Tectonics

Supporting Information **1** for:

Meso–Cenozoic geodynamic evolution of the Patagonian foreland: insights from low-temperature thermochronology in the Deseado Massif

Alexis Derycke[1,2], Marie Genge*[3,4,5], Cécile Gautheron[1], Massimiliano Zattin[3], Stefano Mazzoli[6], Cesar Witt[4], Hermann Zeyen[1], Rosella Pinna-Jamme[1], Frederic Haurine[1], Marcelo Márquez[7]

1 – Université Paris-Saclay, CNRS, GEOPS, 91405, Orsay, France

2 – Géosciences Rennes, UMR6118, CNRS Université de Rennes, France

3 – Department of Geosciences, University of Padua, Italy

4 – Université de Lille, CNRS, Université du Littoral—Côte d'Opale, UMR 8187, LOG, Laboratoire d'Océanologie et de Géosciences, F 59000 Lille, France

5 – Department of Earth Sciences, University of Hong Kong, Pokfulam Road, Hong Kong, SAR, China

6 – School of Science and Technology, Geology Division, University of Camerino, Italy

7 – Departimento de Geología, Universidad Nacional de la Patagonia SJB, Comodoro Rivadavia, Argentina

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Samples collected for AFT and AHe analysis

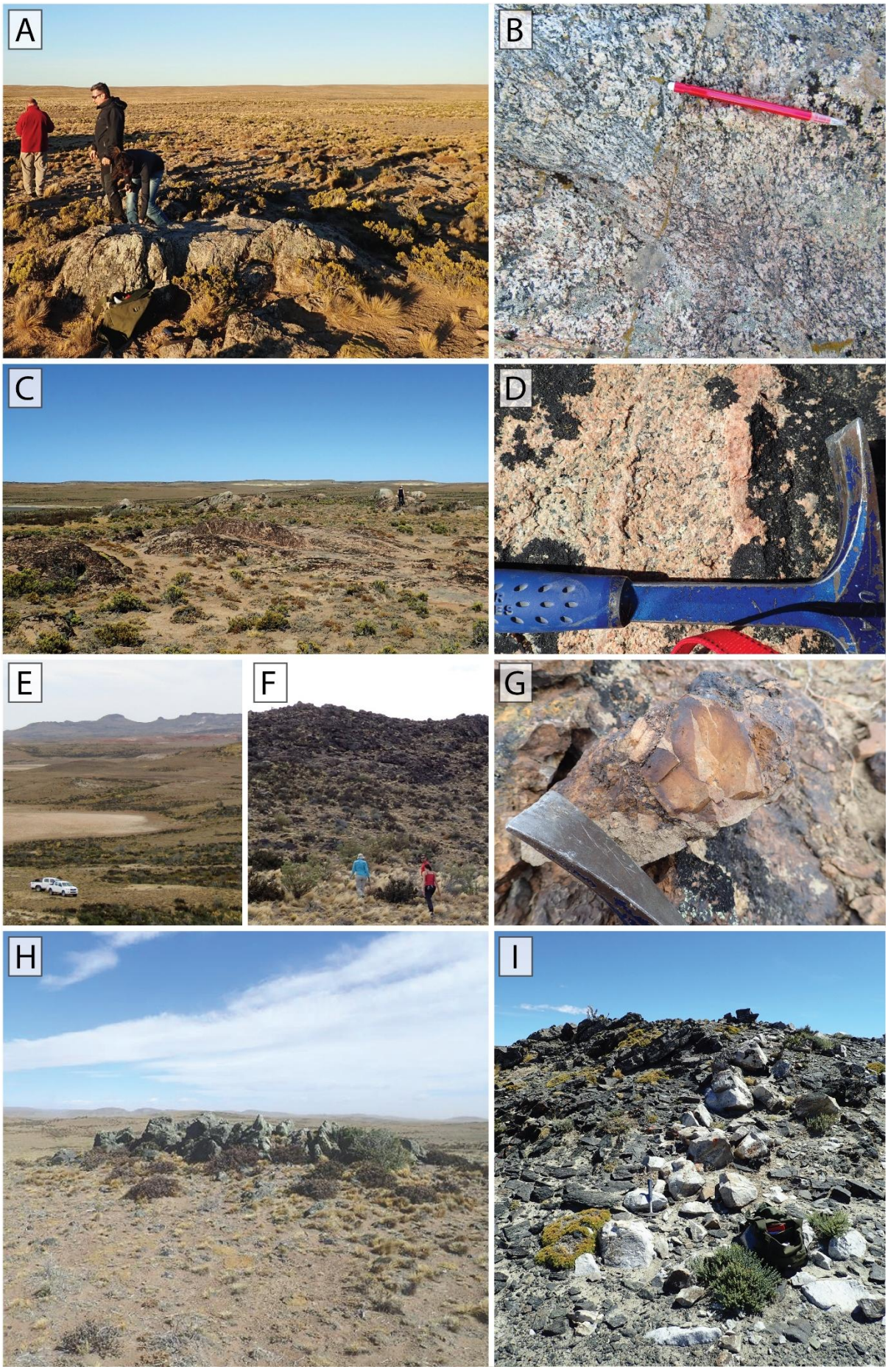
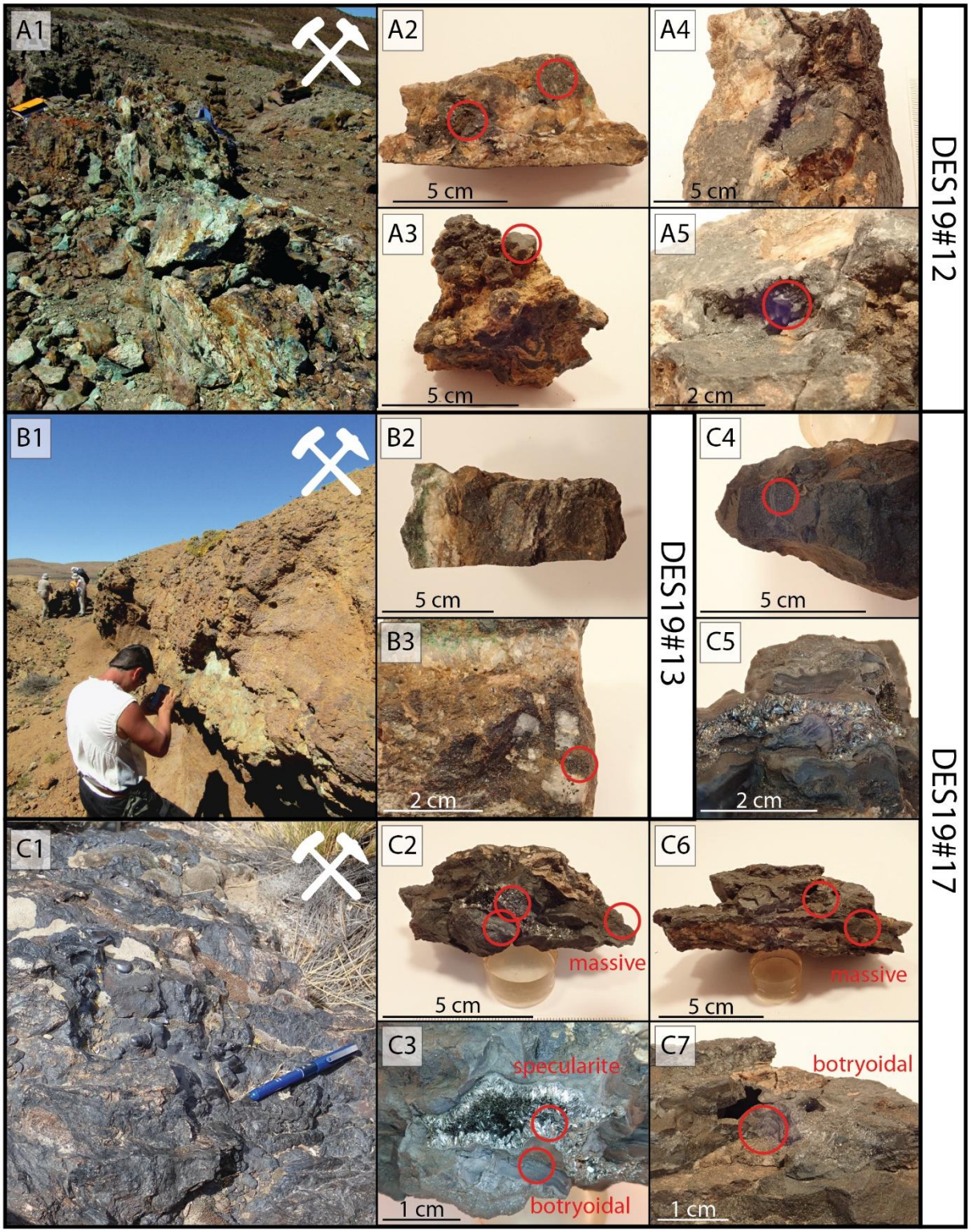


