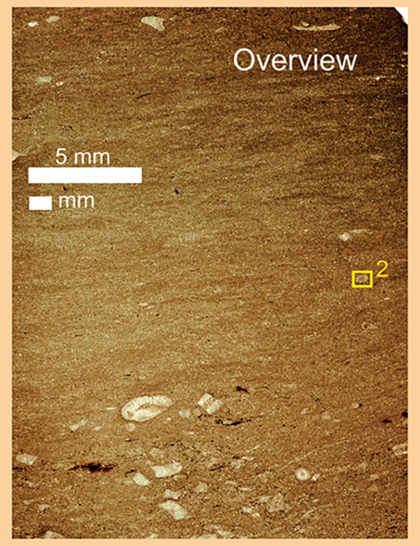
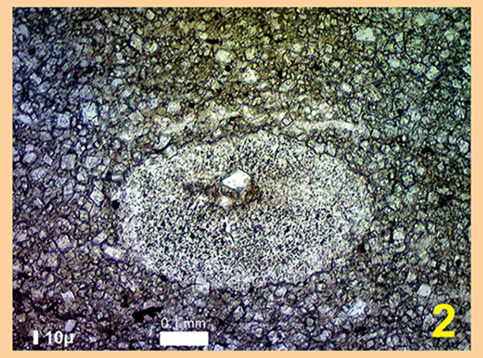
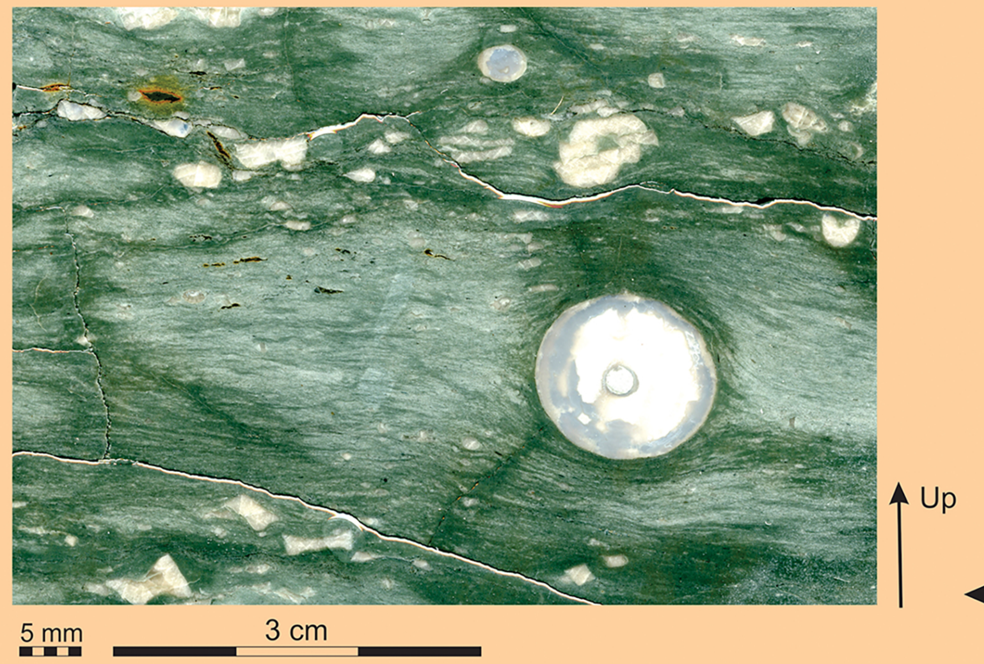
W

