

Figure DR1. Time-lapse animation of overhead views showing the evolution of model 1, lit from the north. Requires *QuickTime* for playback.

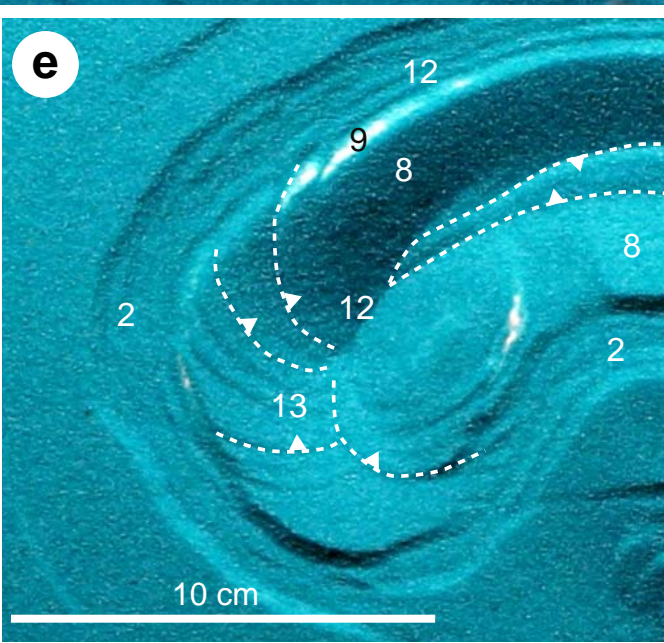
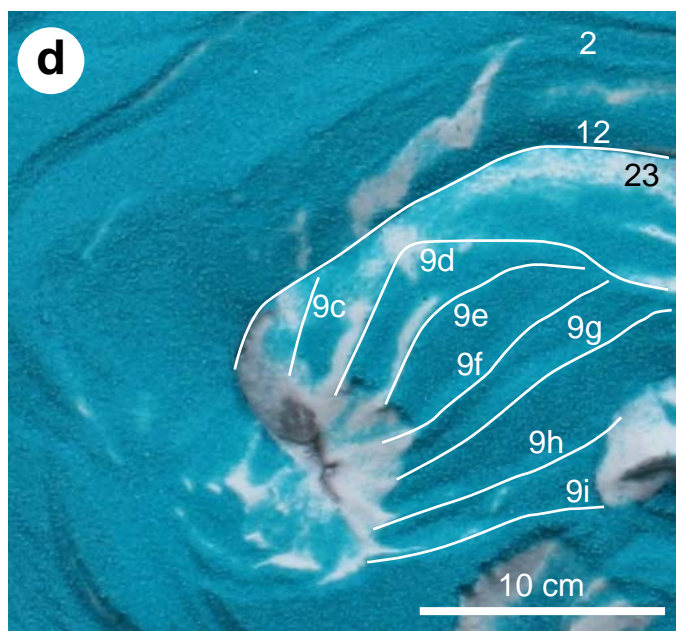
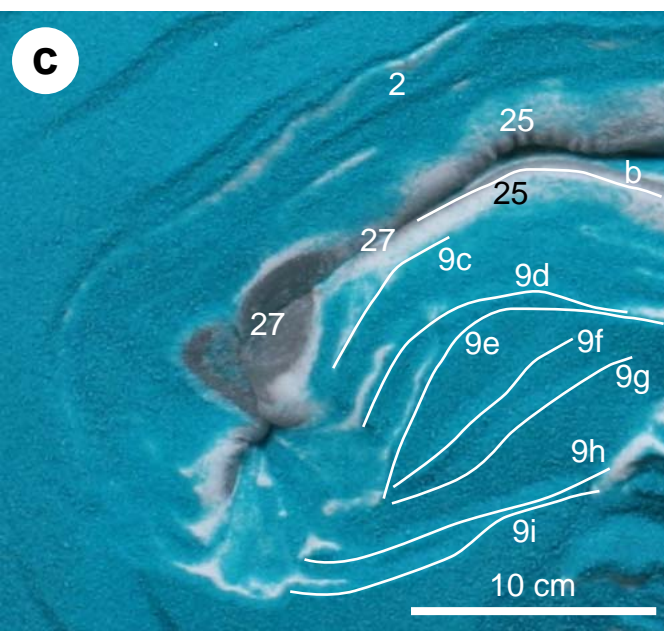
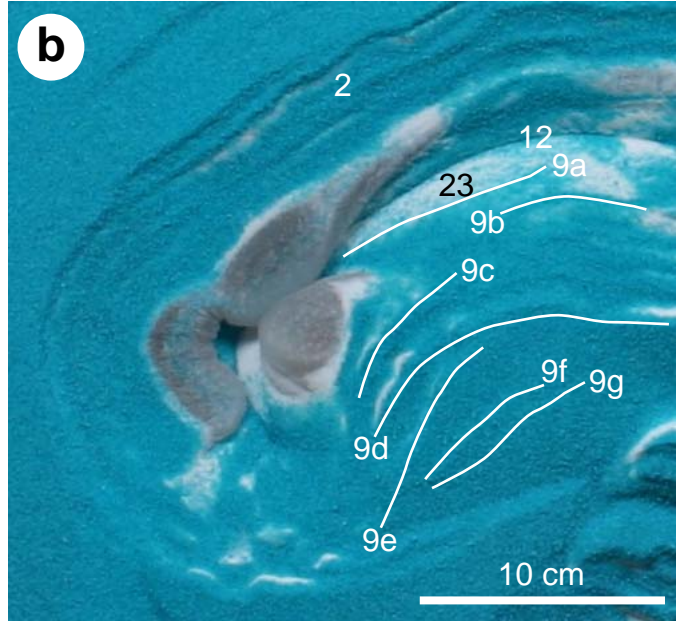
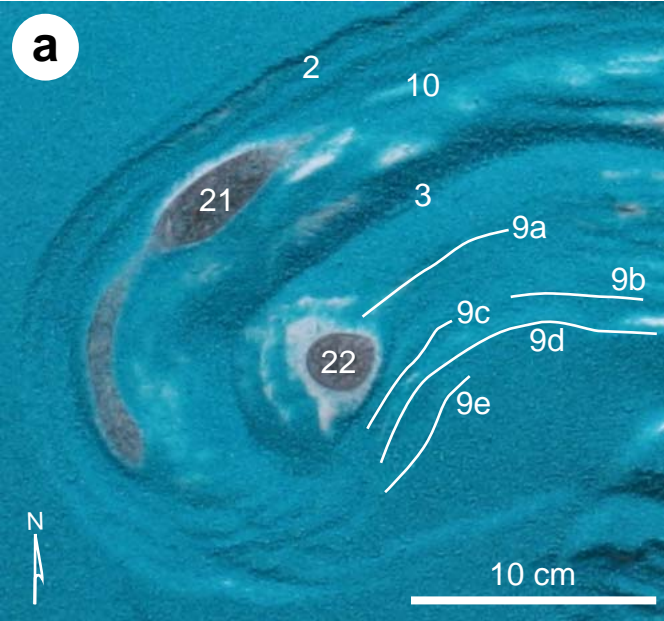
Figure DR2. (a–d) Surface structural evolution of the west end of model 1 during stage 2 of subsidence in which slabs extended on flanks of a drainage trough. (e) Stage 2 of subsidence, featuring radial thrusts in the west drainage trough. Some radial thrusts are annotated; others are marked by shadowed fault scarps. **Figure 5** shows the location. Overhead photographs lit from the top. Key structures: 2, hinge graben; 3, axial thrust; 8, inward-tilted slab of unit 1; 9a to 9i, extensional fault scarps in downgoing slab; 10, subsurface reactive diapir; 12, drainage trench; 13, radial thrusts (only some of which are annotated); 21, exposed diapiric wall; 22, exposed diapiric stock; 23, unit 2 exposed in landslide; 25, inward allochthonous flow; 27, linear suture.

