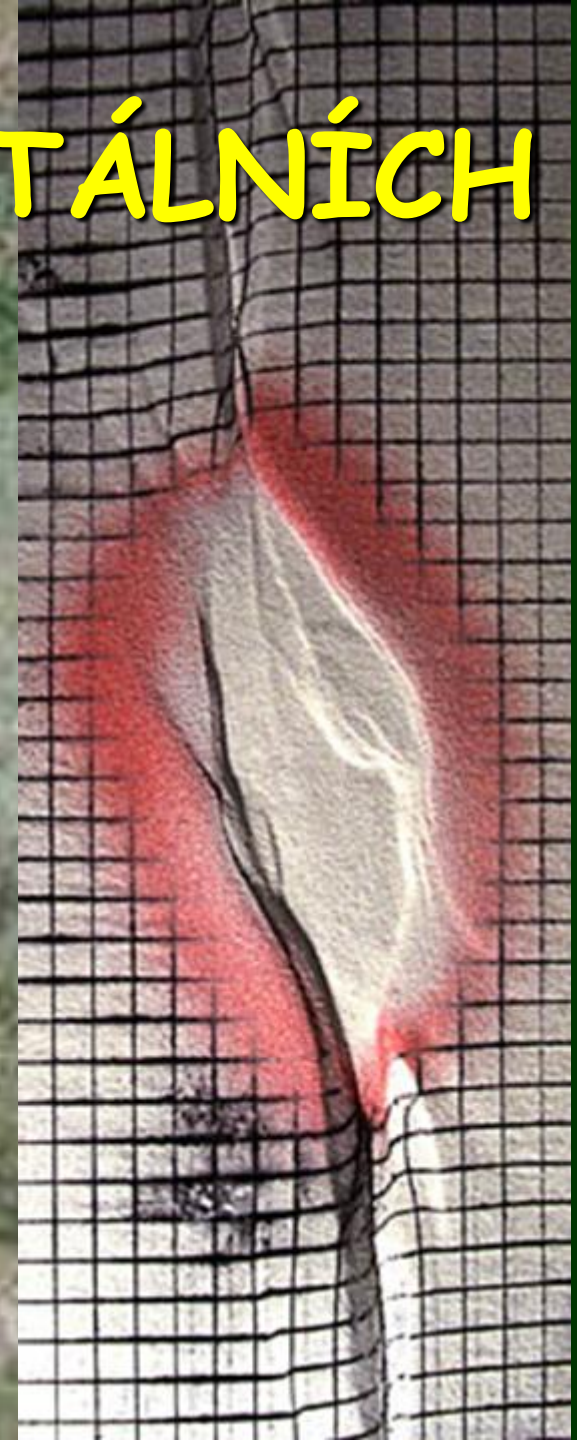
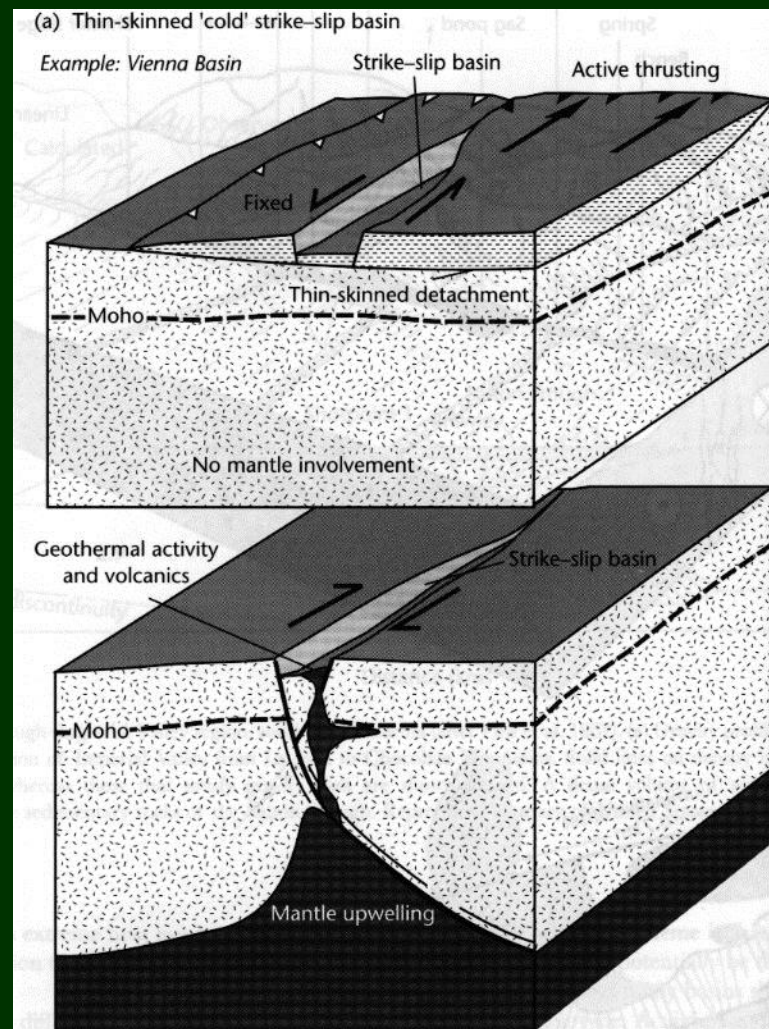


PÁNVE NA HORIZONTÁLNÍCH POSUNECH



CHARAKTERISTIKA:

- vznikají v oblasti ss zón
- relativně malé rozměry
- rychlá subsidence
(např Miocenní Ridge Basin of California
>10km sedimentu za <5Ma)
- tepelný tok je celkově nízký, jsou ale výjimky
⇒ hypo- a hypertermální ss pánve

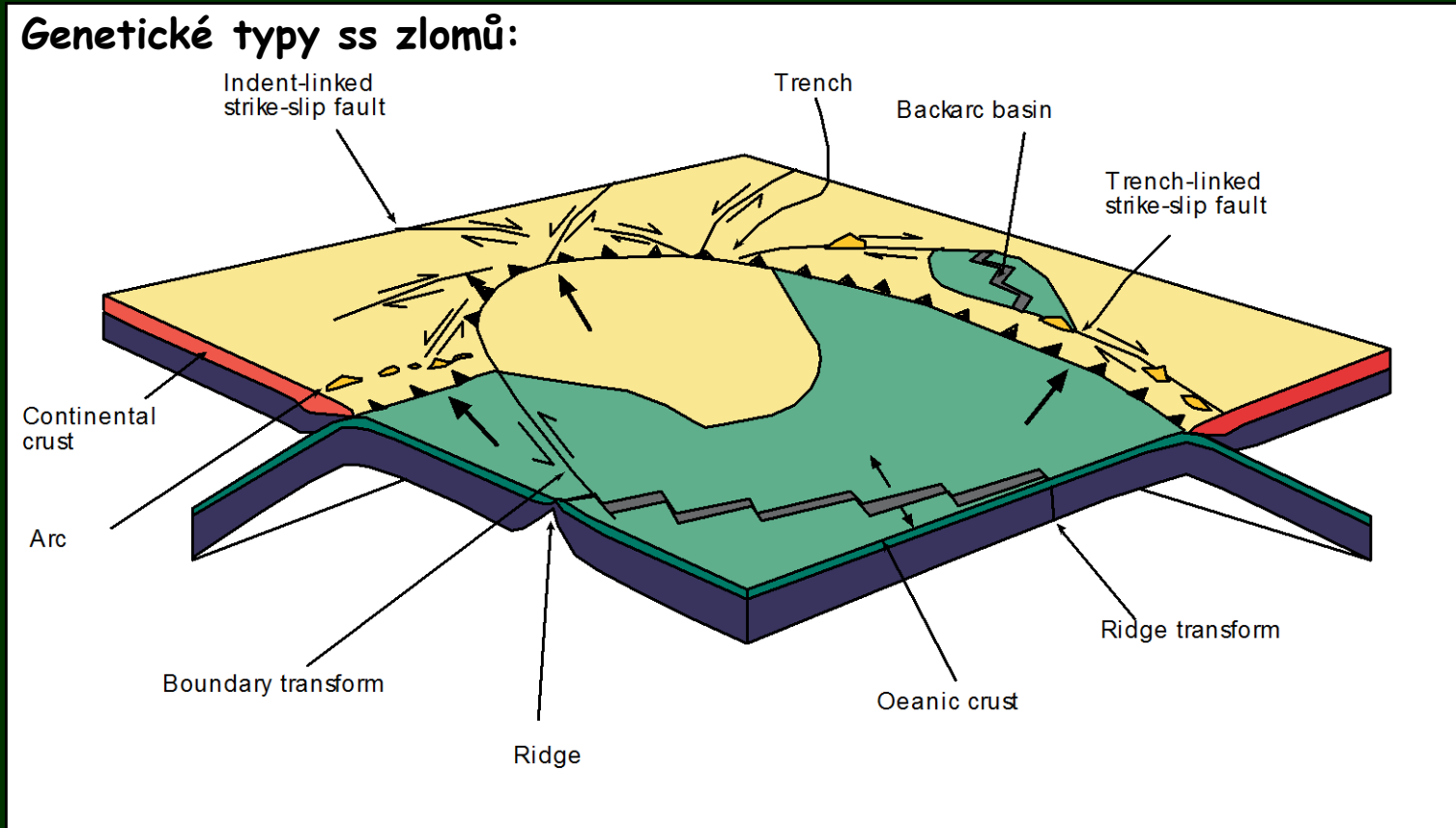


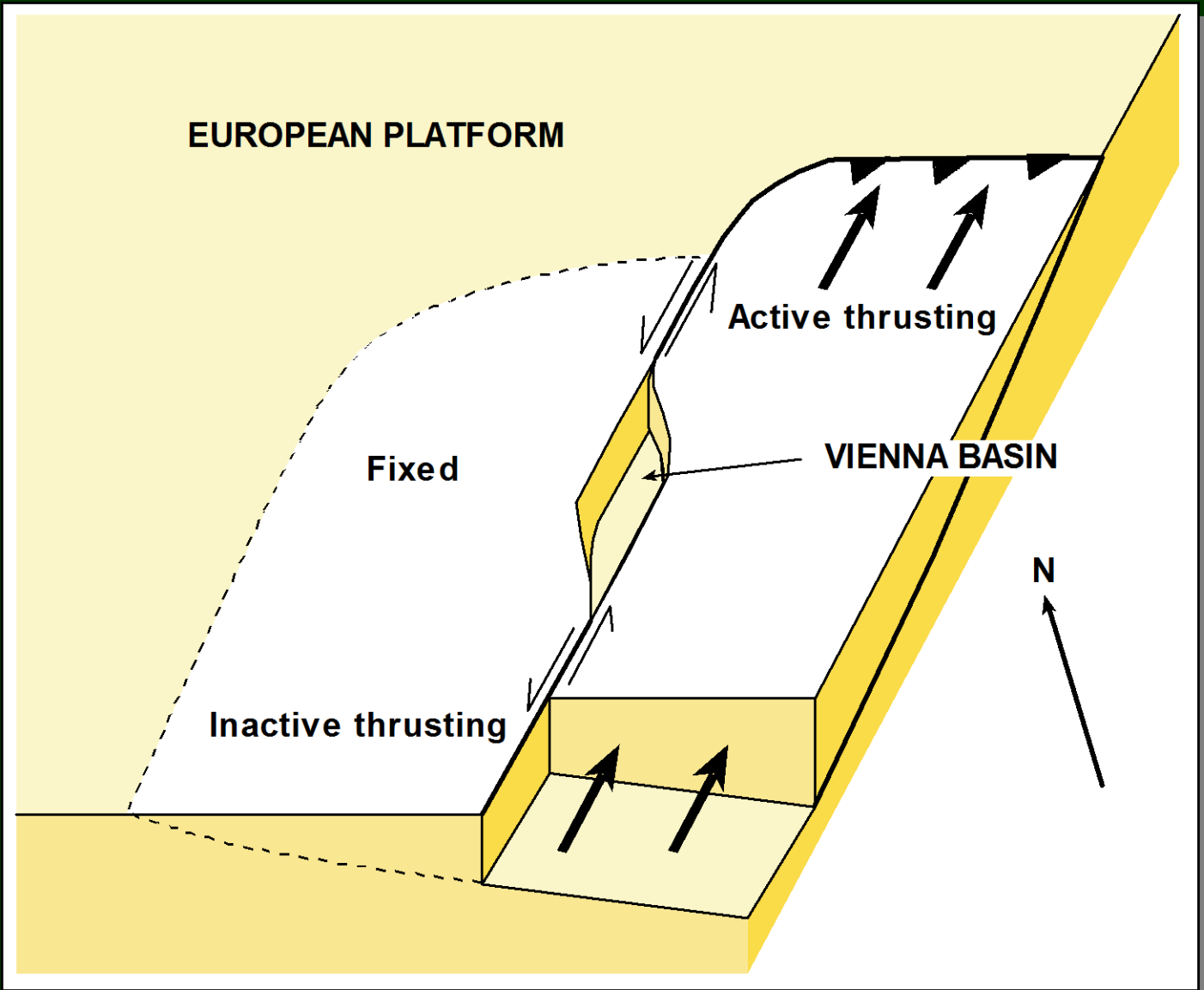
(b) "Hot" strike-slip basin with mantle involvement

Example: Salton Trough

CHARAKTER SS ZLOMŮ:

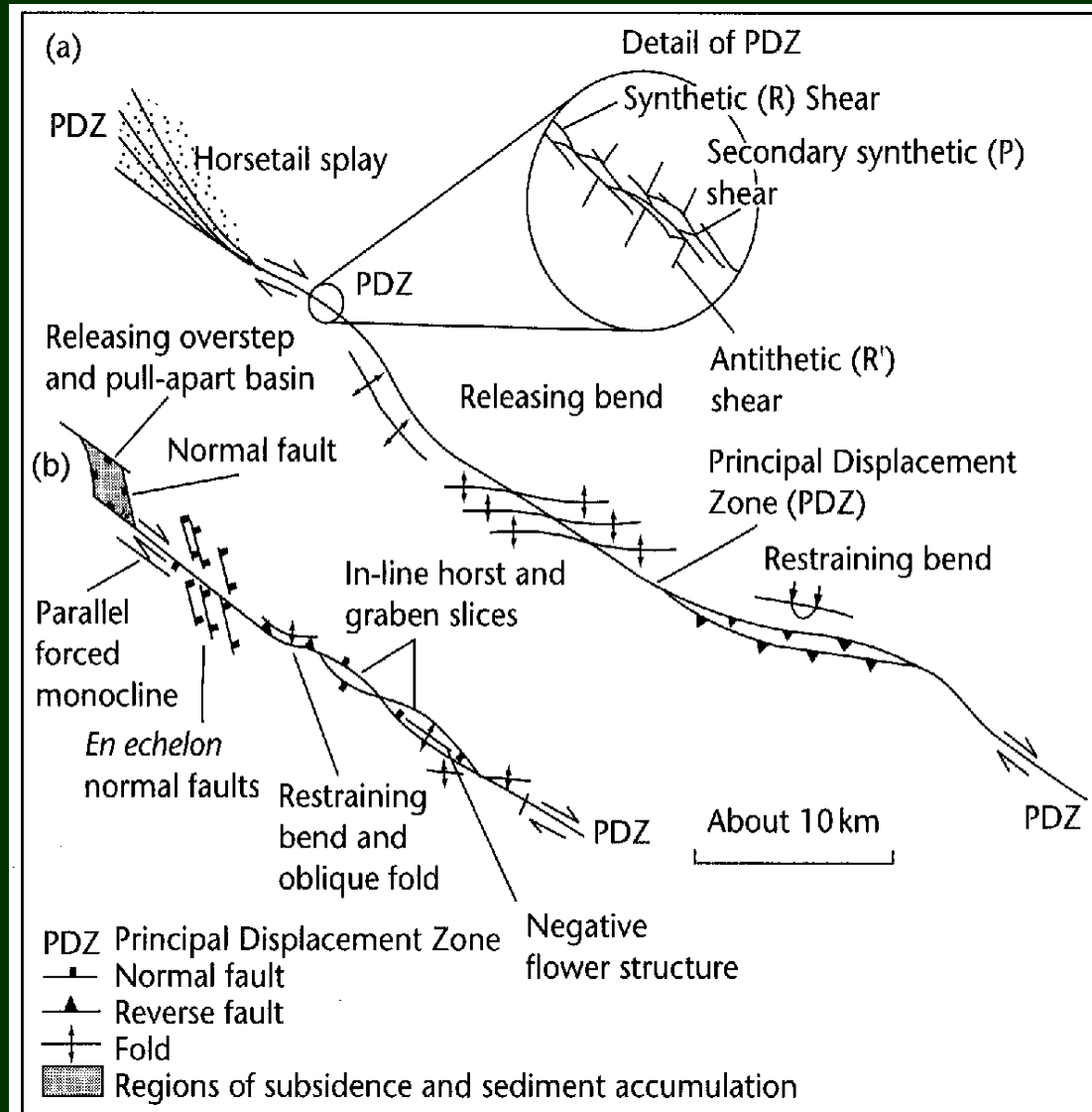
- ss zlomy jsou velmi strmé a v půdorysu mají lineární nebo křivočarý průběh
- směrem do podloží mohou nasedat na mírně ukloněnou plochu detachmentu
- **PDZ (principal displacement zone)** - oblast podél ss zlomu postihované deformací

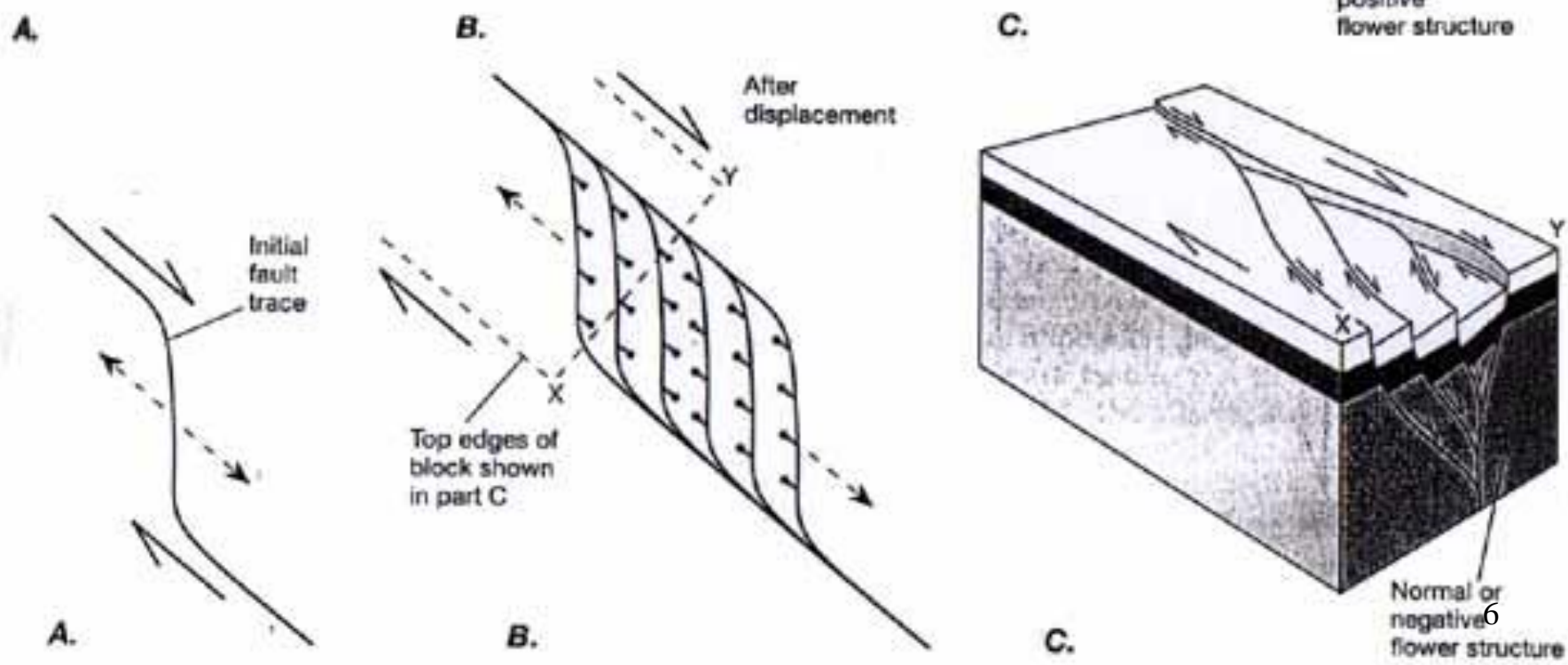
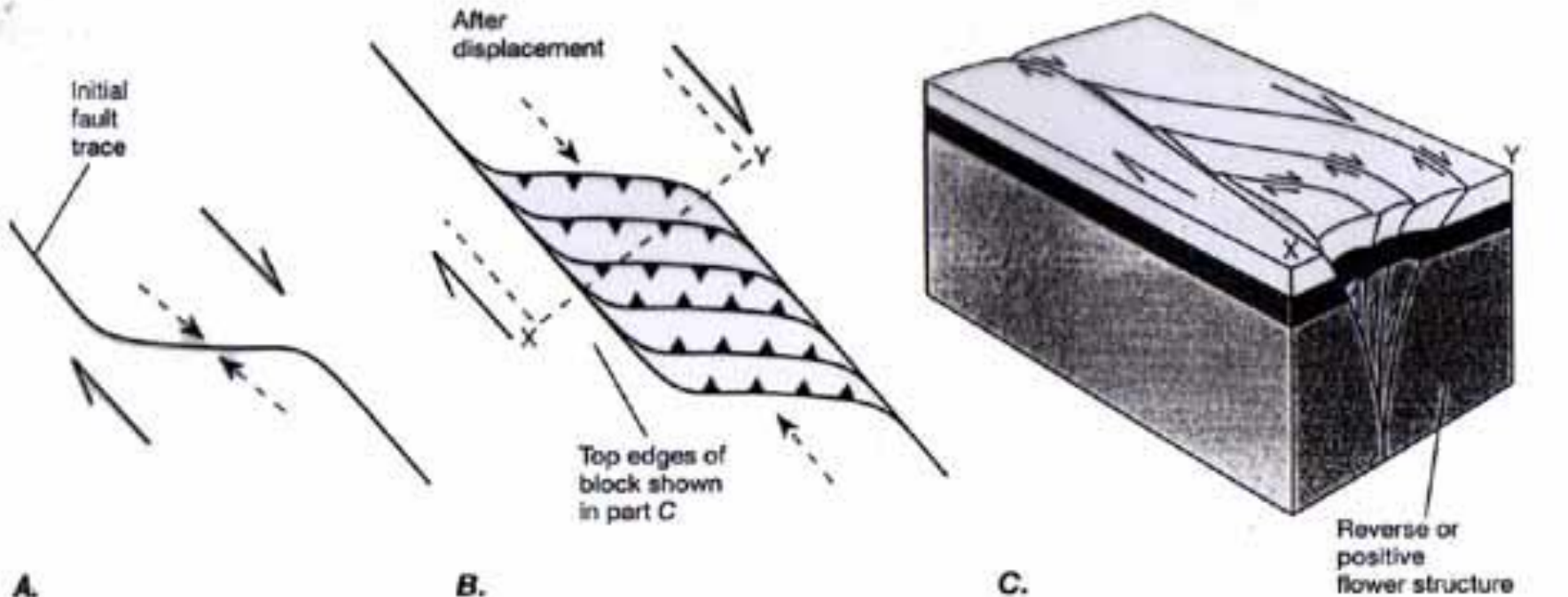


