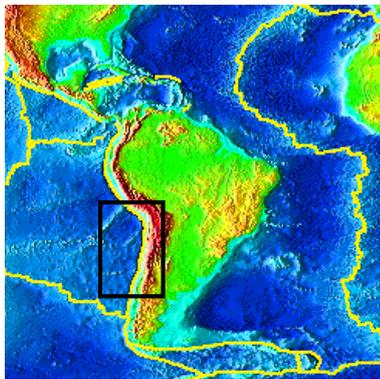


Fajas Plegadas y Corridas

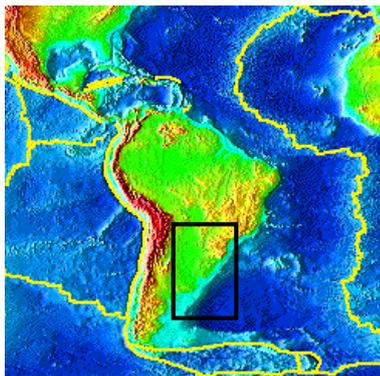


Margen activo



Se desarrollan las fajas plegadas y corridas más comunes y más importantes. Se vinculan a esfuerzos tangenciales.

Margen pasivo

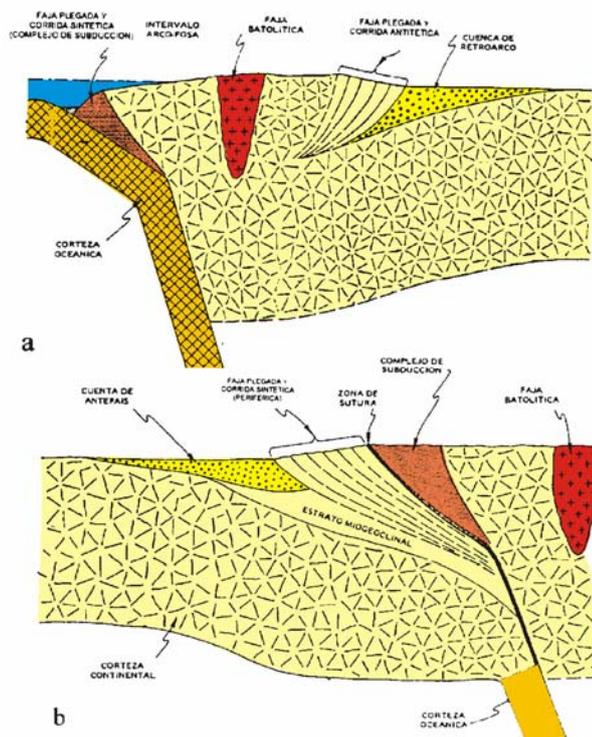


No son muy comunes ni importantes las fajas plegadas y corridas. Se vinculan a acomodación por **gravedad**.

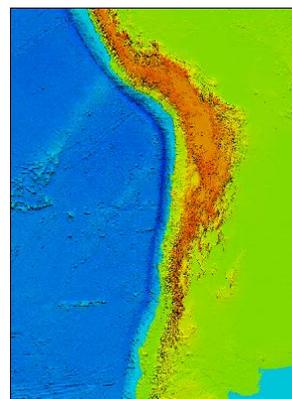
Fajas plegadas y corridas en márgenes activos

- sintéticas
- antitéticas

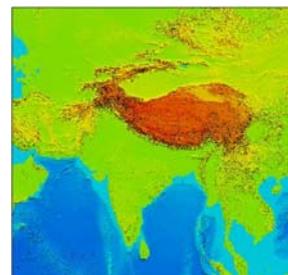
Fajas plegadas y corridas en márgenes activos

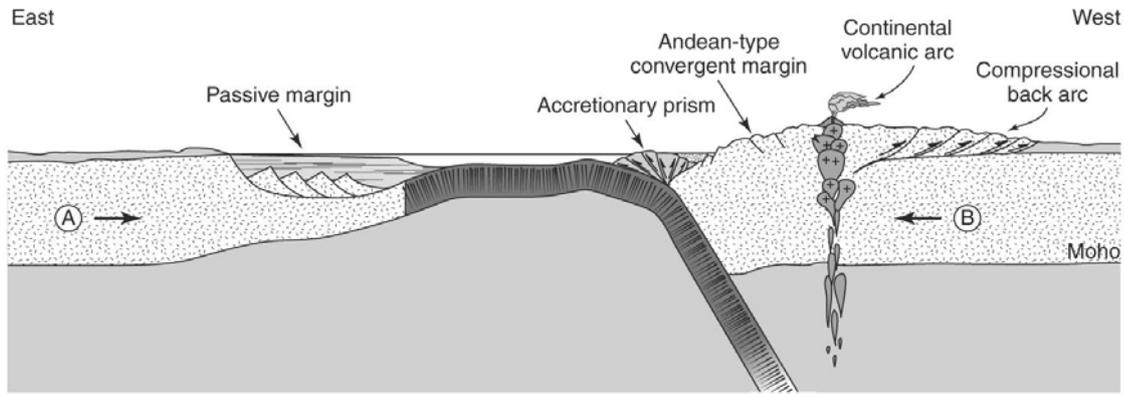


Margen tipo andino

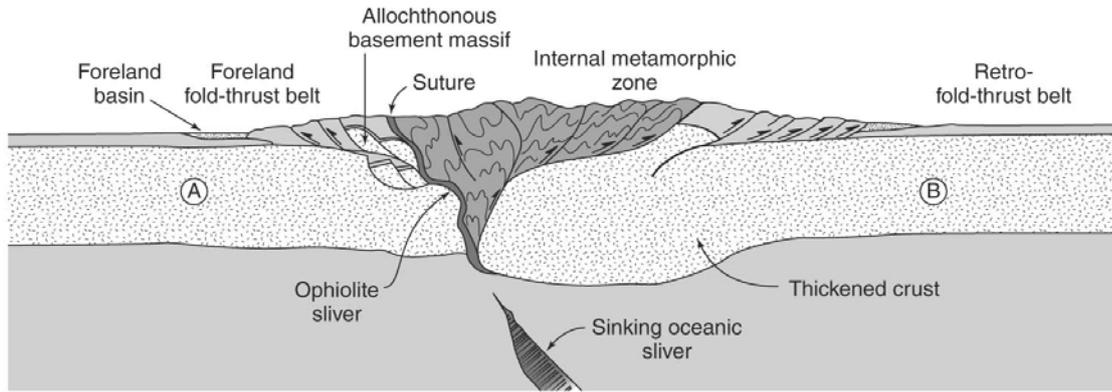


Margen tipo alpino



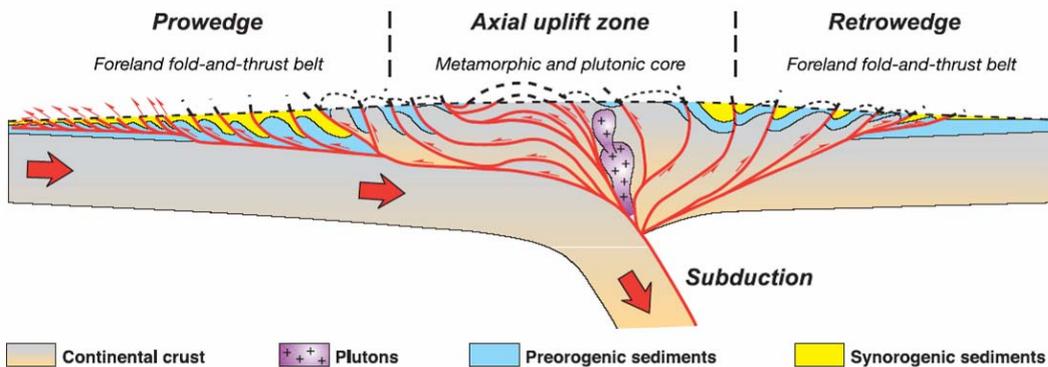
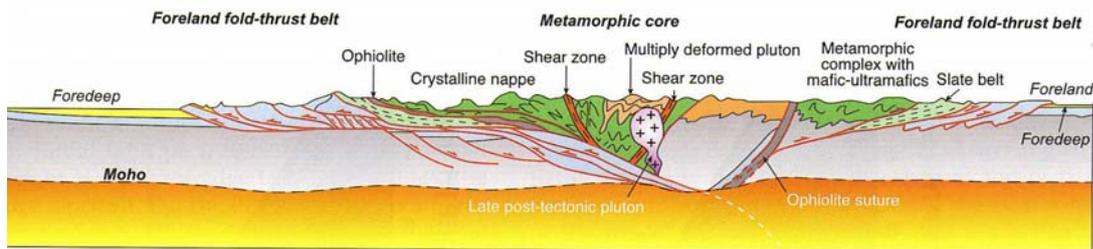


(a)



(c)

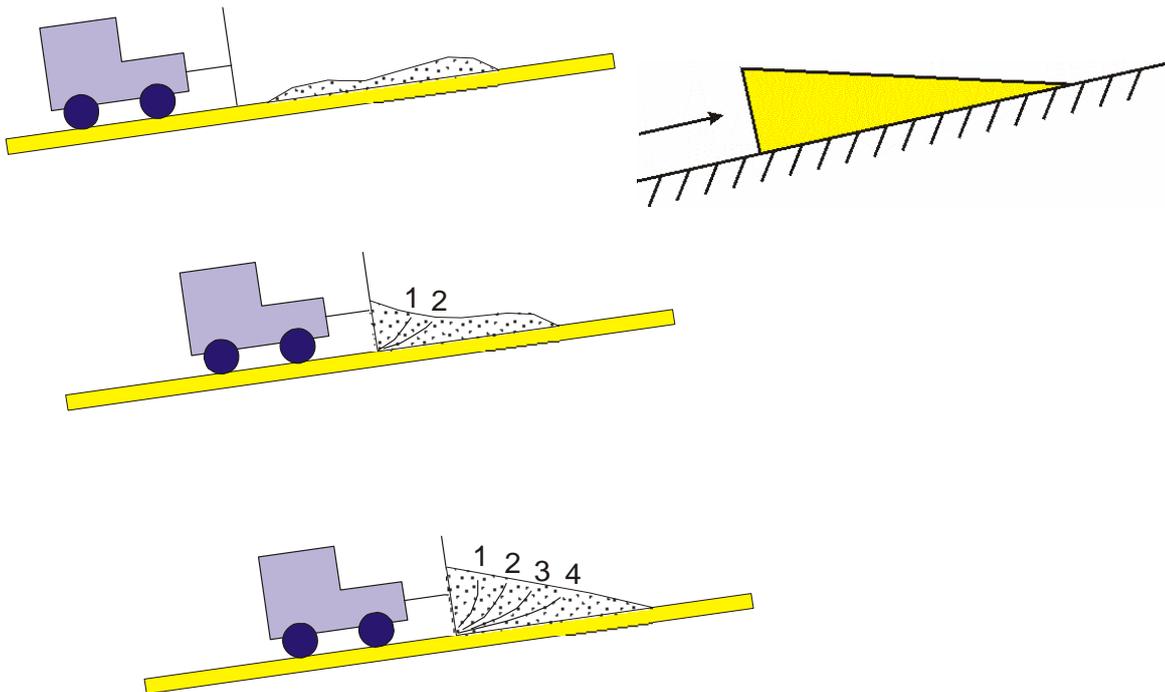
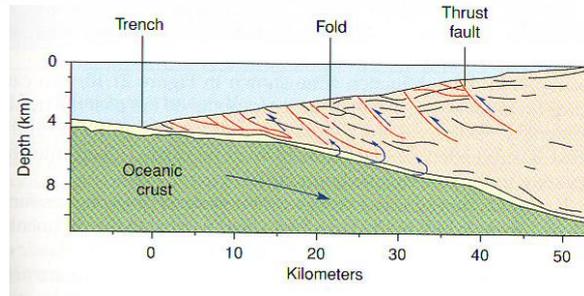
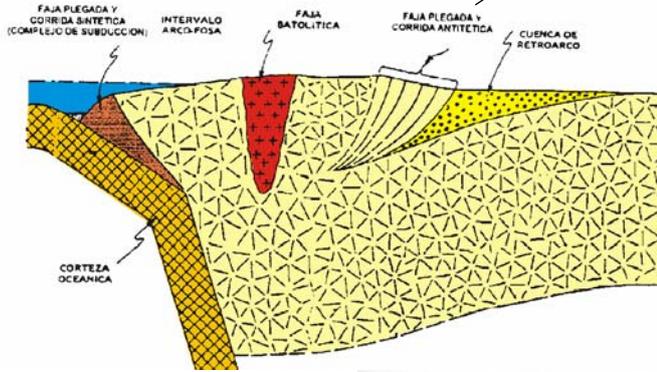
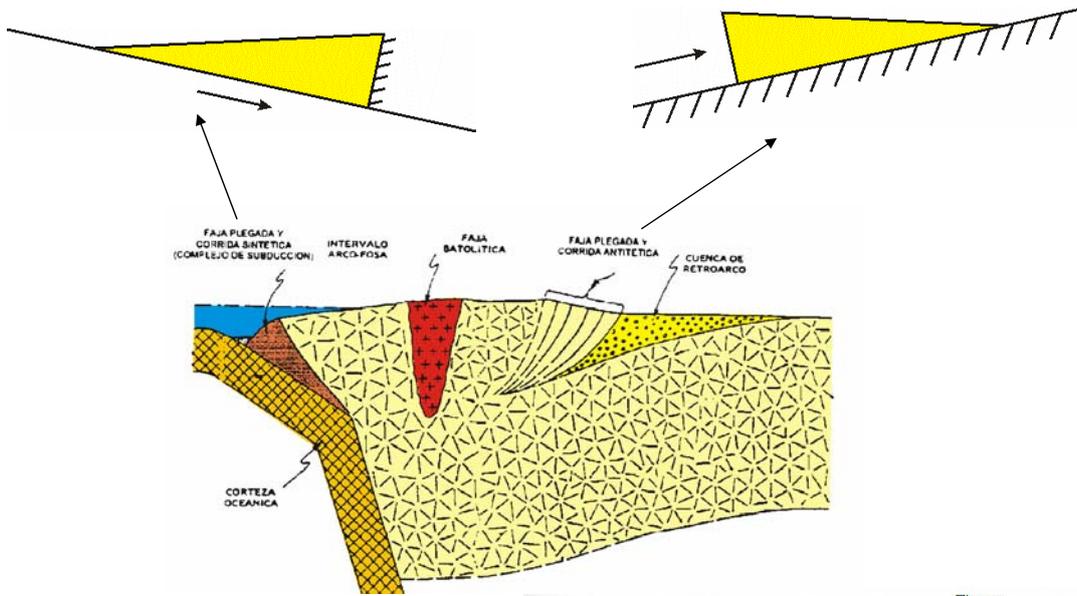
Cuñas doblevergentes (*doubly vergent thrust wedges*) en márgenes colisionales tipo alpino

