

DIGITAL TECTONIC ACTIVITY MAP OF THE EARTH
Tectonism and Volcanism of the Last One Million Years

DTAM

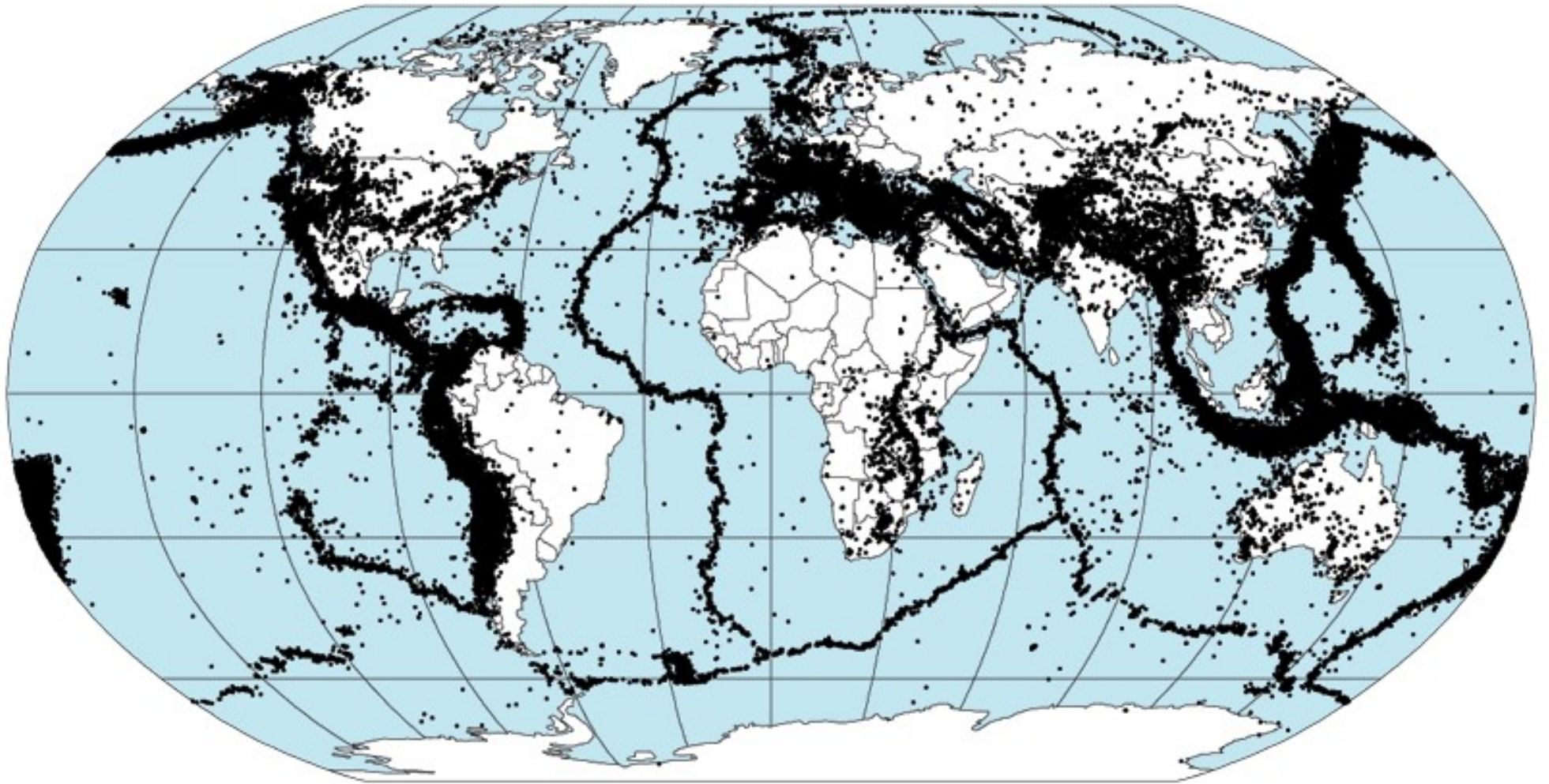


NASA/Goddard Space Flight Center