Figure DR3. Oblique view to the east end of Hebes Chasma; eye altitude 36 km, 2× vertical exaggeration. Image via Google Earth from NASA/USGS and ESA/DLR/FU Berlin (G. Neukum). **Figure 14** shows location.

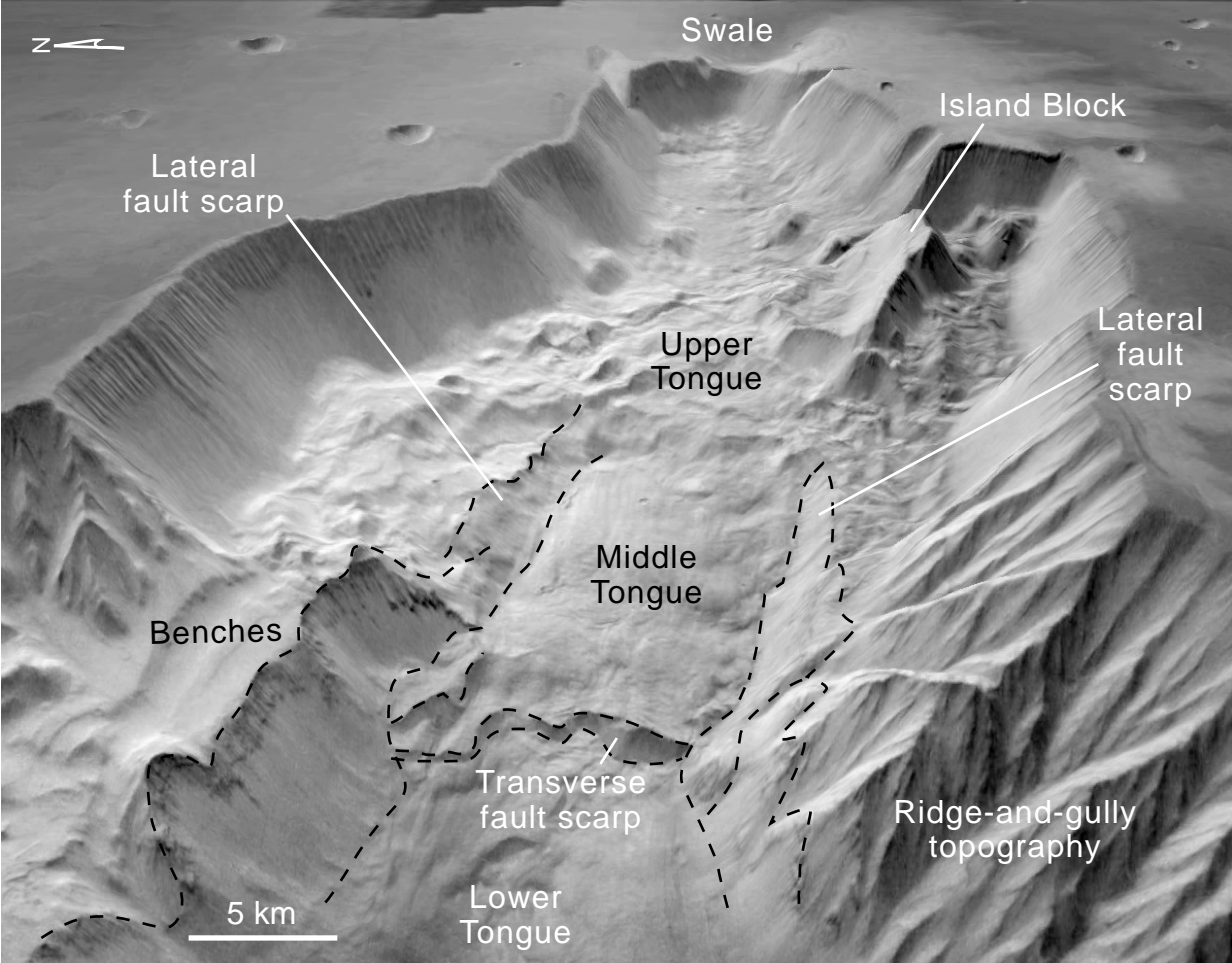
Figure DR4. Arcuate grabens separate fault benches stepping down the west wall of Hebes Chasma. A septum only 6 km wide at its narrowest point separates Hebes Chasma from Echus Chasma. Vertical CTX image. **Figure 14** shows location.

