

Jurassic hot-spring activity in a fluvial setting at La Marciana, Patagonia, Argentina

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Appendix. Colour versions of the figures

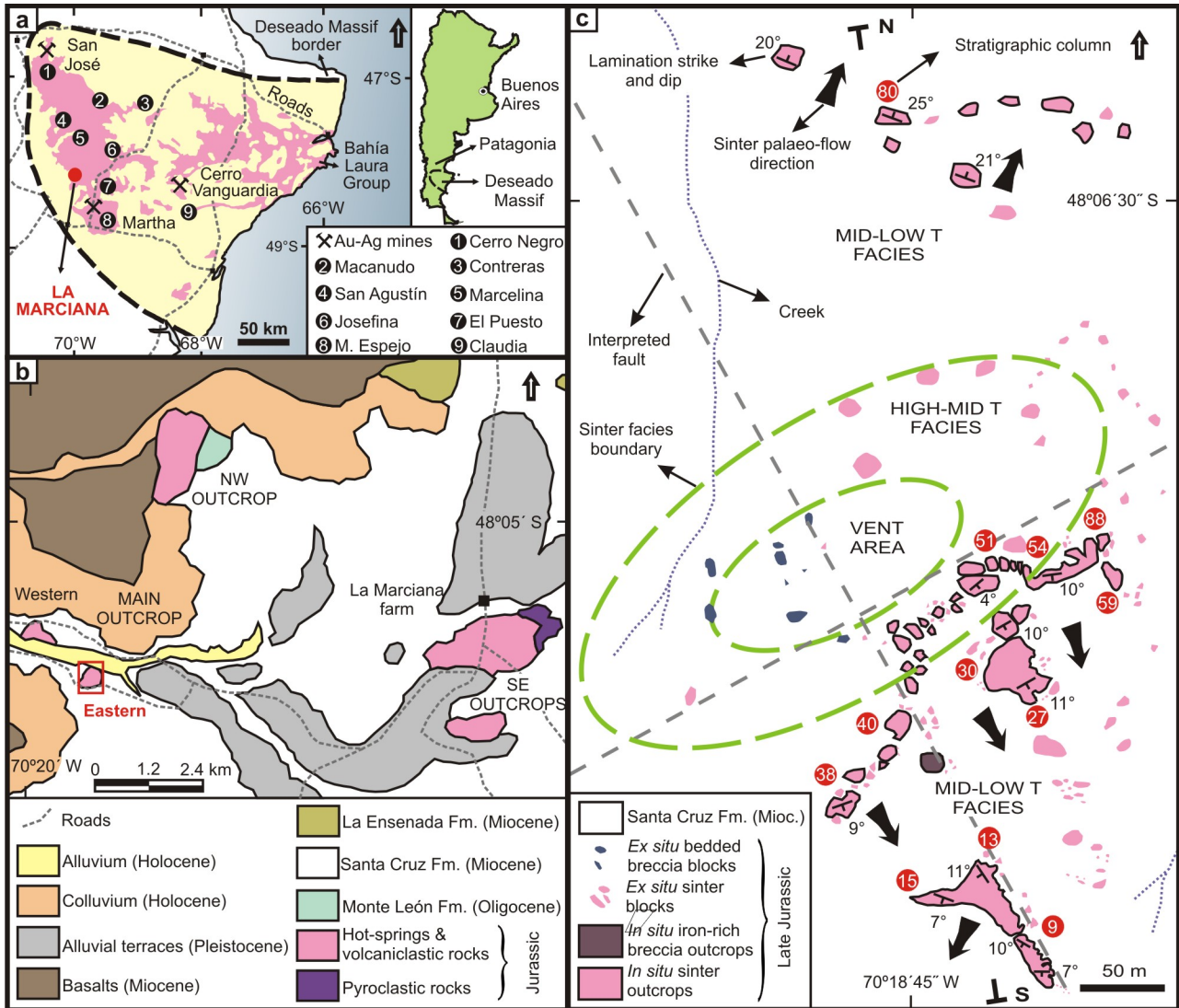


Figure 1. Geological context of La Marciana sinter. (a) Regional map of Jurassic volcanic deposits, Deseado Massif, Patagonia, Argentina, with location of active mines and hot-spring deposits. (b) La Marciana area geological map (modified from Guido, de Barrio & Schalamuk, 2002). (c) La Marciana Eastern Main Outcrop map, marking locations of selected stratigraphic columns, and N-S cross-section line of Figure 2. Also shown are inferred faults and broad palaeoenvironmental divisions of the sinter apron.