Greenbelt, Maryland 20771

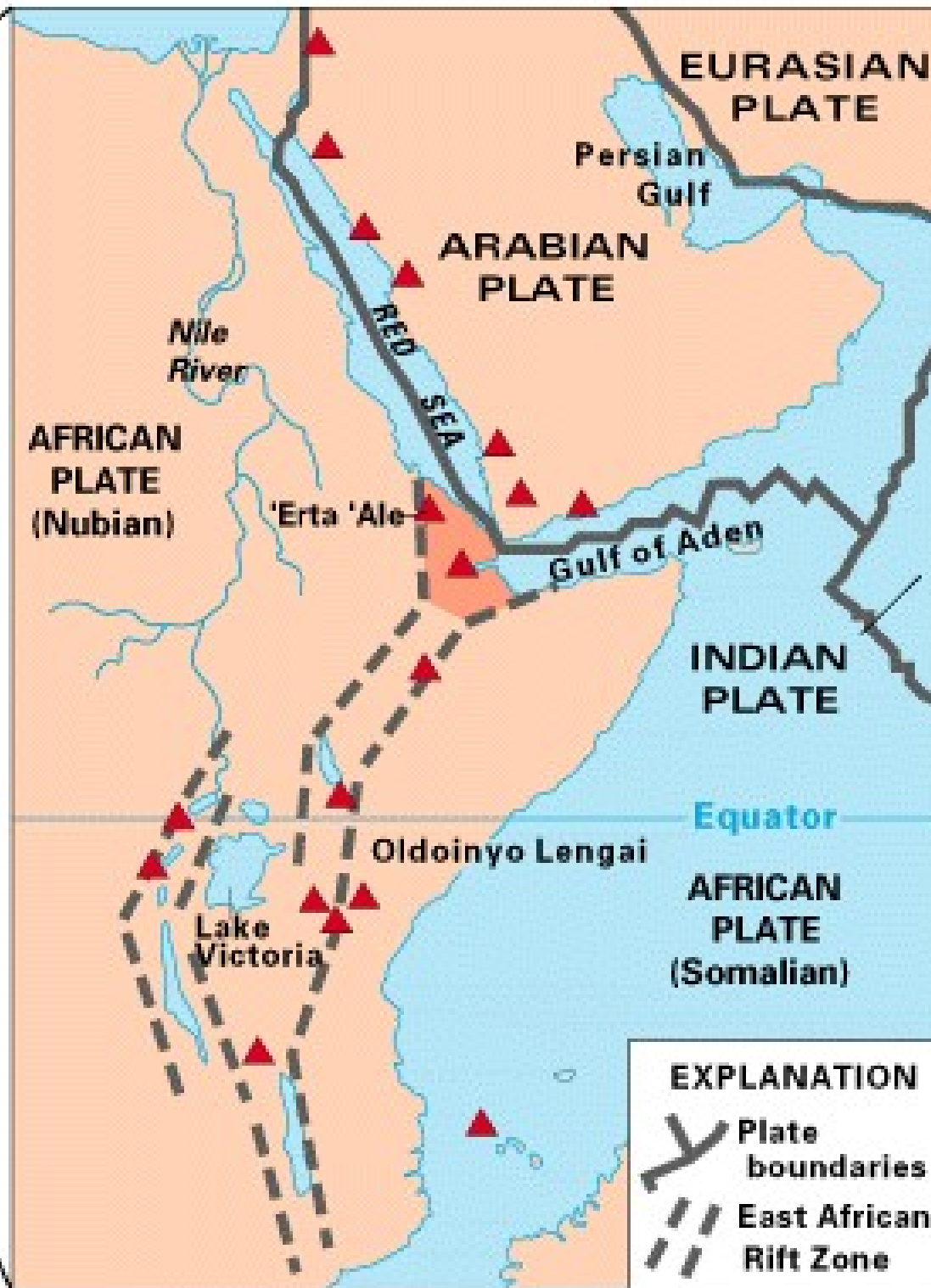
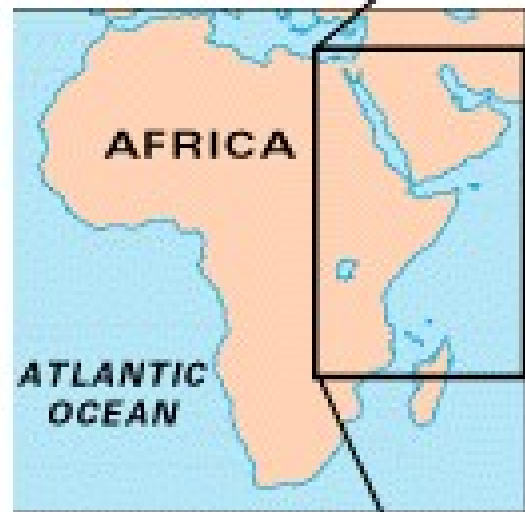
Robinson Projection
Mainly oceanic crust
October 1998