E

Siliciclastic Mudstone with Dispersed Crinoid Grains



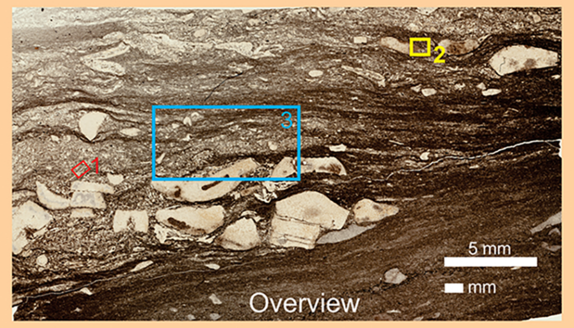


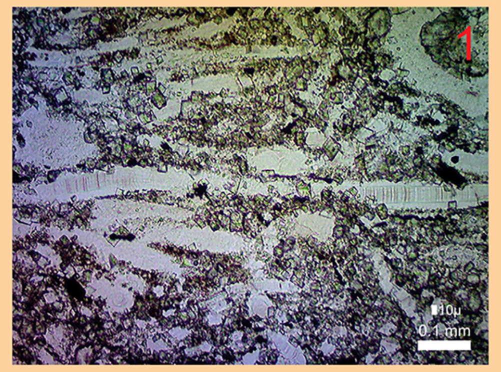


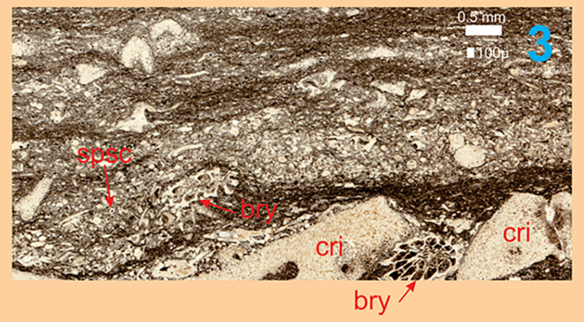
2.5 meters

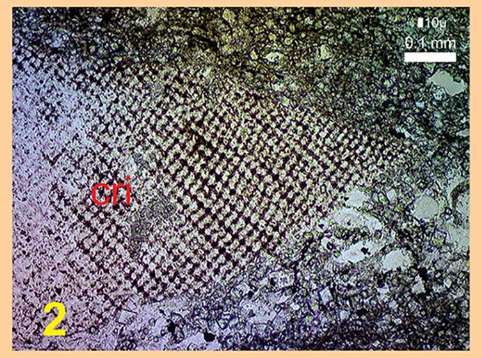
Sample G3-6

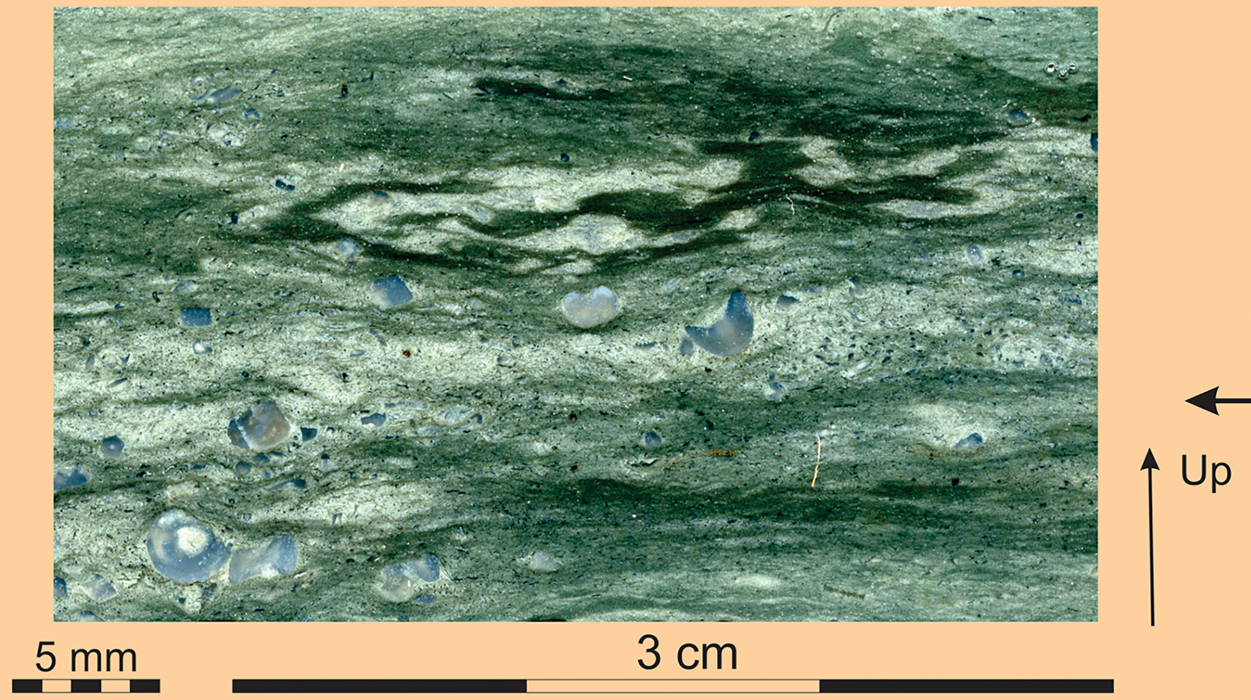
The lower image is of a polished slab containing crinoid grains dispersed in a siliciclastic mudstone matrix. The very fine-grained, light gray material consists of siliceous sponge spicules and possibly some secondary dolomite rhombs. The large crinoid grain is probably a dropstone, given the geometry of the matrix laminations, terminated on the sides and draped over both top and bottom. The upper two images are photomicrographs (plane light). The **Overview** image shows crinoid grains dispersed in a siliciclastic mudstone matrix that has been extensively dolomitized; the dolomite rhombs are inticated by the very fine-grained (well less than 0.05 mm), white, rectangular grains. These dolomite rhombs are readily apparent in Insert 2 however, the crinoid grain is essentially non-dolomitized.