Figure S1. A and B. Outcrop of sample DES19#02, Rio Deseado Complex, La Modesta Fm. C and D. Landscape and outcrop of sample DES19#11, Rio Deseado Complex, Bajo La Leona Fm. E, F and G. Landscape and outcrop of sample DES19#15, Bahia Laura volcanic complex. Cerro Leon laccolith. H. Outcrop of sample DES19#29, Chon Aike deposits. I. Outcrop of sample DES19#05, Rio Deseado Complex, La Modesta Fm.

Samples collected for HHe and MnHe analysis



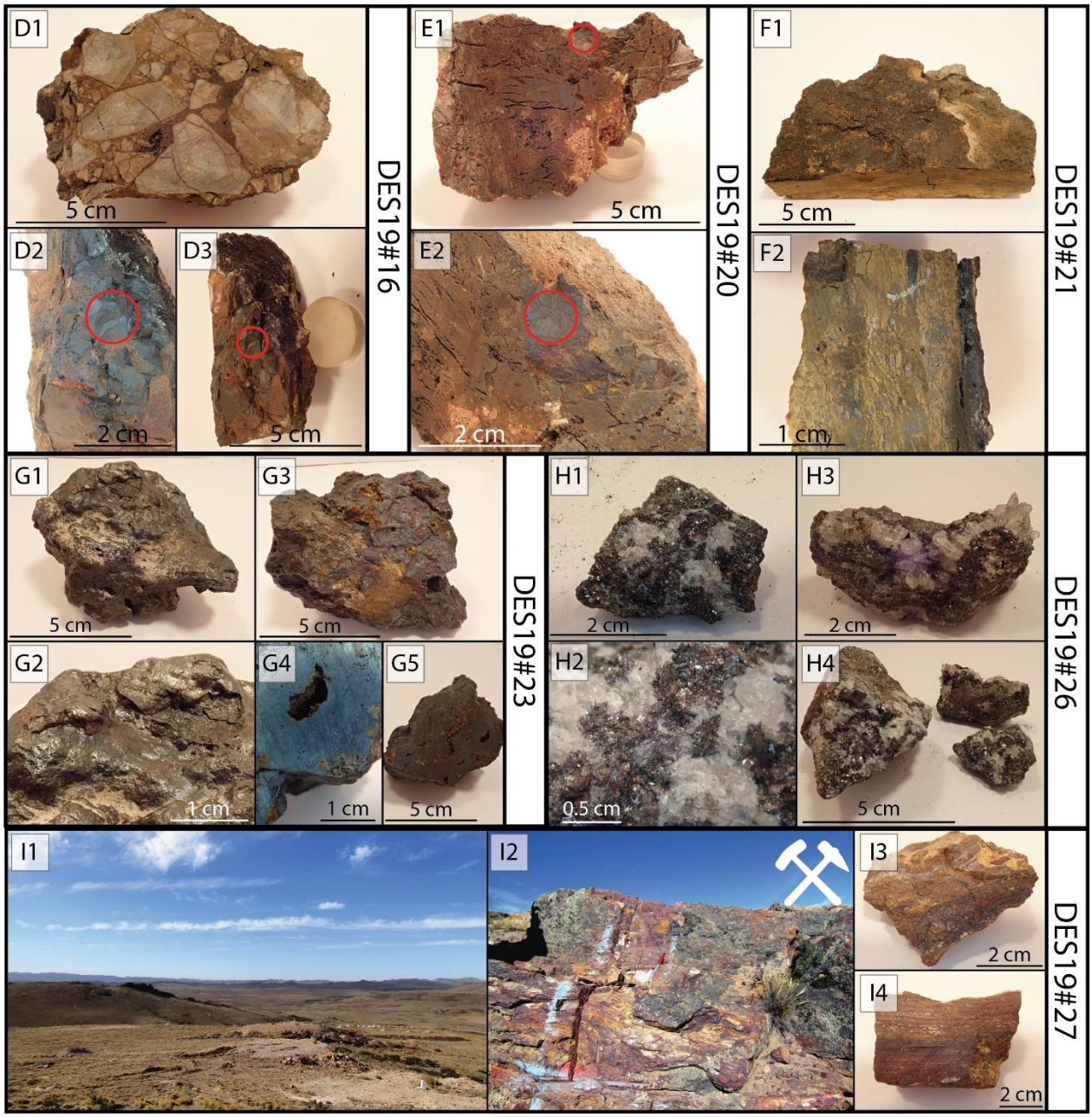
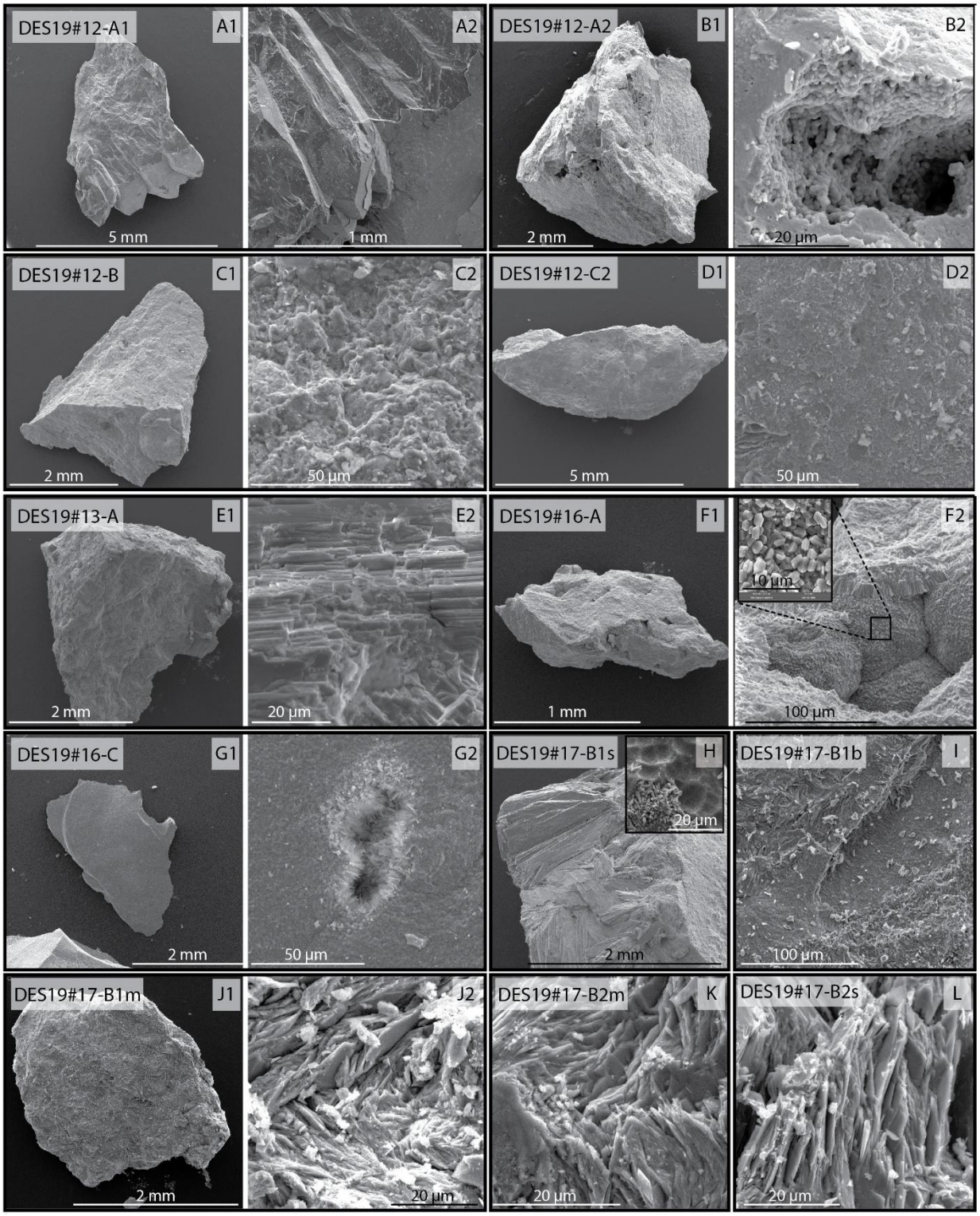