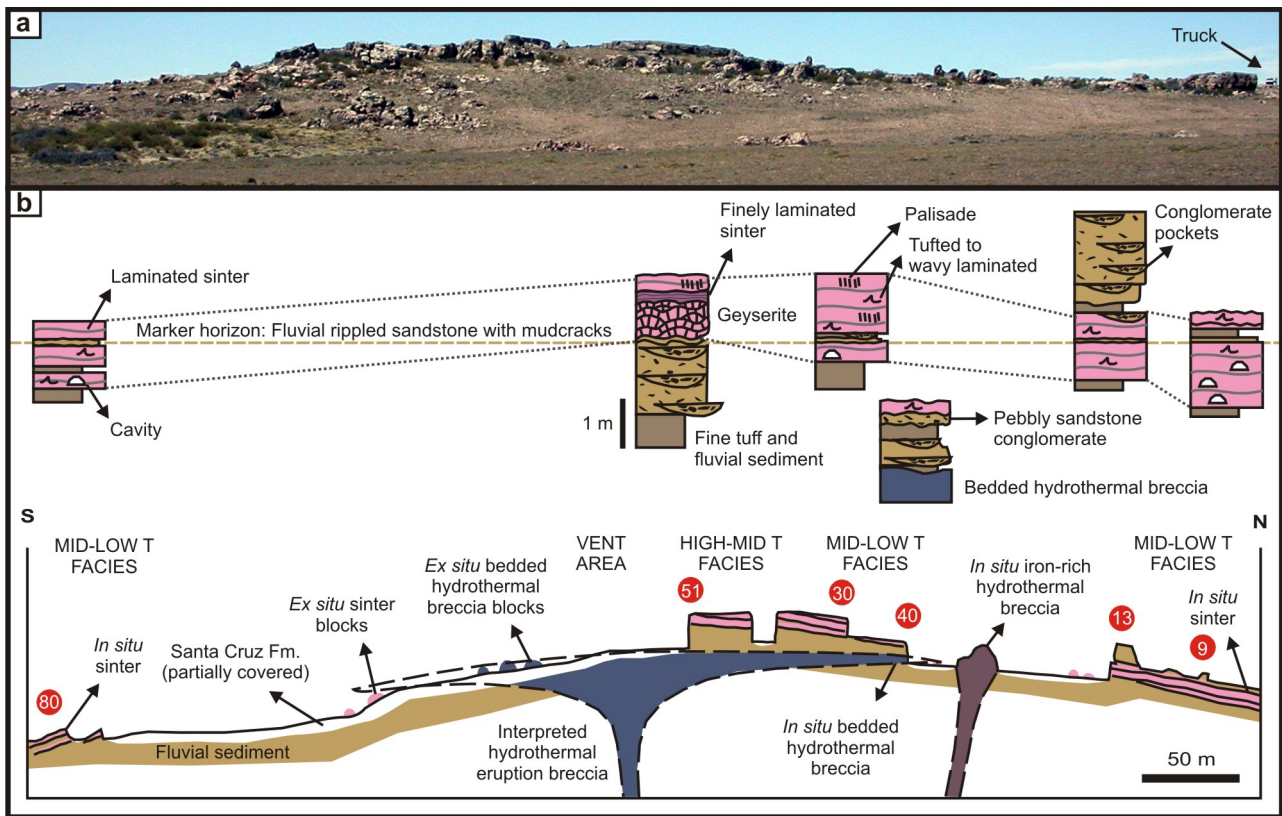


Figure 2. La Marciana Eastern Main Outcrop N-S cross-section. (a) Sinter apron, E view, showing typical outcrop exposure. (b) Schematic N-S cross-section with selected stratigraphical columns (numbered circles) positioned above their locations in the cross-section, partly correlated by a fluvial rippled sandstone marker horizon.