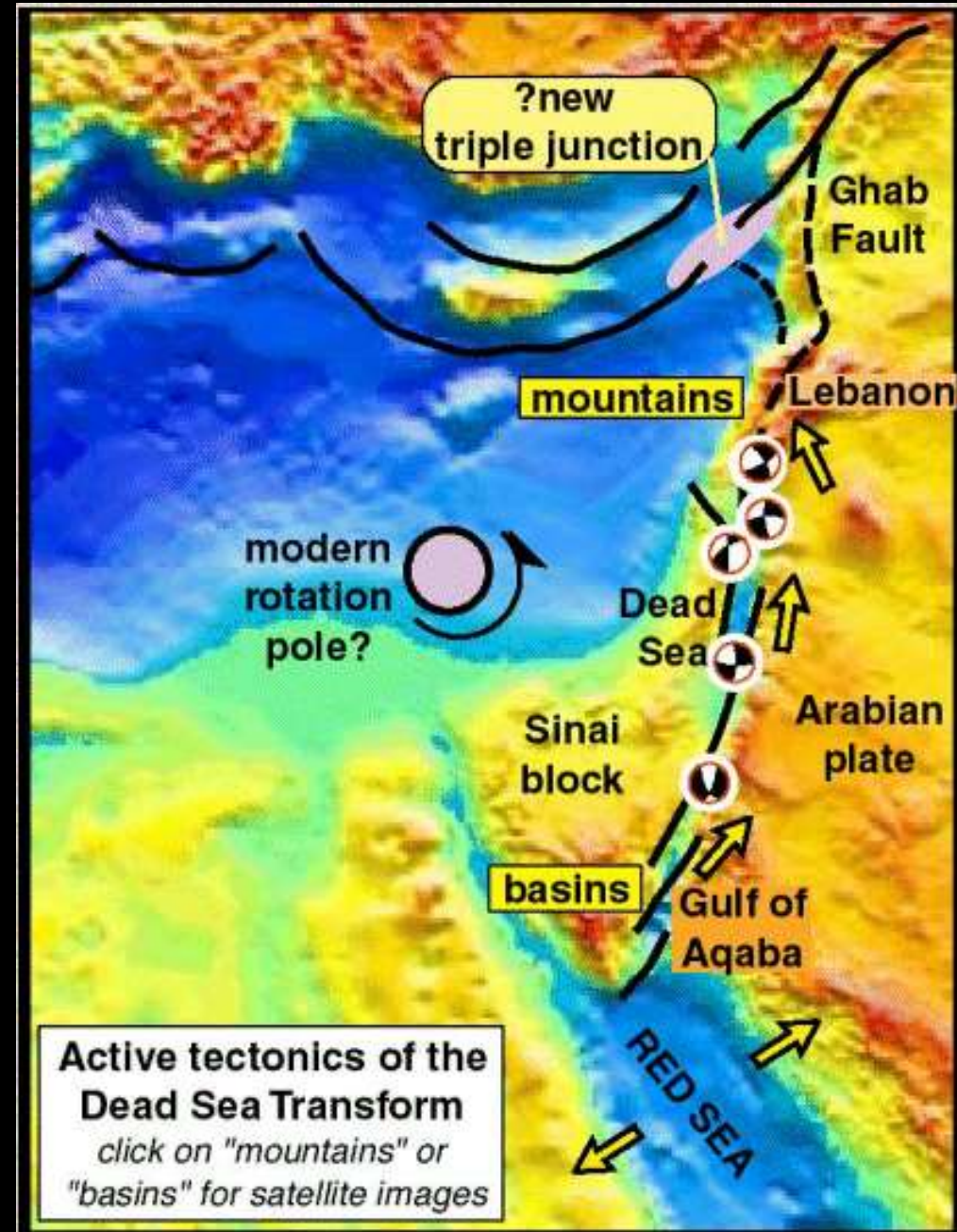