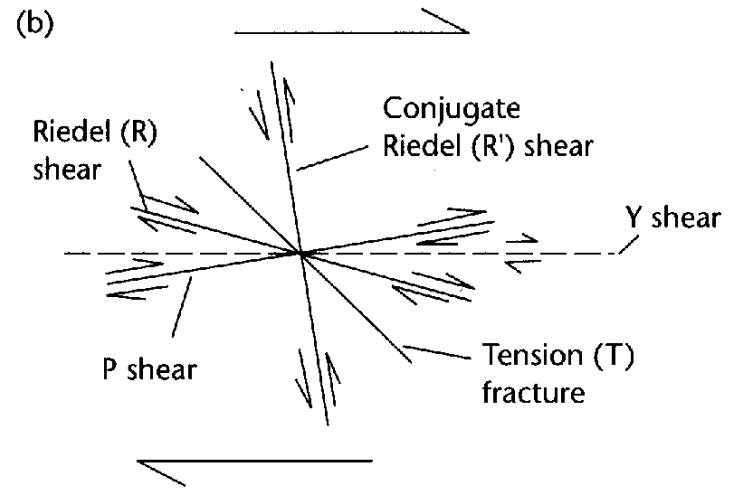
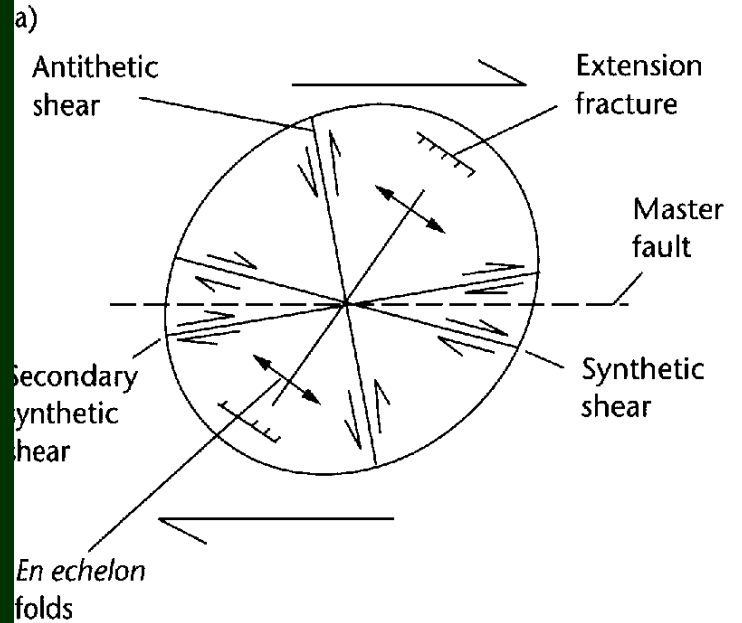
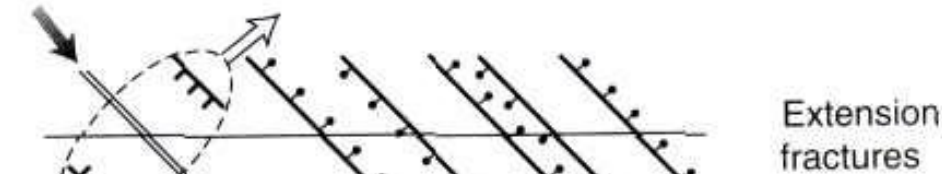
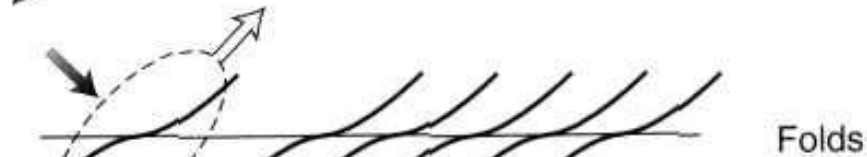
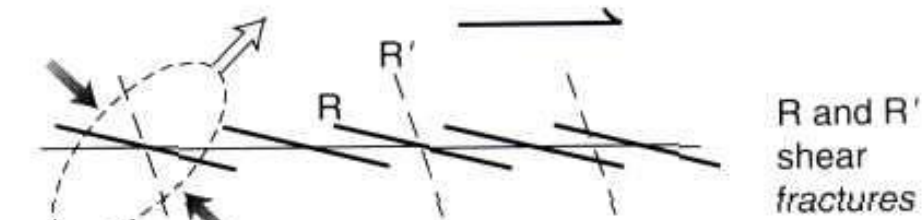


STRUKTURNÍ ZNAKY SS ZÓN:

- Koexistence poklesových a násunových struktur narozdíl od extenzních a kompresních oblastí
- En-échelon uspořádání zlomů a vrás vzniklých díky pohybům na hlavním ss zlomu
- Uspořádání zlomů a vrás s ohledem k orientaci deformační elipsy
⇒ Při střižné deformaci vzniká 5 typů fraktur







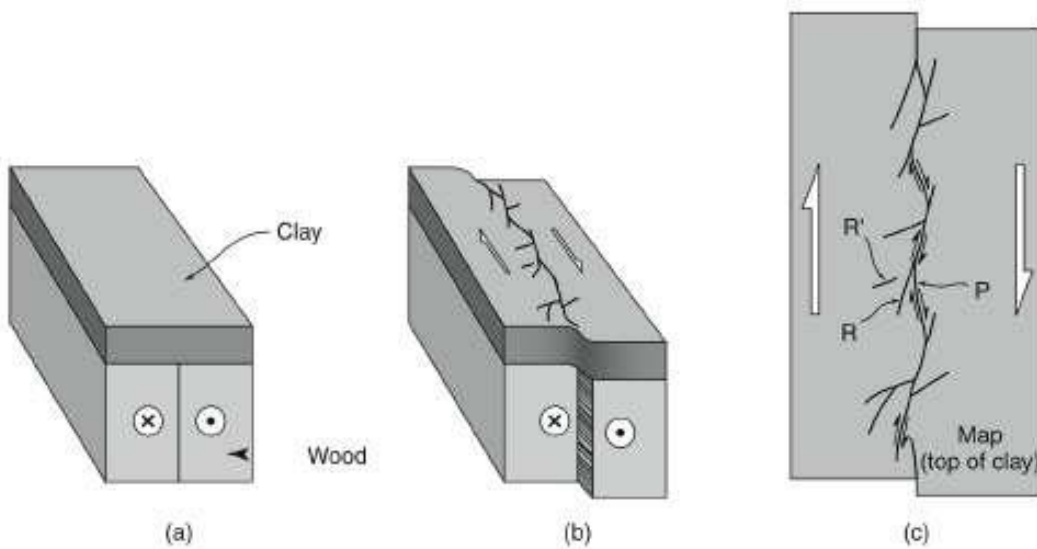


FIGURE 19.14 A laboratory model of strike-slip fault development. [a] Before deformation, a clay cake rests on two wooden blocks that were pressed together. The clay represents the weak uppermost crust, and the wood blocks represent the stronger lower crust. The vertical boundary between the two blocks represents the strike-slip fault. [b] As deformation begins, Riedel shears develop in the clay cake. [c] A map view of the top surface of the clay cake, showing a later stage of deformation, in which Riedel shears have been linked by P fractures. A throughgoing fault has just developed. [d] An example of a clay-cake experiment, this one for left-lateral shear.



FIGURE 19.13 A side-scan radar image from the Darien Basin in eastern Panama showing an array of *en echelon* anticlines whose formation has arched up the land surface, creating a set of ridges. The field of view is about 50 km. Note that the geometry of these structures indicates left-lateral shear.

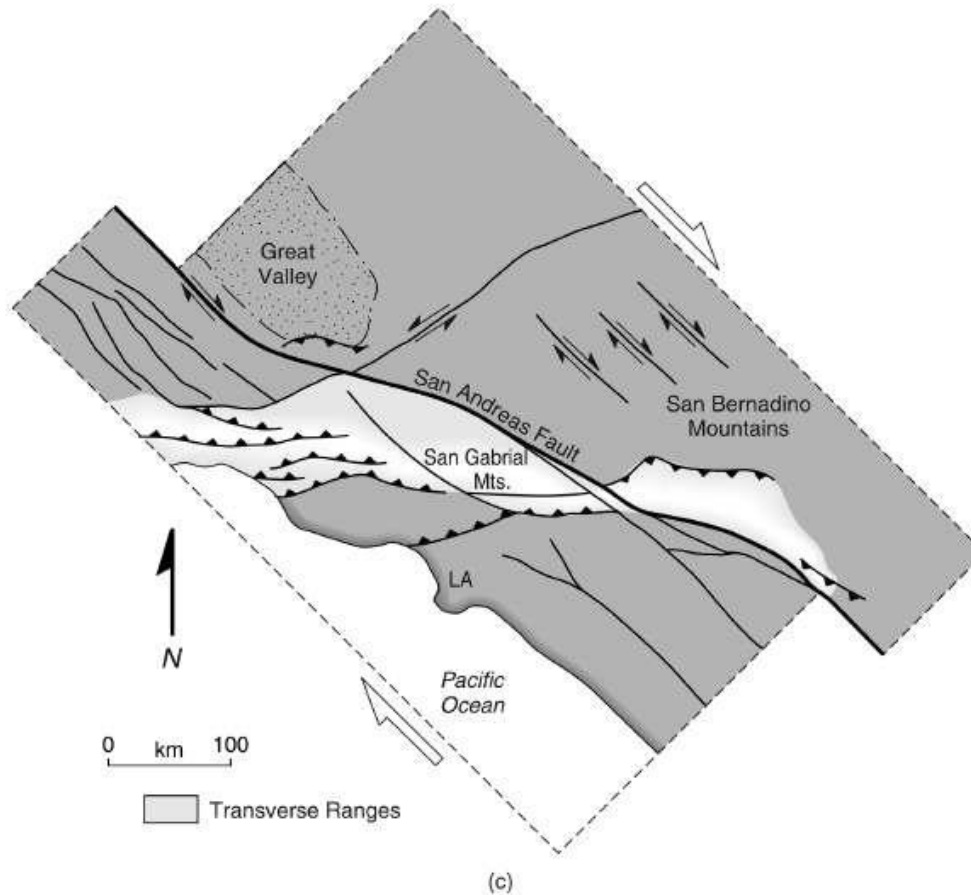
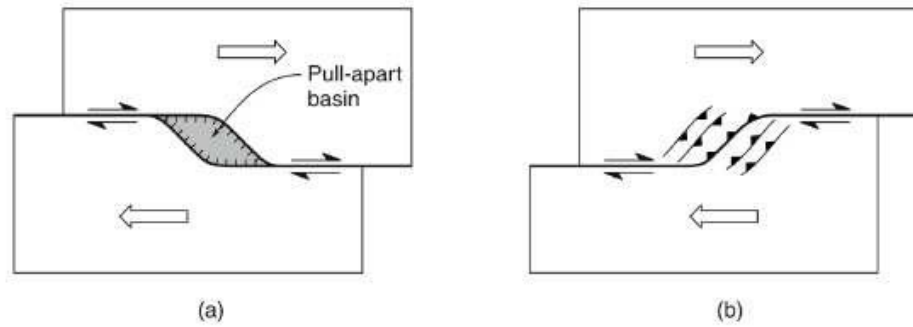
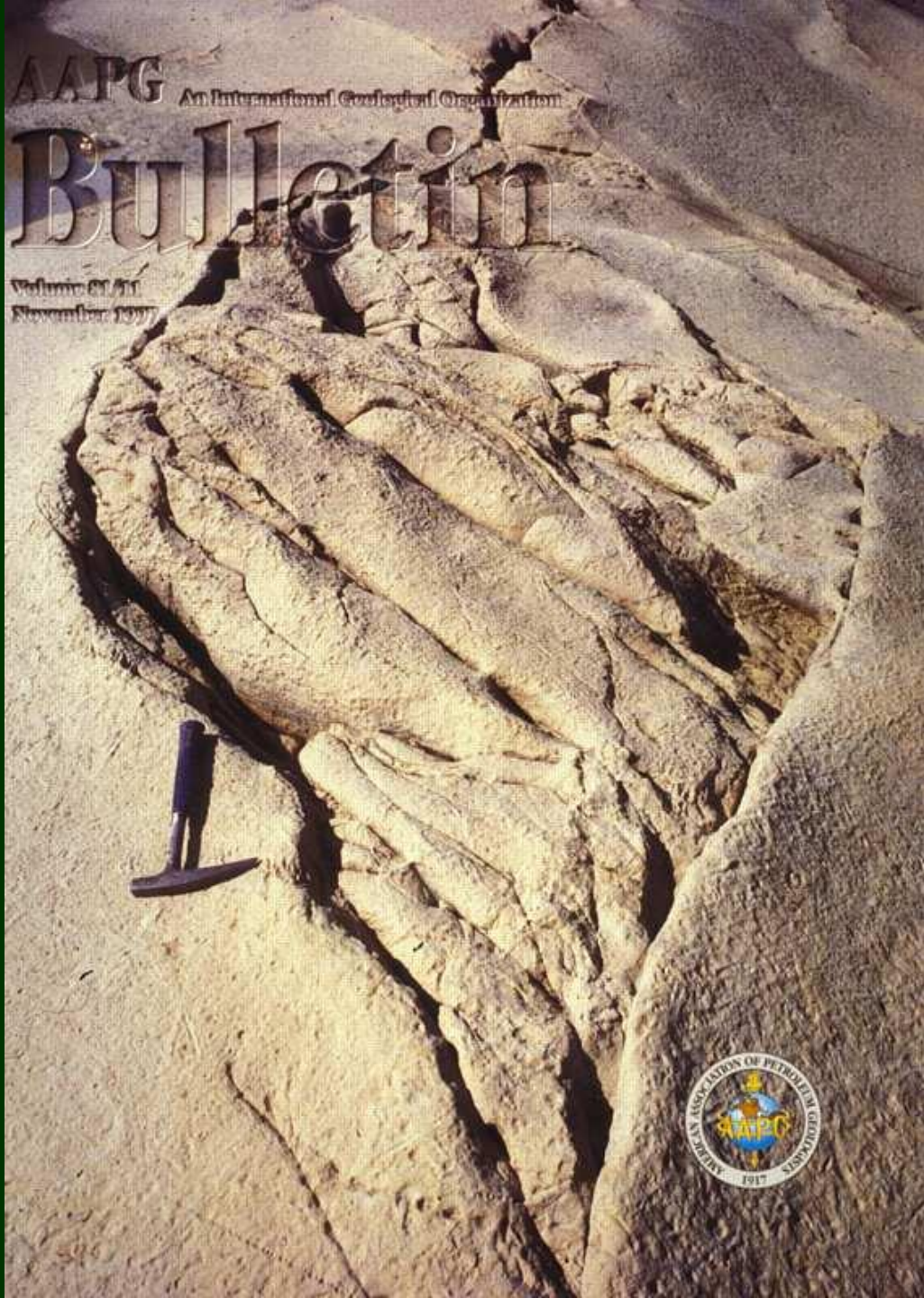


FIGURE 19.20 Map-view models of fault bends along strike-slip faults. The “edges” of the crustal blocks are provided for reference. [a] Releasing bend at which normal faults and a pull-apart basin have formed. [b] Restraining bend at which thrust faults have formed. [c] Application of this model to the San Andreas Fault north of Los Angeles [LA]. The dashed lines outline imaginary reference blocks. The San Andreas Fault bends along the margin of the Mojave Desert.

AAPG An International Geological Organization

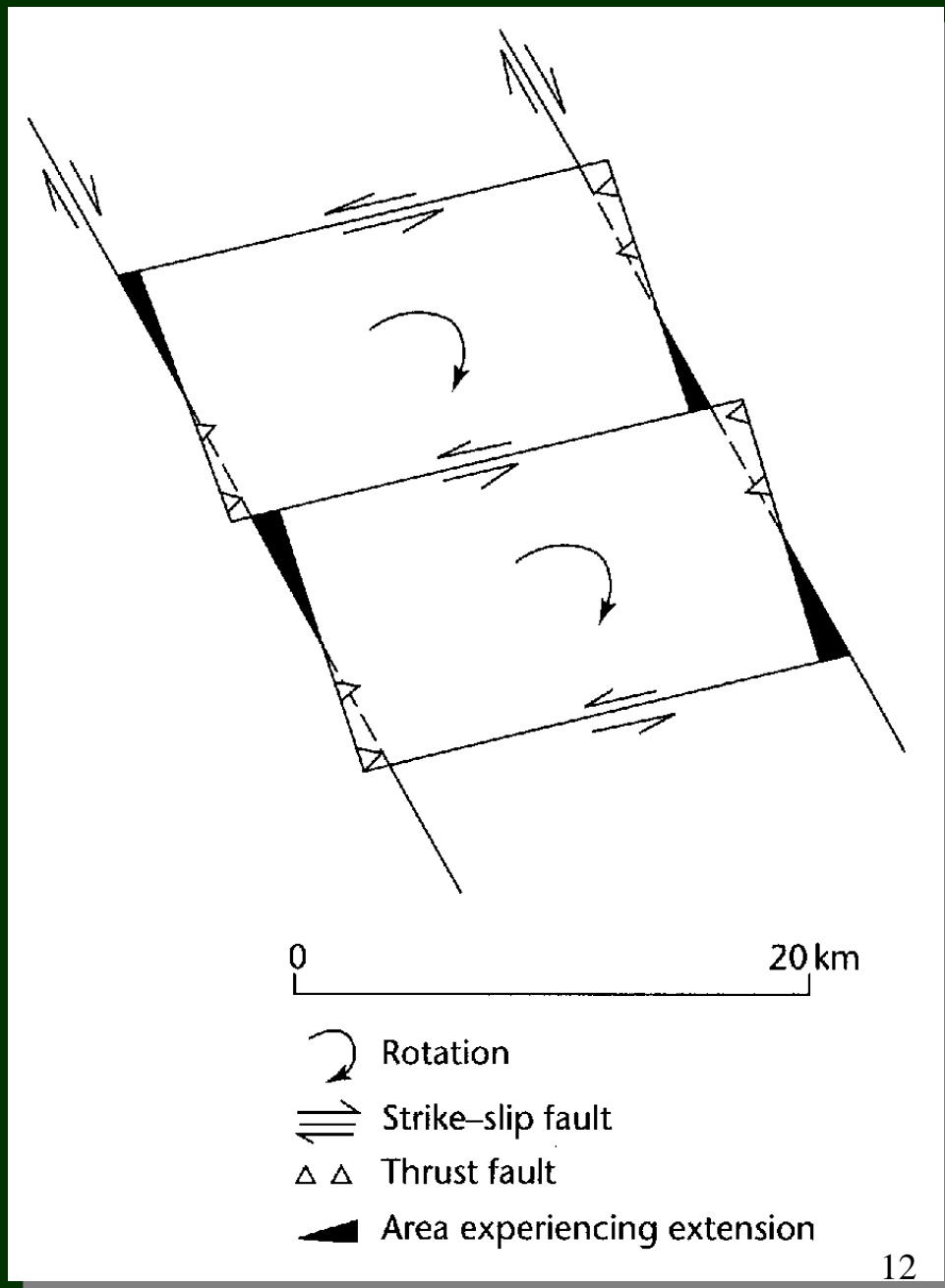
Bulletin

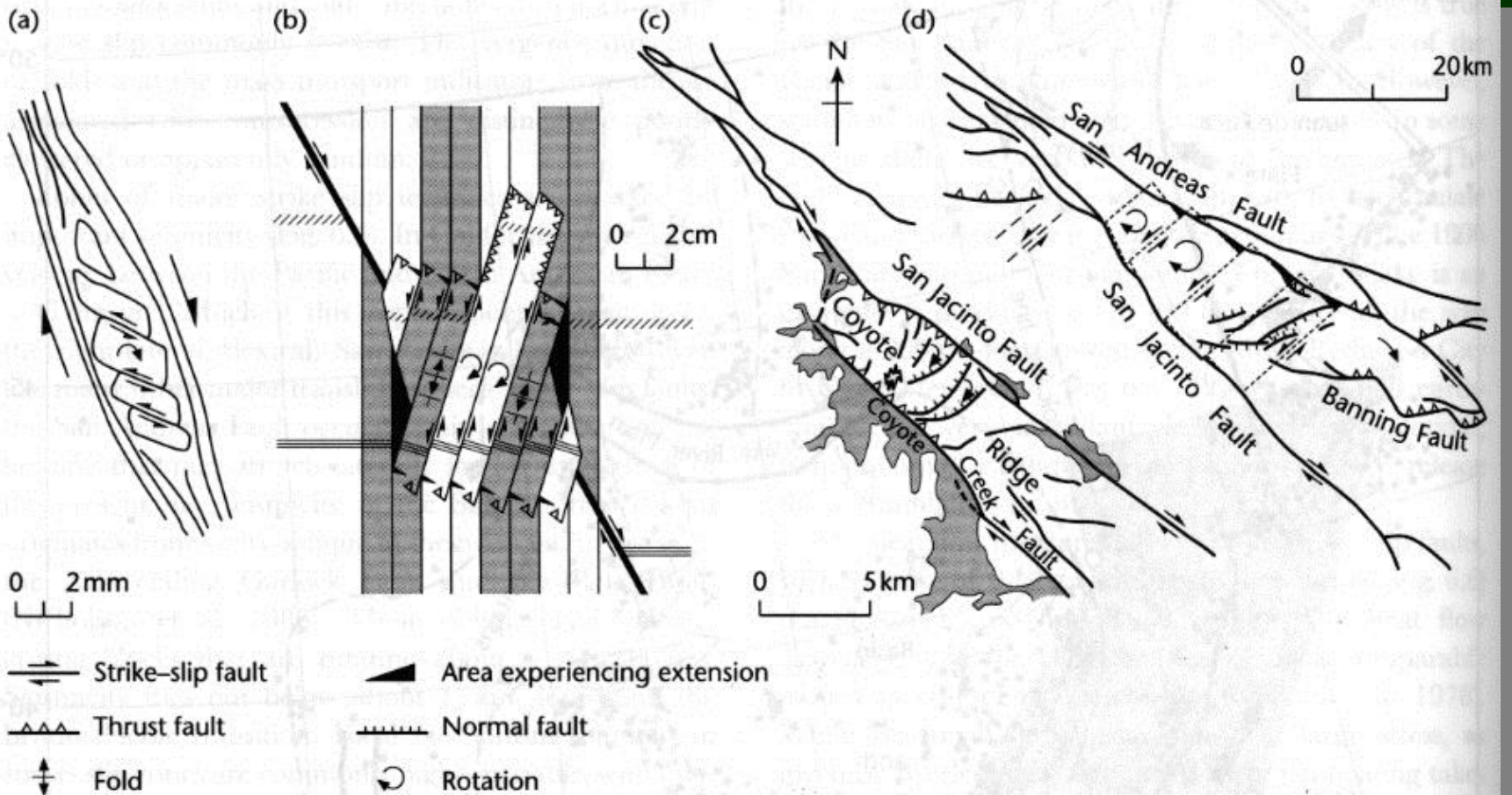
Volume 61/51
November 1997



SS ZLOMY A ROTACE BLOKŮ:

- Rotace kolem subvertikálních os
- Otvírání trojúhelníkových depocenter
- Vznik vrás paralelních s kratší osou def. elipsy
- Vysoké rychlosti rotace
(Imperial Valley Area $35^{\circ}/0,9\text{My}$)





FAKTORY OVLIVŇUJÍCÍ STRUKTURY PDZ:

□ Kinematika (konvergentní, divergentní, čistý stříh)

konvergence ⇒ **transprese** - převažují reverzní zlomy a vrásy ⇒ "pozitivní kytky"

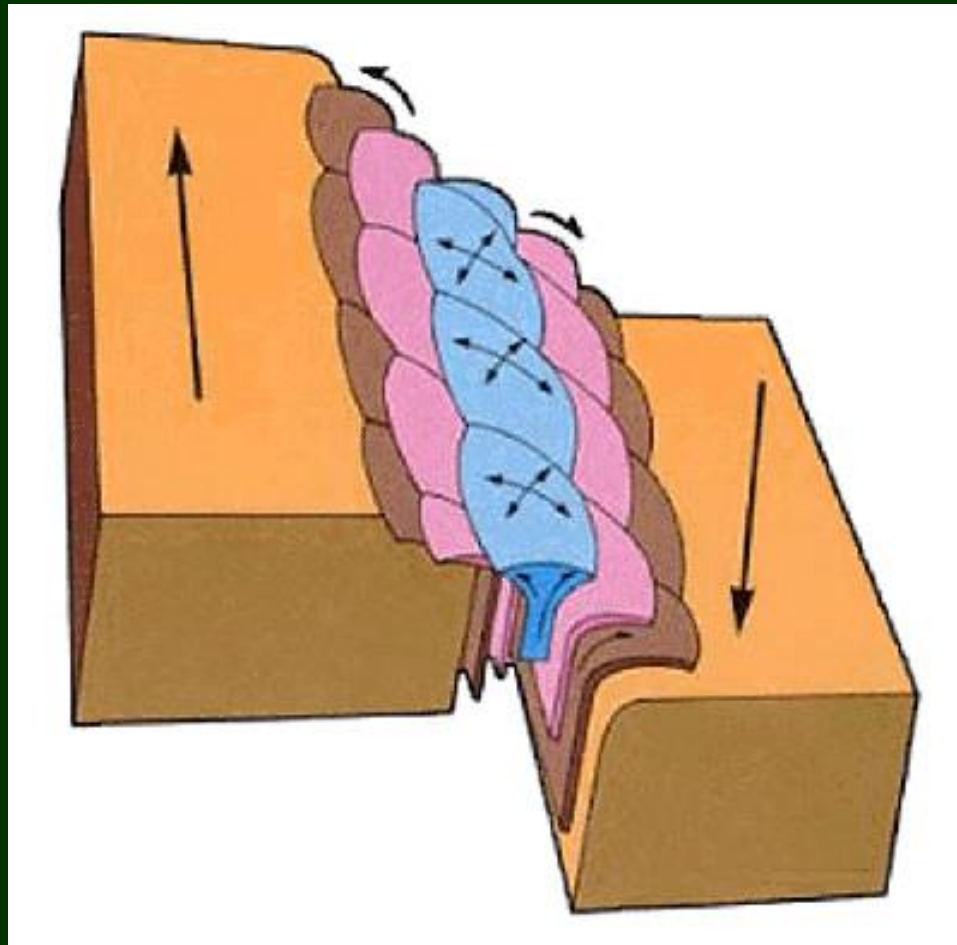
divergence ⇒ **transtenze** - převažují poklesové zlomy ⇒ "negativní kytky"

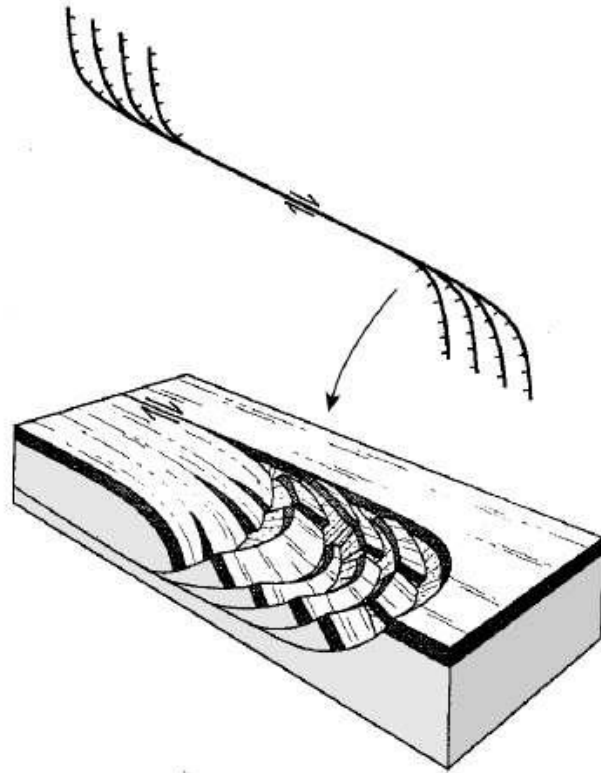
- flexury jsou vázány jen na extenzní zlomy

□ Velikost pohybu (přemístění) - deformaci postupně přejímá hlavní zlom

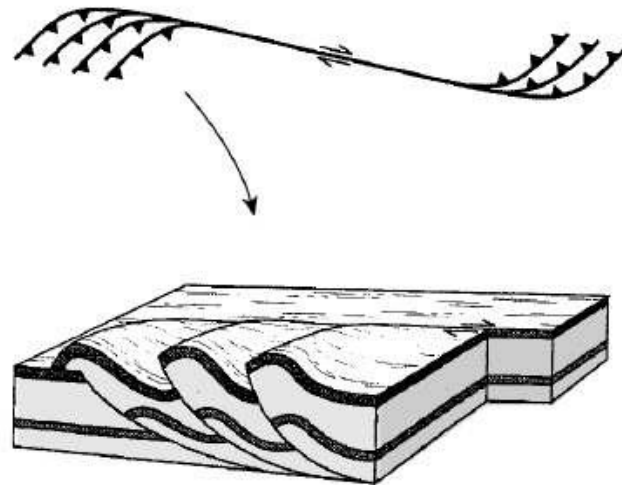
□ Materiálové vlastnosti deformovaných hornin a sedimentární výplně

□ Geologická stavba území (konfigurace stávajících struktur)





(a)



(b)

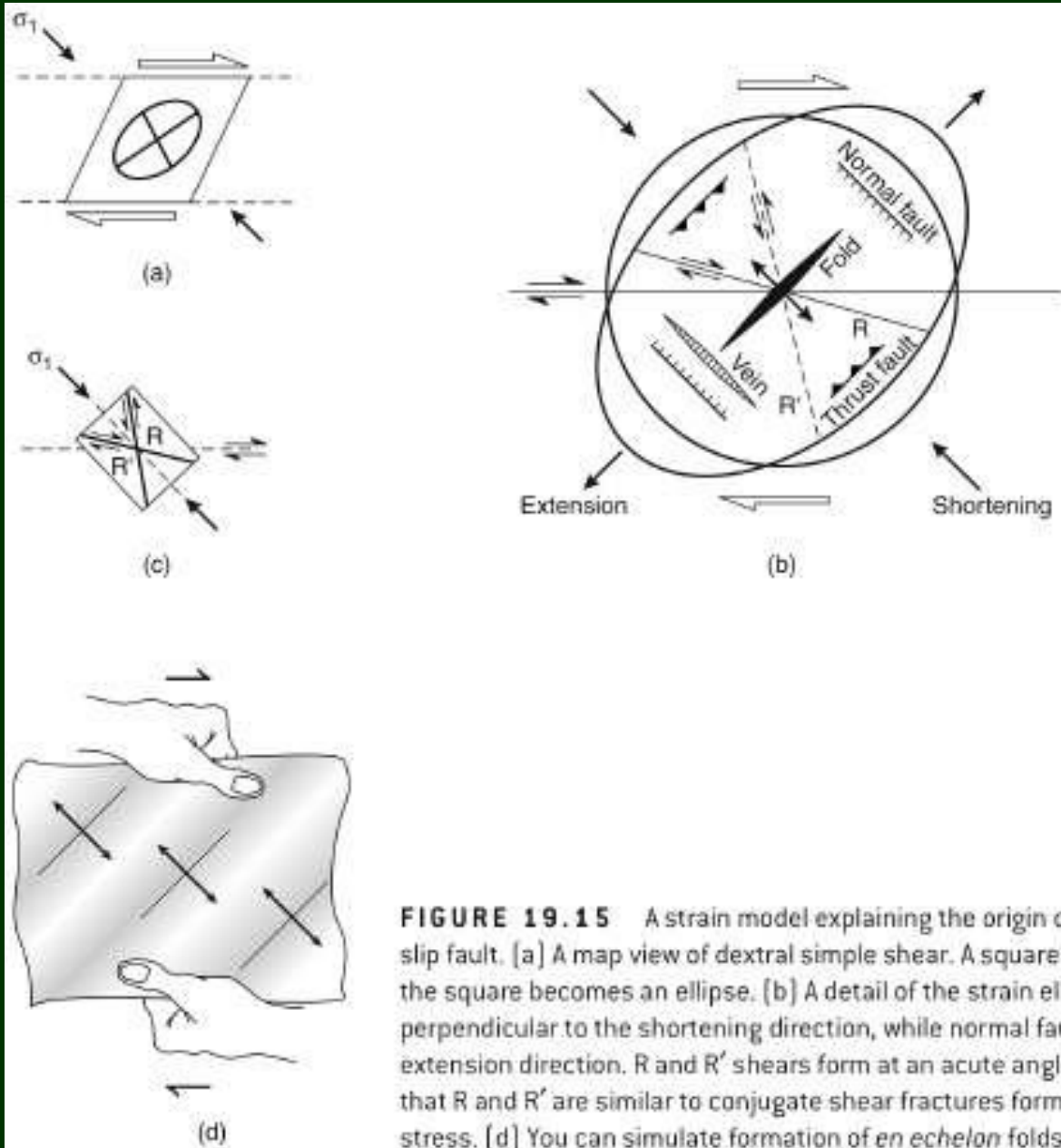


FIGURE 19.15 A strain model explaining the origin of subsidiary structures along a strike-slip fault. [a] A map view of dextral simple shear. A square becomes a parallelogram, and a circle in the square becomes an ellipse. [b] A detail of the strain ellipse showing that folds and thrusts form perpendicular to the shortening direction, while normal faults and veins form perpendicular to the extension direction. R and R' shears form at an acute angle to the shortening direction. [c] Note that R and R' are similar to conjugate shear fractures formed in rock cylinder subjected to an axial stress. [d] You can simulate formation of *en echelon* folds with a sheet of paper.

VZNIK

SS

PÁNVÍ



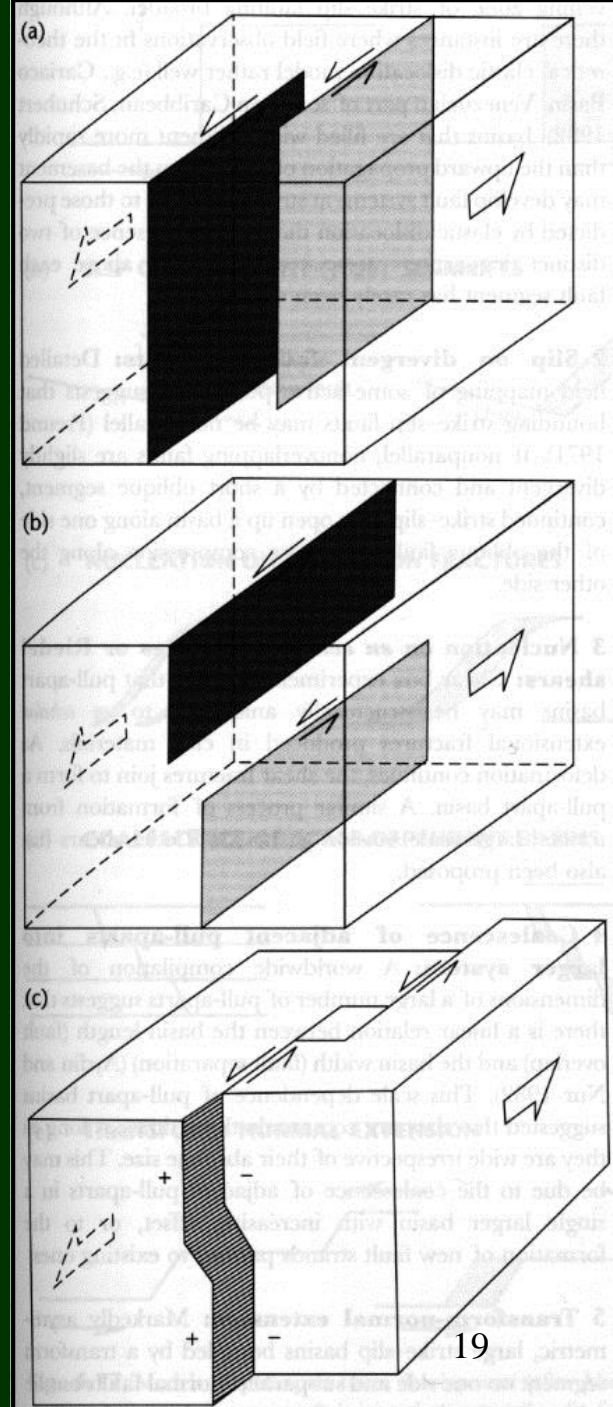
overstep = stepover

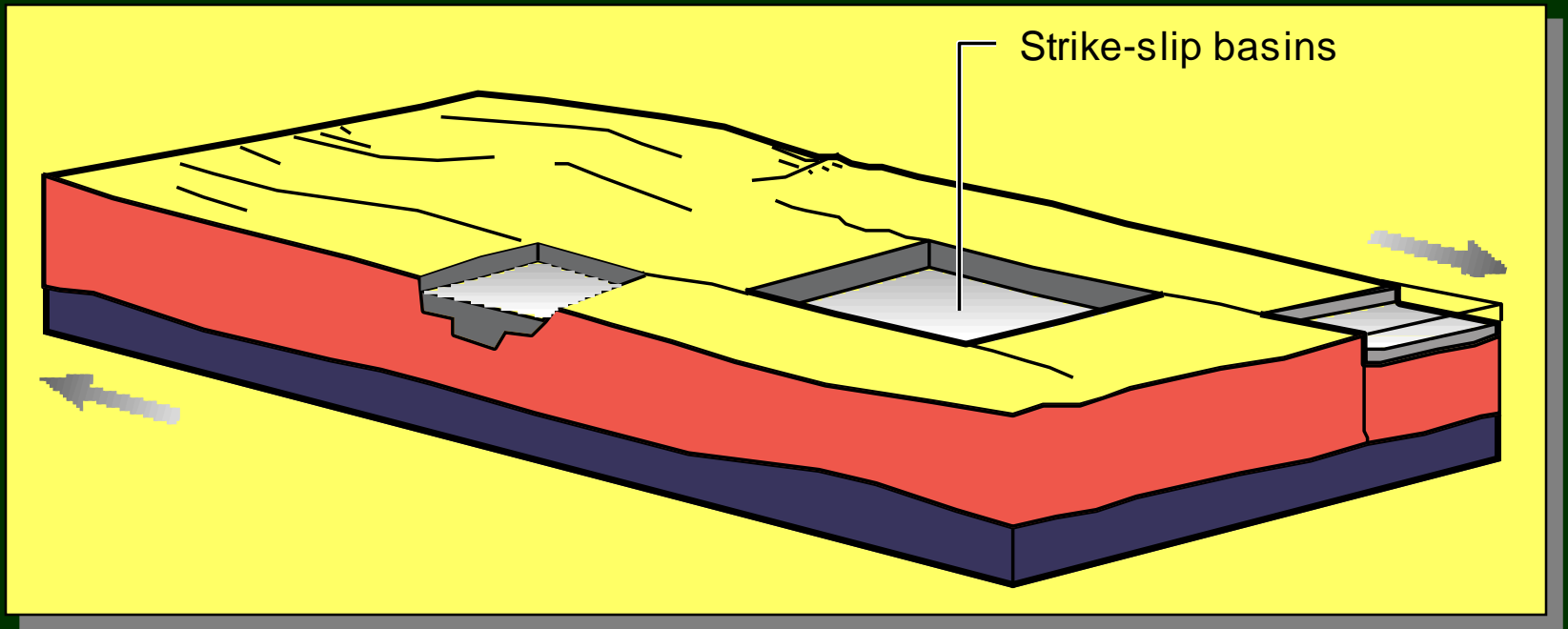
- strukturní diskontinuita mezi dvěma překrývajícími
paralelními nebo subparalelními se ss zlomy.

podle smyslu overstepu ⇒ extenze nebo komprese

⇒ *pull-apart basin*

⇒ *push-up range*





DĚLENÍ SS PÁNVÍ PODLE KINEMATIKY:

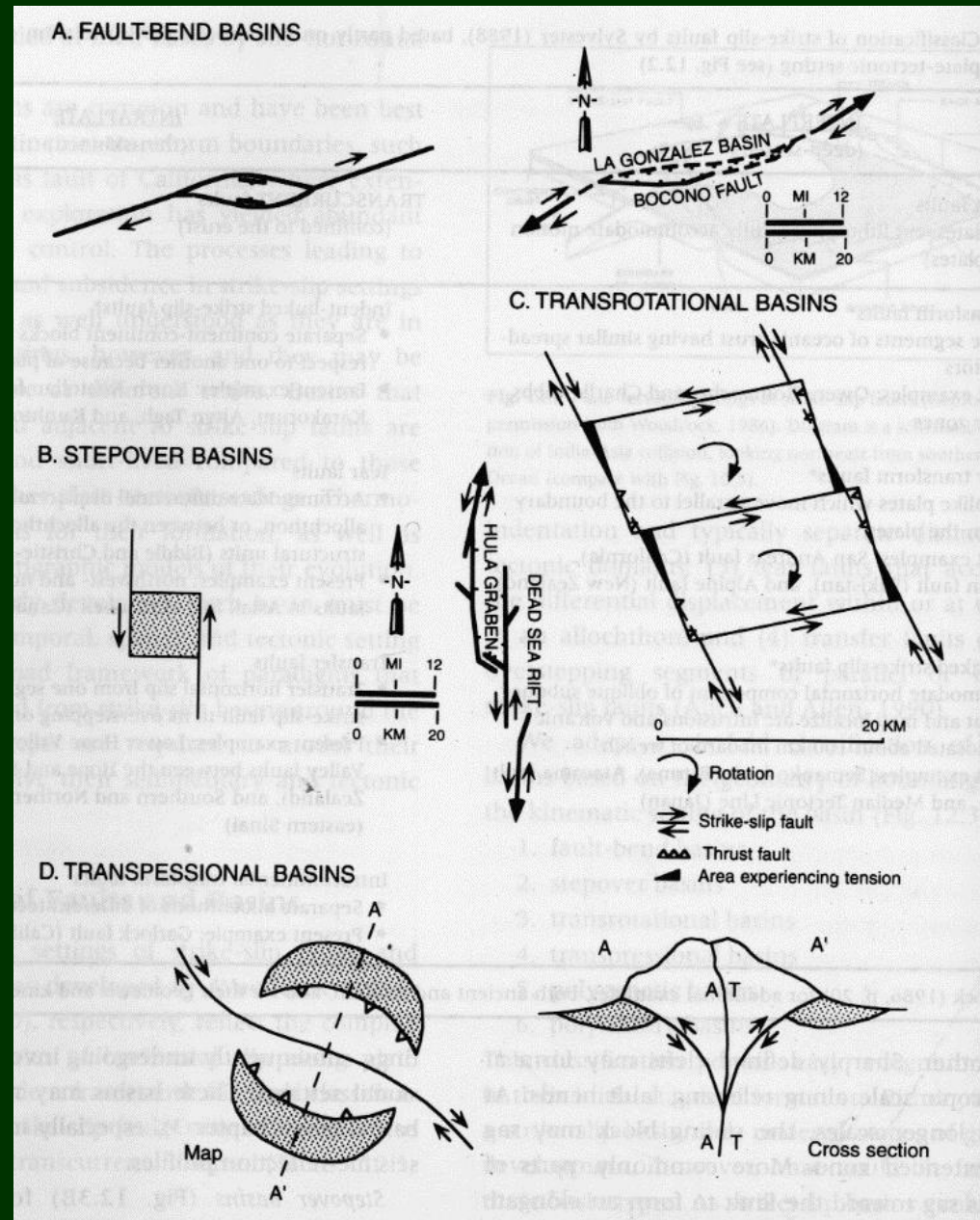
❑ **Fault-band pánve** - oblast lokální extenze v místě ohybu ss zlomu
(*California San Andreas Systém*)

❑ **Overstep pánve** - extenze v místě "overstepu" (*Dead Sea*)

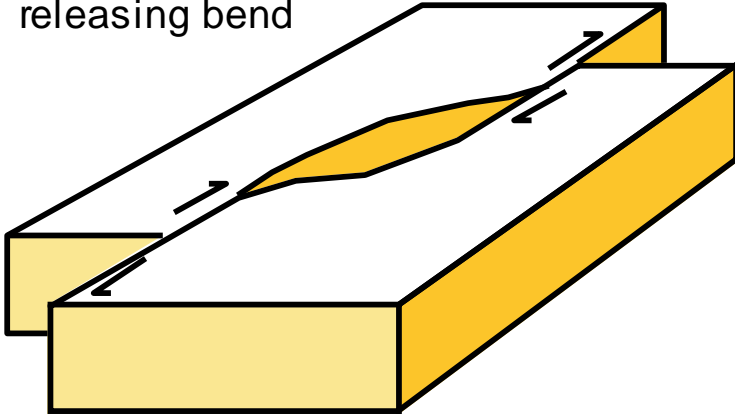
❑ **Transrotační pánve** - otevírání sed. prostoru díky rotaci bloků mezi dvěma ss zlomy (*Los Angeles Basin*)

❑ **Transpresní pánve** - protáhlé deprese, paralelní se směrem vrás a zlomů v zónách šikmé konvergence