Figure S2. Red circles correspond to location of sub-samples selected. A. Sampling site of samples DES19#12 in a metric vein with copper oxides (A1). Samples DES19#12-A (A2), DES19#12-C (A3) and DES19#12-B (A4, A5). B. Sampling site of samples DES19#13 in an abandoned exploration copper pit (B1). Sample DES19#13-A (B2 and B3). C. Sampling site of samples DES19#17 in a large metric vein (C1). Samples DES19#17-B1 with massive, specularite and botryoidal oxides (C2, C3 and C5), DES19#17-B2 (C4) and DES19#17-B3 (C6 and C7). D. Samples DES19#16-A (D1) and DES19#16-C (D2 and D3). E. Sample DES19#20 (E1 and E2). F. Sample DES19#21 (F1 and F2). G. Sample DES19#23, entire (G1-G3) and cut (G4 and G5). H. Several pieces of sample DES19#26 (H1-H4) taken in a gauge. I. Landscape at sampling site in Mina La Josefina (I1) and outcrop for sample DES19#27 taken in a sinter (I2). Sample DES19#27 (I3 and I4).

SEM images of hematite and Mn-oxides analyzed



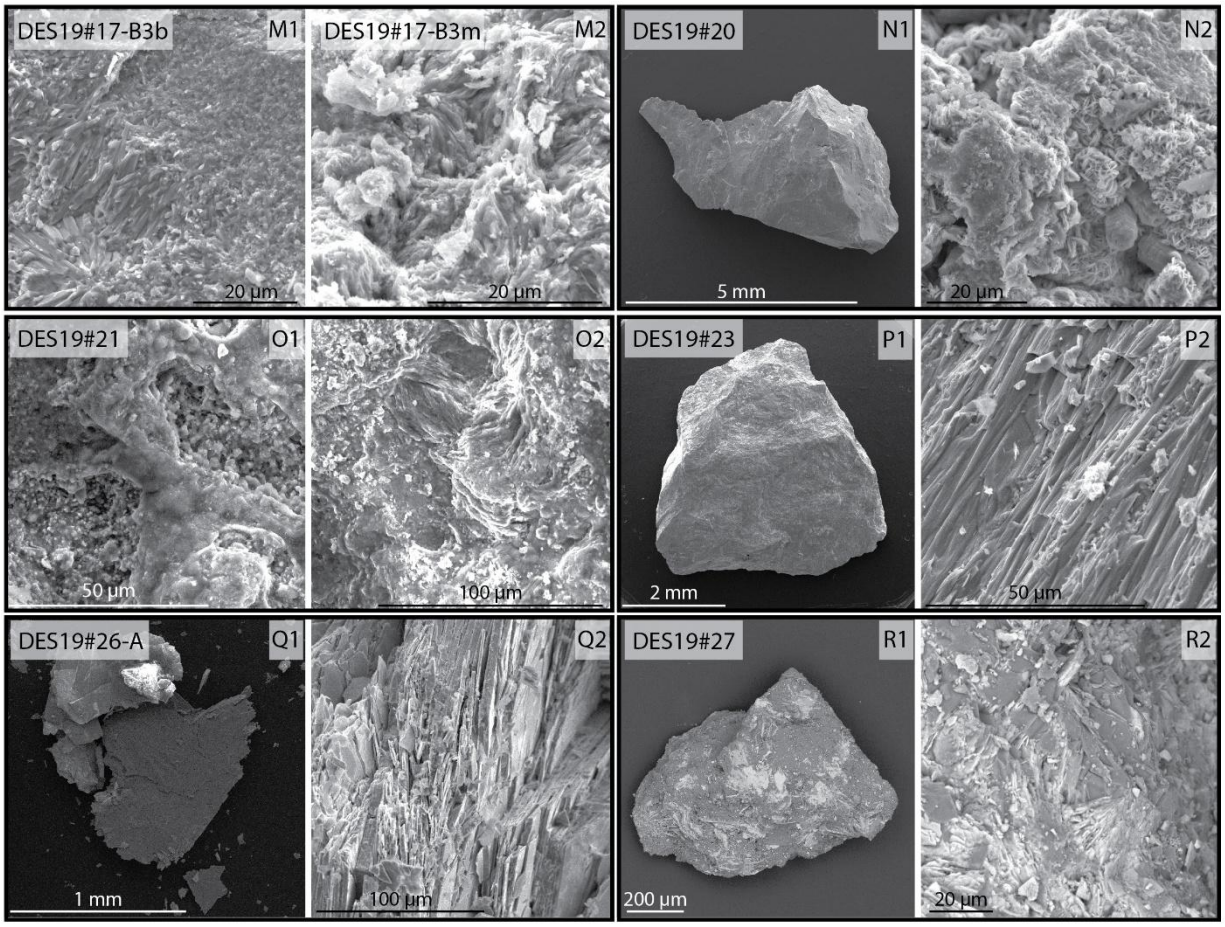


Figure S3. SEM images of hematite and Mn-oxides dated in this study. A-D. All DES19#12 subsamples, mostly with plate morphology and some rare euhedral grains. E. DES19#13 subsample with stacked plates. F-G. DES19#16 sub-samples with euhedral botryoidal (F-DES19#16-A) and spicule (G-DES19#16-C) in a matrix. H-M. DES19#17-B subsamples with diverse mineralogy such as needles (I-DES19#17-B1-b, L-DES19#17-B2-s, M1-DES19#17-B3-b), euhedral (H-DES19#17-B1-s, K-DES19#17-B2-m), plates (J-DES19#17-B1-m) and spicules in matrix (M2-DES19#17-B3-m). N. Subsample DES19#20 with euhedral and plate morphology. O. Subsample DES19#21 with euhedral and plate morphology. P. Subsample DES19#23 with needles morphology. Q. Subsample DES19#26 with plate morphology. R. Subsample DES19#27 with needles and matrix morphology.