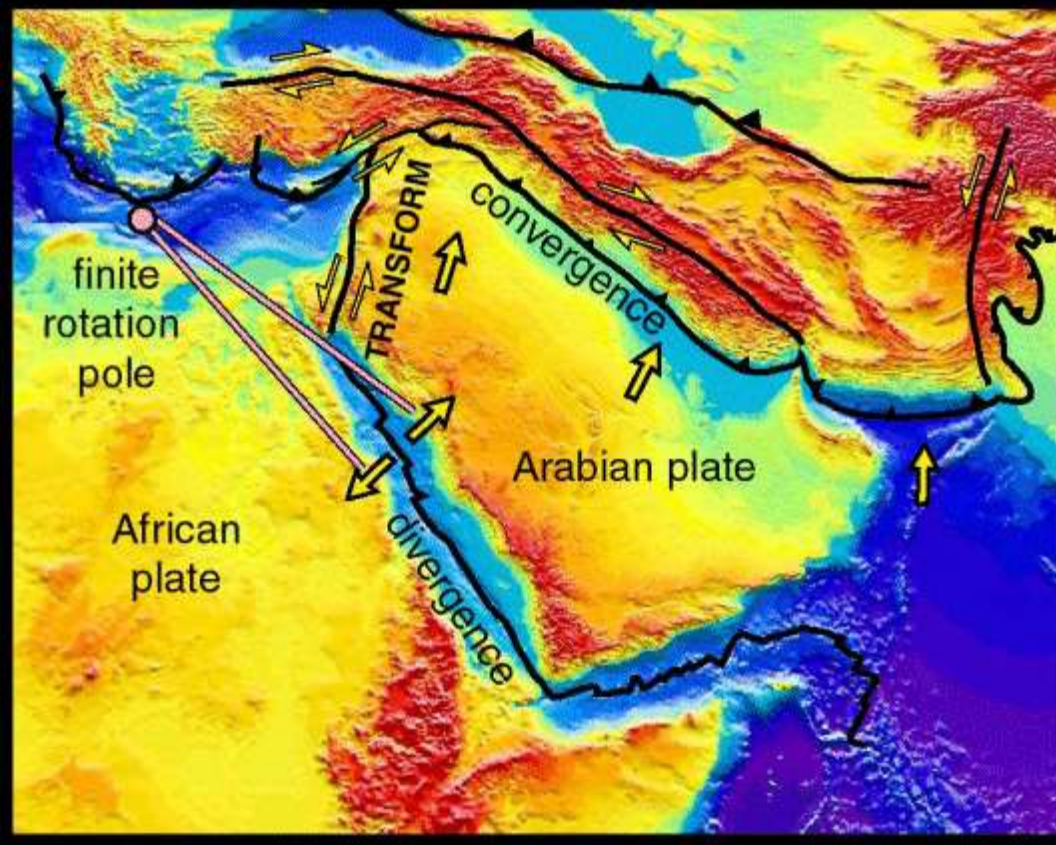
LEGEND