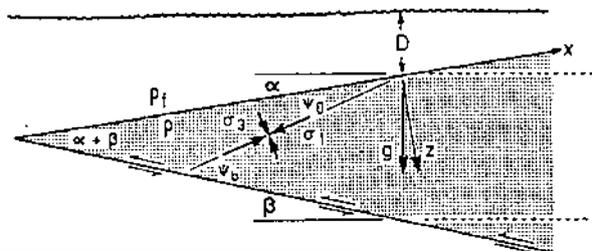


Continental crust Plutons Preorogenic sediments Synorogenic sediments

cuña sintética

cuña antitética





$$\alpha + \beta = \psi_b - \psi_0$$

donde

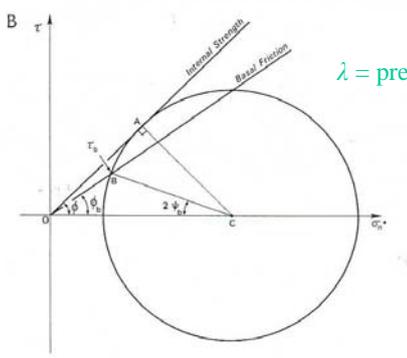
$$\psi_0 = \frac{1}{2} \arcsin \left(\frac{\sin \alpha'}{\sin \phi} \right) - \frac{1}{2} \alpha'$$

$$\psi_b = \frac{1}{2} \arcsin \left(\frac{\sin \phi_b'}{\sin \phi} \right) - \frac{1}{2} \phi_b'$$

$$\alpha' = \arctan \left[\frac{1 - \rho_f}{1 - \lambda} \tan \alpha \right] \quad (\text{si } \rho_f = 0 \text{ entonces } \alpha' = \alpha)$$

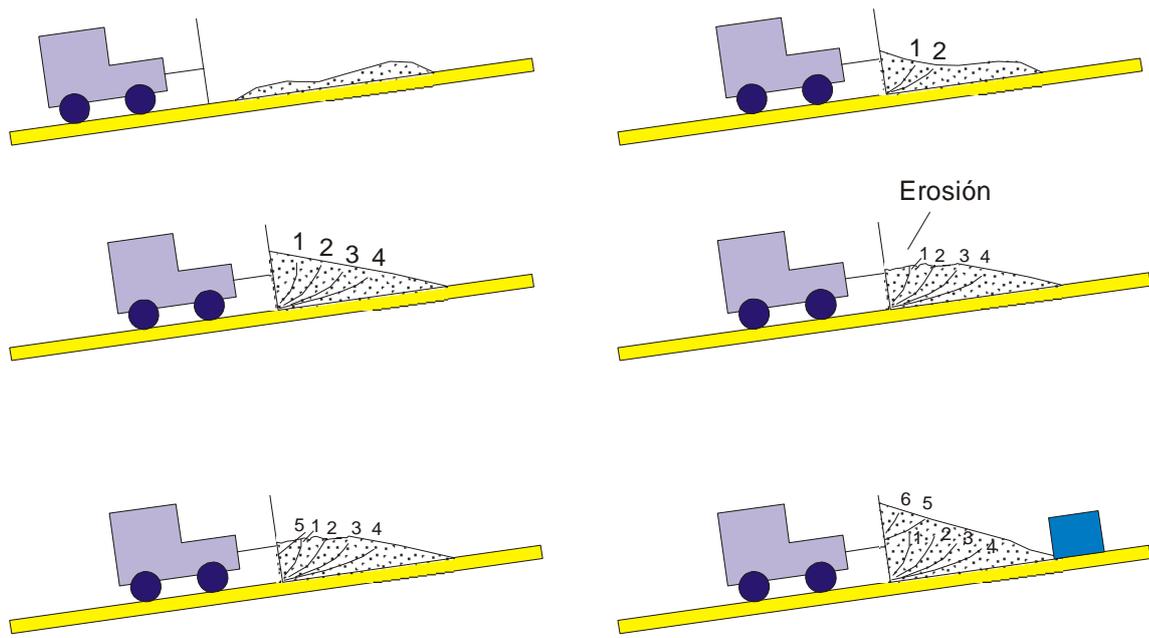
$$\phi_b' = \arctan \left[\mu_b \left(\frac{1 - \lambda_b}{1 - \lambda} \right) \right] \quad (\text{si } \rho_f = 0 \text{ entonces } \phi_b' = \phi_b)$$

Ver derivación de ecuaciones en
 Davis, Suppe & Dahlen (1983)
 Davis, Suppe & Dahlen (1984)
 Dahlen (1990)



Recordemos que
 $\lambda = \text{presión de fluidos} / \text{presión litostática}$
 y que $\mu_b = \tan \phi_b$

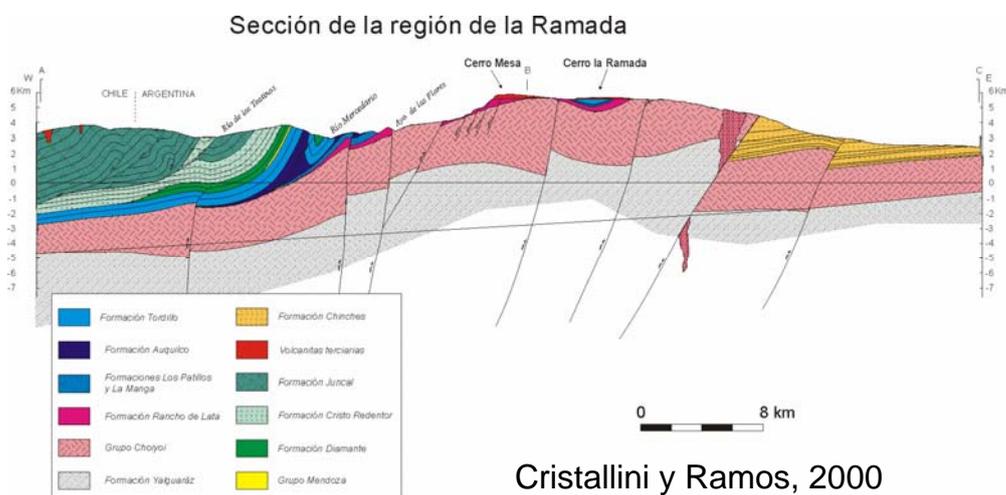
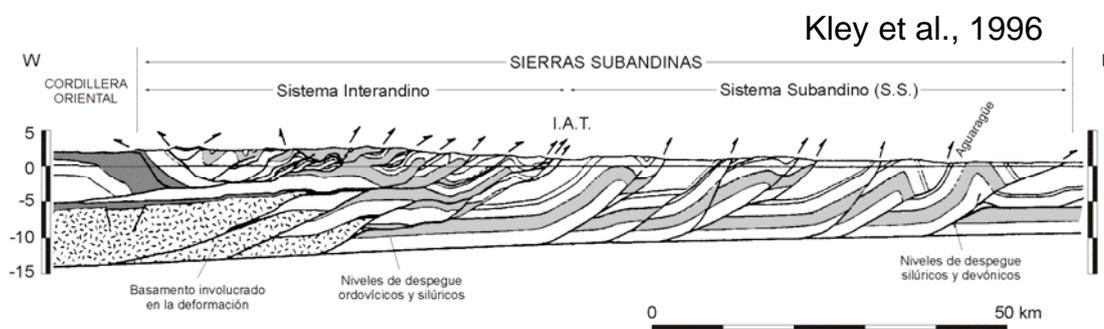
Dahlen, 1990