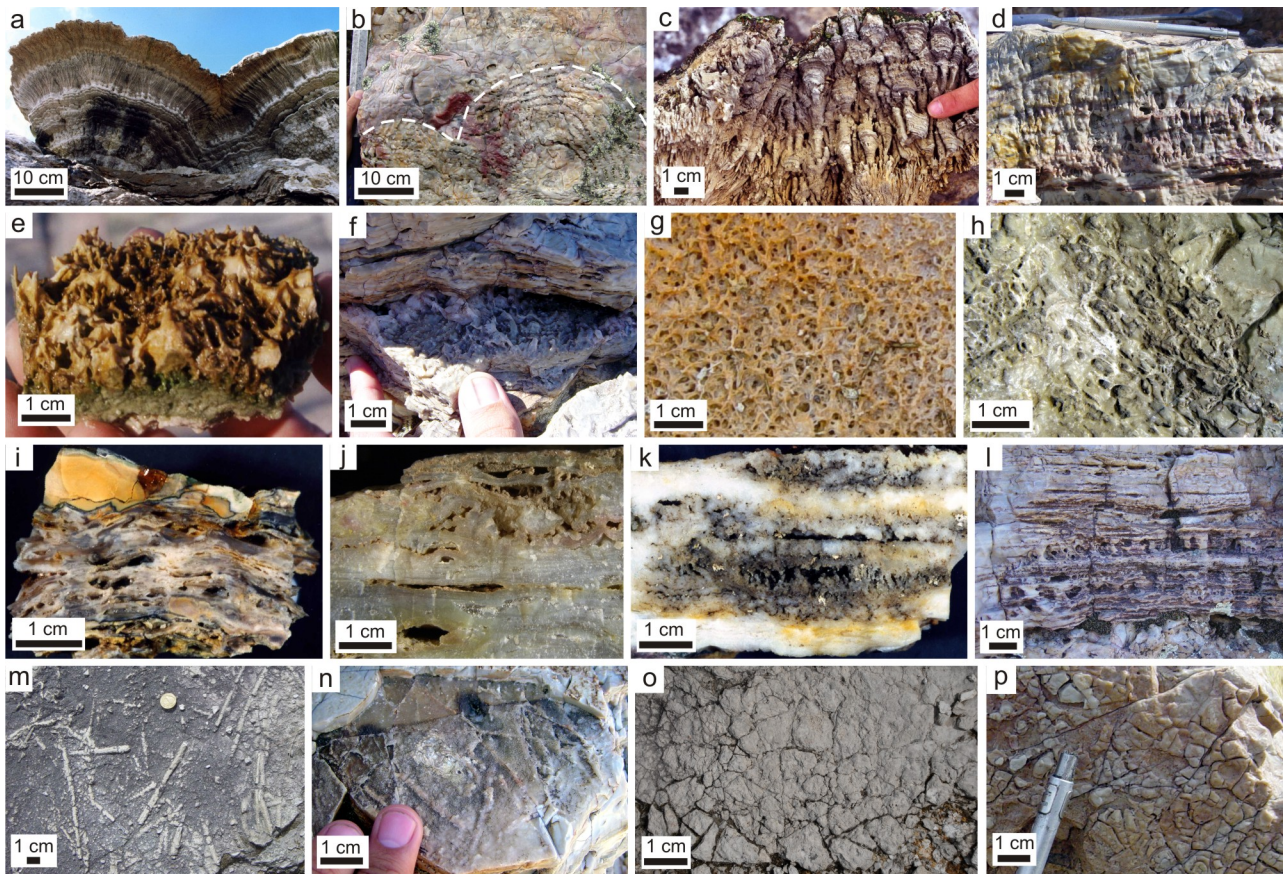


Figure 3. Comparison of palaeoenvironmentally significant sinter fabrics, Holocene (Taupo Volcanic Zone (TVZ), New Zealand) and Jurassic (La Marciana). (a–d) Inferred high-temperature vent geysirite rim fabrics, in cross-section. (a) Laterally linked hemispheroidal fabric, rim margin, Ohaaki Pool (drained), TVZ. (b) Two laterally linked hemispheroidal geysirite rim features (white dashed line), overlain by very finely laminated sinter; SC 55, La Marciana. (c) Detail of upwardly radiating geysirite textures; Northern Waiotapu, TVZ. (d) Detail of upwardly radiating geysirite textures; SC 88, La Marciana. (e–j) Interpreted mid-temperature fabrics. (e) Conical tufted texture, oblique plan view, Kuirau Park, TVZ. (f) Conical tufted overlain by wavy laminated fabrics, oblique bedding plane view, SC 9, La Marciana. (g) Tuft network, Atiamuri pool margin, plan view, TVZ. (h) Tufted network texture, bedding plane view, SC 80, La Marciana. (i) Wavy laminated fabric with curved lenticular voids (flattened ‘bubble mats’), cross-section view, 4694 ± 40 ka Umukuri sinter, TVZ. (j) Wavy laminated fabric with flattened, almond-shaped vugs, some filled with late-stage microquartz; cross-section view, SC 40, La Marciana. (k–p) Inferred low-temperature textures. (k) Palisade fabric in cross-section, partly recrystallized to massive, mottled, diffusely layered (white) textures, Umukuri sinter, TVZ. (l) Palisade fabric in cross-section, within a primary porosity ‘window’, SC 30, La Marciana. (m) Poorly preserved, silicified plant reeds, plan view, Golden Fleece Terrace (dry), Orakei