- Actively-spreading ridges and transform faults
- Total spreading rate, cm/year, NUVEL-1 model (DeMets et al., Geophys. J. International, 101, 425, 1990)
- Major active fault or fault zone; dashed where nature, location, or activity uncertain
- Normal fault or rift; hachures on downthrown side
- Reverse fault (overthrust, subduction zones); generalized; bars on upthrown side
- Volcanic centers active within the last one million years; generalized. Minor basaltic centers and seamounts omitted.



[Seismic Activity](#)





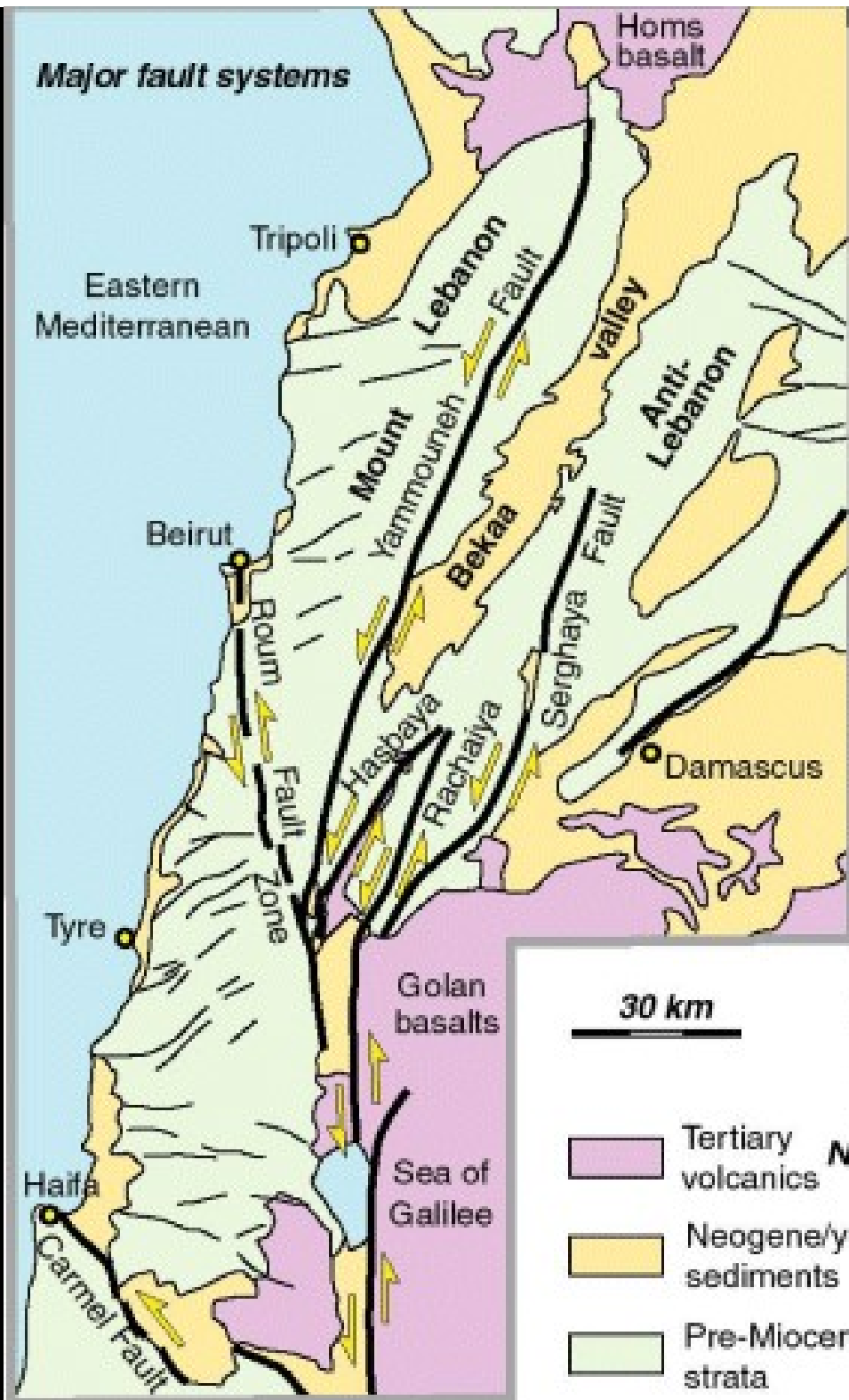
Active tectonics of the Dead Sea Transform
 click on "mountains" or "basins" for satellite images



STS094-728-10

The Dead Sea segment of the Arabian-African plate boundary is centered in this northward view; the Gulf of Aqaba lies just off the the bottom of the frame where the Egypt-Israel border (B) meets the Dead Sea valley. The basin that the Dead Sea lies in is in three segments. The Dead Sea occupies the current basin. The next older is filled with salt evaporated from the Mediterranean Sea when it extended into the basin. This salt has since deformed into salt domes: the Lisan Peninsula (L) and Mount Sedom (S, of Sodom and Gomorrah fame). Just north of the Dead Sea and along the faulted west (left) base of the mountains is the irrigated patch of land at Jericho (J), situated there because of large springs. The Sea of Galilee (G) marks another left step in the fault zone (and thus another depression to catch water). The dark region east of the Sea of Galilee is a recent basalt volcanic field (left edge is the Golan Heights). The volcanoes are in lines making a 30° angle (tension direction) to the shear zone of the Dead Sea fault.

Major fault systems



Understanding the map

The Dead Sea Transform in Lebanon is represented by five main fault zones (Serghaya, Rachaiya, Hasbaya, Yammouneh and Rouchi). Of these, only the Yammouneh Fault crosses the whole country. Apparent off-sets of the main piles of lava (Golan and Homs) show the overall left-lateral movement sense on the faults (arrowed). However, it's not just faulting. Lebanon shows significant mountain building - evidence for crustal shortening. The uplifted areas are represented on the map by outcrops of Pre-Miocene strata. Younger rocks (sediments and lava) occupy relatively lower ground. The chief structures apart from faults are major antiforms - which are also the chief uplifts - Mount Lebanon and the Anti-Lebanon-Mount Hermon range.