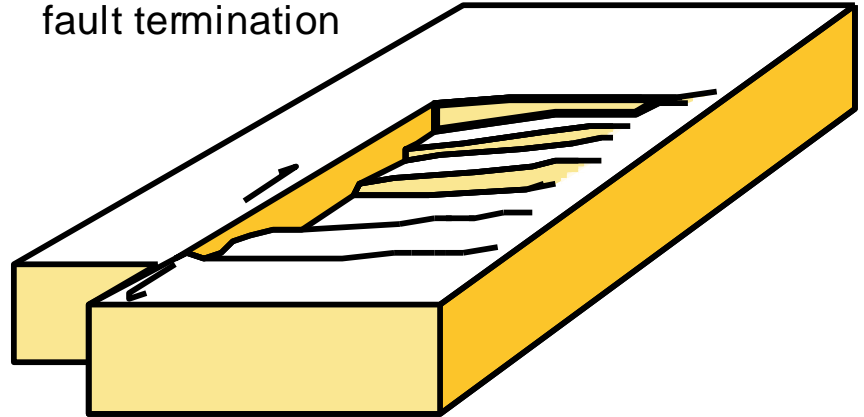
⇒ subsidence souvisí s **flexurou**



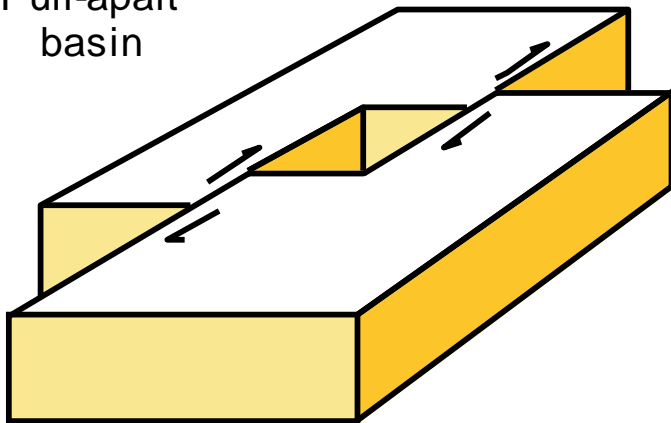
Basin formed at releasing bend



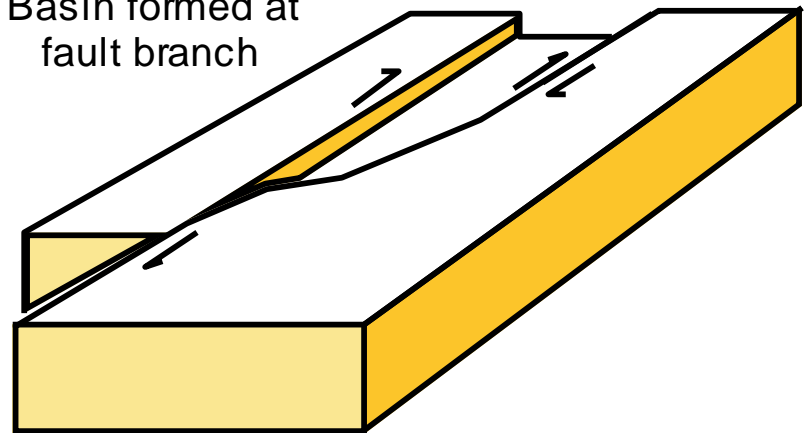
Basin formed at fault termination



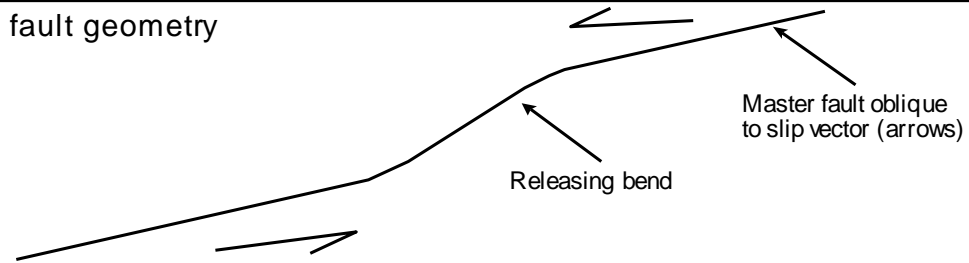
Pull-apart basin



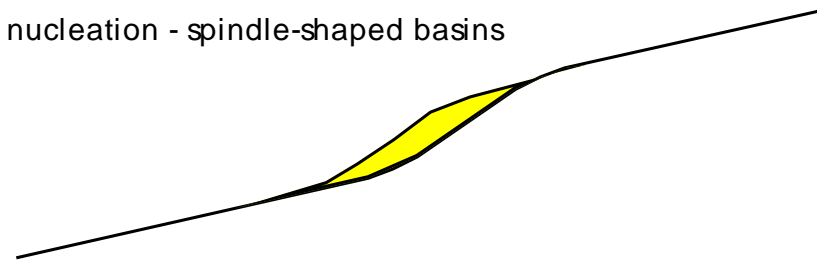
Basin formed at fault branch



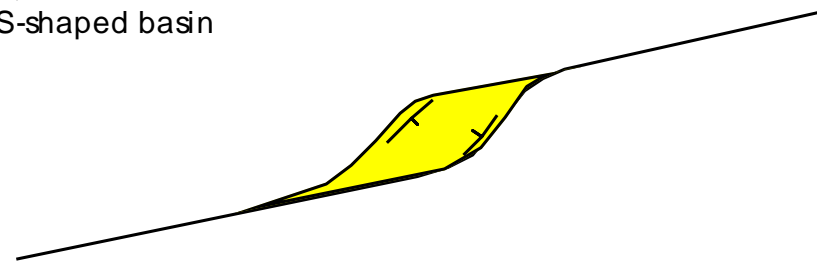
A) Initial fault geometry



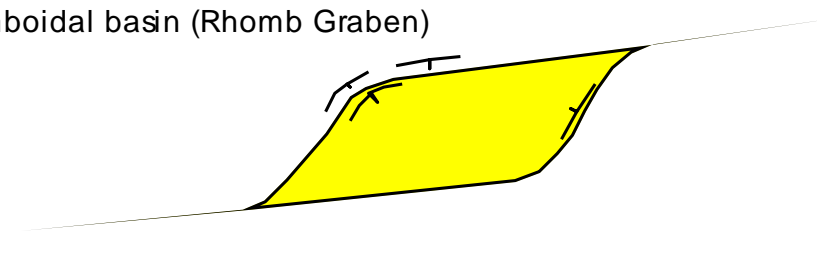
B) Basin nucleation - spindle-shaped basins



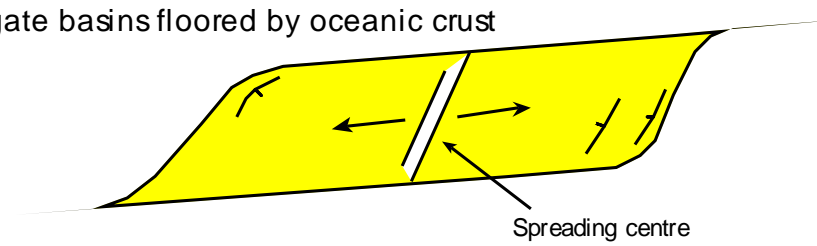
C) Lazy S-shaped basin

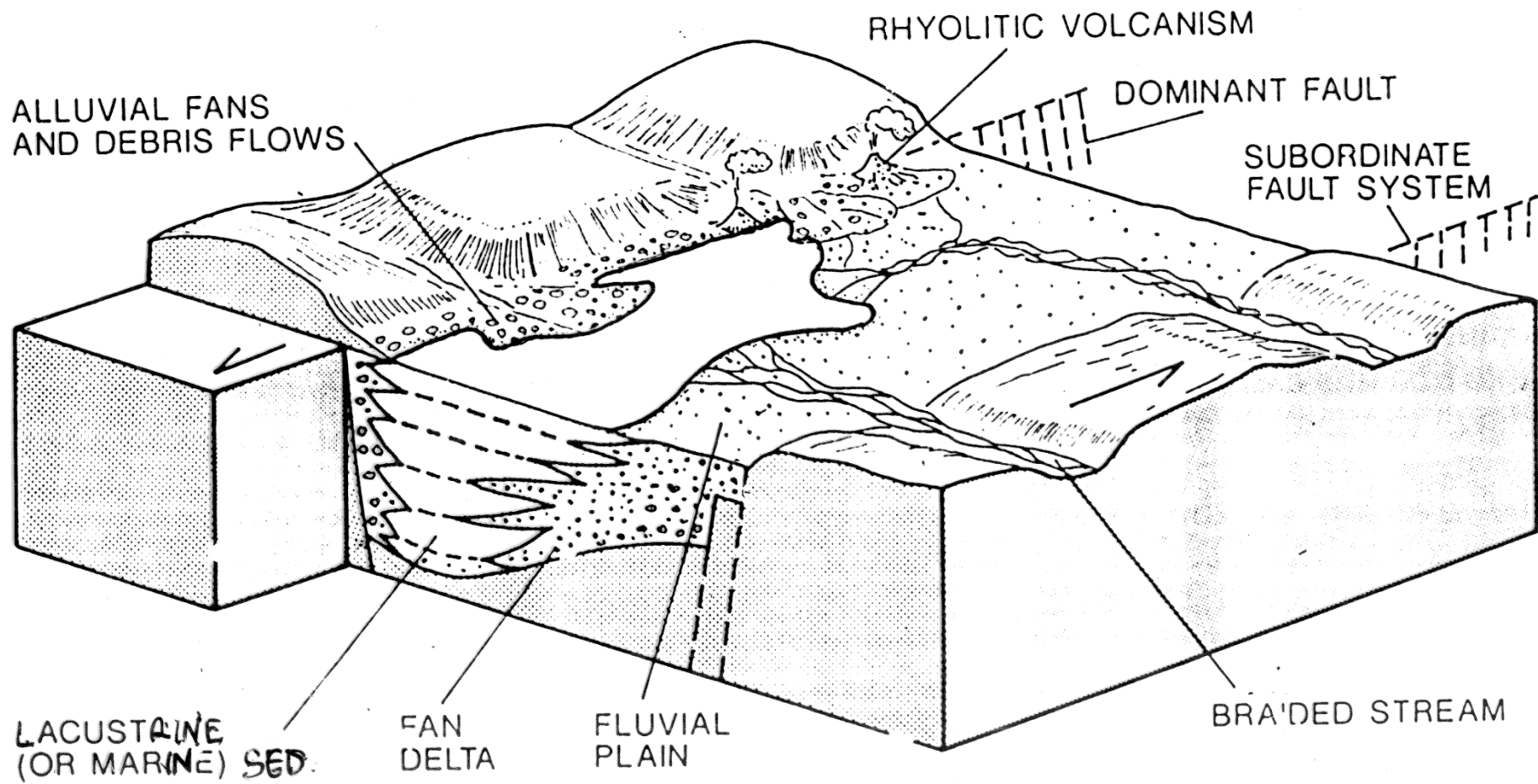


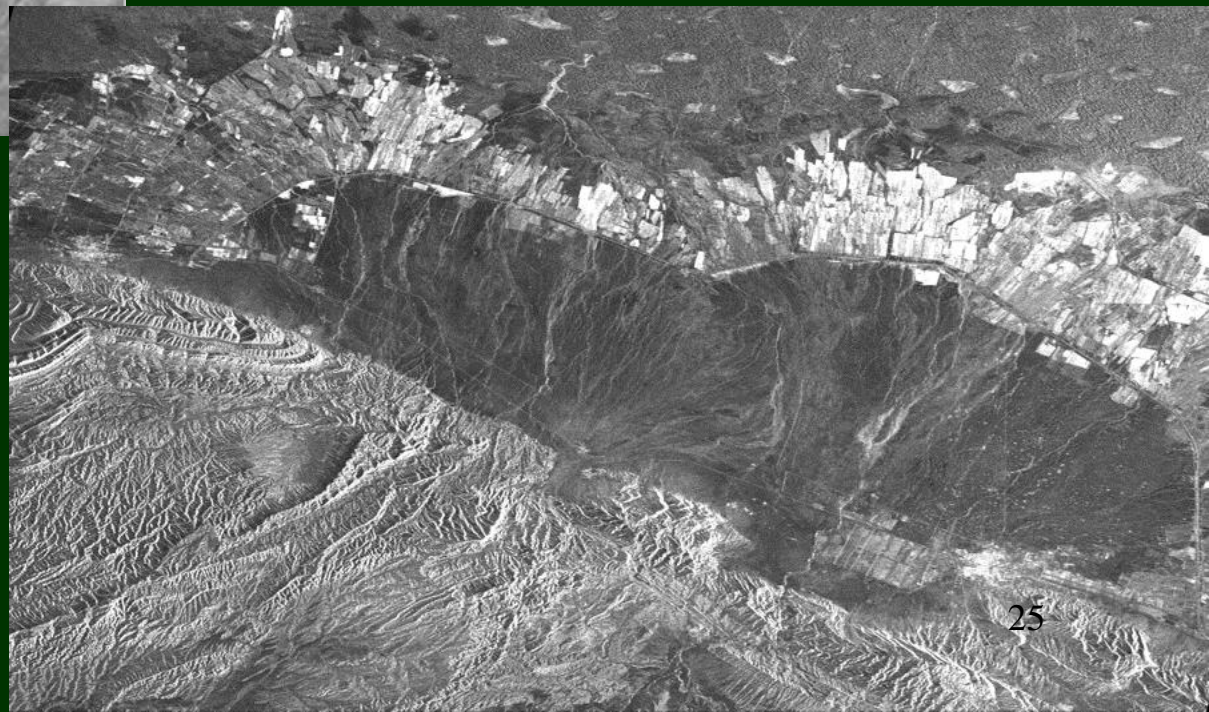
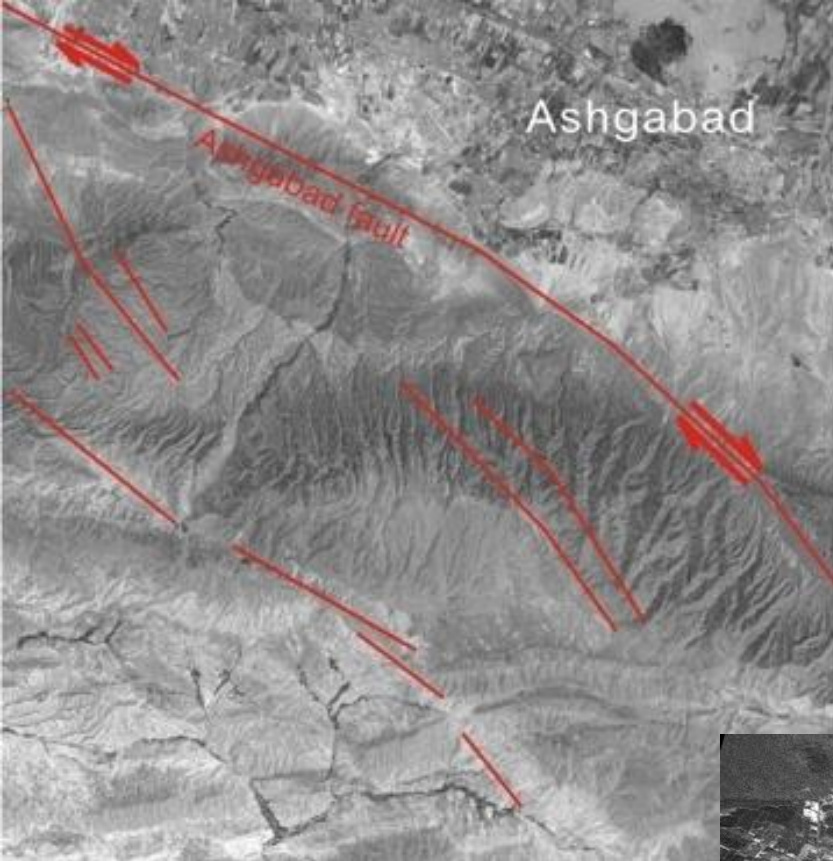
D) Rhomboidal basin (Rhomb Graben)

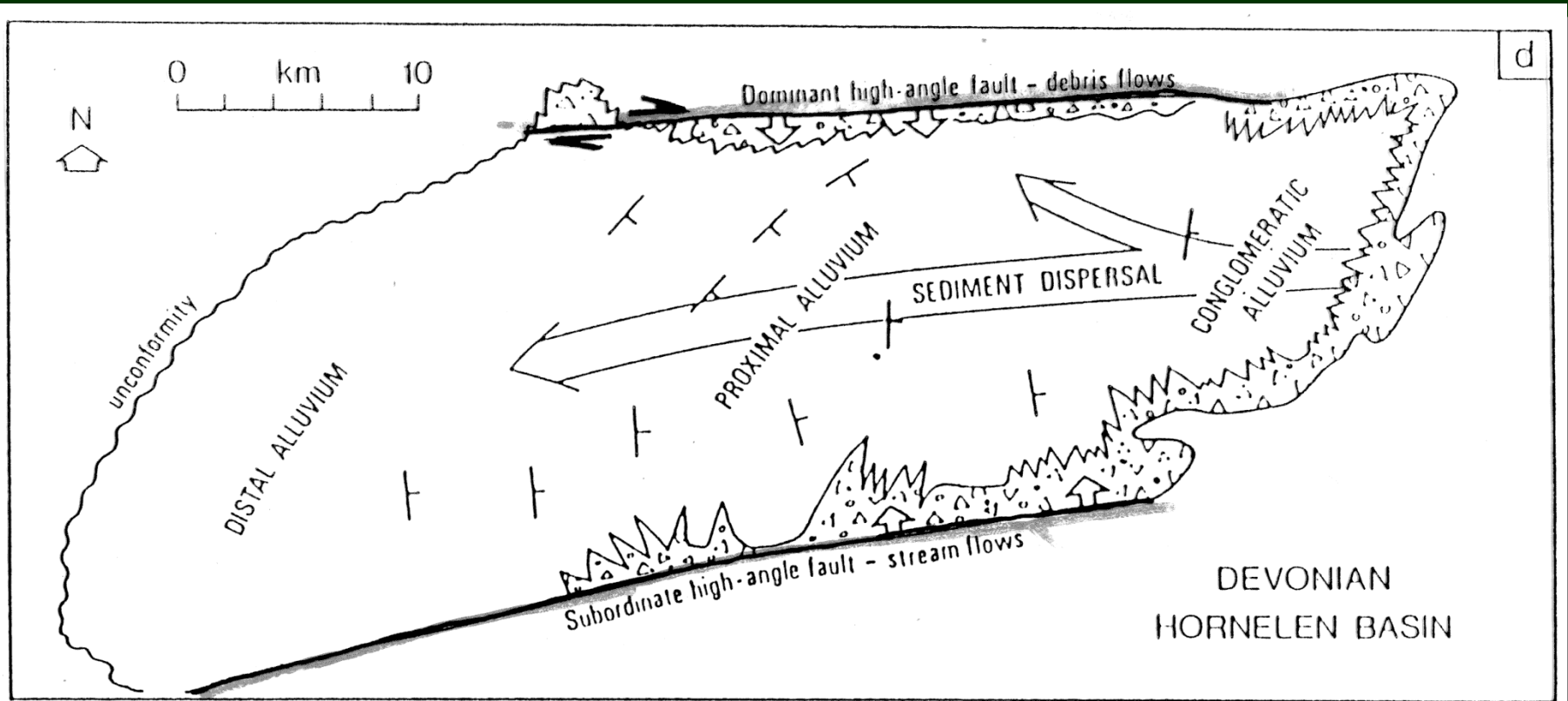


E) Elongate basins floored by oceanic crust

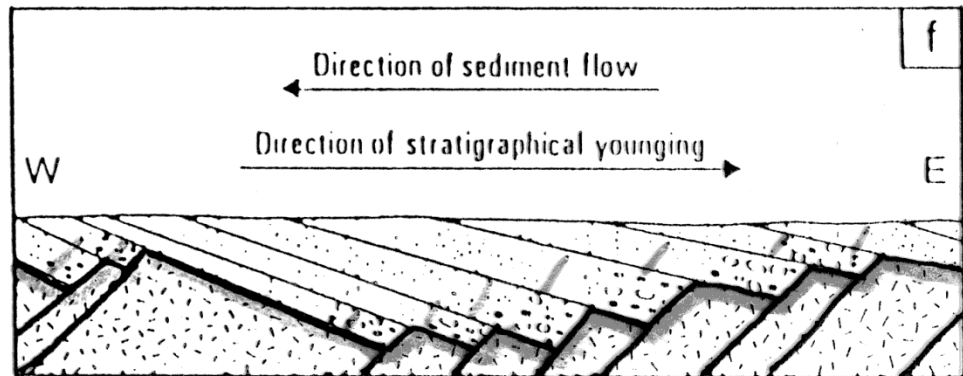
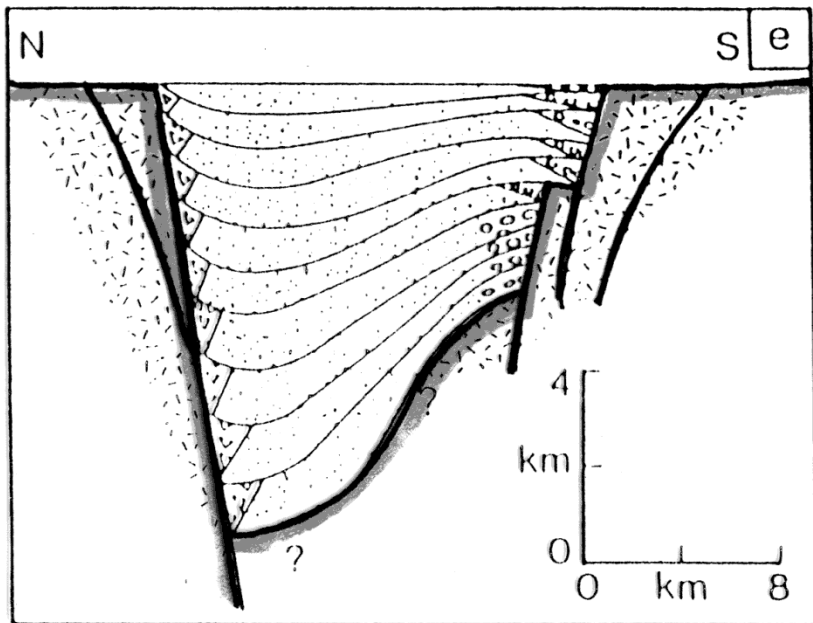