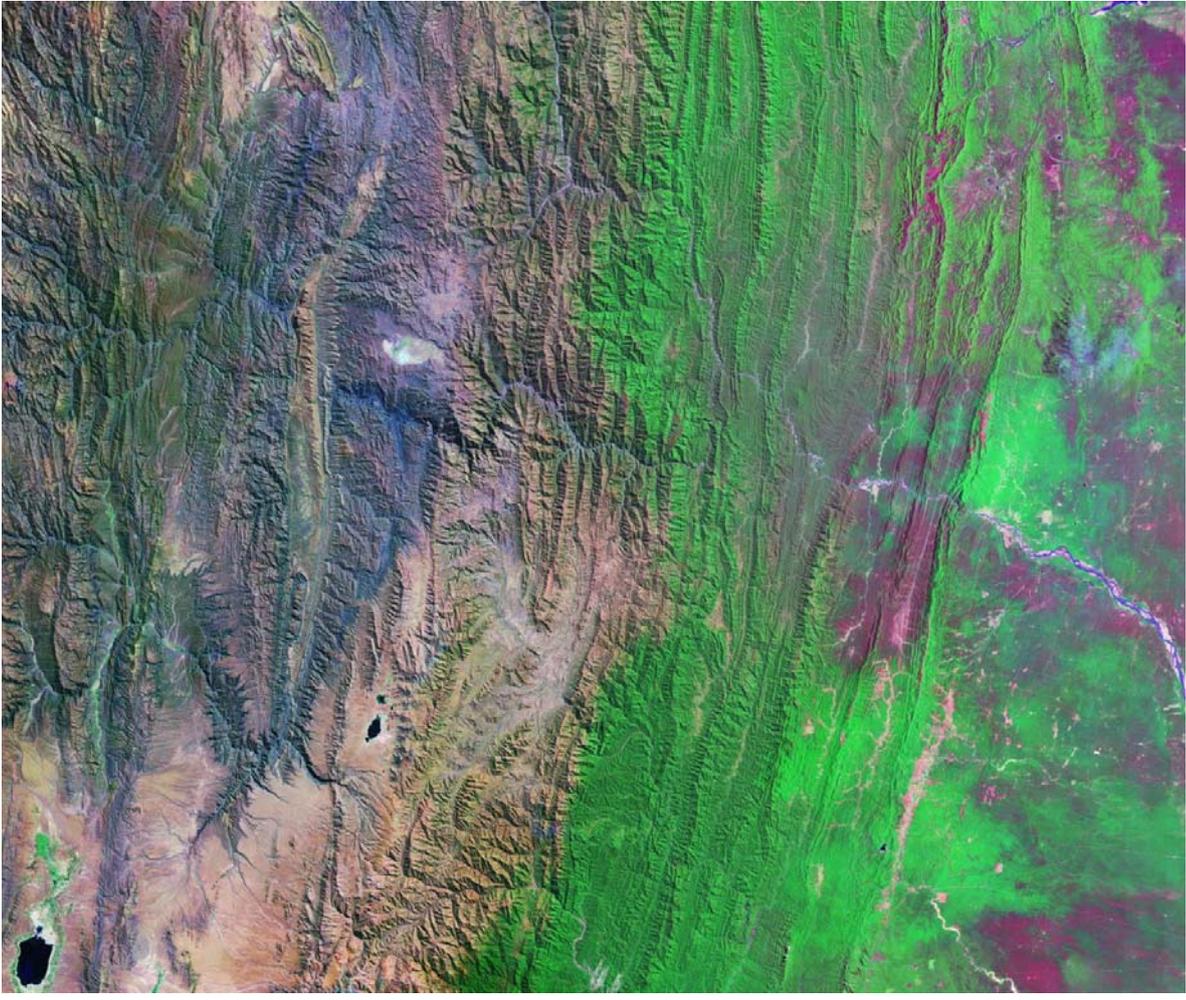


Estructuras fuera de secuencia

Fajas plegadas y corridas

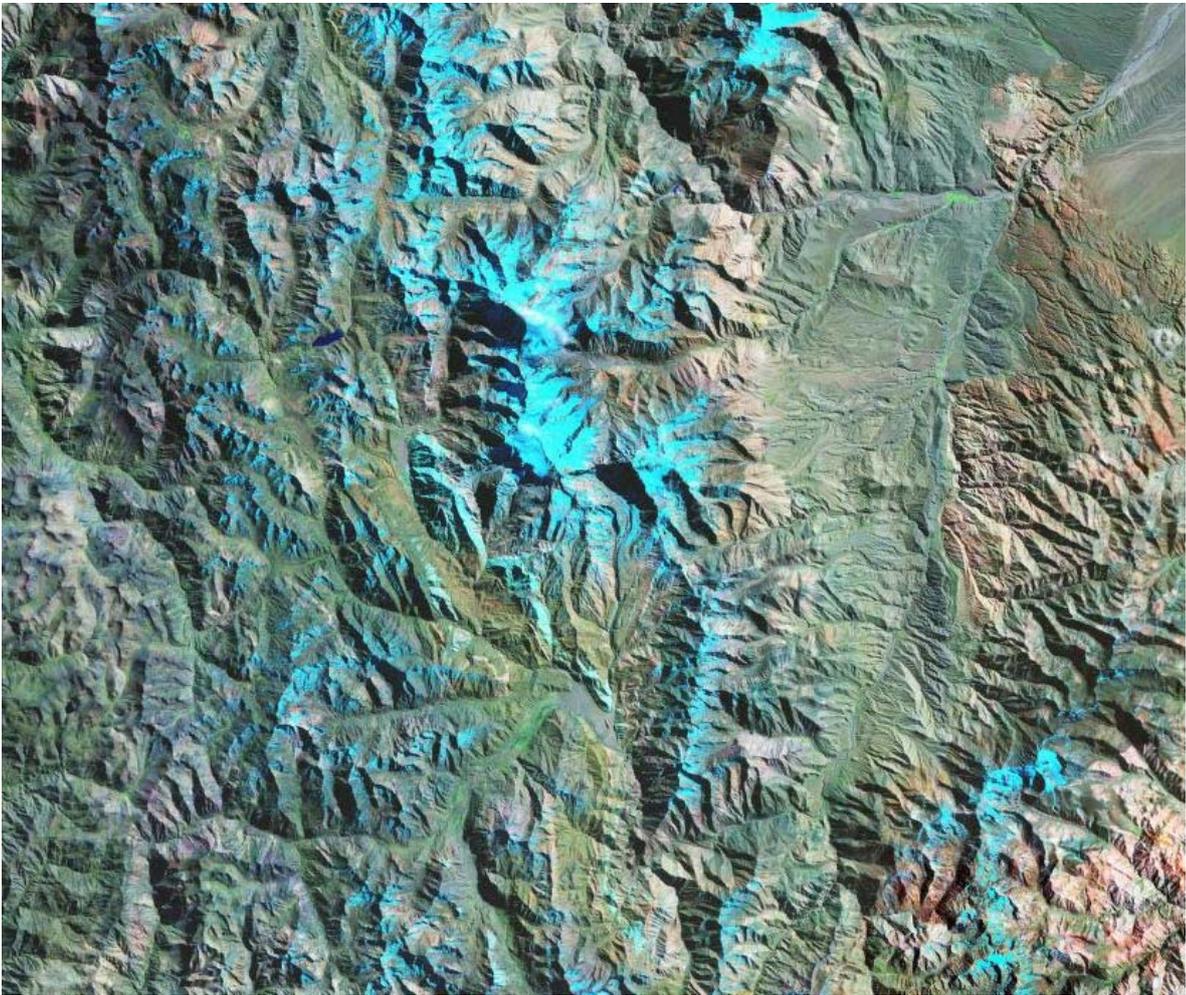
- de piel fina (*thin skinned*)
- de piel gruesa (*thick skinned*)





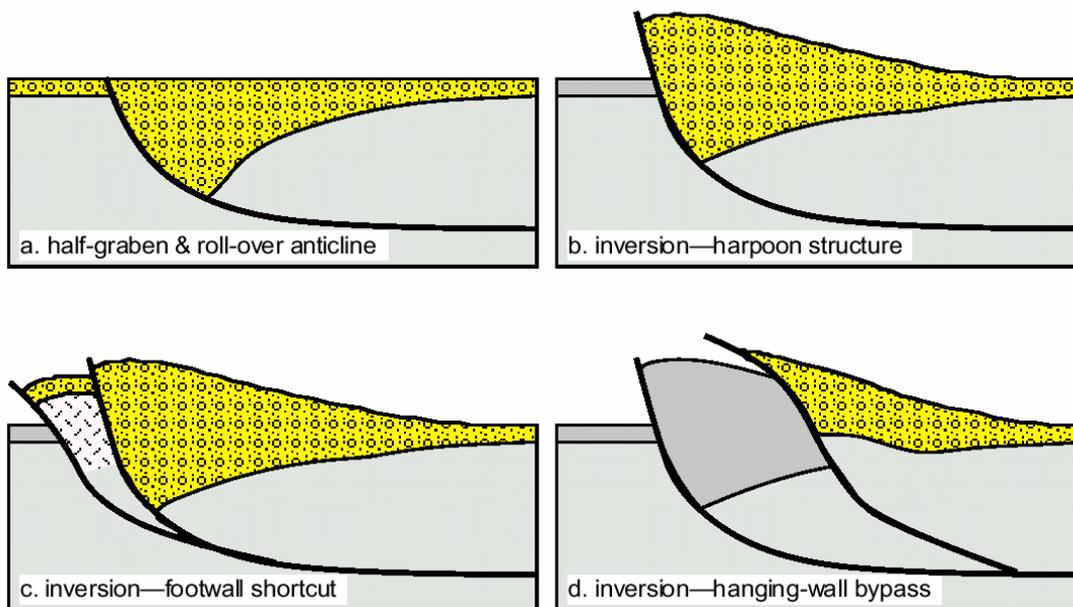
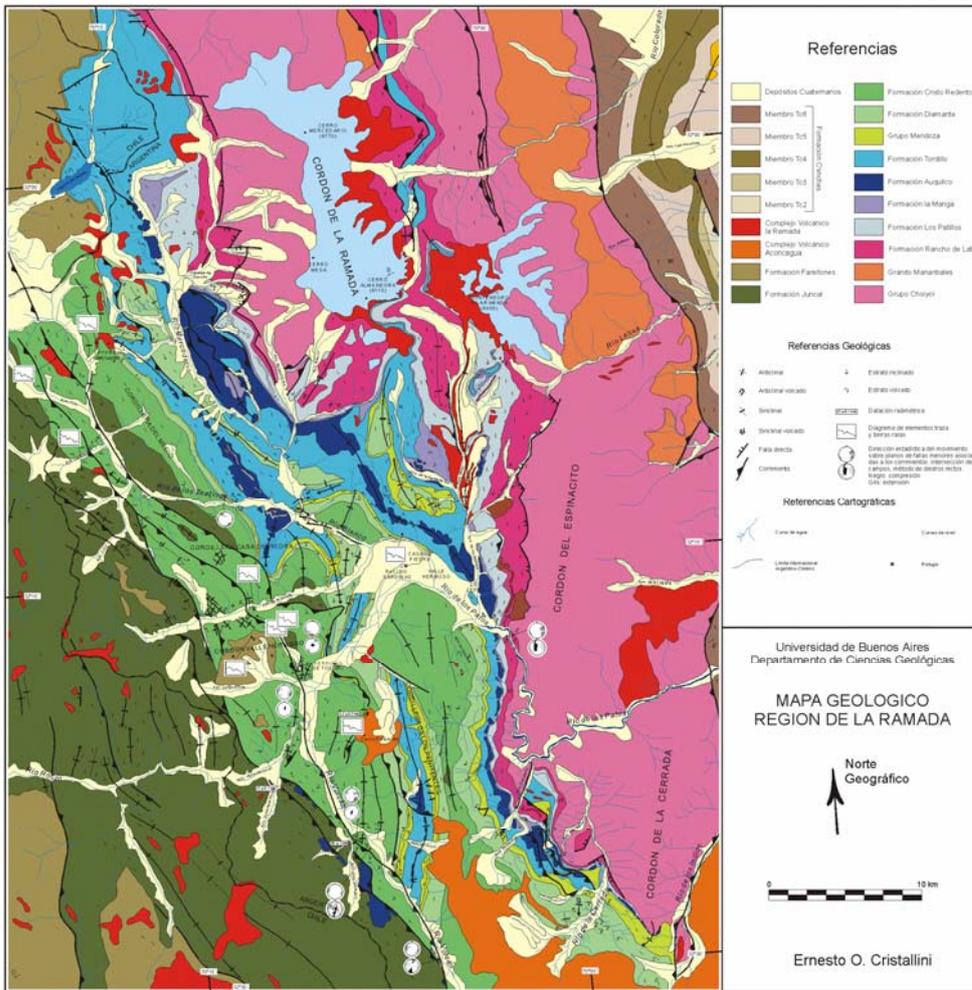
CRISTALLINI 2007