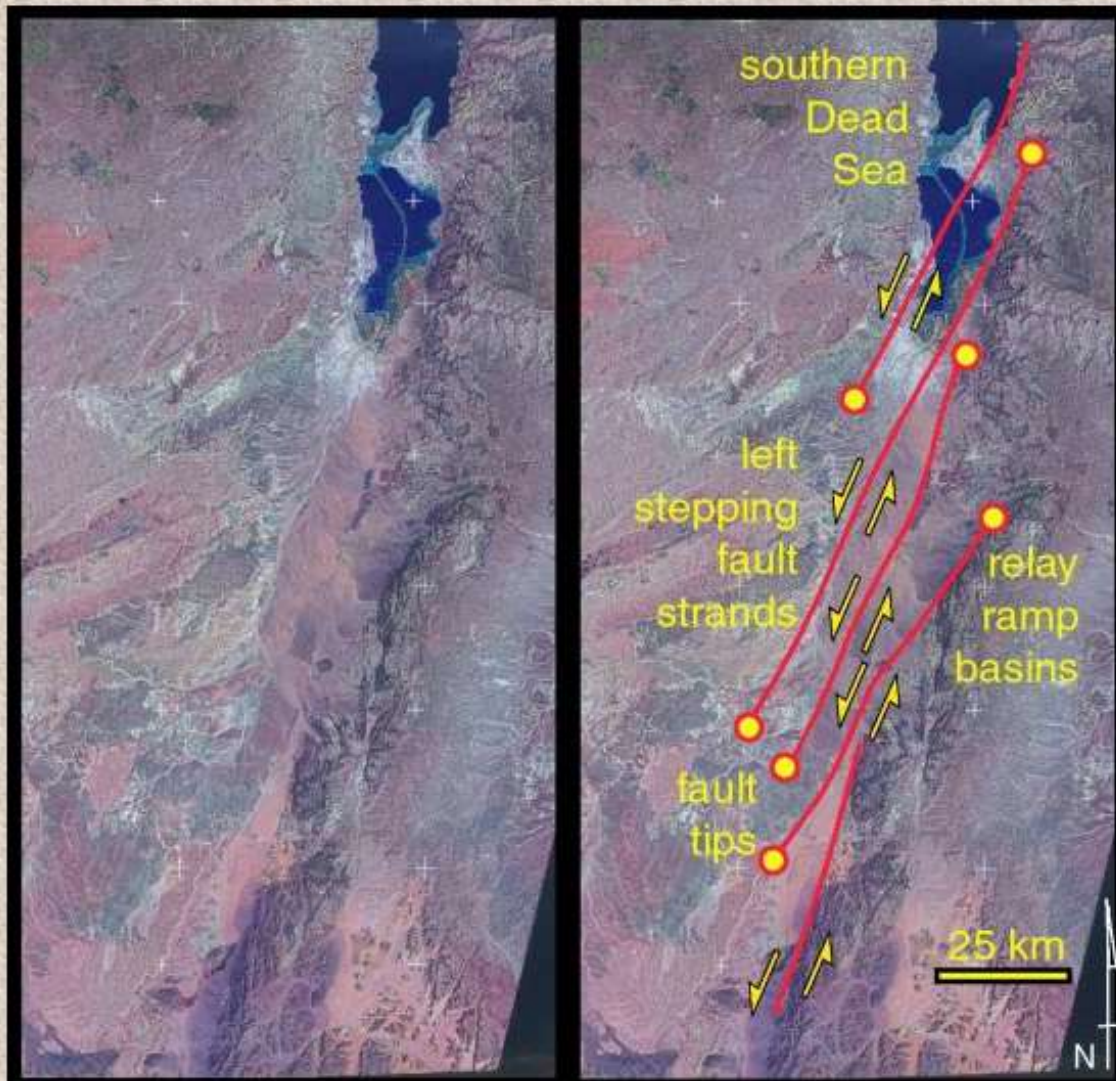
You can visit the following examples.

Faults and structures

Lavas and landscapes

Uplifted coastal features

Satellite image of the southern part of the transform



This scene shows the basins developed in the southern part of the transform, along the Israel-Jordan border. The southern edge of the Dead Sea appears at the top of the image. Note that there is no through-going fault here - despite the 100+km of bulk displacement on the transform. Presumably fault strands have transitory existences - growing and slipping, perhaps rotating and then being replaced (and cut by) younger strands. The old fault segments may be represented by the bed rock lineaments on the satellite image - but obviously they are obscured by young sediment in the basins themselves.