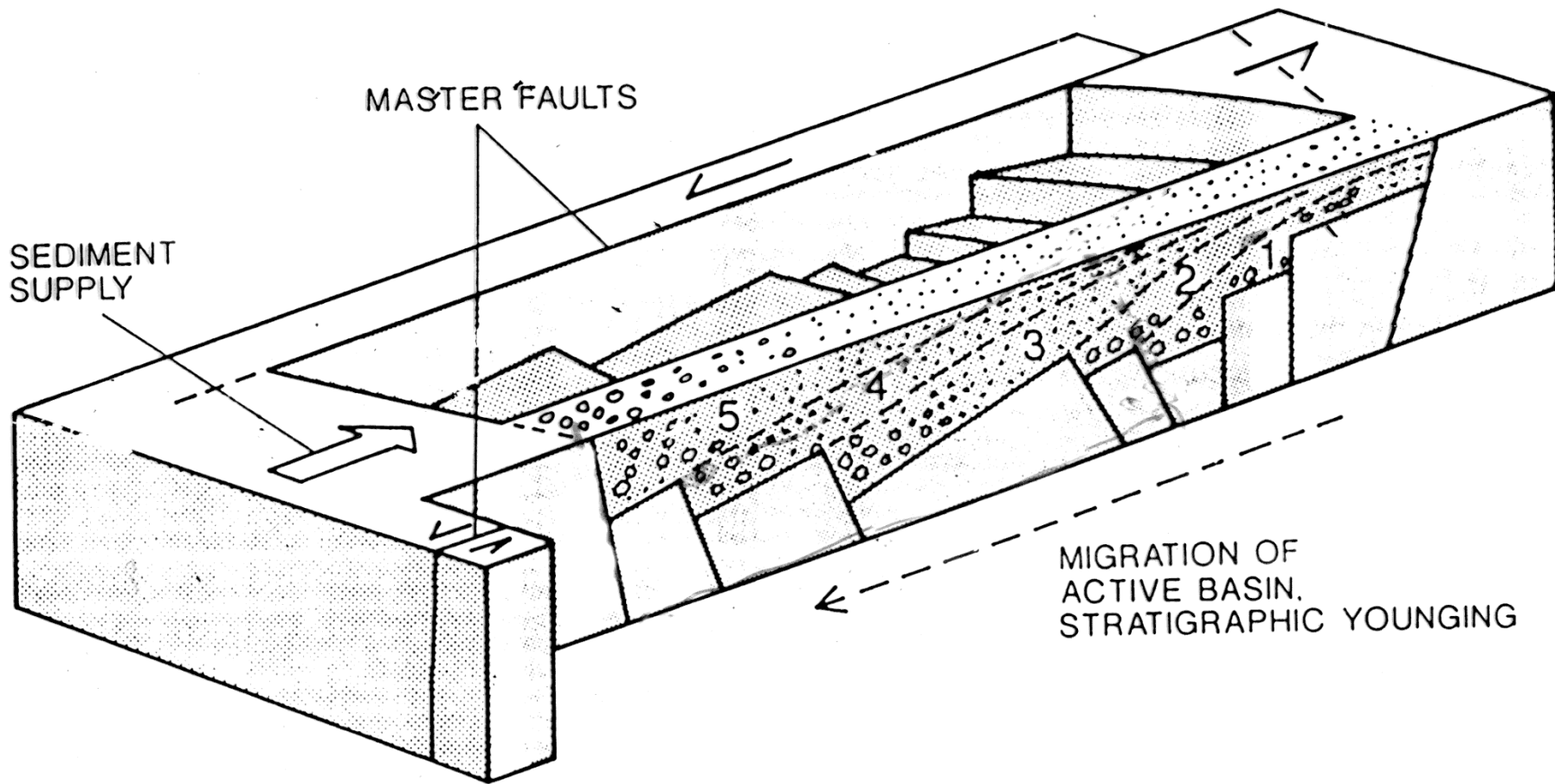




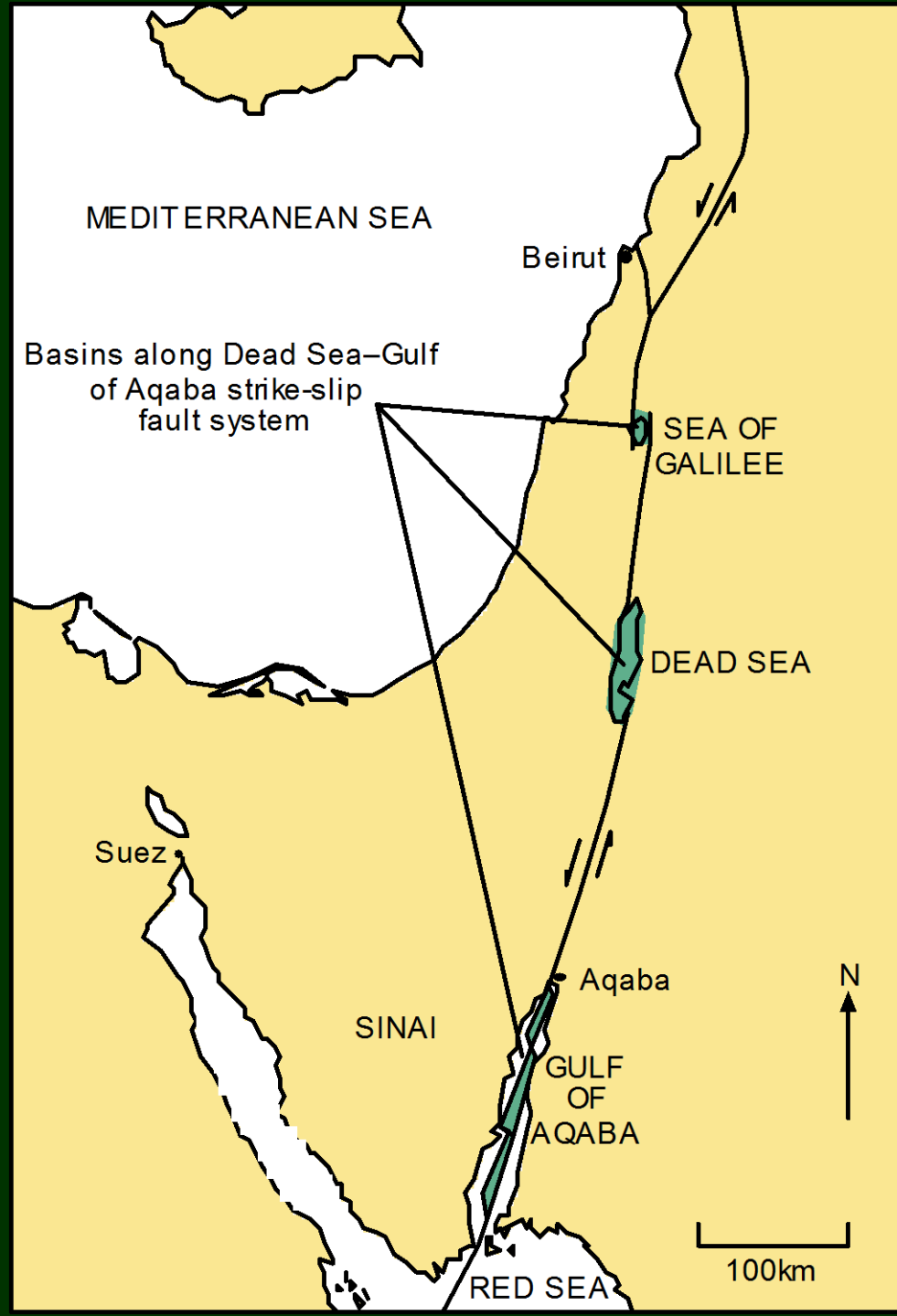


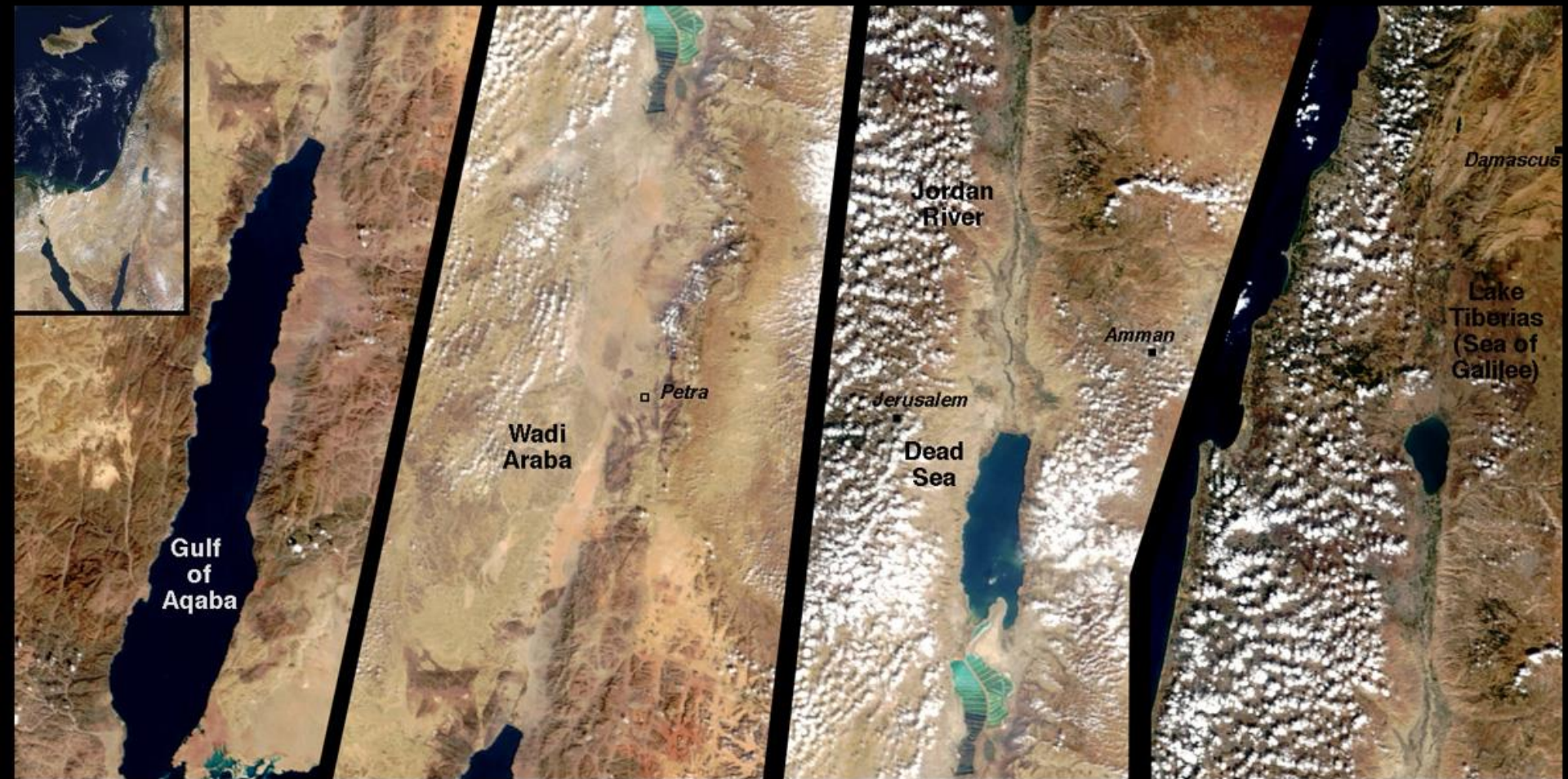




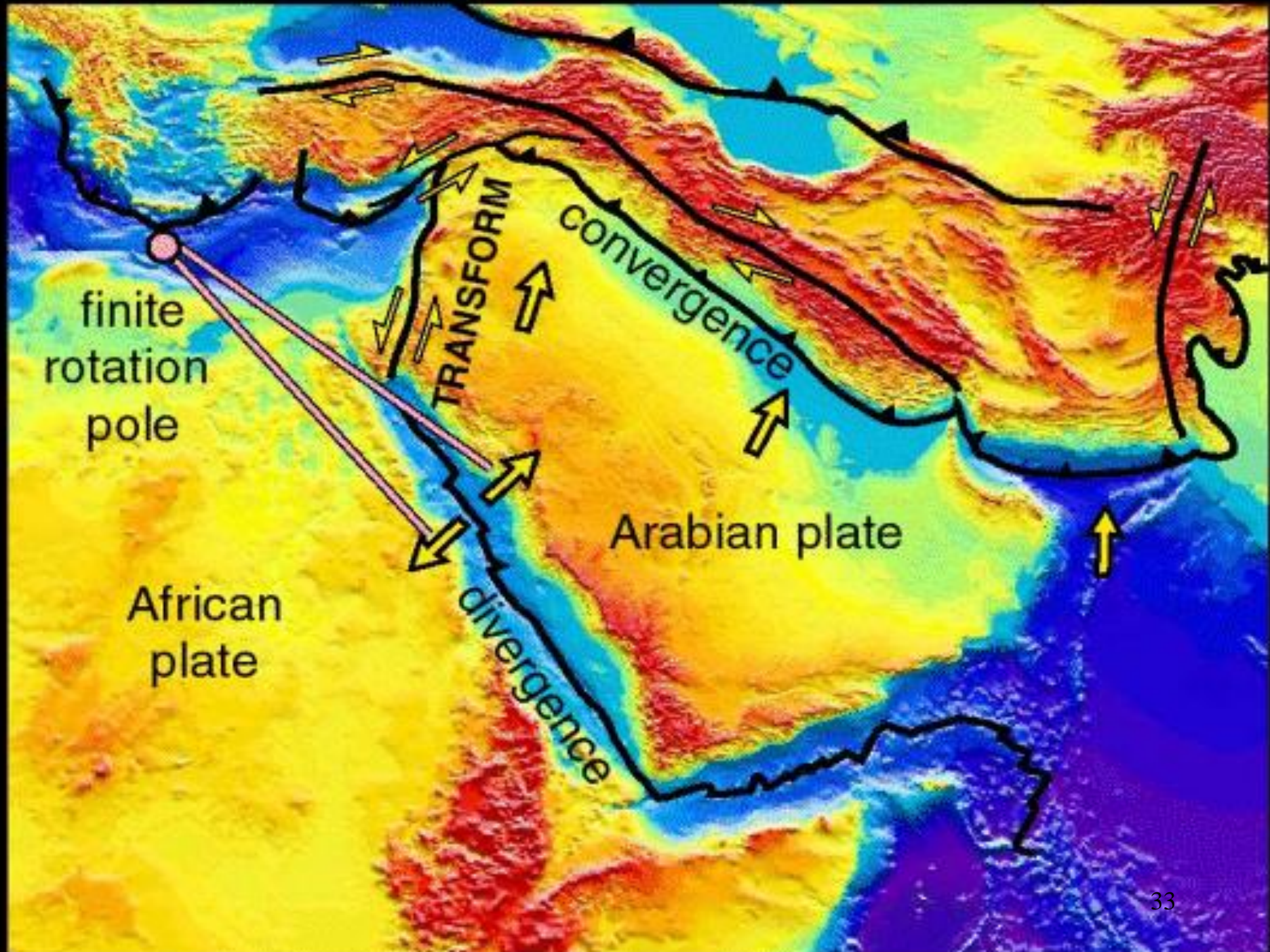


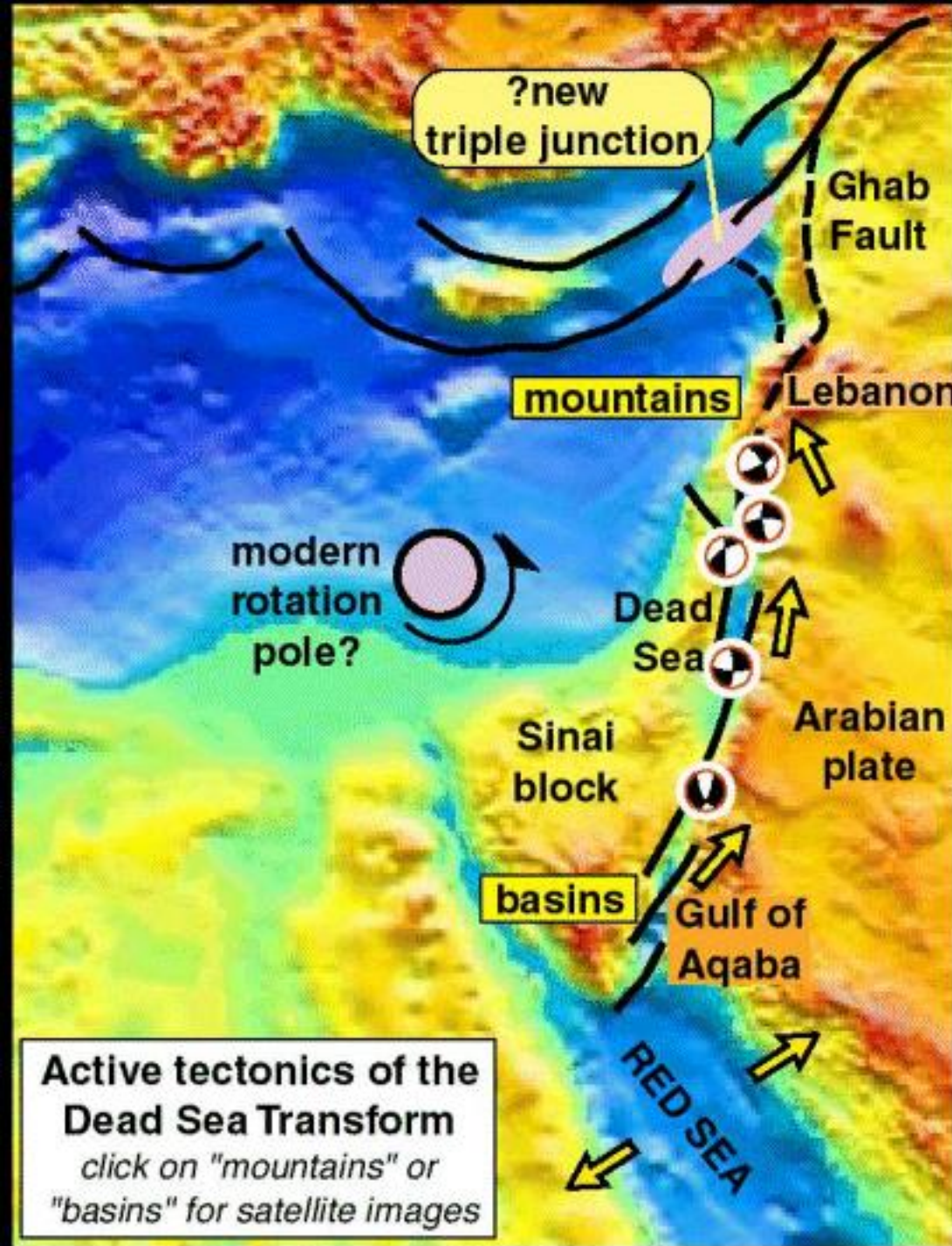


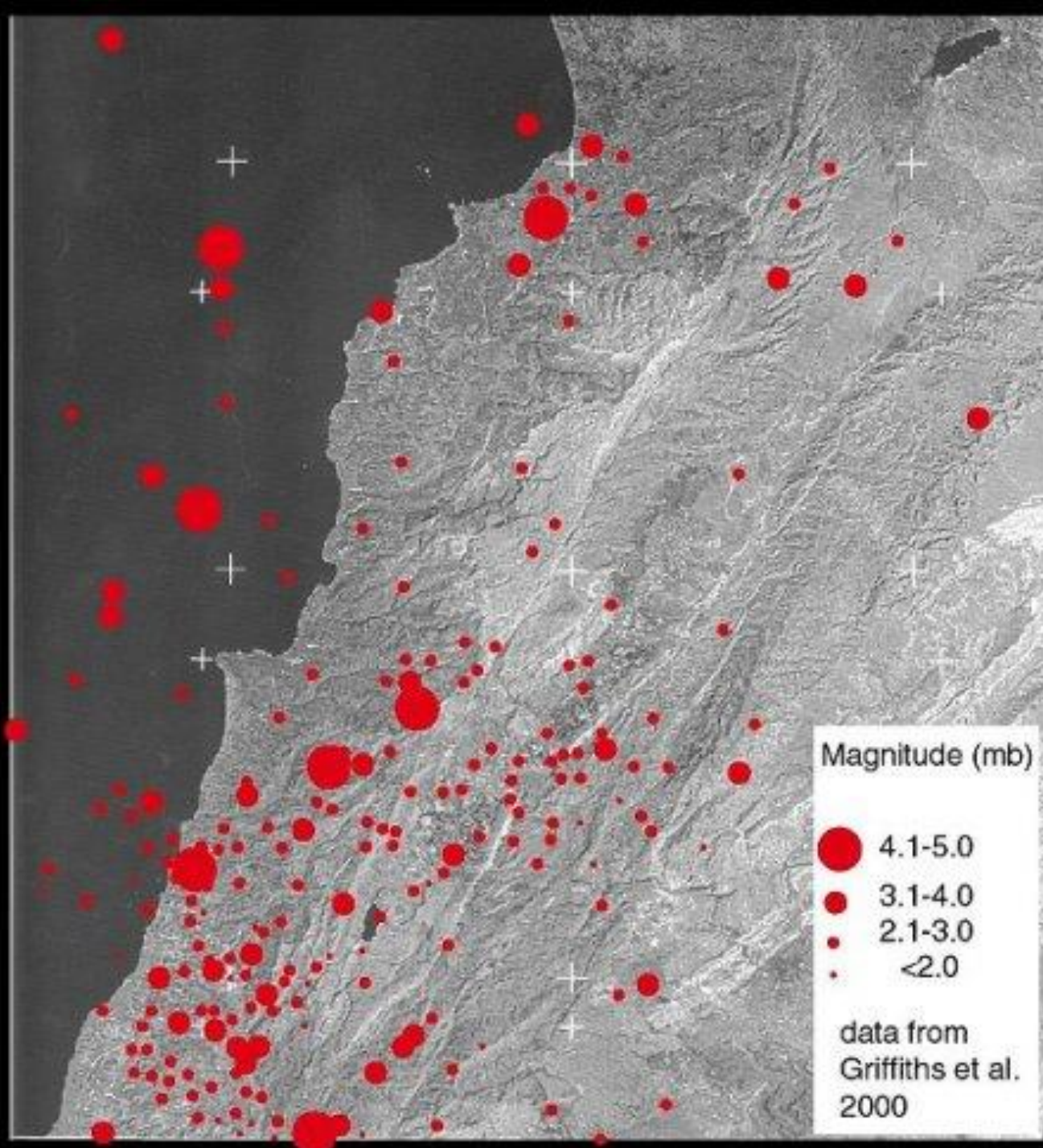




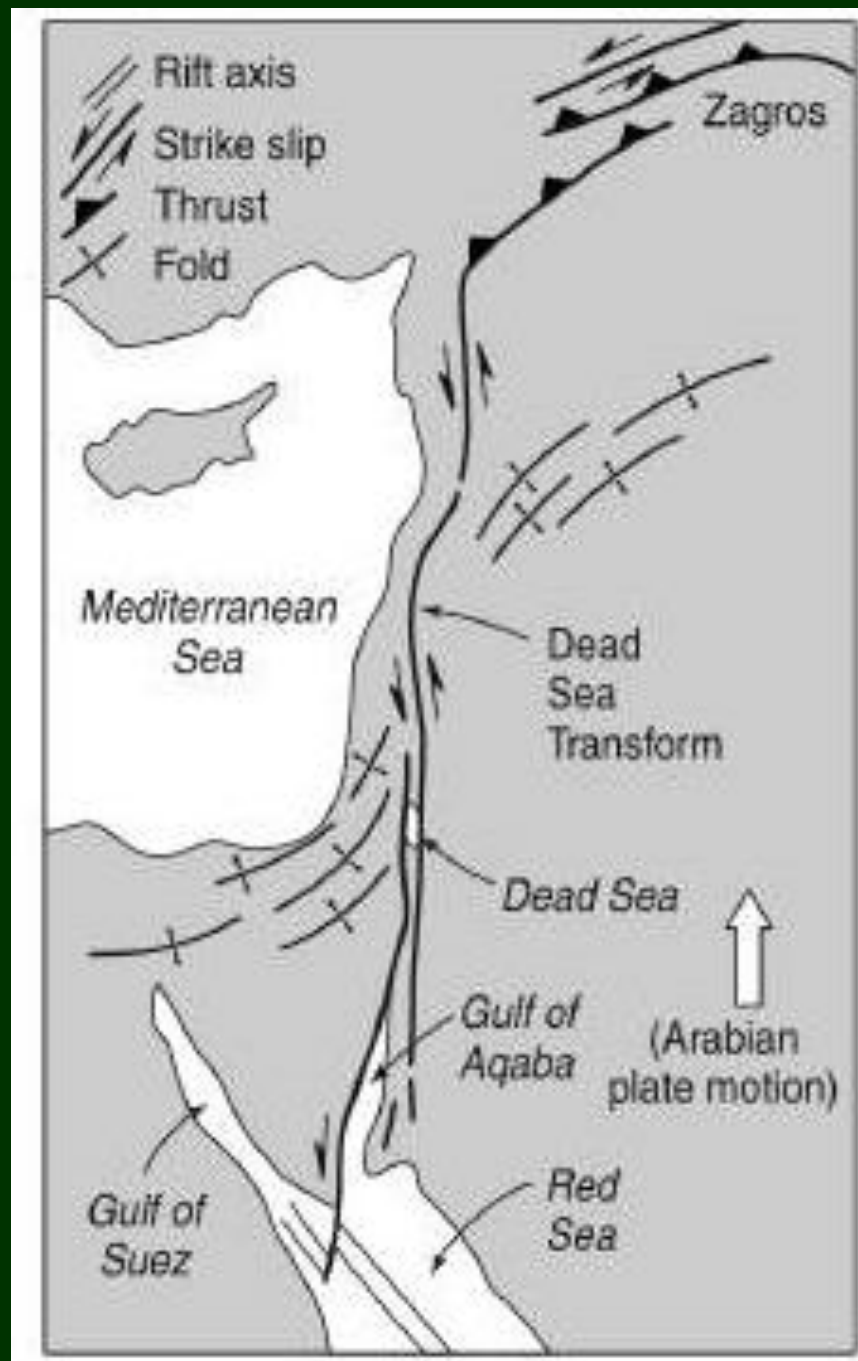
Terra MODIS true-color image acquired November 1, 2002. (MIOD November 6, 2002)