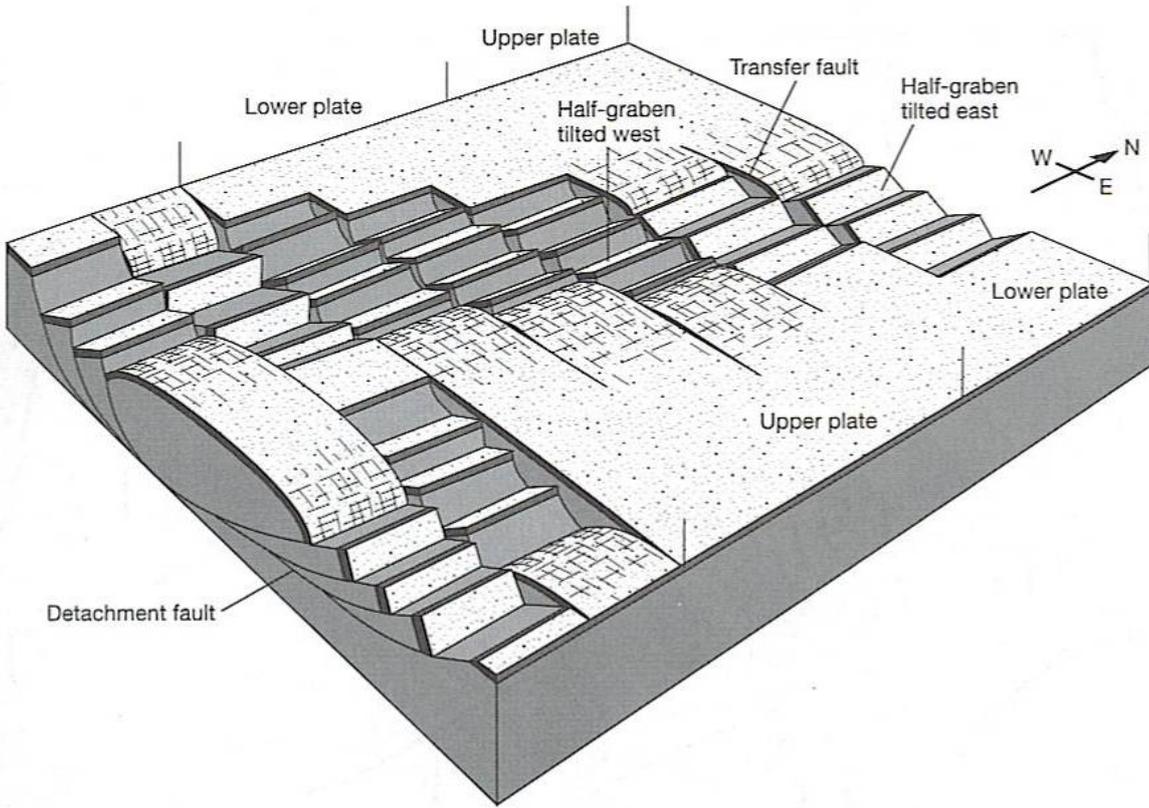
Universidad de Buenos Aires



CRISTALLINI 2007

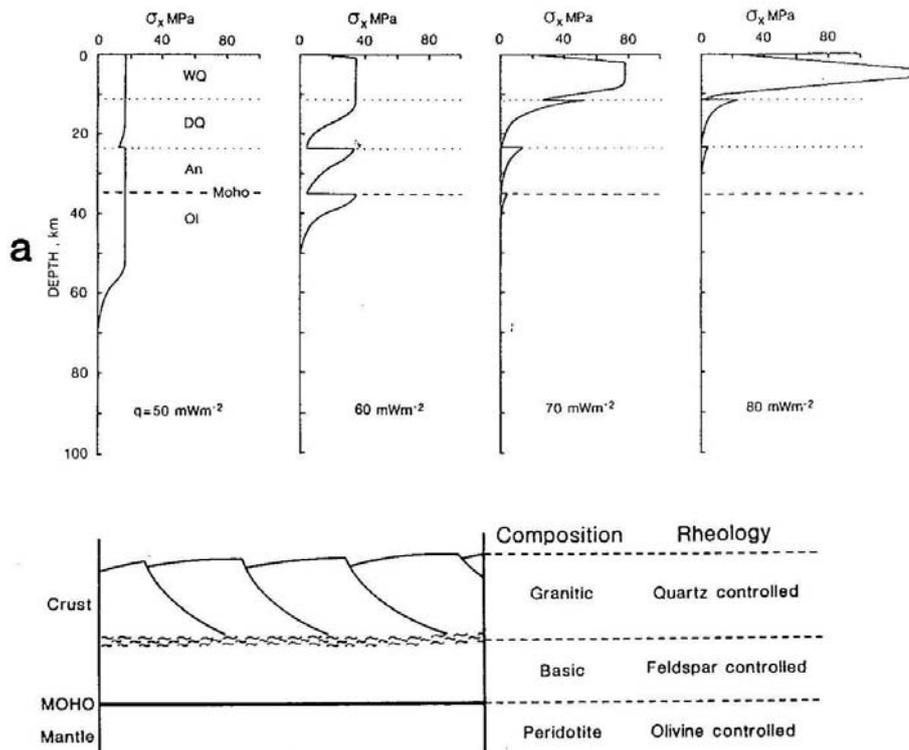
Universidad de Buenos Aires





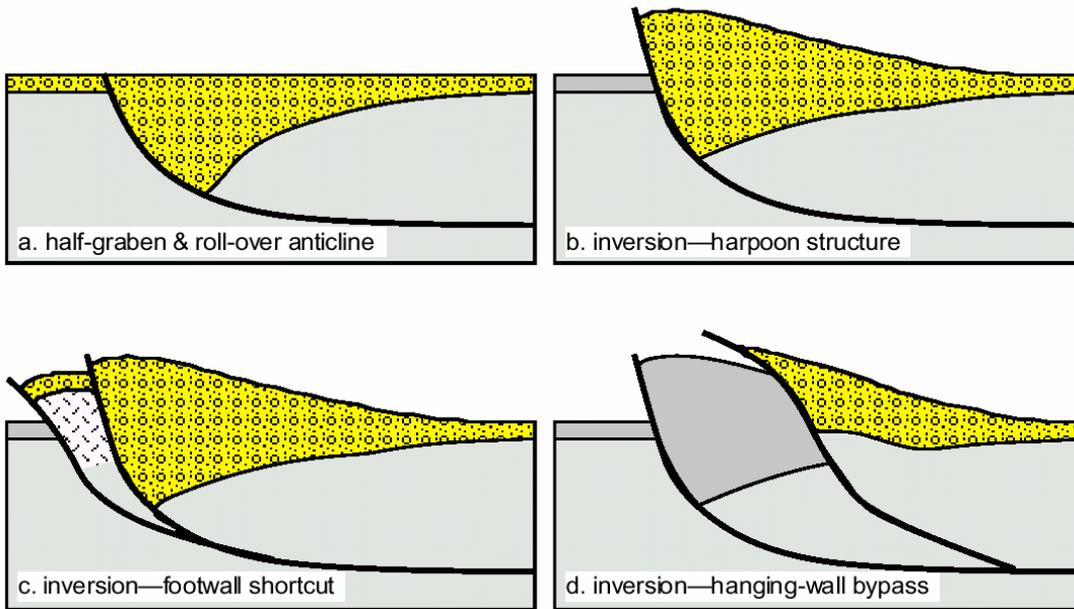
Twiss & Moore, 1992

CRISTALLINI 2007

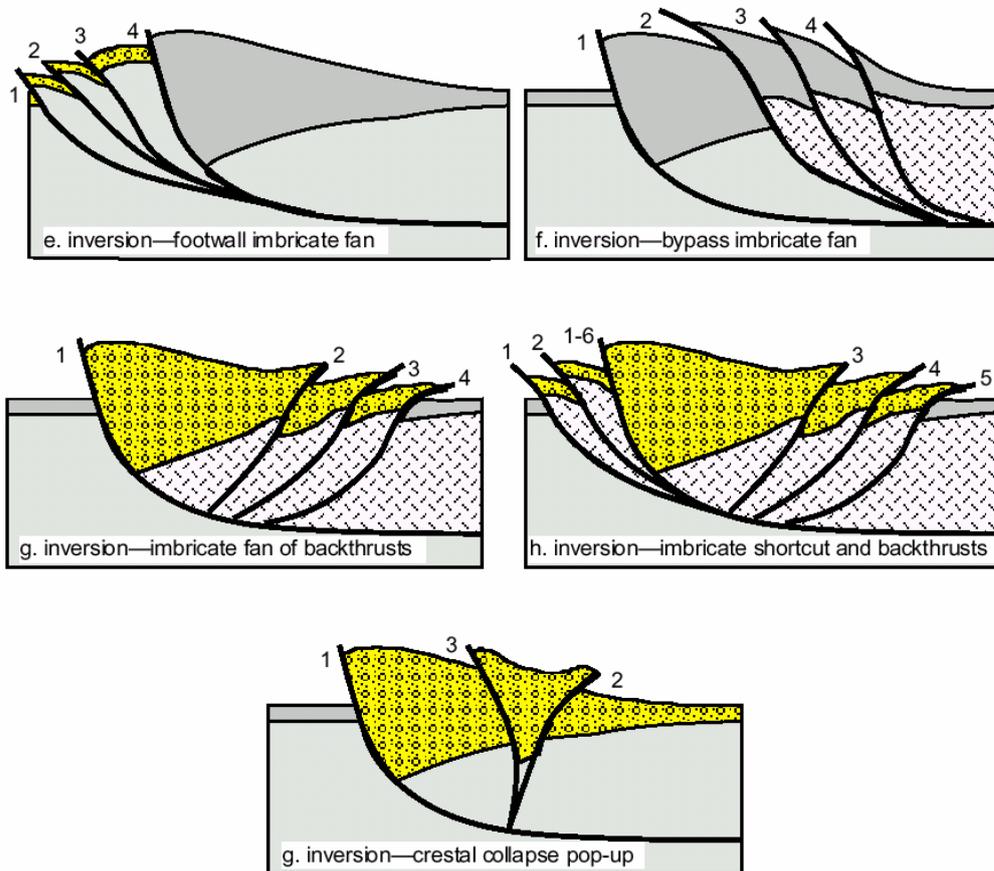


Kusznir, Karner & Egan, 1987

CRISTALLINI 2007

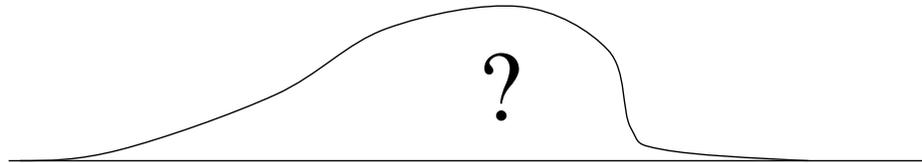


McClay y Buchanan (1992)



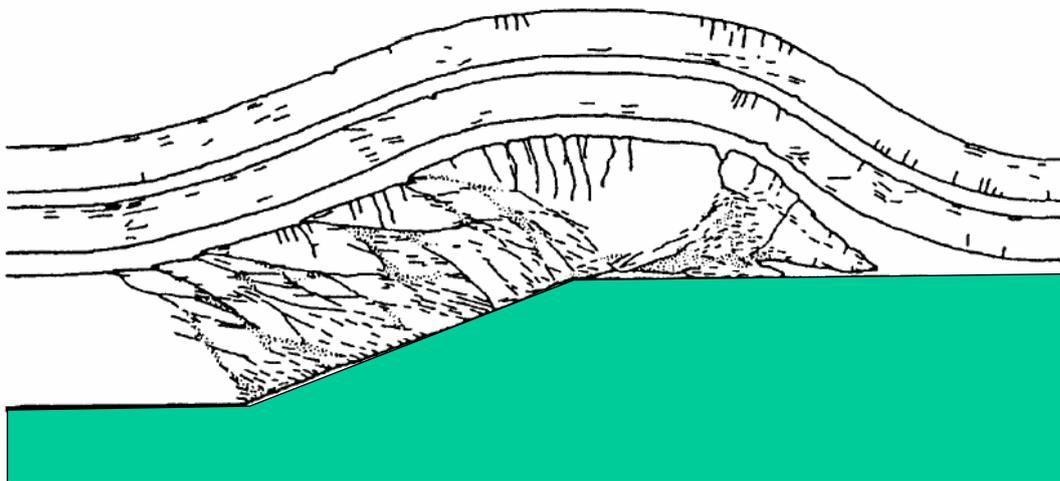
McClay y Buchanan (1992)