Figure DR5. Comparative hillslope morphology. (a) Shaggy weathering layered Lower Hebes Formation shedding a smooth talus apron down to the left. Vertical HiRISE view of the east flank of Hebes Mensa. **Figure 14** shows location. (b–c) Shaggy weathering gypsum and anhydrite with limestone inclusions in Junction Diapir. These Carboniferous evaporites are mechanically weathering in a polar desert in the Sverdrup Basin on Axel Heiberg Island, Nunavut, Arctic Canada. Photographs by Martin Jackson.

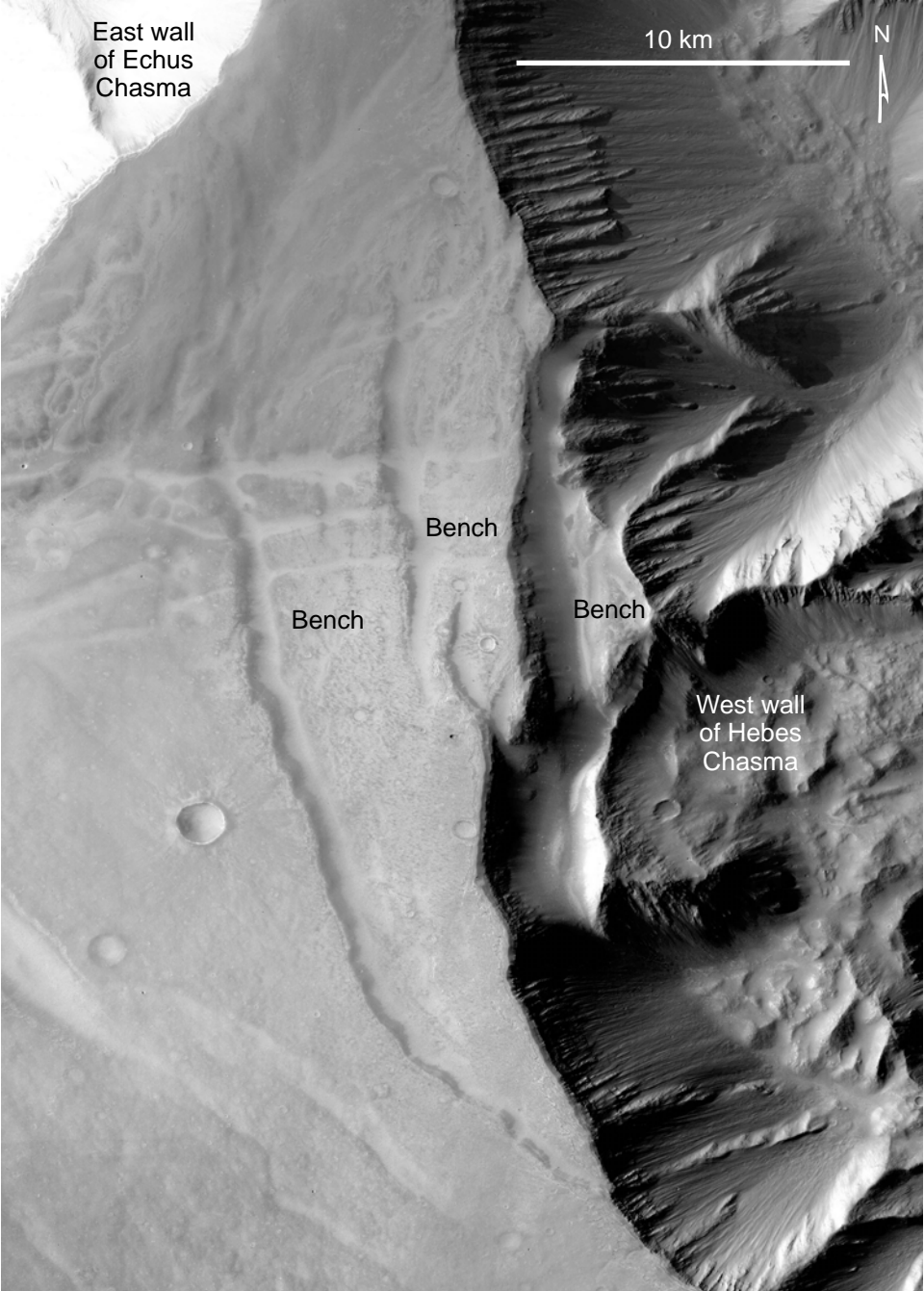
Figure DR6. Laser-scan relief map showing vertical view of model 3, where extension spread far beyond the chasma boundaries because the underlying mobile unit 3 was equally widespread. Compare with **Figure 6** where the mobile unit 3 was restricted to the chasma.



