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Geological evidence and future detection of active tectonics on Mars.

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Accumulating evidence shows that recent tectonic deformation affected discrete areas on Mars (e.g. Spagnuolo et al., 2011; Roberts et al., 2012): Steep scarps cut bedrock and unconsolidated deposits, including mass wasting and eolian materials. The crater size frequency-based age estimate for some of these scarps, e.g. in Aureum Chaos is a few Myr only.
The case for recent or very recent volcanism is sound on Mars (e.g. Hauber et al., 2011; Neukum et al., 2004), but comparably young tectonics on Mars had not been discovered until recently.
Areas with linear or curvilinear, steep fault-like scarps (e.g., in Aureum or Aram Chaos) are relatively far from large volcanic edifices and provinces with recent effusive activity. Hence, a direct volcano-tectonic link, e.g., with Tharsis, seems unlikely. On the other hand, late collapses and subsidence in ∼Hesperian or younger chaos/chasma areas could be responsible for the local deformation, which appears to be mainly extensional. Reactivation of older structures is also a possibility.
Regardless the actual mechanism and geodynamic setting, present tectonic activity on Mars is a very real possibility, and it would open a range of opportunities for research such as geodynamics, hazards for future exploration, resources and exobiological potential: present faulting in chasmata and chaotic terrains could offer pathways for subsurface fluids to reach the surface or near subsurface, including potential degassing.
Future missions such as InSight (NASA) and potentially Mars Network Science Mission (MNSM, ESA) could detect the first signs of Mars's tectonic activity. In addition, ESA ExoMars Trace Gas Orbiter could also investigate any potential outgassing in the vicinity of recently faulted candidate areas.

References:

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