Pliegues relacionados a fallas

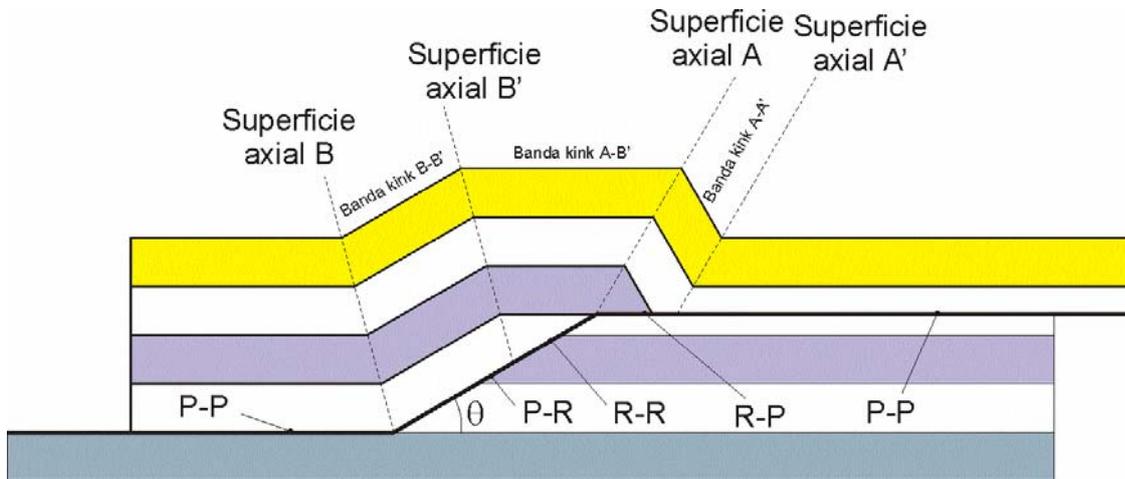


Pliegues relacionados a fallas

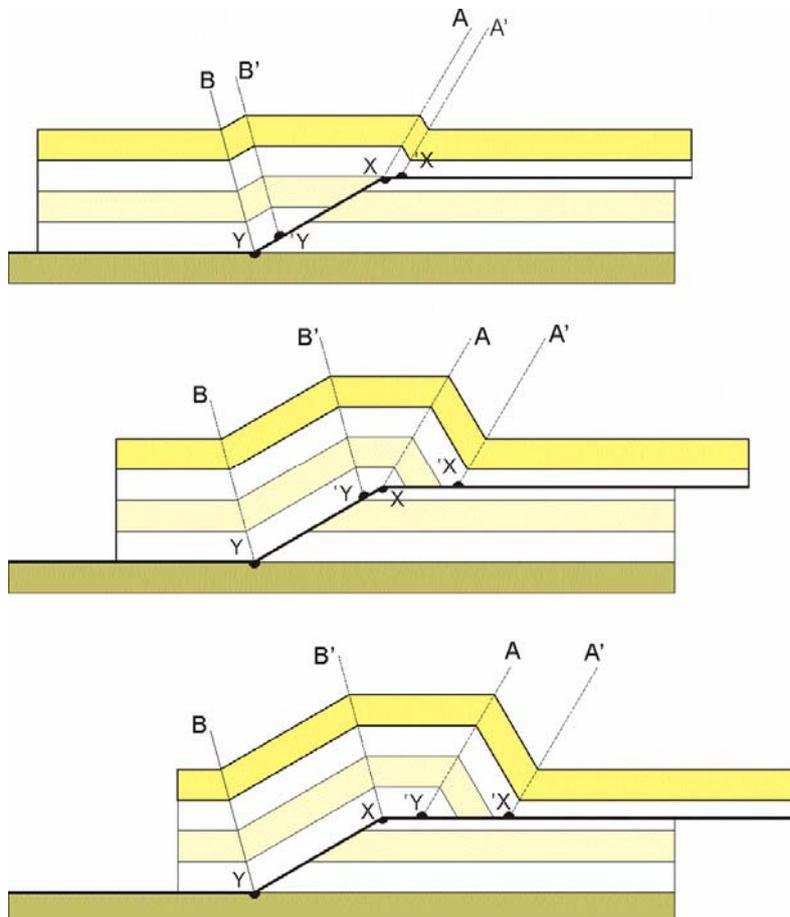
Acomodación al plano de falla



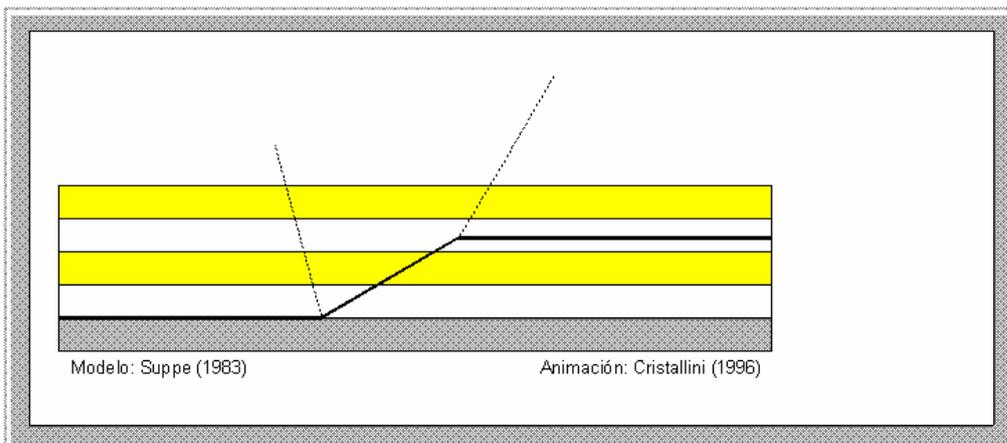
Plegamiento por de flexión de falla (*fault-bend folding*)



Suppe, 1983

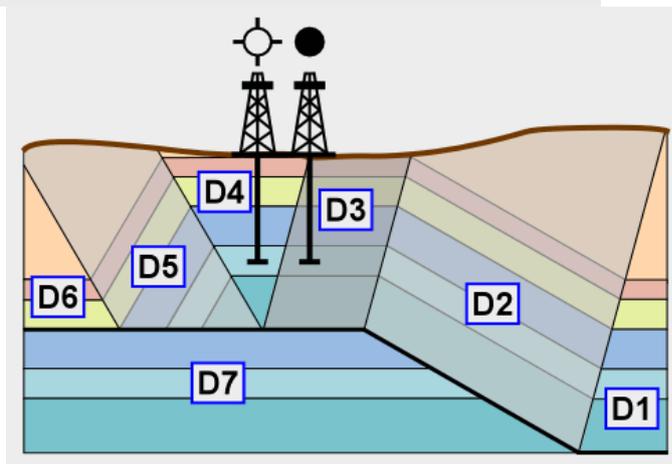
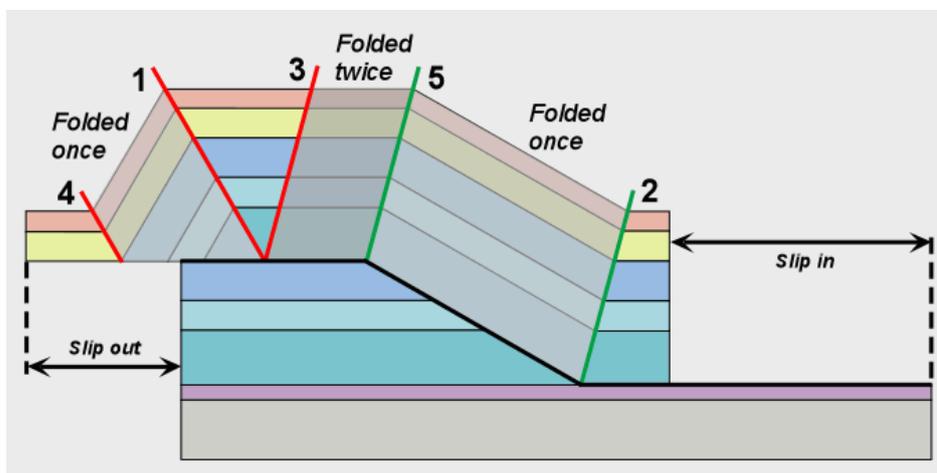


