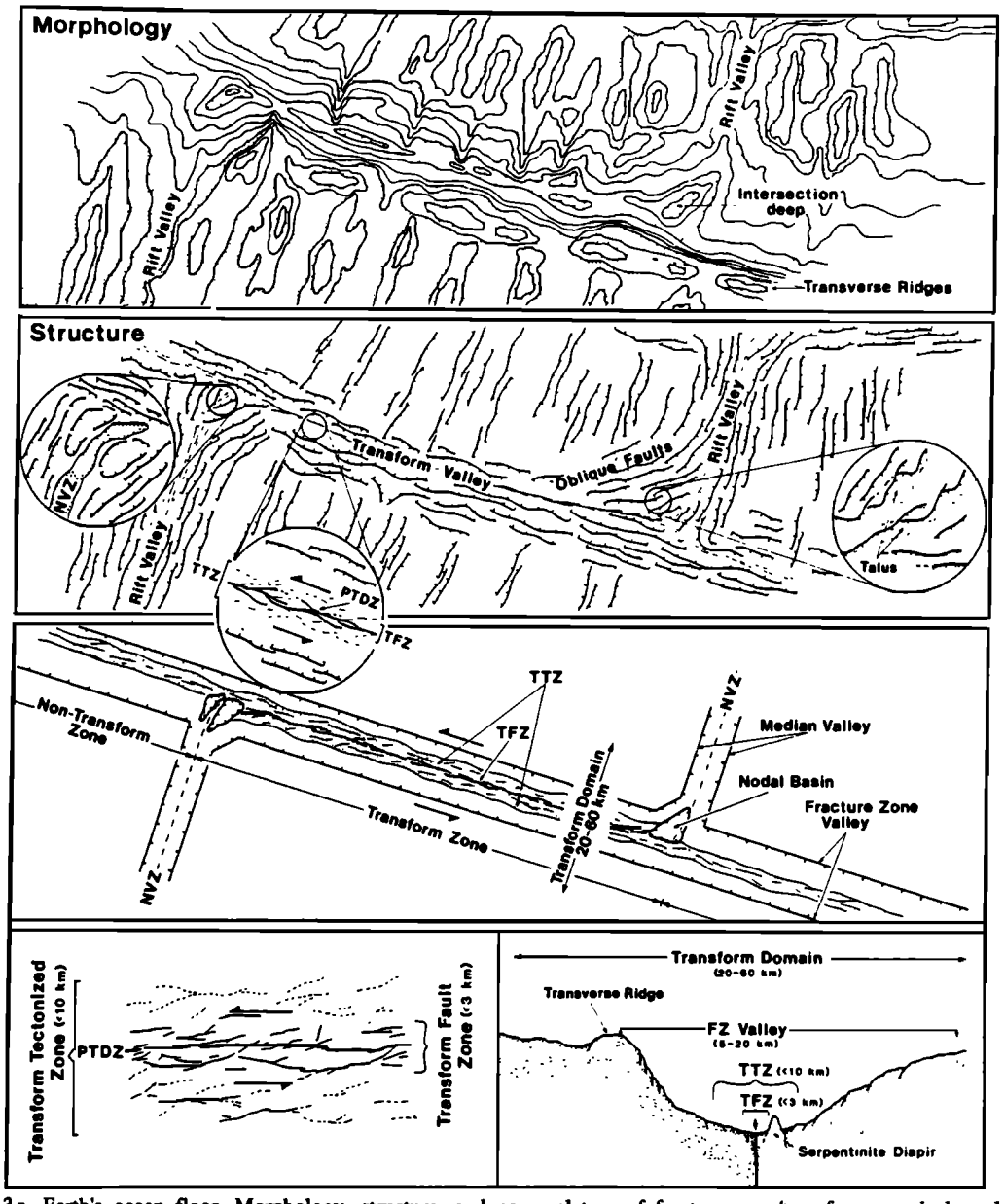

Fig. 3*a*. Earth's ocean floor. Morphology, structure, and nomenclature of fracture zone/transforms, and abyssal hills (modified from *Fox and Gallo* [1986]). At the top, the rift valleys are separated by about 100 km along the transform fault and the general topographic characteristics of the abyssal hills, the transform, and a small part of its aseismic extensions are shown. The structure and nomenclature are shown below. NVZ, neovolcanic zone; TFZ, transform fault zone; TTZ, transform tectonized zone; PTDZ, principal transform displacement zone. See *Fox and Gallo* [1986] for details.

fracture zone contains a central trough 5-20 km in width that has regional inward dipping convex-downward slopes down to the trough floor. Subsidiary basins, troughs, and ridges are present along the valley floor. Floor depth is a function of transform offset and may be as much as several thousand meters [*Fox and Gallo*, 1986] due to differences in age and subsidence level across the fracture zone. Ocean floor topography typically changes across the fracture zone due to the juxtaposition of crust and lithosphere of different ages. Transverse ridges often parallel the edge of the fracture zone valley (Figure 3*a*). The actual movement at any given time occurs primarily along a narrow transform fault zone (TFZ), but the movement can migrate and such migration tends to produce a broader transform tectonized zone (TTZ) (Figure 3*a*). Talus and sedimentation often obscure the details of the floor structure, and volcanism is often localized within fracture zones [*Lowrie et al.*, 1986]. Fracture zones are observed to change their morphology along strike. A sonograph mosaic of the Charlie-Gibbs transform and fracture zone in the North Atlantic (Figure 3*b*) shows its distinctly linear appearance over short distances and its complexity along strike and along its flanks [*Searle*, 1979].

In map view, fracture zones can be linear, arcuate, or slightly sinuous, depending on a number of factors including changes in spreading rate, location and variability of poles of rotation, and interplate and intraplate deformation subsequent to crustal formation [*Cande et al.*, 1988]. On Earth, fracture zones (FZ) reach thousands of kilometers in length and are apparently limited only by the width of the ocean basin.

The spacing between major FZs is relatively constant