6.5 meters

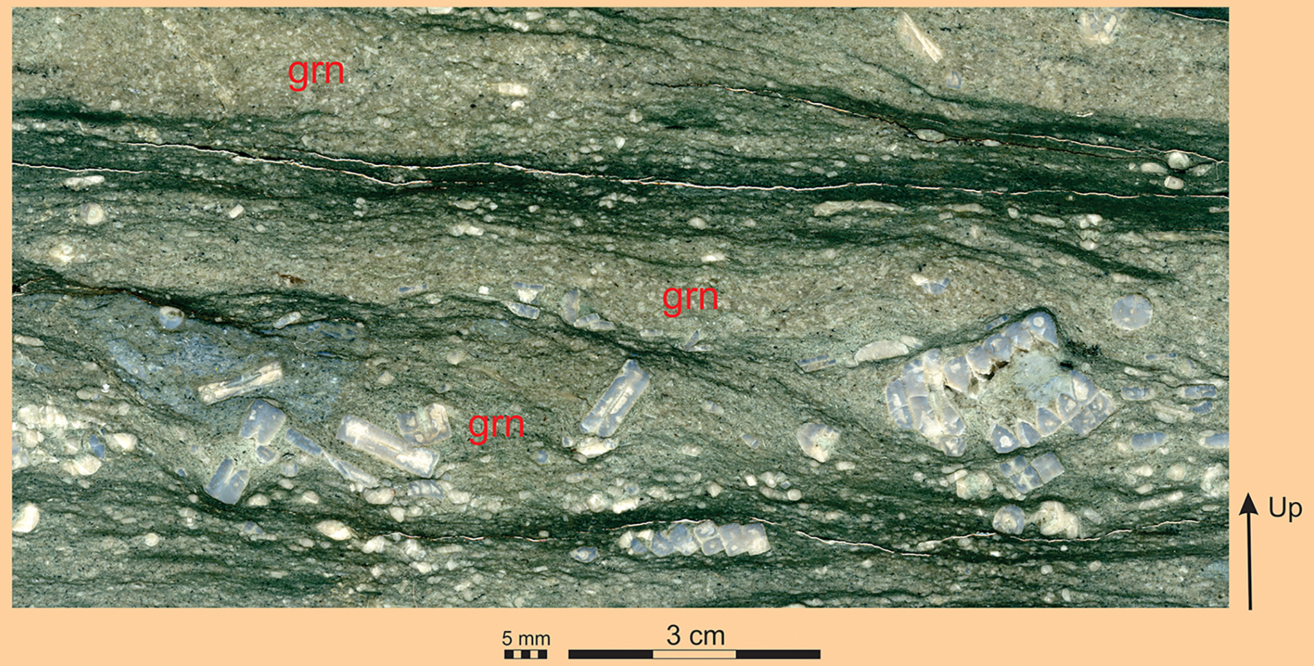
Sample G3-5

The lower image is of a polished slab containing dispersed crinoid grains in a siliciclastic mudstone matrix. The light gray matrix is primarily composed of siliceous sponge spicules. The gray, glassey material surrounding the crinoid clasts is chert. The four upper images are photomicrographs (plane light). The **Overview** image contains crinoid clasts, sponge spicules, and bryozoan clasts. Siliceous sponge spicules and dolomite rhombs are prominent in Insert **1.** The matrix in Insert 2 contains numerous dolomite rhombs, however, the large crinoid grain (cri) is essentially free of this secondary dolomitization. Insert **3** contains crinoid clasts (cri), bryozoan fragments (bry), and the circular transverse sections of sponge spicules (spsc). Dolomite rhombs occurr throughout the siliciclastic mudstones, however, such secondary alteration is rare within the crinoid grainstones.

Heterolithic Crinoid-bryozoan Grainstone and Siliciclastic Mudstone with Dispersed Crinoid Grains

Photo 1. Heterolithic (interbedded) crinoid grainstone and siliciclastic mudstone containing dispersed crinoid grains. Observe the variable contacts between main lithologic units: sharp as well as intertonguing. Furthermore note the horizontal change in the mudstone units from predominantly mudstone to intertonguing mudstone and crinoid grainstone. The scale divisions are 5 cm.

0.65 meters



Sample G3-1

Heterolithic (interbedded) crinoid grainstone (light-colored, grn) and siliciclastic mudstone with dispersed crinoid grains (dark colored). The gray, glassey material surrounding some crinoid clasts is chert. The bed thicknesses increase upsection over a distance of 0.65 meters, **Photo 1**.

4.2 meters

Crinoid-bryozoan Grainstone

Sample G3-1A

Crinoid-bryozoan grainstone.

Section G3, Detail 2: Petrographic illustration of the facies change in channel-fill **A**, **Sections G3** and **G7**.

The facies change between crinoid grainstone unit **2** and the overlying siliciclastic mudstone takes place in a 2.5 meter-thick, westward sloping zone that is parallel to the inclination of grainstone unit **2**. The lithologic transition involves a) the westward reduction in grainsize of the crinoid grainstone (Samples **1A** and **1**), b) a heterolithic (interbedded) unit of crinoid grain-/packstone and siliciclastic mudstone with dispersed crinoid grains (Samples **1** and Photo **1**), and c) siliciclastic mudstone with dispersed crinoid grains and siliceous sponge spicules (Samples **5** and **6**). The actual transition takes place via interfingering of crinoid grainstone and siliciclastic mudstone; this interfingering ranges from cm- to decimeter-thick beds. The transition to only siliciclastic mudstone with dispersed crinoid grains is not observed in this exposure because of a) the limited horizontal extent of the exposure in the transition zone (no more that 15 meters) and b) erosion of the siliciclastic mudstone prior to deposition of the overlying crinoid grainstone of unit **3**. It should be noted that this transition zone is not present in **Section G7**, which is 50 meters south on the other side of TN52.