Suppe, 1983

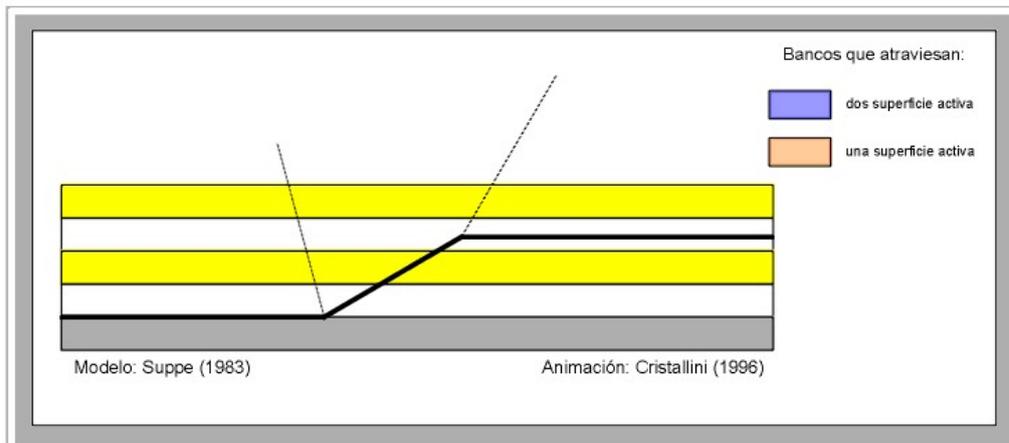


Plegamiento por flexión de falla

CRISTALLINI 2007



CRISTALLINI 2007

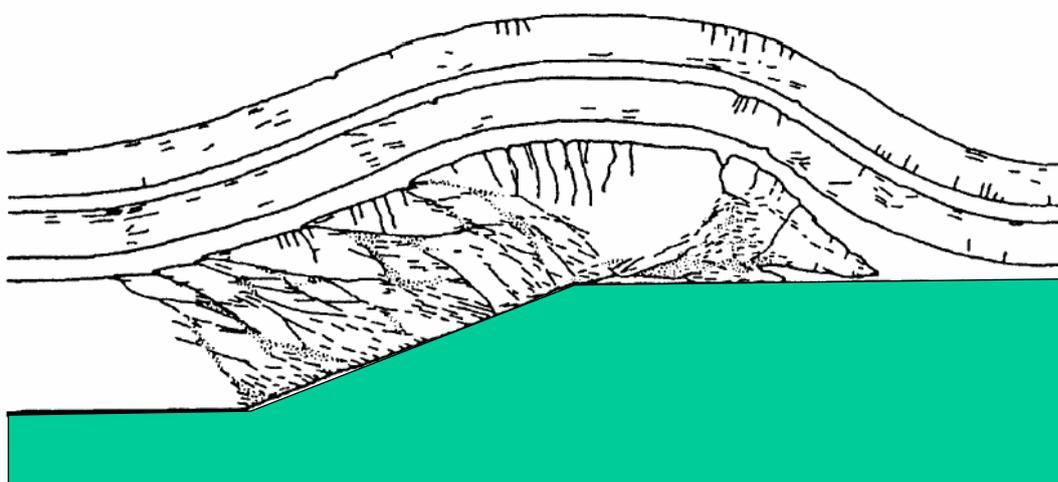


Plegamiento por flexión de falla

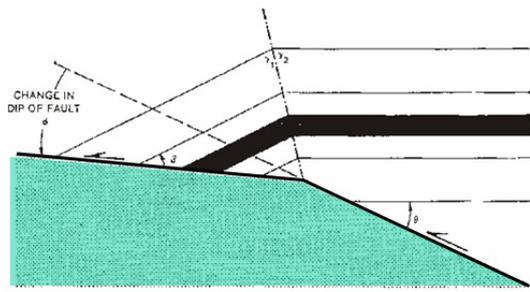
CRISTALLINI 2007

Pliegues relacionados a fallas

Acomodación al plano de falla

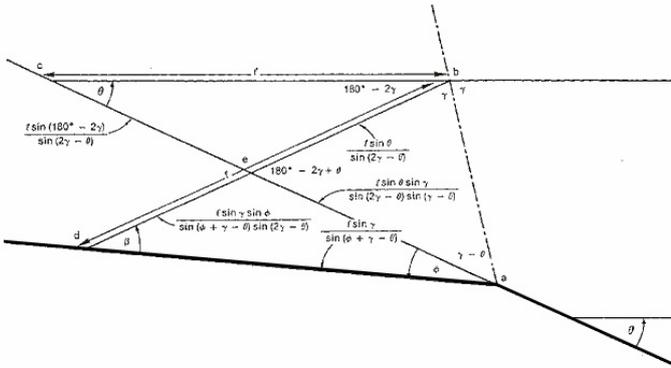


CRISTALLINI 2007



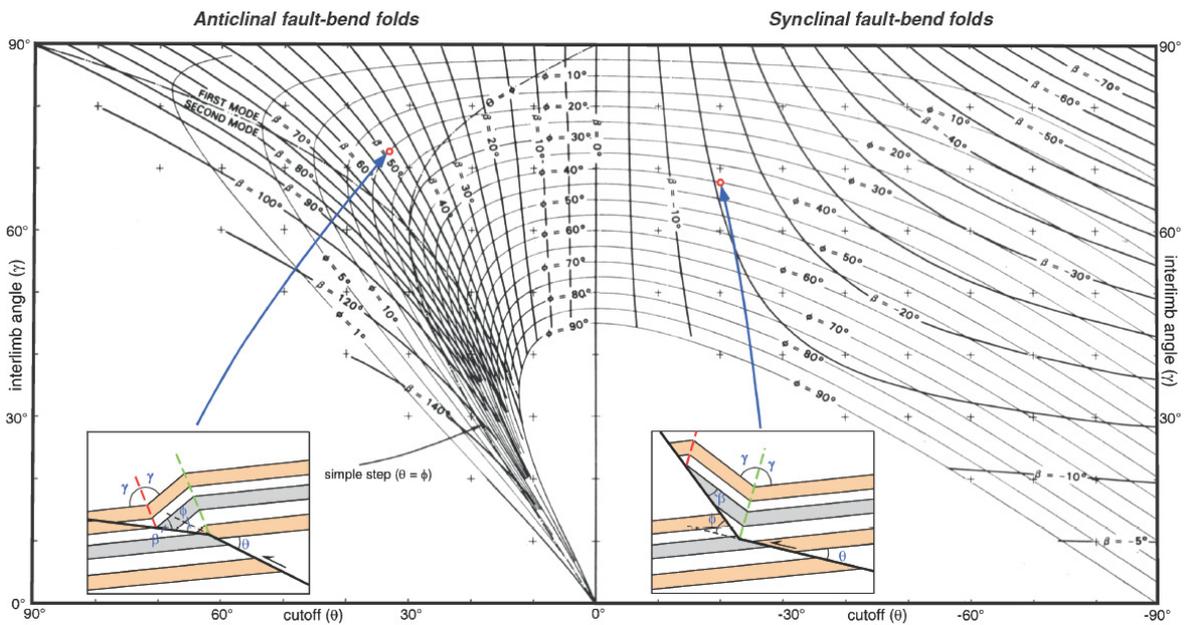
$$\phi = \tan^{-1} \left[\frac{-\sin(\gamma - \theta) \cdot [\sin(2\gamma - \theta) - \sin\theta]}{\cos(\gamma - \theta) \cdot [\sin(2\gamma - \theta) - \sin\theta] - \sin\theta} \right]$$

$$\phi = \theta = \tan^{-1} \left[\frac{\sin 2\gamma}{1 + \cos^2 \gamma} \right]$$

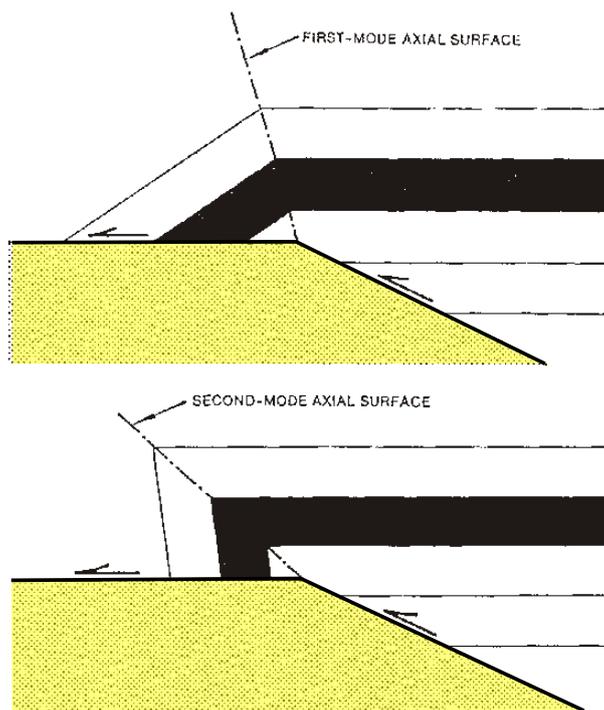


Suppe, 1983

Pliegues de flexión de falla



Suppe, 1983 (en Shaw et al 2005)

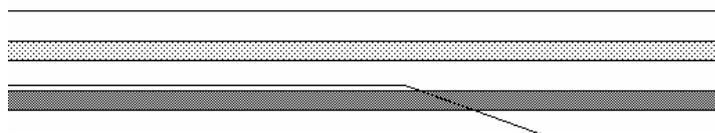


Suppe, 1983

CRISTALLINI 2007

Duplex - The Movie

by Rick Allmendinger © 1990
individual frames were produced by
MacThrust Ramp™



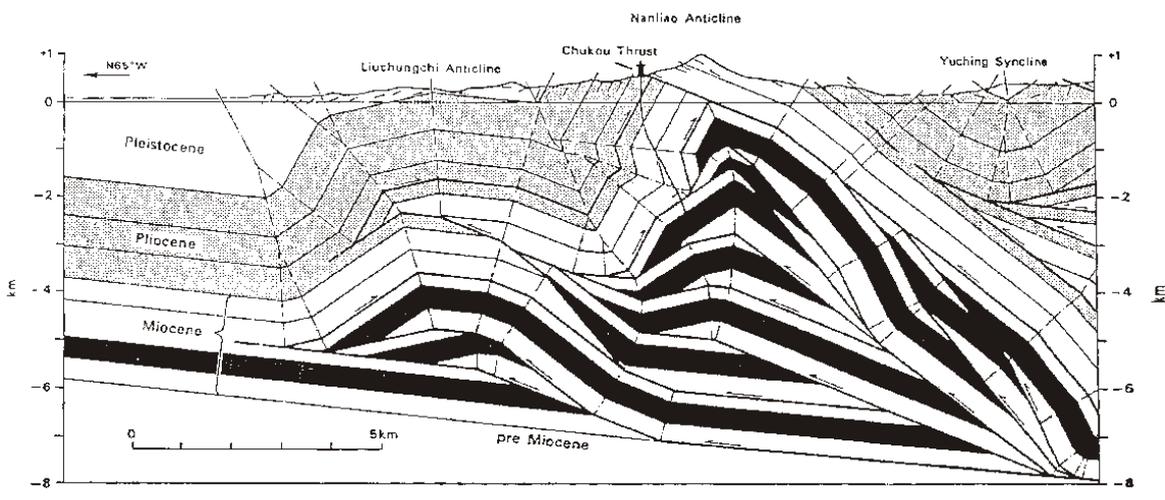
200 300 400 500 600 700 800

Go Backwards

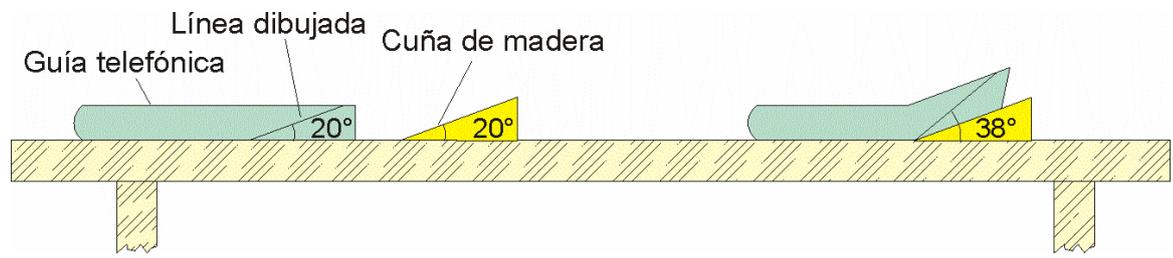
Slow motion

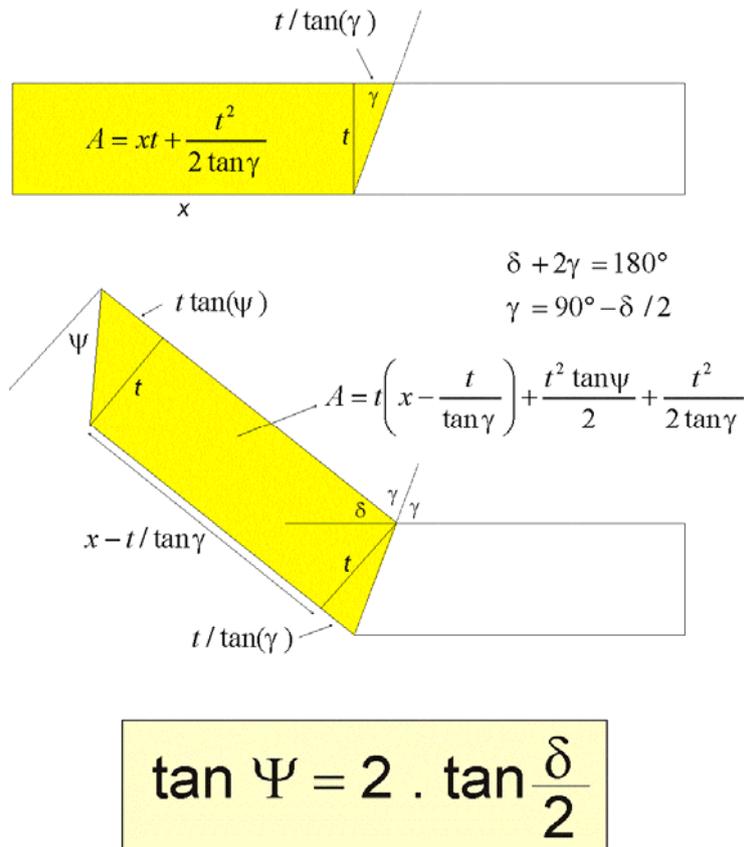
Show Movie click the mouse to stop the movie