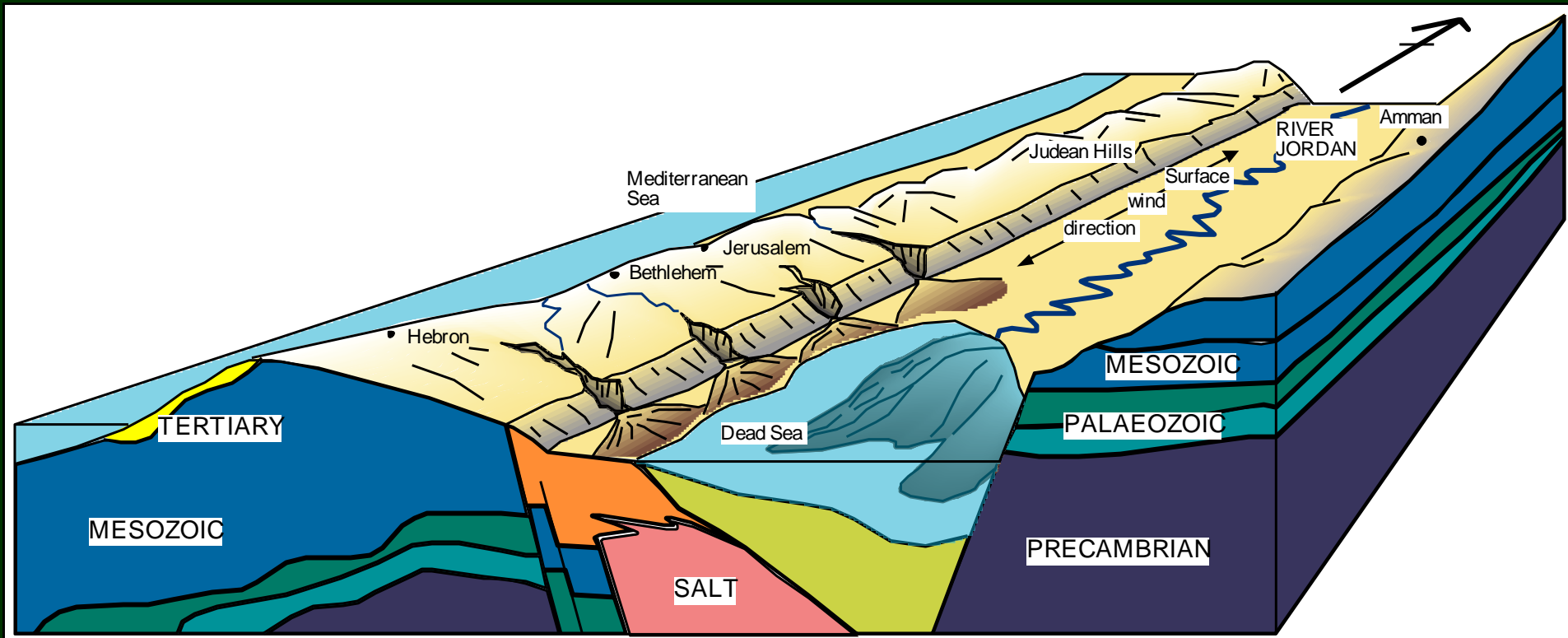


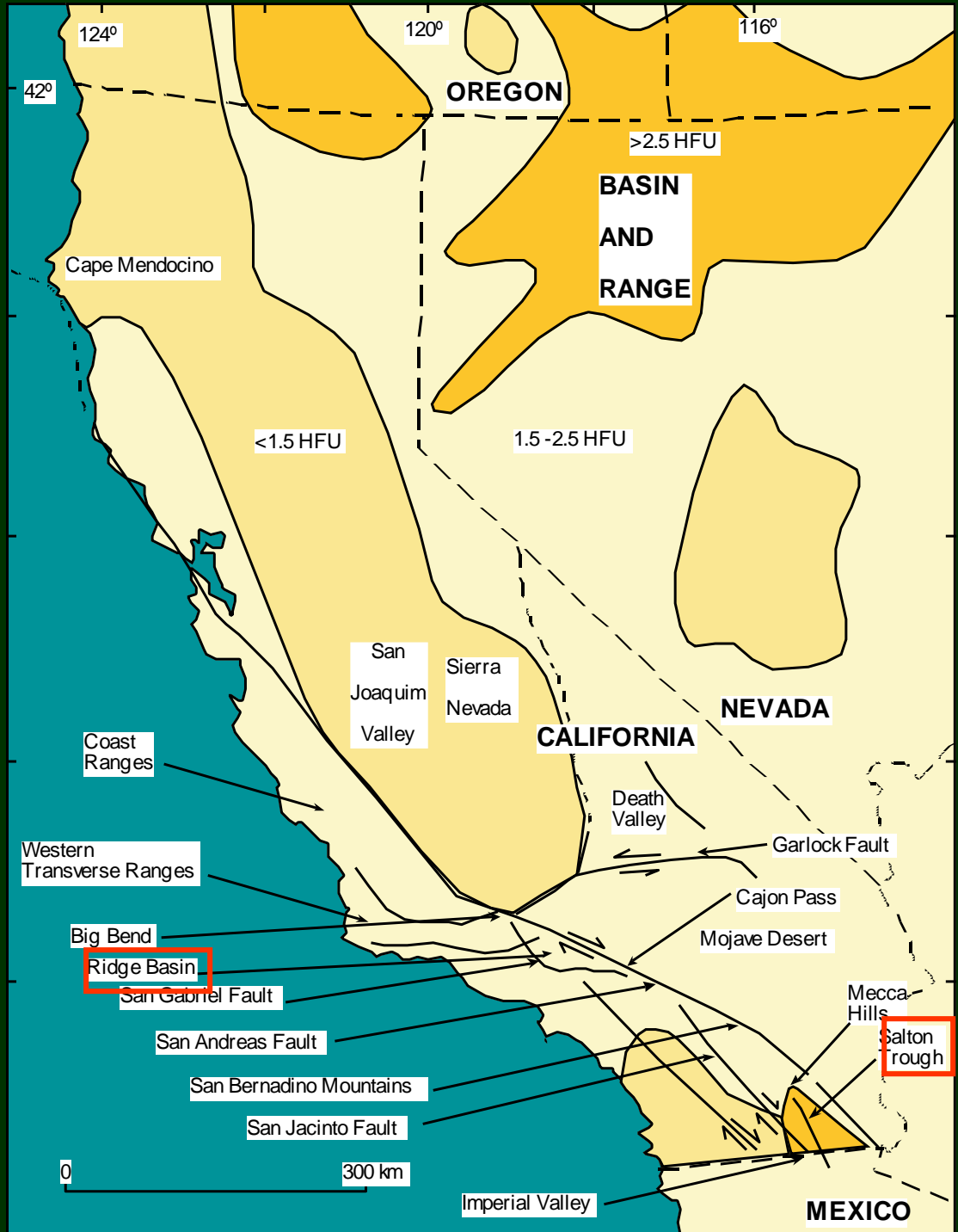


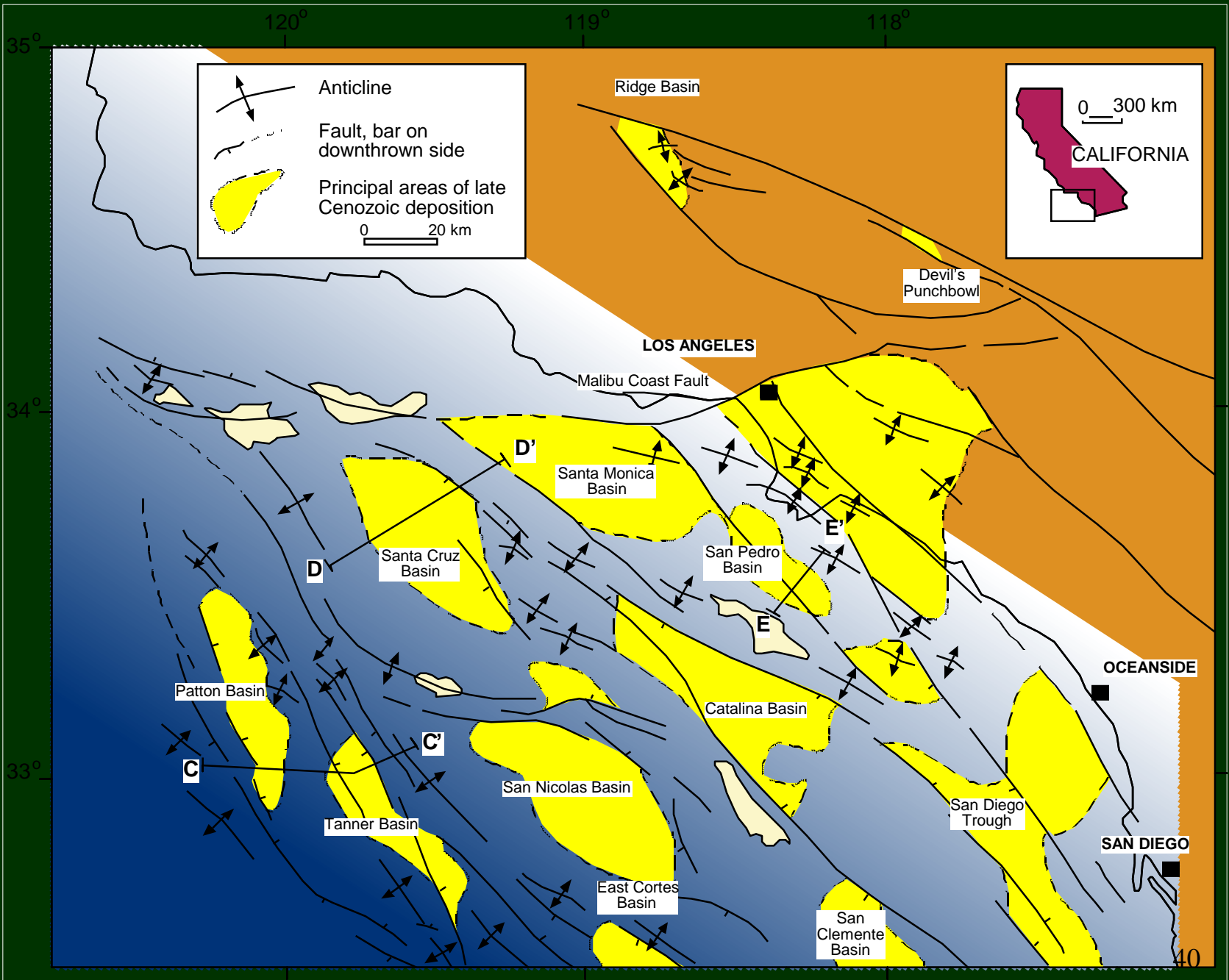











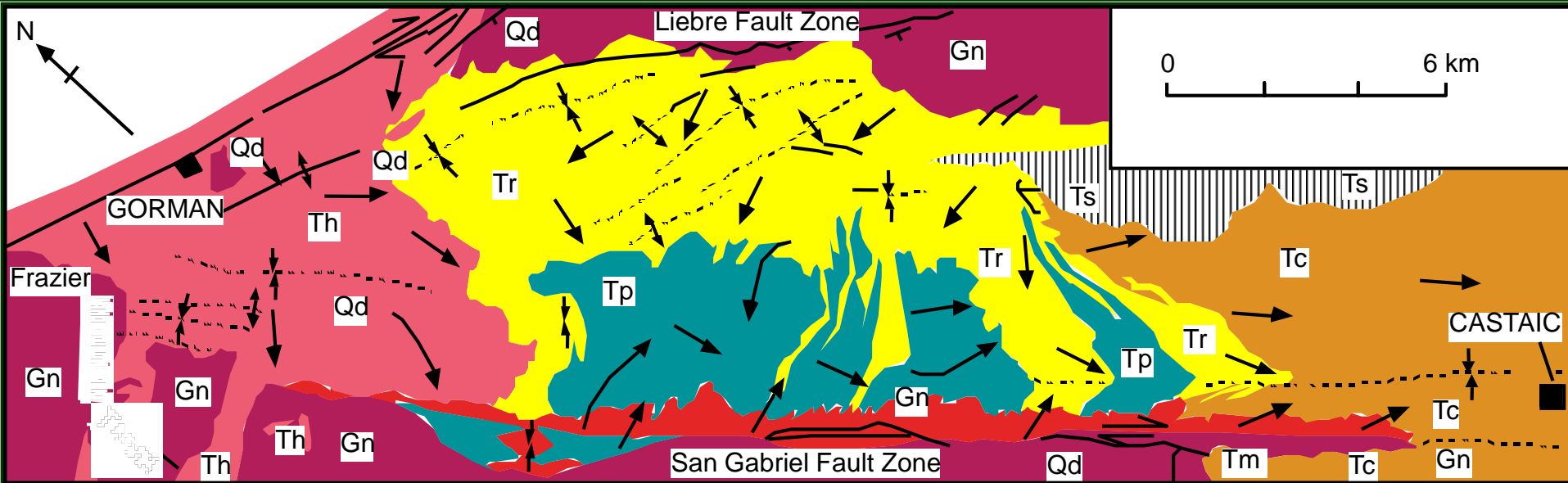




 Anticline
 Fault, bar on downthrown side
 Principal areas of late Cenozoic deposition
 0 20 km

0 300 km
 CALIFORNIA

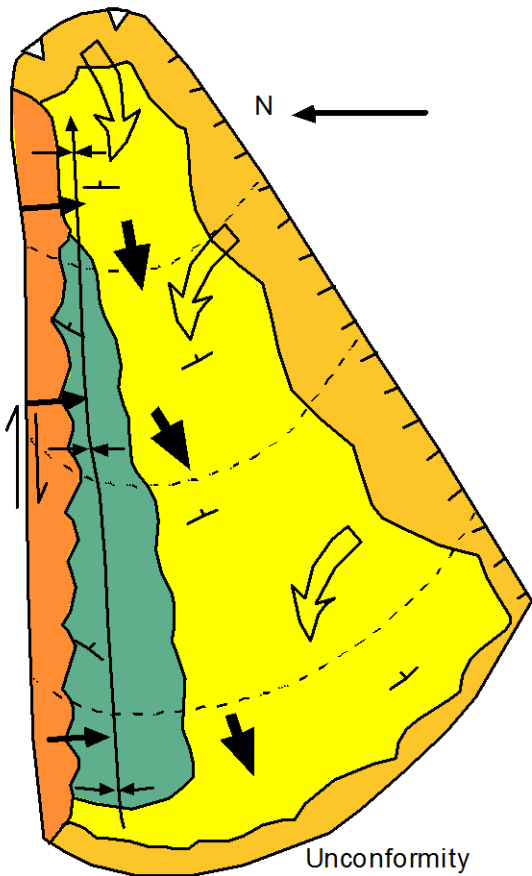
Ridge Basin California



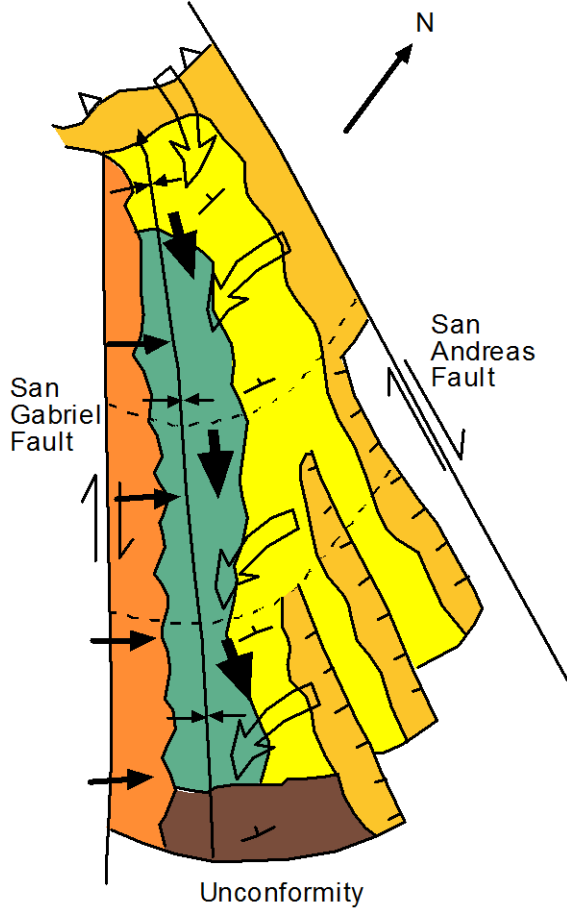
Pleistocene	Ridge Basin Group	Th	Hungry Valley Fm. (fluvialite sandstones, conglomerates)
		Tp	Peace Valley Fm. (lacustrine shales, siltstones)
Pliocene	Ridge Basin Group	Tr	Ridge Route Fm. (fluvialite sandstones, conglomerates)
		Tv	Violin Breccia
Miocene		Tc	Castaic Fm. (marine mudstones and turbidite sandstones)
Palaeocene-Eocene		Tm	Modelo/Mint Canyon Fm.
		Ts	San Franciscquito Fm.
Pre-Tertiary		Qd	Quartz Diorite
		Gn	Gneiss

↘ General direction of sediment transport

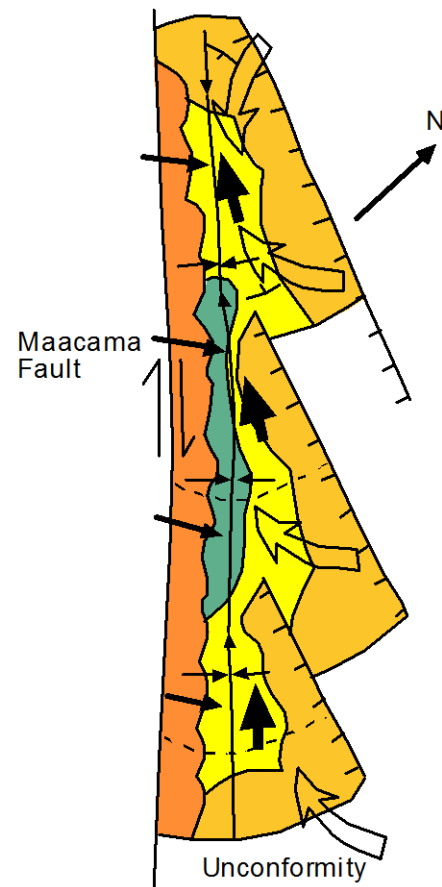
Hornelen
(~1250 km²)









Ridge Basin
(~400 km²)

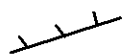



Little Sulphur Creek
(~15 km²)





-  Talus, landslide and debris flow dominated alluvial fans
-  Alluvial plain and fan delta deposits
-  Stream flow dominated alluvial fans
-  Marine turbidites
-  Lacustrine deposits


 Approximate strike & dip of bedding


 Normal or high-angle reverse fault (barbs on downthrown block)

