

Supplementary 1

S1 Calcrete

In the Bollène quarry, a massive hardened layer is exposed stratigraphically above the Turonian Sandstones, at roughly 3 meters above the quarry floor (Fig. S1a). This layer is characterized by a tabular structure and its lower boundary is irregular, as well as its thickness (Fig. S1a, b). The features of this weathered crust and the invariably negative  $\delta^{13}\text{C}$  and  $\delta^{18}\text{O}$  values of its cement (Fig. 12b), suggest that it is a “massive” calcrete (e.g. Alonso-Zarza, 2003). The calcrete specimen was collected along this level (Fig. S1c, d), and the cement was sampled to compare its stable isotopes composition with that of cement in nodules (Fig. 12b).



**Figure S1.** (a) Overview photograph that show the local stratigraphic framework of the Bollène quarry. The whitish Turonian sands, with DBs and nodules, are overlain by a reddish-brown massive calcrete level (b, c). (d) Calcrete hand specimen.