CRISTALLINI 2007



Suppe, 1983

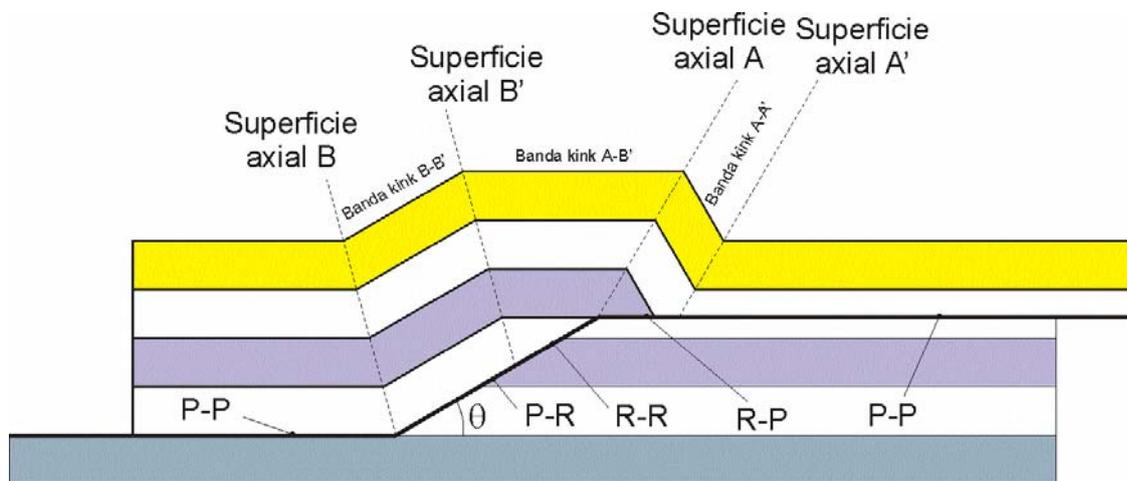




Allmendinger, 1999

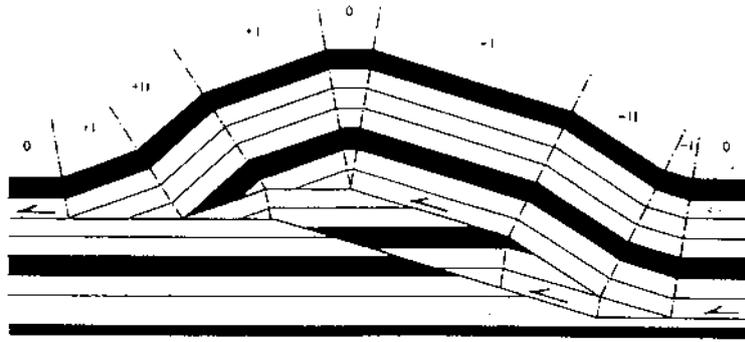
CRISTALLINI 2007

Plegamiento por de flexión de falla (*fault-bend folding*)



Suppe, 1983

CRISTALLINI 2007



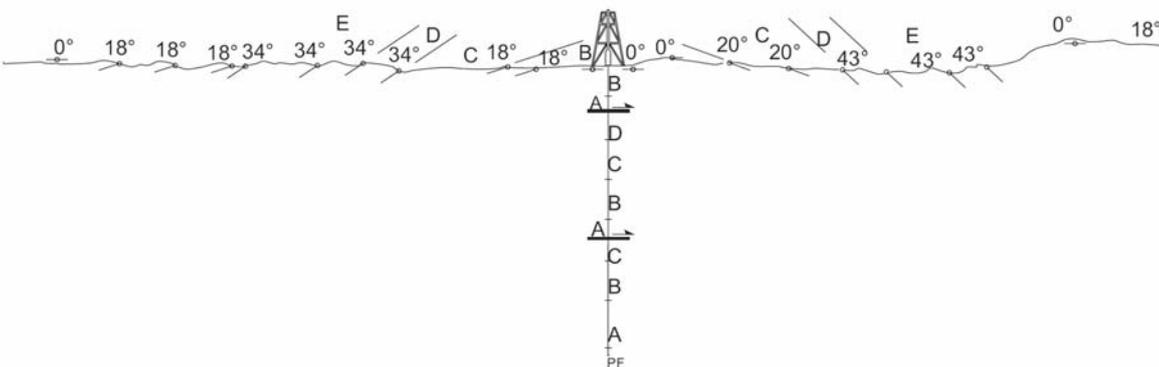
Forelimb Dips (+)							<i>Fundamental Cut-off Angle</i> θ	Backlimb Dips (-)						
VII	VI	V	IV	III	II	I	I	II	III	IV	V	VI	VII	
61.6°	52.5°	43.0°	34.0°	25.2°	16.6°	8.2°	8°	15.9°	23.4°	30.6°	37.3°	43.5°	49.3°	
70.2°	59.2°	48.6°	38.3°	28.3°	18.6°	9.2°	9°	17.8°	26.2°	34.0°	41.3°	47.9°	53.9°	
80.6°	67.6°	55.2°	43.3°	31.9°	20.9°	10.3°	10°	19.7°	28.9°	37.4°	45.1°	52.0°	58.2°	
93.1°	77.3°	62.6°	48.8°	35.7°	23.3°	11.4°	11°	21.6°	31.5°	40.6°	48.7°	55.9°	62.2°	
109°	88.8°	71.0°	54.8°	39.8°	25.8°	12.6°	12°	23.5°	34.1°	43.7°	52.1°	59.5°	65.9°	
128°	102°	80.5°	61.5°	44.3°	28.5°	13.8°	13°	25.4°	36.7°	46.7°	55.4°	62.9°	69.4°	
160°	119°	91.3°	68.6°	48.9°	31.2°	15.0°	14°	27.2°	39.1°	49.5°	58.4°	66.1°	72.5°	
-*	146°	104°	76.3°	53.6°	33.9°	16.2°	15°	29.1°	41.5°	52.3°	61.4°	69.0°	75.5°	
	-*	124°	85.9°	59.0°	36.8°	17.4°	16°	30.9°	43.9°	54.9°	64.1°	-*		
		-*	99.2°	65.6°	40.2°	18.8°	17°	32.7°	46.2°	57.5°	-*			
		-*	123°	73.1°	43.7°	20.2°	18°	34.4°	48.4°	59.9°	-*			
			-*	82.2°	47.4°	21.6°	19°	36.2°	50.6°	-*				
			-*	97.6°	52.0°	23.2°	20°	37.9°	52.7°	-*				
				-*	57.0°	24.8°	21°	39.6°	-*					
				-*	63.6°	26.6°	22°	41.3°	-*					
				-*	72.0°	28.4°	23°	42.9°	-*					
				-*	-*	30.4°	24°	24°	-*					

* bed thinning required

from Suppe (1983)