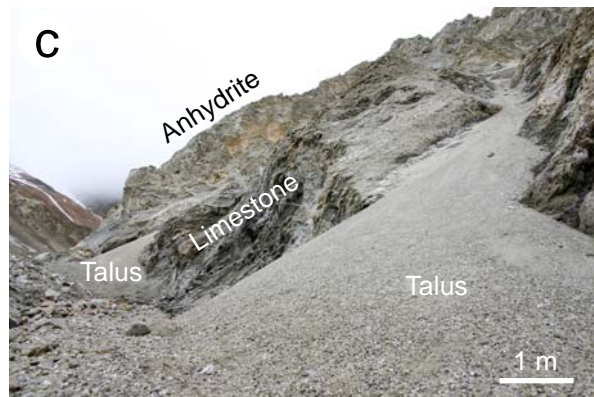
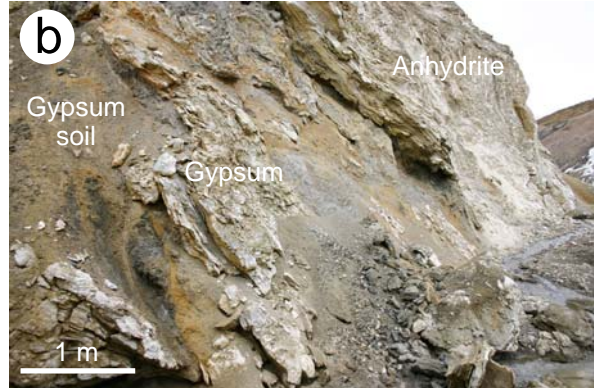
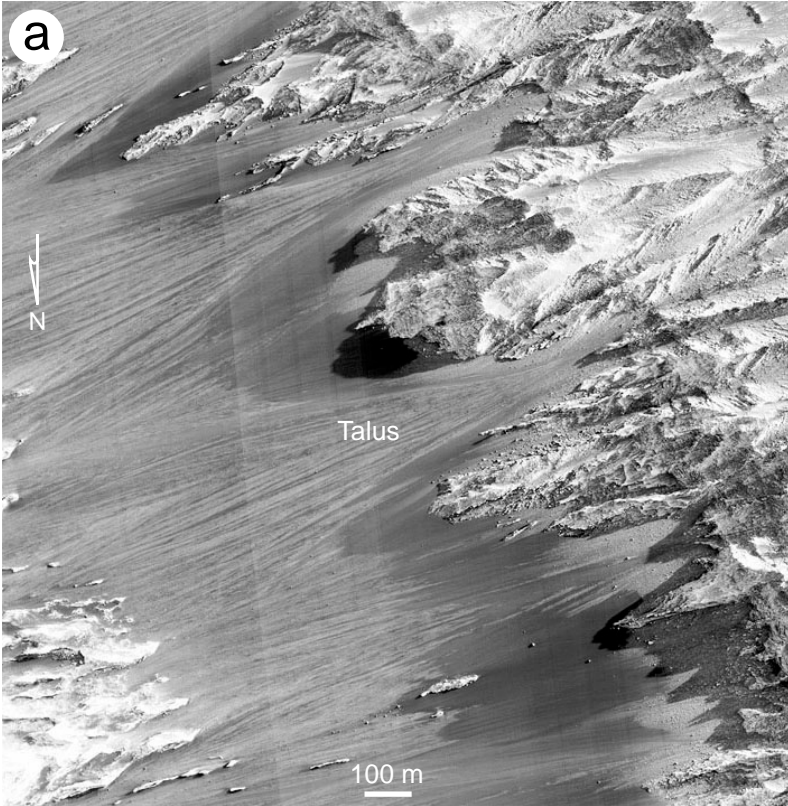
Jackson Fig. DR2



