

# **Geodynamic inversion to constrain the nonlinear rheology of the lithosphere: Supplementary material**

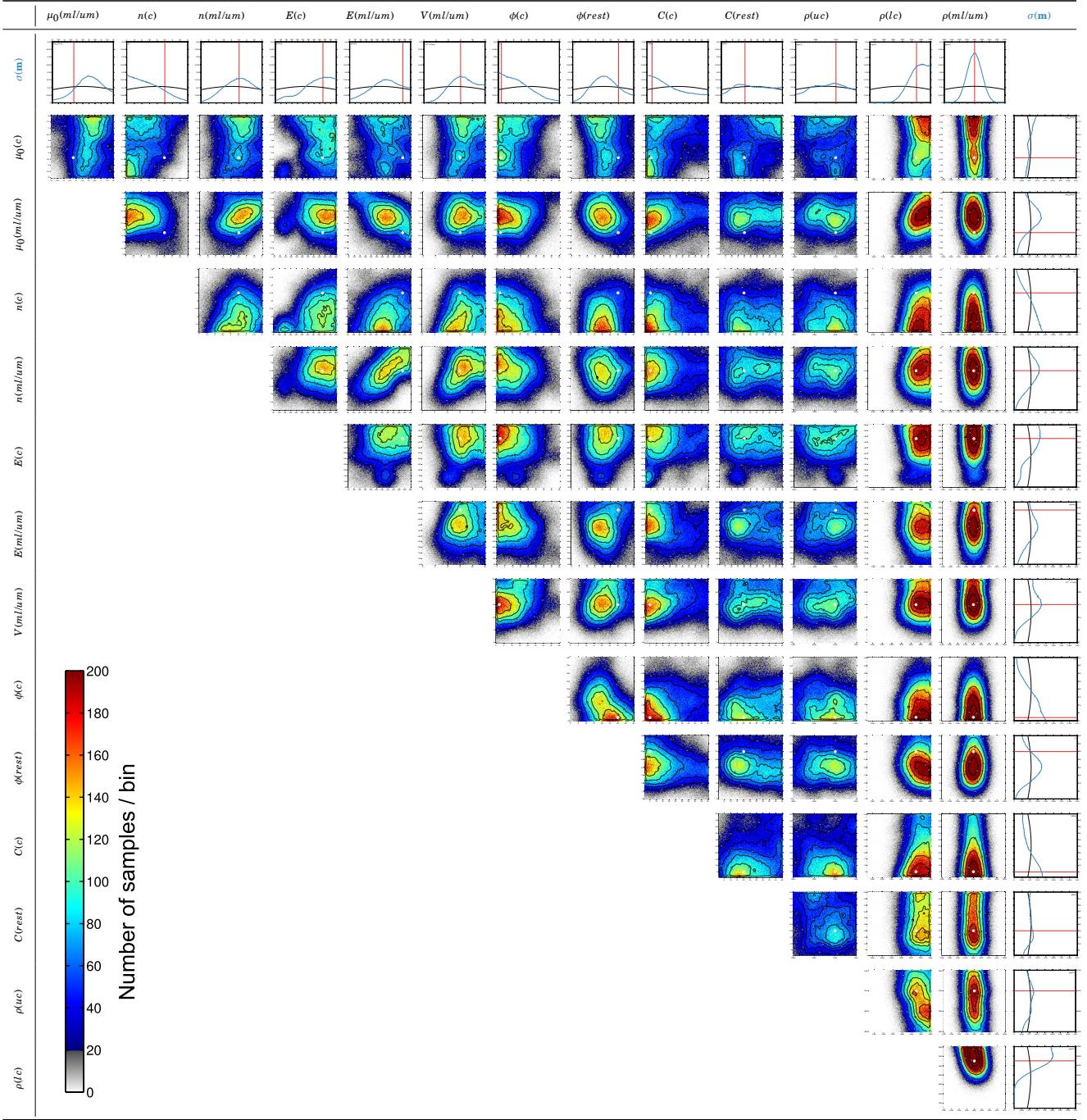
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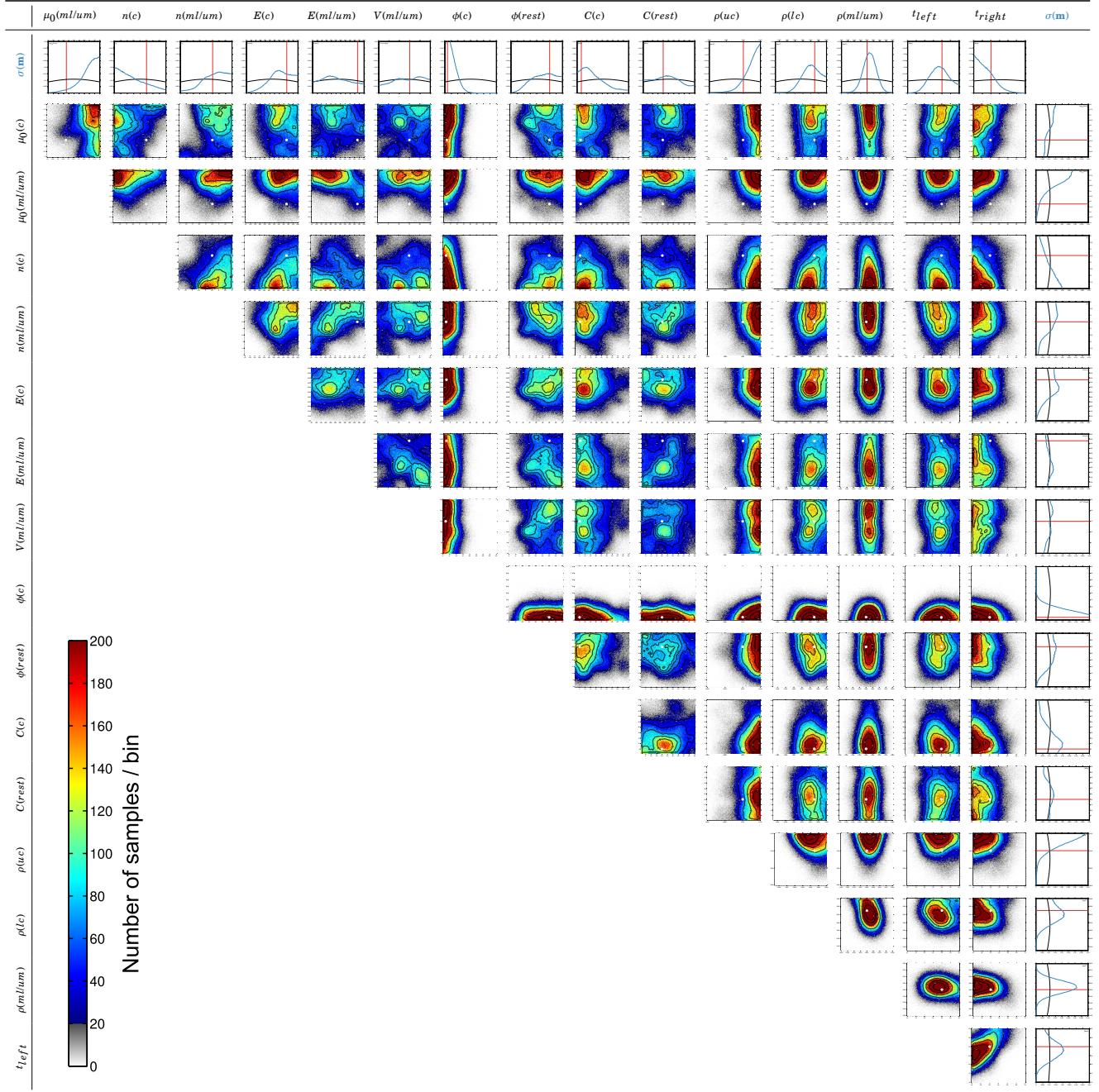
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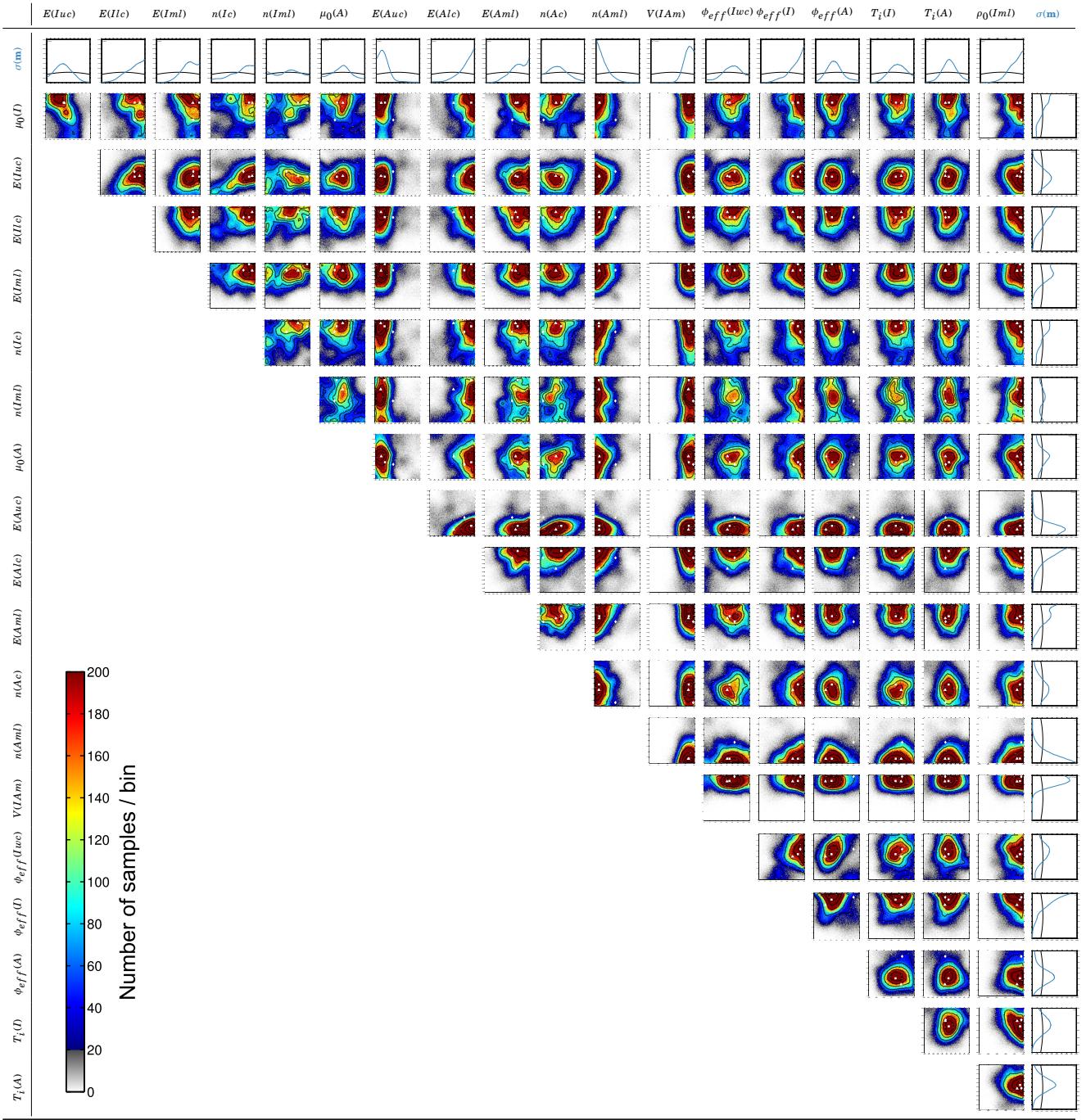
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**Figure S.1.** Geodynamic inversion results of the synthetic oceanic subduction scenario with full temperature knowledge described in section 3.3. The results are given in terms of marginal distributions of the posterior probability. Red lines and red markers show true model values.



**Figure S.2.** Geodynamic inversion results of the synthetic oceanic subduction scenario with parameterised temperature (section 3.4). The indications are similar to those in Fig. S.1.



**Figure S.3.** Geodynamic inversion results of the India-Asia collision scenario (section 4). The indications correspond to those given in Fig. 14.