 Direction of sediment transport along strike-slip margin

 Axis and plunge of syncline

 Direction of sediment transport along basin axis

 Direction of sediment transport along other margin of basin

 General trace of dipping strata

Ridge Basin California

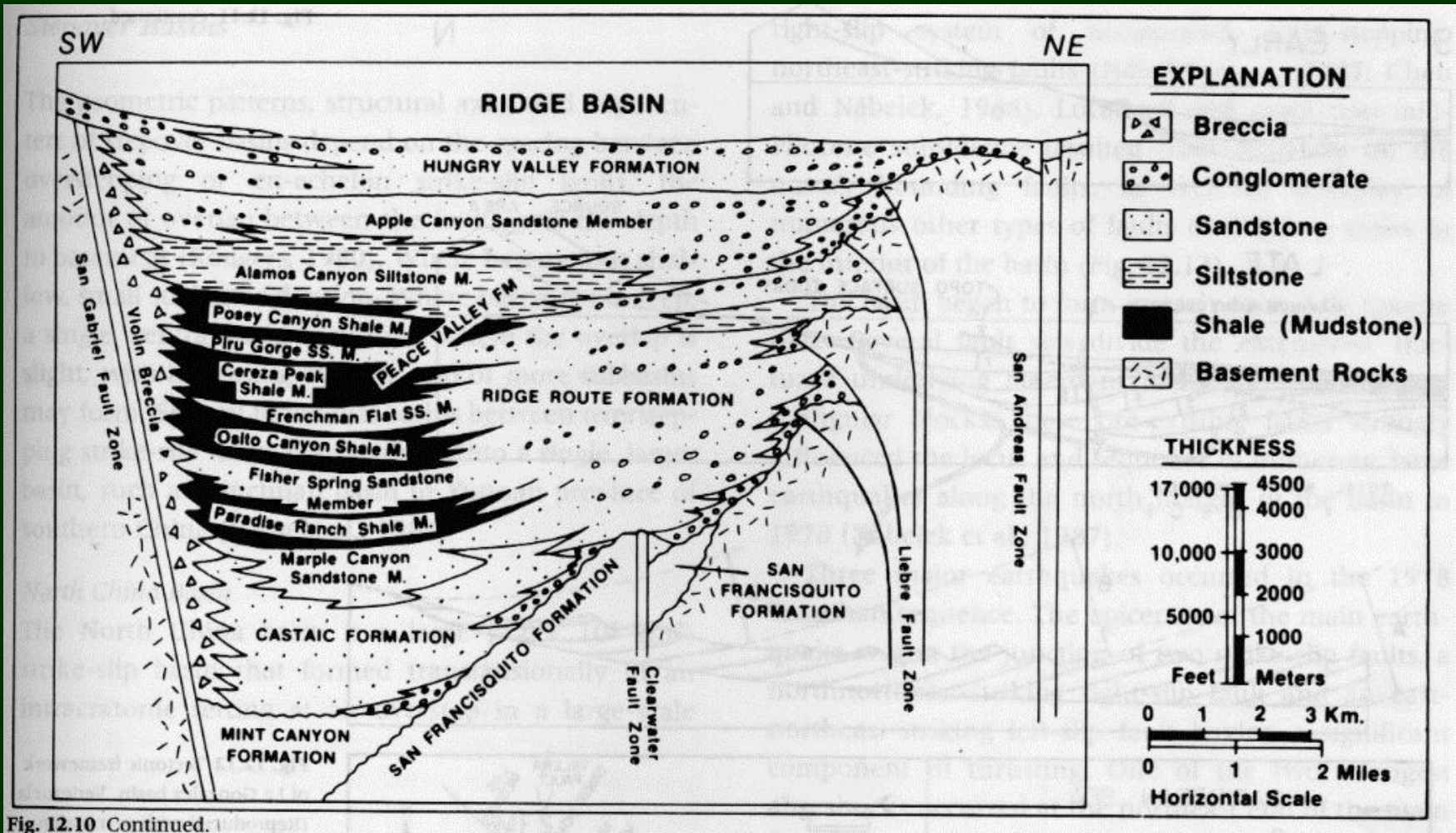
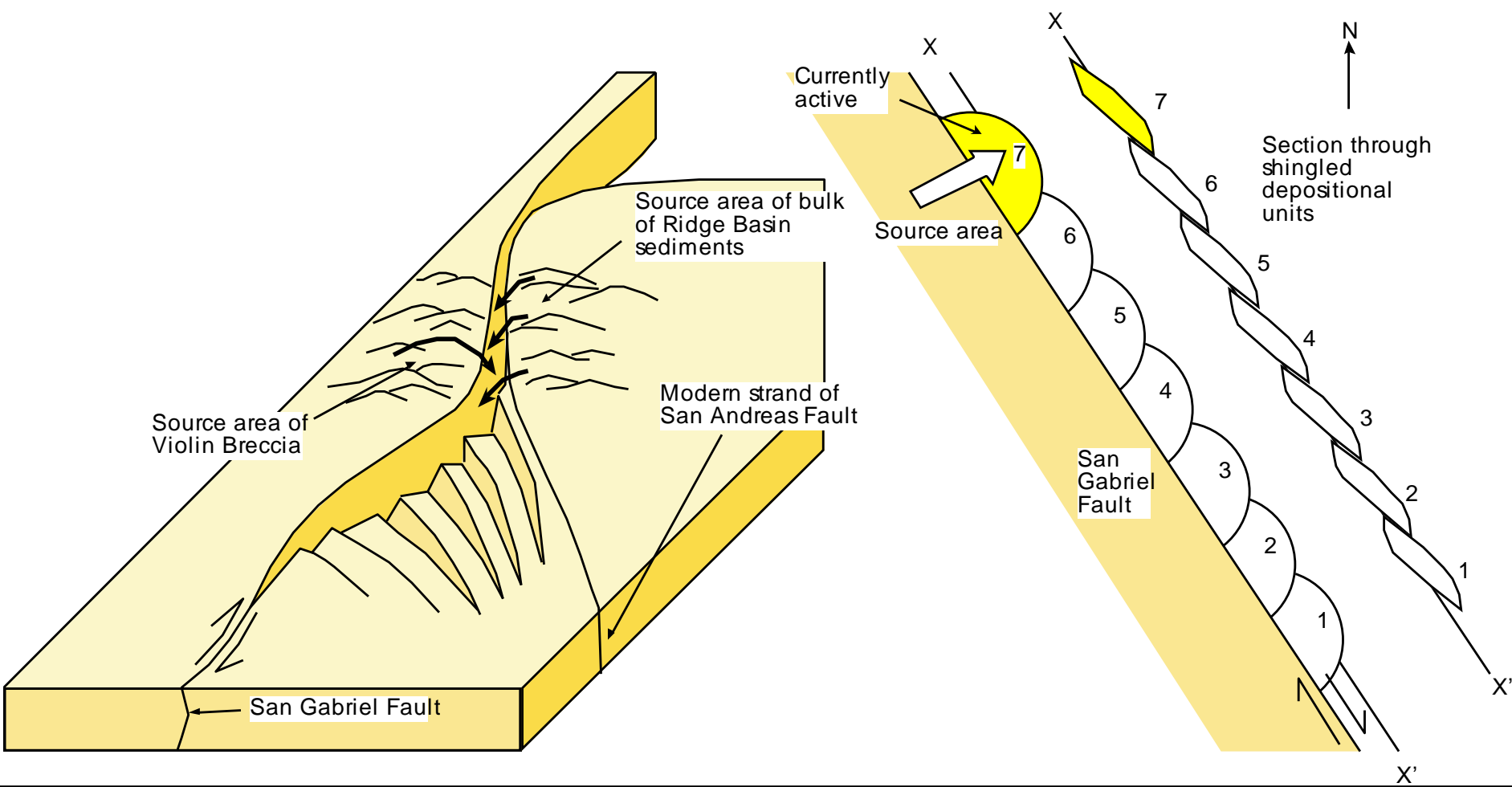
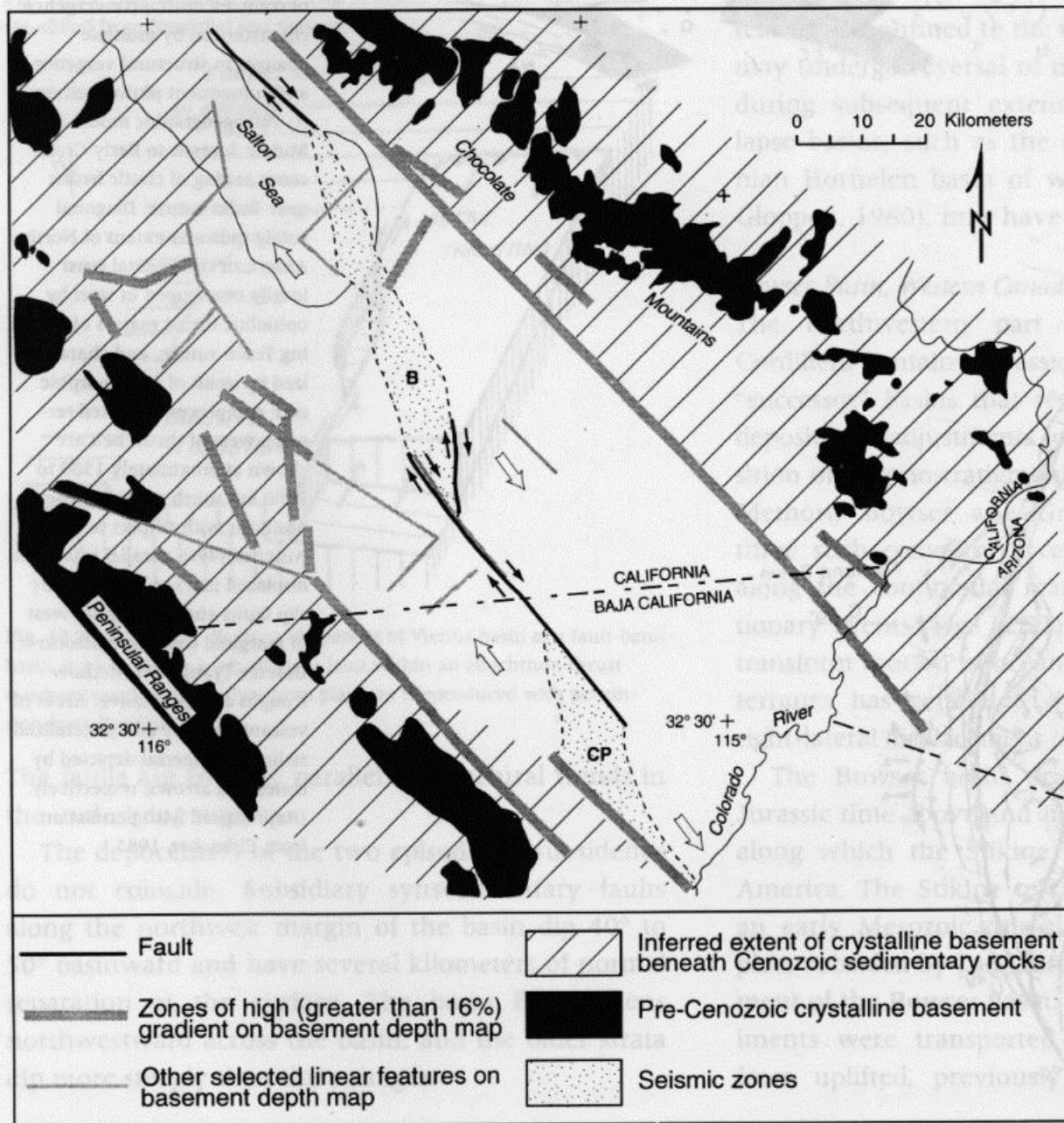


Fig. 12.10 Continued.







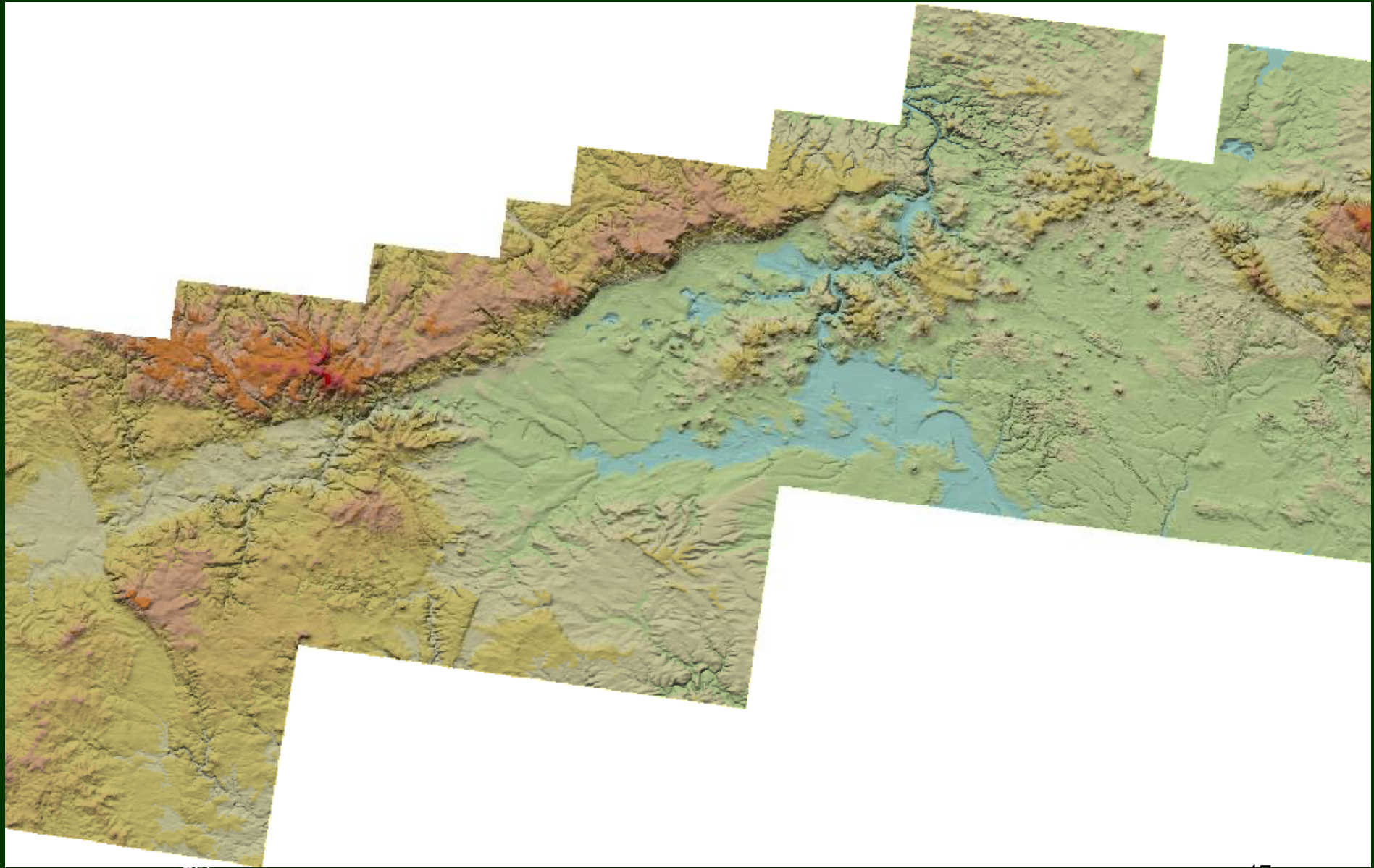
(a)

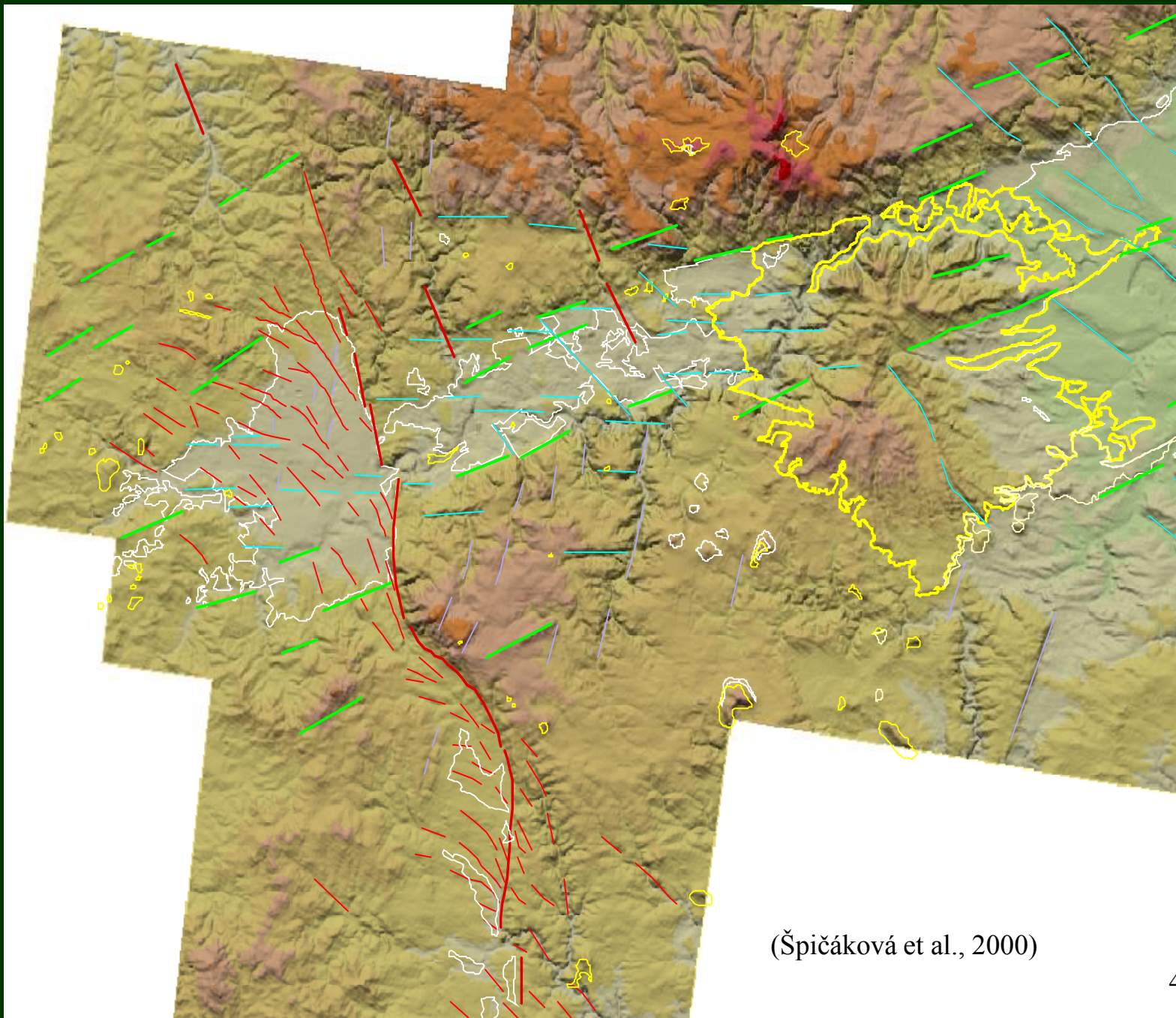


(b)

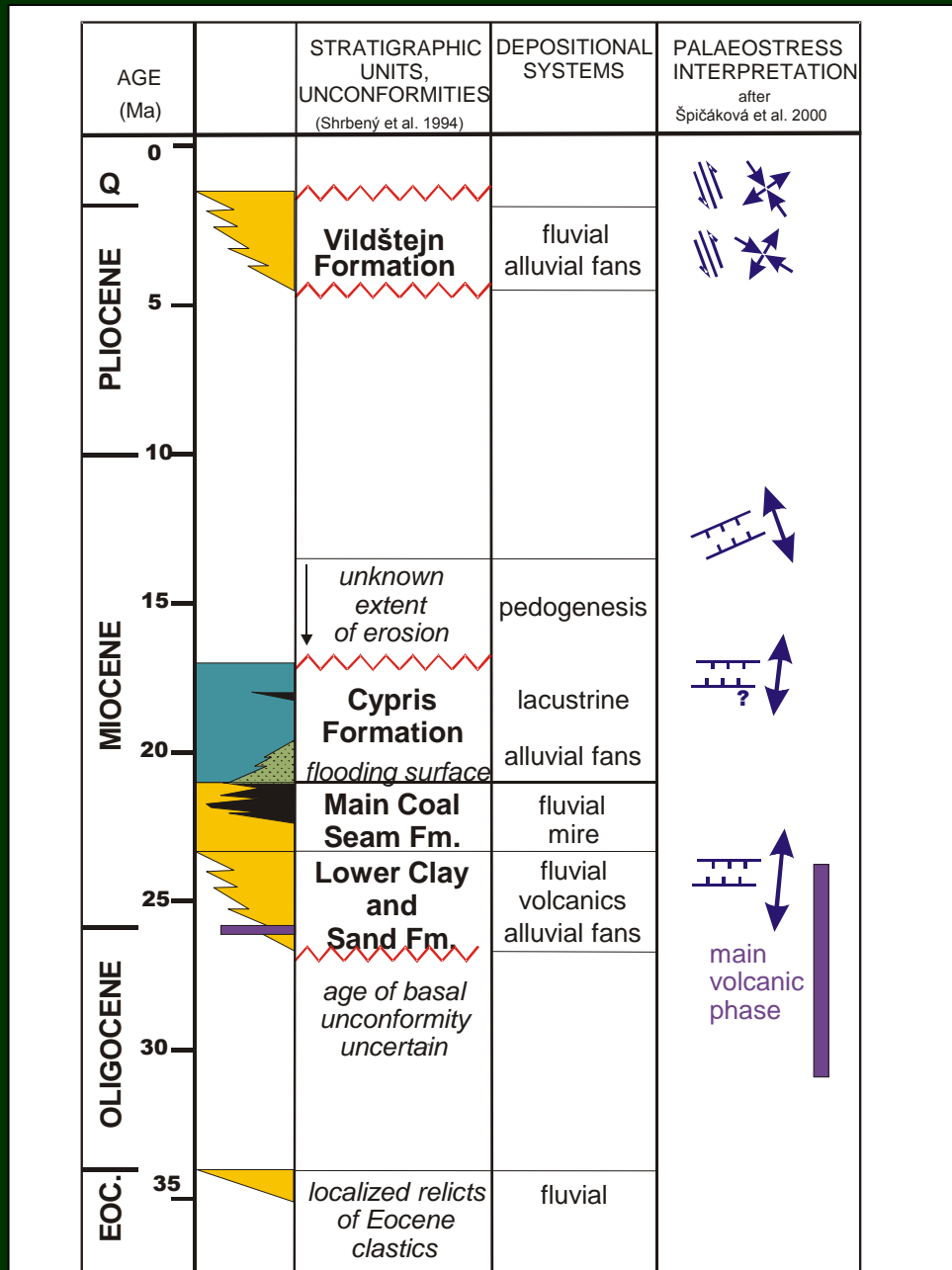


FIGURE 19.17 [a] Air photo showing the trace of the San Andreas Fault, north of San Francisco (Tomales Bay). Note that the faulting has locally caused a water-filled depression to form. [b] Photograph of pressure ridges along the San Andreas Fault, San Luis Obispo County, California. [c] A cross section of a pressure ridge in a road cut across the San Andreas Fault near Palmdale, California.





(Špičáková et al., 2000)



I. ETAPA - RIFTOVÁ

ČAS:

26 - 17 mil.

PALEONAPĚTÍ:

S-J až SSV-JJZ extenze

AKTIVNÍ ZLOMOVÉ SYSTÉMY:

V-Z (depocentra)

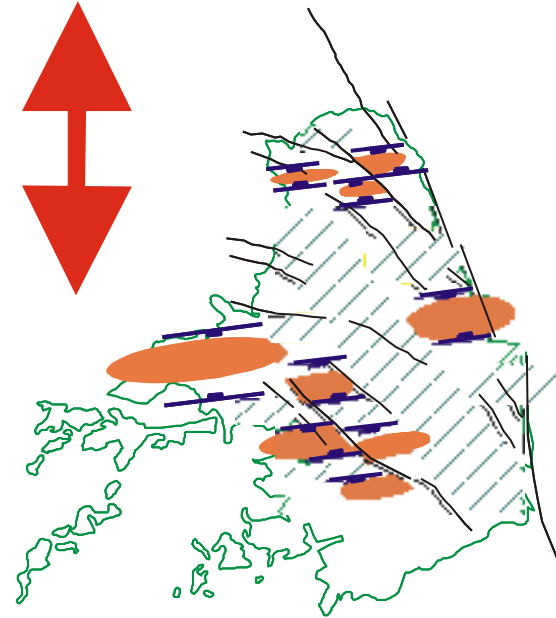
SZ-JV (akomodační zóna)

SEDIMENTACE:

V-Z protažená depocentra

V-Z menší hřbítky

SZ-JV "centrální" hřbet



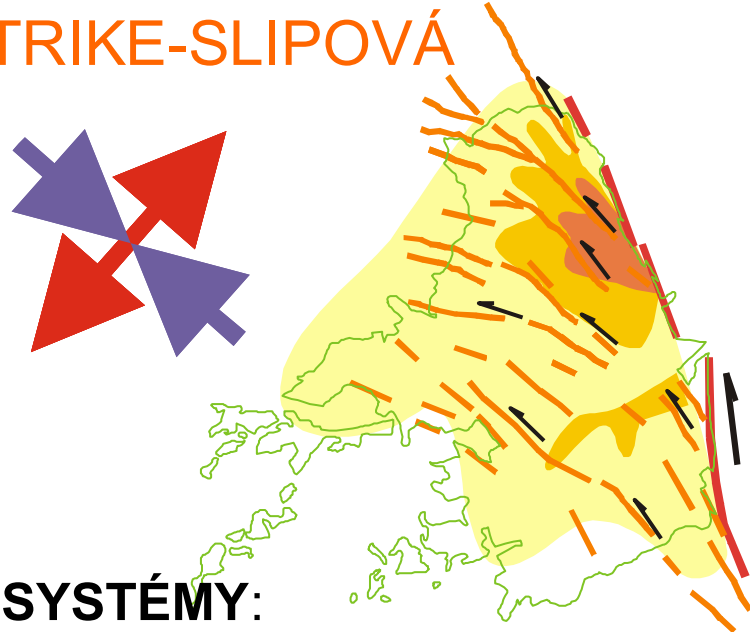
II. ETAPA - STRIKE-SLIPOVÁ

ČAS:
4.5 - 1.5 mil.