Korako, TVZ. (n) Possible silicified and recrystallized plant stems, bedding plane view, SC 9, La Marciana. (o) Desiccation cracks, plan view, Golden Fleece Terrace (dry), Orakei Korako, TVZ. (p) Preserved desiccation cracks, bedding plane view, SC 9, La Marciana.

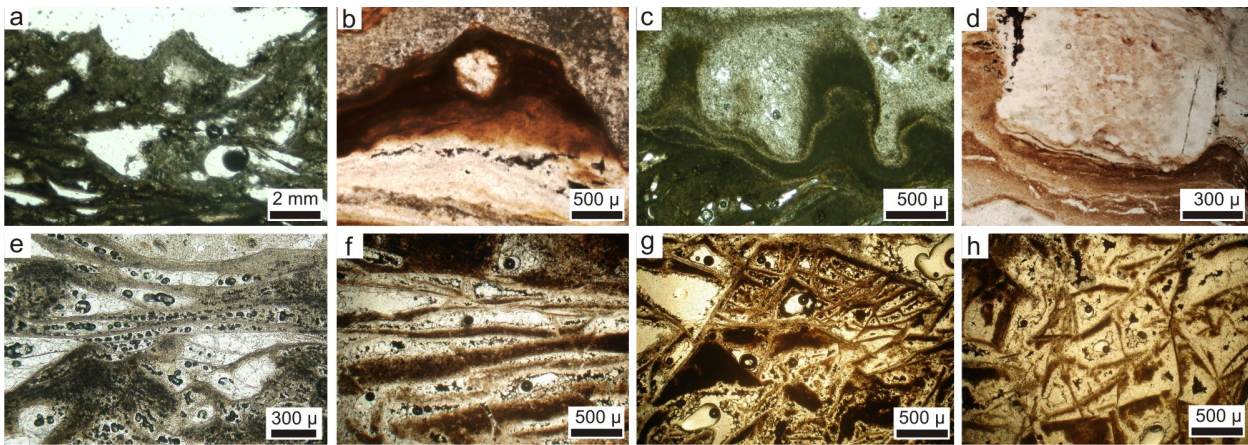


Figure 4. Petrography of probable microbial textures at La Marciana, with some morphological comparisons made to Pleistocene-Recent hot spring sinters. (a) Small conical tufts and lenticular voids (white pore spaces; flattened ‘bubble mats’) from a domal stromatolite (~ 15 ka sinter at Tahunaatara, Taupo Volcanic Zone (TVZ); cf. Campbell, Buddle & Browne, 2004, their fig. 11D, p. 496). (b) Conical structure (dark brown) from La Marciana with trapped bubble (circular white feature) and microtufts. (c) Three digitate microstructures (dark brown) from a Tahunaatara domal stromatolite, with spaces between digits filled by filamentous/fibrous microbial fabric (light green). (d) Two digitate microstructures (brown) from La Marciana, with spaces between digits preserving a clotted microfabric inferred as microbial in origin. (e) Modern bubble mat laminae with fibrous exopolymeric substance (EPS) in voids from HB2 spring, Tokaanu, TVZ. Dark grains are polishing grit. (f–h) Transition from wavy laminated to network fabric in La Marciana sinter. (f) Wavy laminae with lenticular voids. (g) Same fabric but broken and partly disconnected. (h) ‘Criss-cross’ network fabric, inferred as desiccated, fibrillar microbial fabrics similar to those forming at modern hot-springs around drying, mid-temperature pool margins.