E) of $135\,\mathrm{kJ\,mol^{-1}}$, and a water fugacity ($f_{\mathrm{H_2O}}$) of 1000 MPa, assuming a strain rate of $10^{-15}\,\mathrm{s^{-1}}$ (Chapman, 2021). The applied strain rate adopts a 2D approximation, which is consistent with slab subduction models (Liu and Currie, 2019). At each time step, the viscosity was recalculated based on the updated temperature field. The mantle lithosphere and the molten magma are modeled with constant dynamic viscosities of 1×10^{21} and 1×10^{19} Pa s, respectively. The model fault was assigned a low viscosity of 5×10^{19} Pa s to represent the CNB (Vissers et al., 1995; Columbu et al., 2015)."

The bibliography has been corrected for missing standard abbreviations (Li and Li, 2007; Morris et al., 2000; Rodríguez-González et al., 2012; Wei et al., 2023).

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