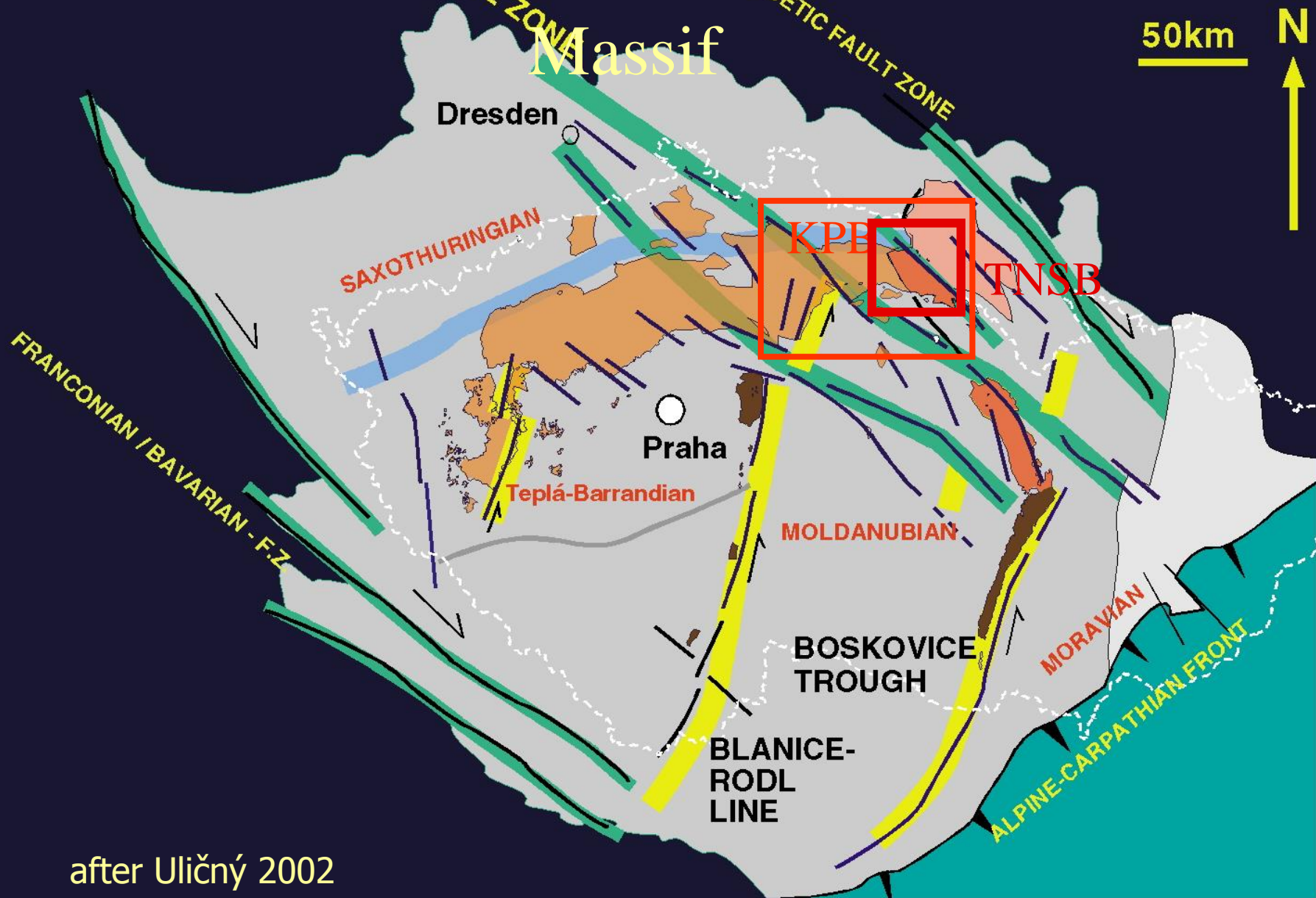
PALEONAPĚTÍ:
SV až SSV extenze

AKTIVNÍ ZLOMOVÉ SYSTÉMY:
levostranný horizontální posun podél MLZL,
SZ až SSZ zlomy vějířovitého zakončení MLZL

SEDIMENTACE:
řízena SZ-JV až SSZ-JJV extenzními zlomy,
maximum subsidence u V okrajového zlomu

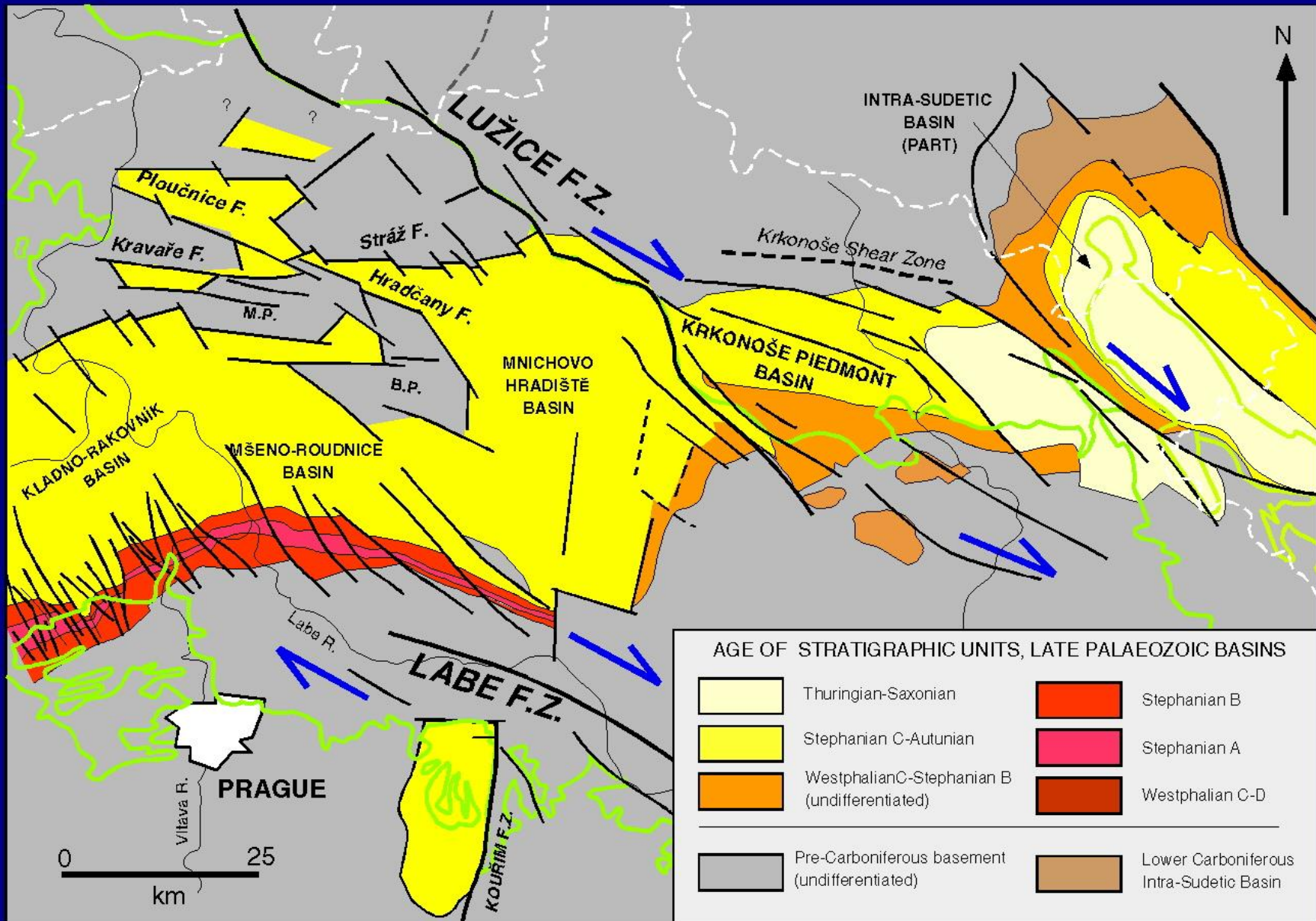


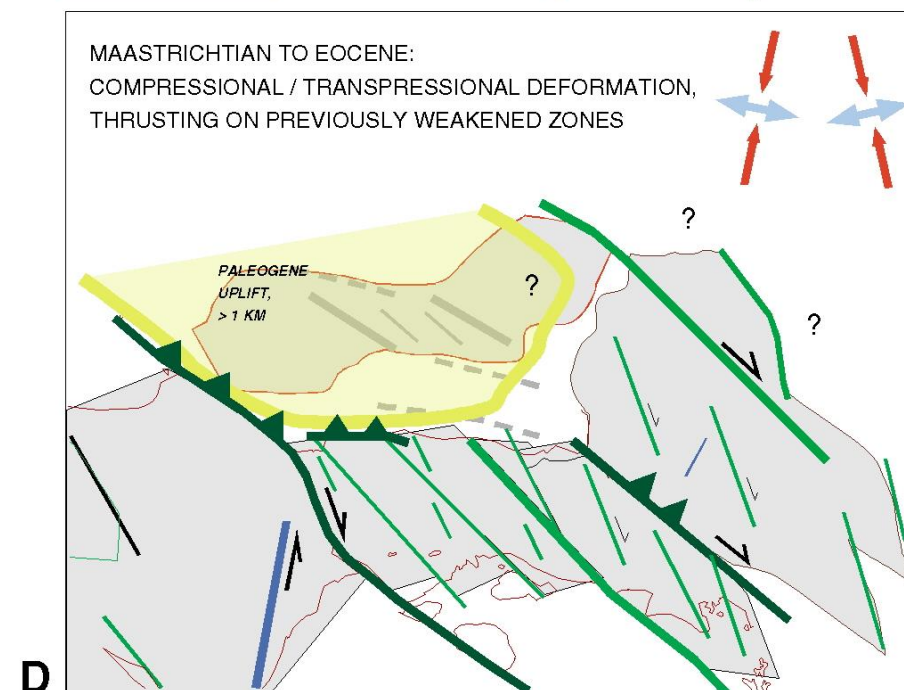
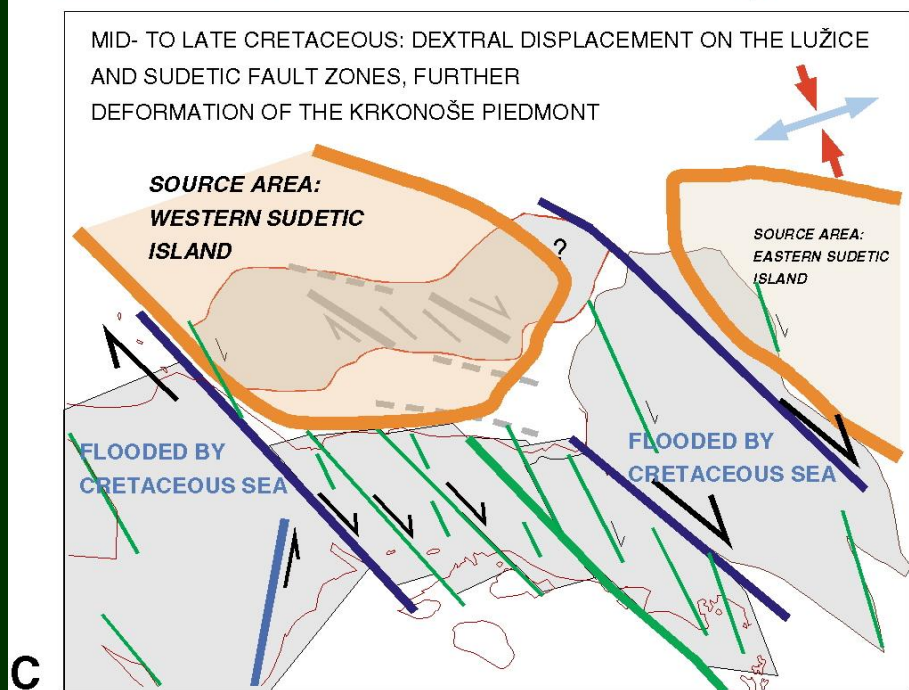
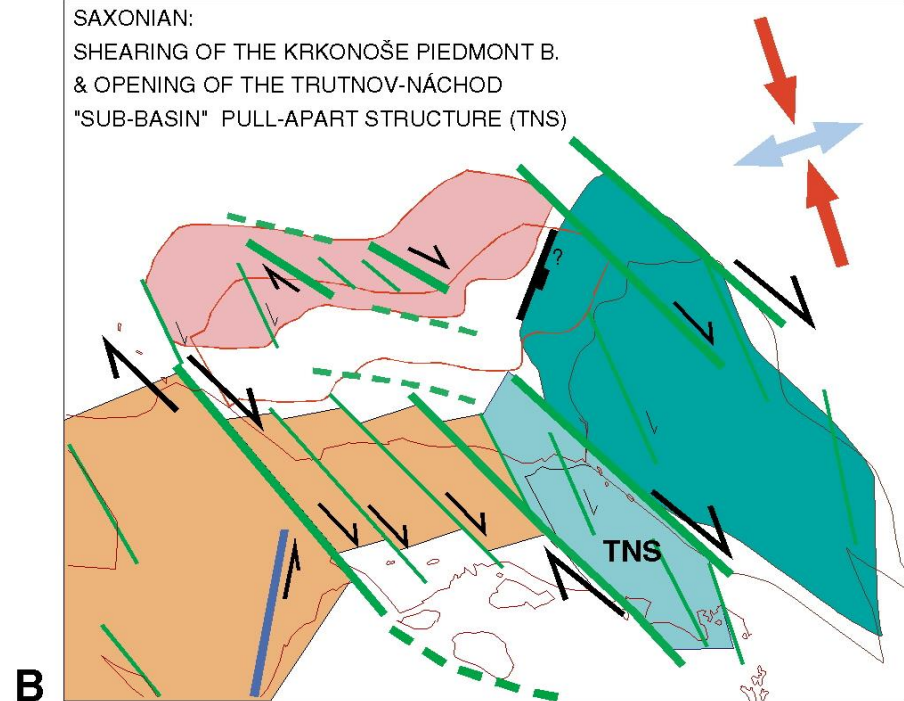
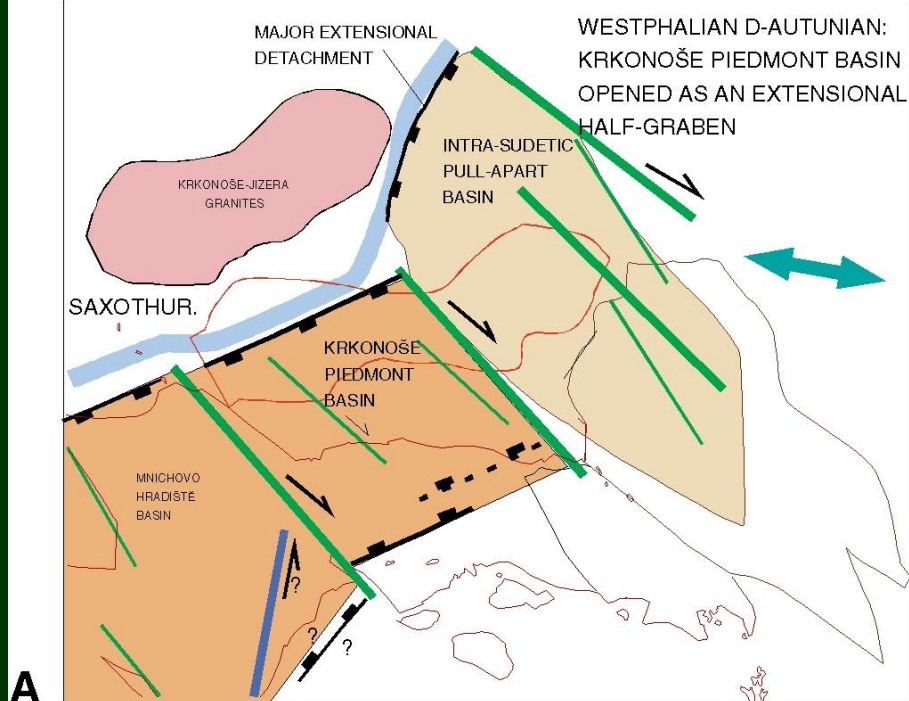
Bohemian Massif



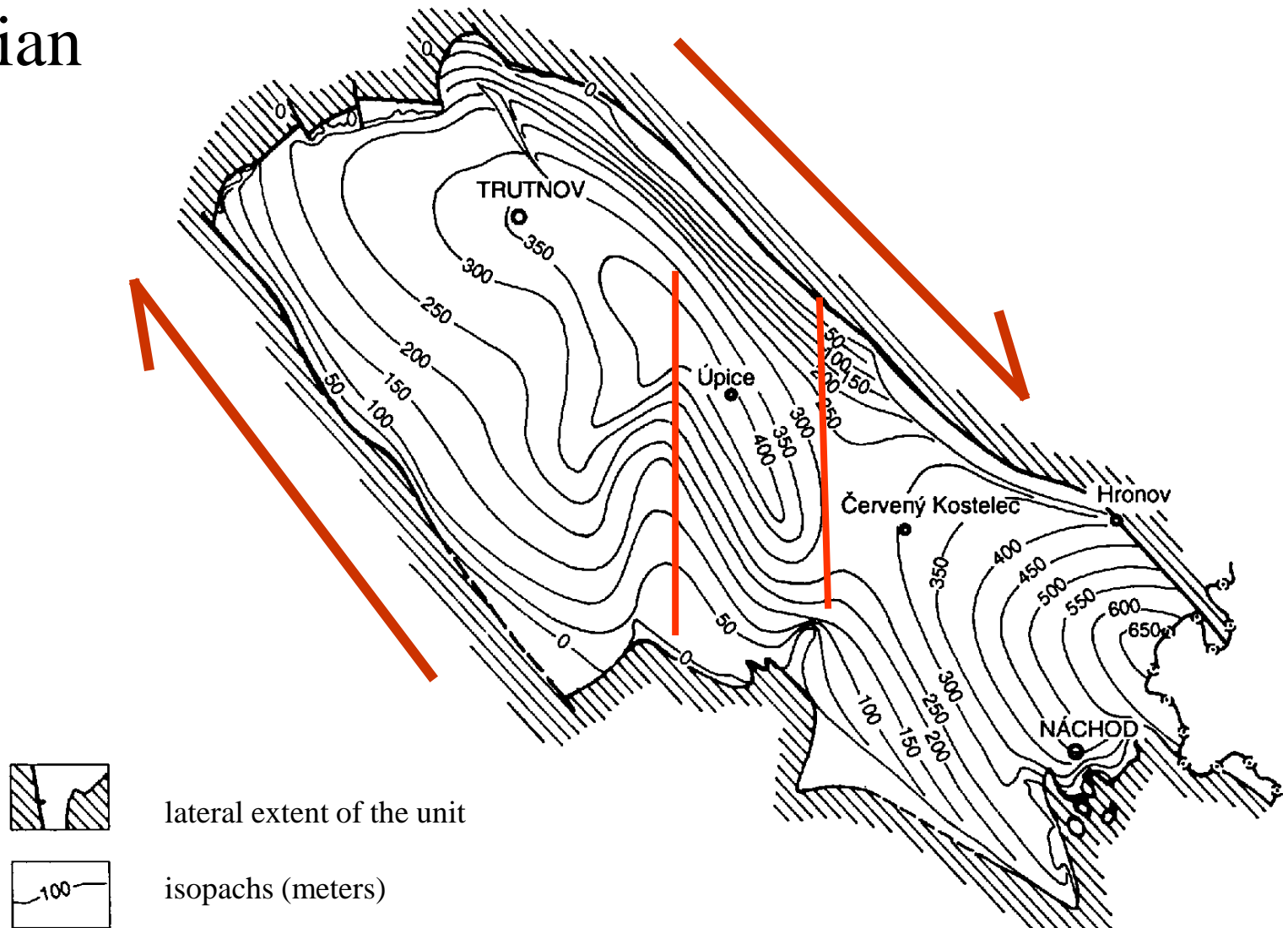
after Uličný 2002

LATE PALAEOZOIC BASINS, CENTRAL AND NE BOHEMIA

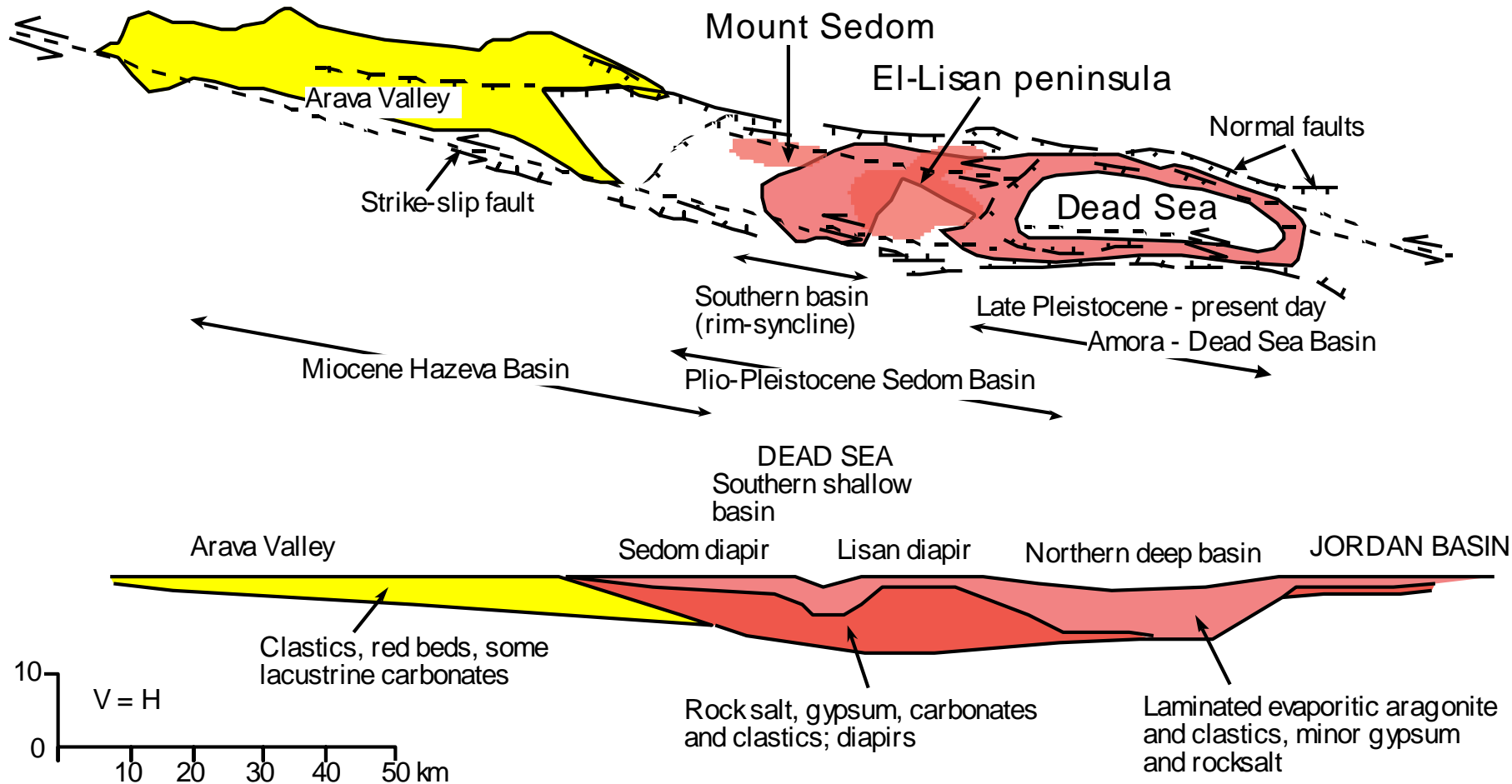




Saxonian



after Prouza and Tásler 2001



Salton Sea



6 mi



USGS