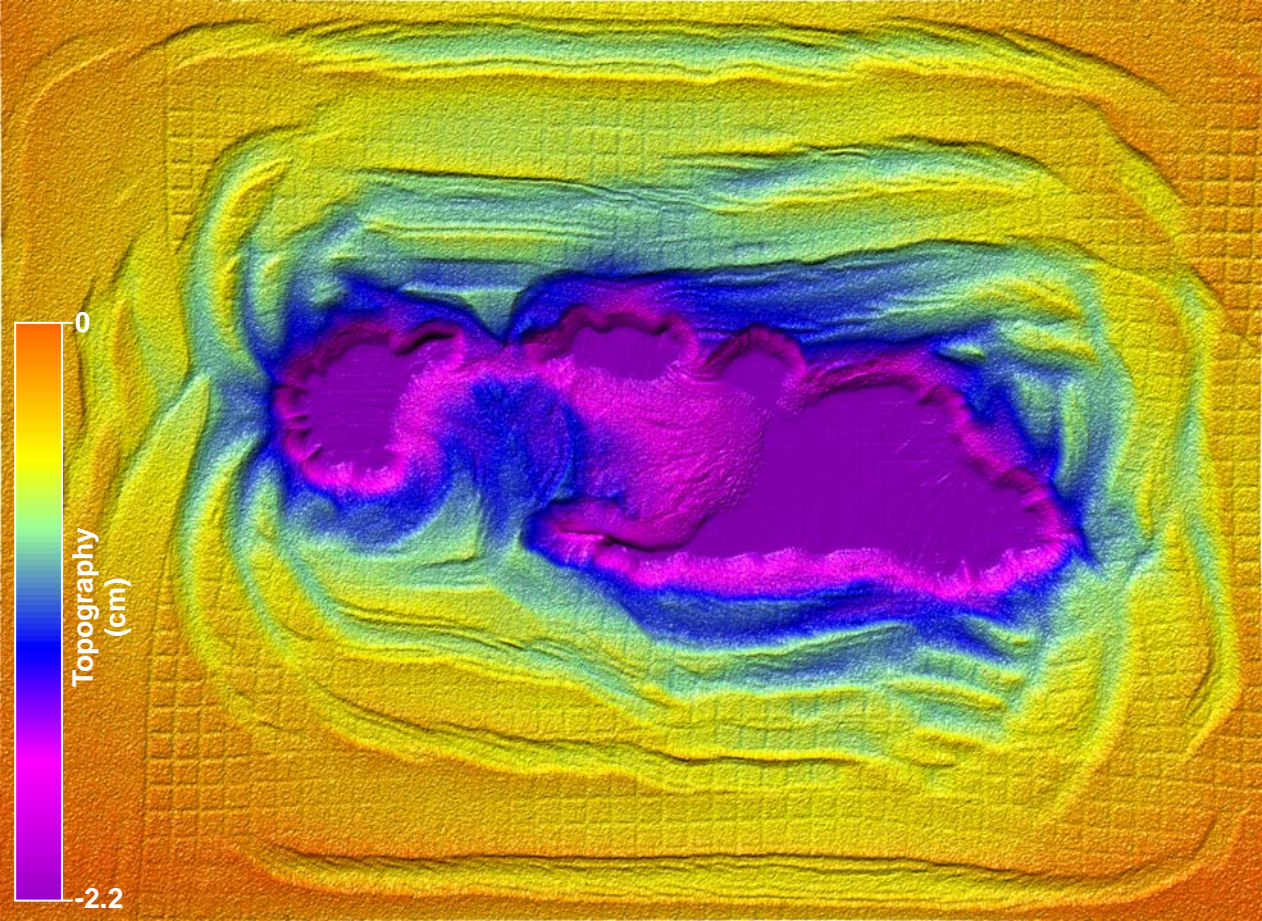
Jackson Fig. DR3



Jackson Fig. DR4



Jackson Fig. DR5



Jackson Fig. DR6