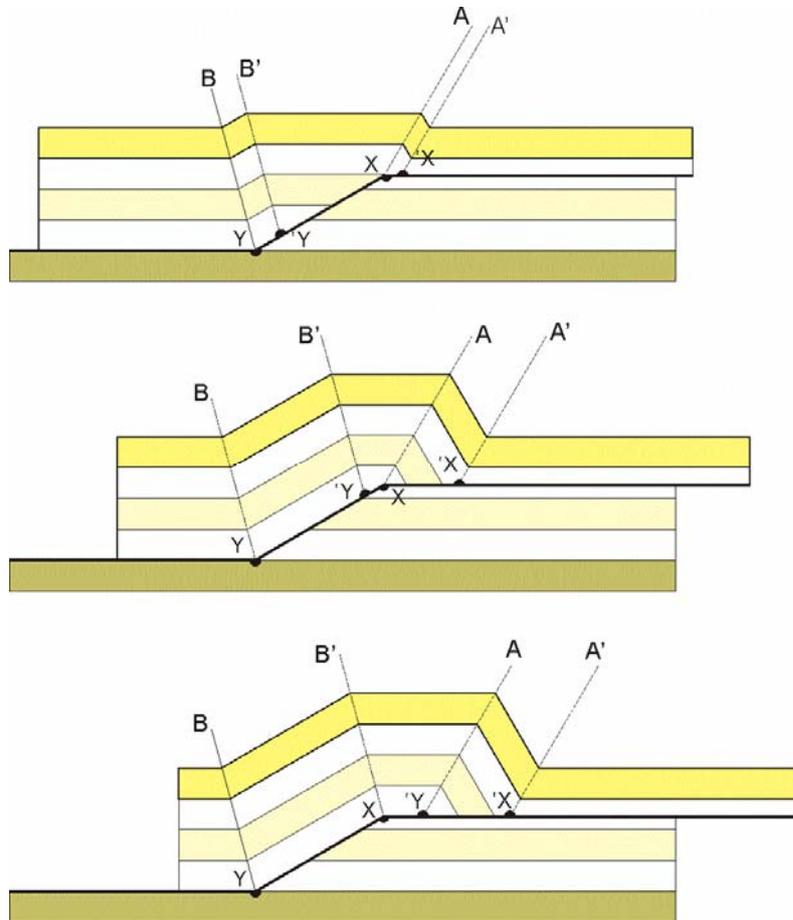
Suppe, 1983

CRISTALLINI 2007



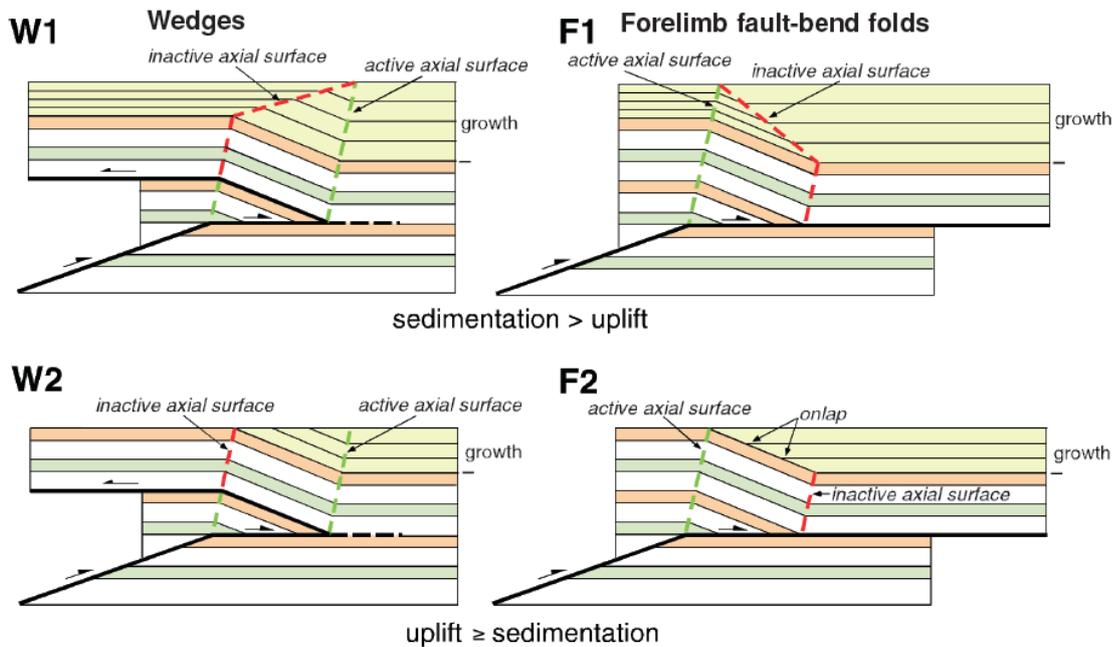
Universidad de Buenos Aires

CRISTALLINI 2007

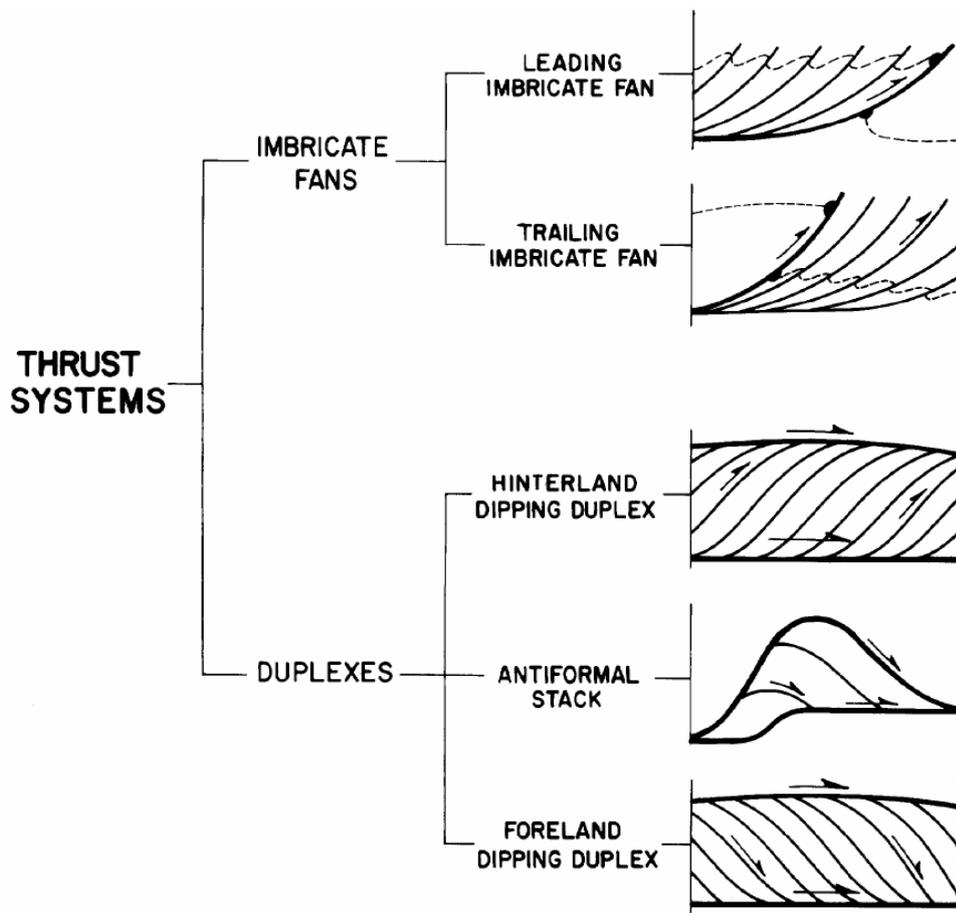


Suppe, 1983

CRISTALLINI 2007

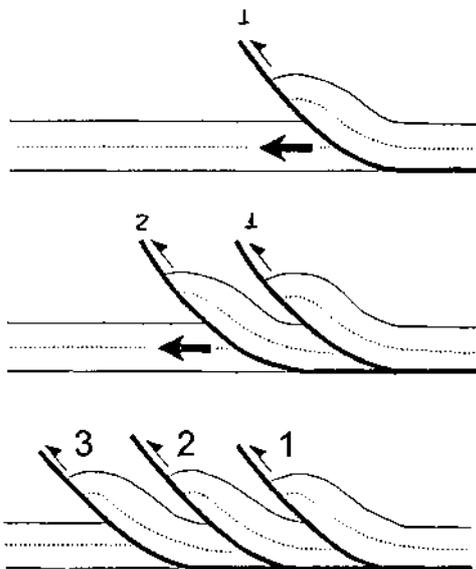


CRISTALLINI 2007

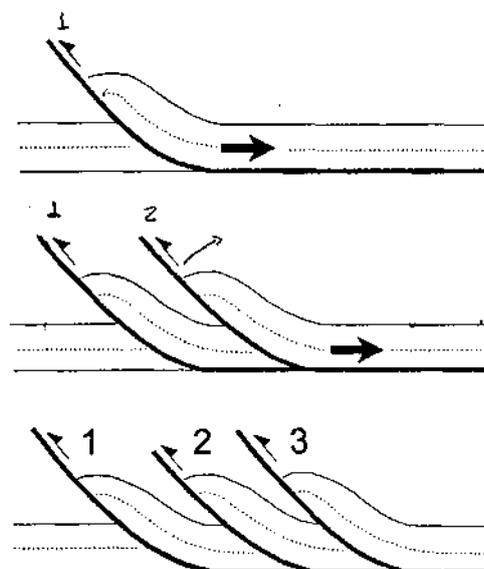


Boyer & Elliott, 1982

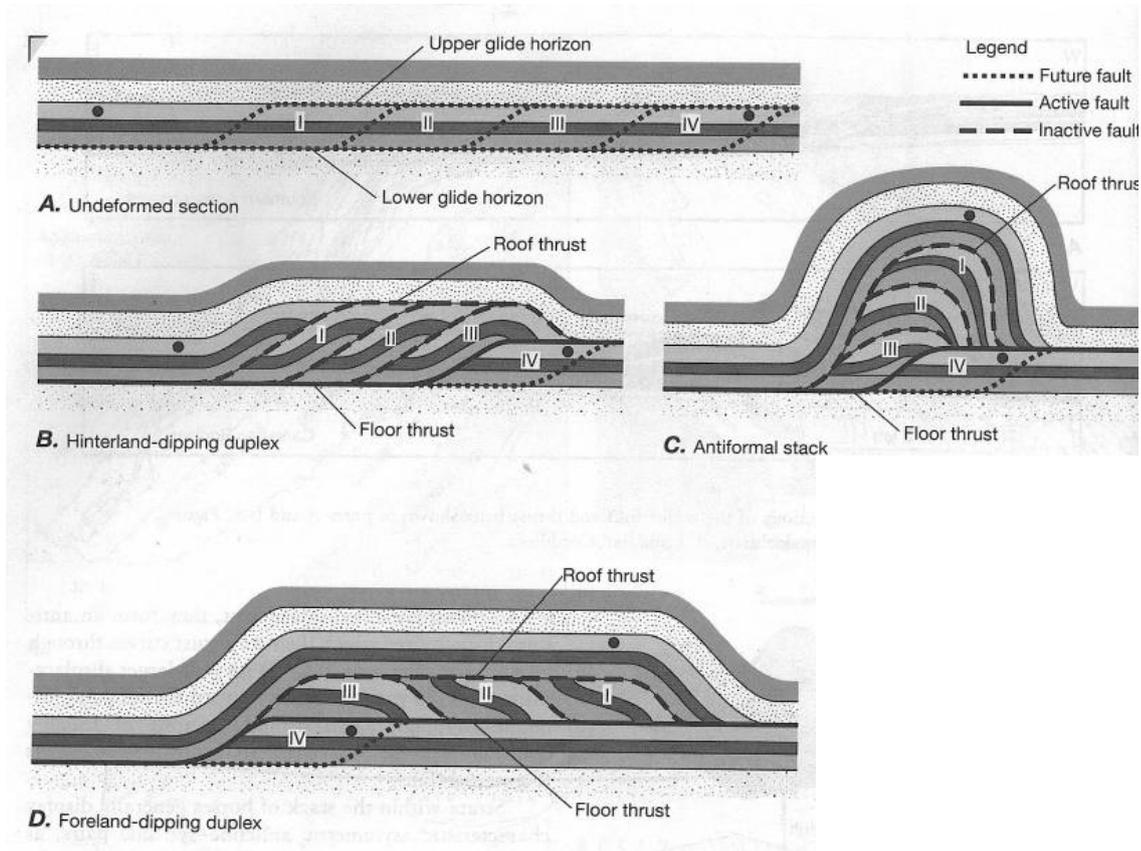
SECUENCIA DE BLOQUE INFERIOR



SECUENCIA DE BLOQUE SUPERIOR



Muñoz, 1997



Twiss & Moore, 1992

Duplex - The Movie

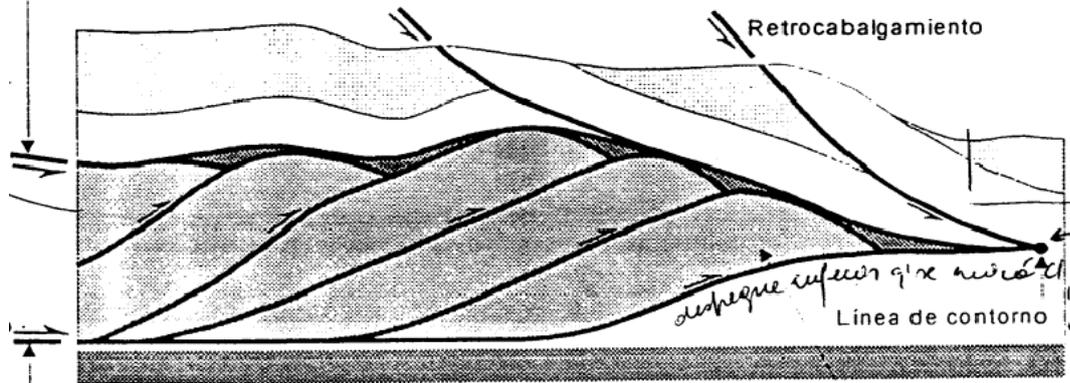
by Rick Allmendinger © 1990
 individual frames were produced by
 MacThrust Ramp™

The interface includes a horizontal axis with markers at 200, 300, 400, 500, 600, 700, and 800. Below the axis are playback controls:

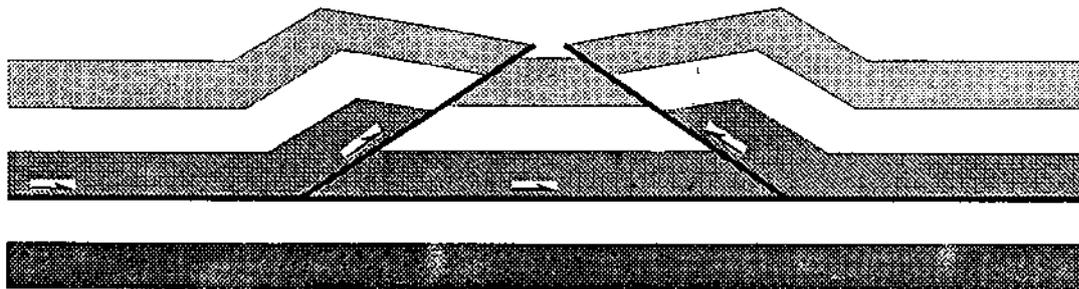
- Go Backwards
- Slow motion
- Show Movie** button
- click the mouse to stop the movie

Animación

DESPEGUE SUPERIOR (Dahlstrom 1970, Jones 1982)
CABALGAMIENTO SUPERIOR PASIVO (Banks & Warburton, 1986)



Jones, 1986 en Muñoz, 1997



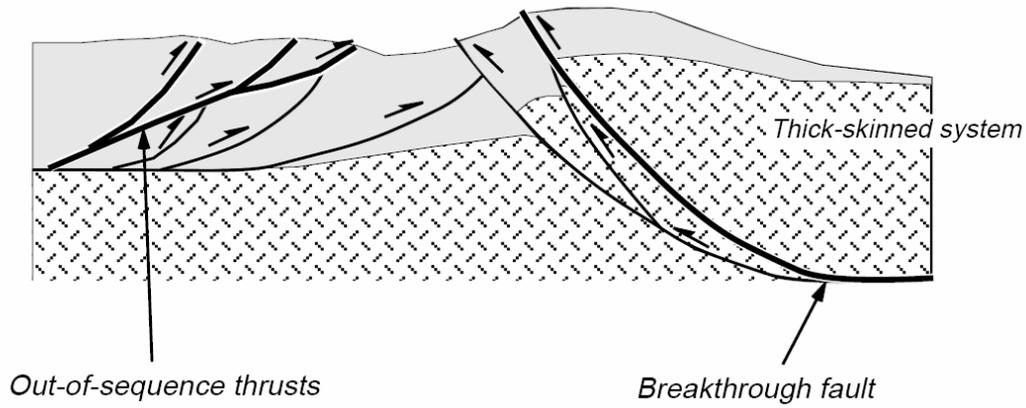
ZONA TRIANGULAR

(B)

Thick-skinned triangle zone

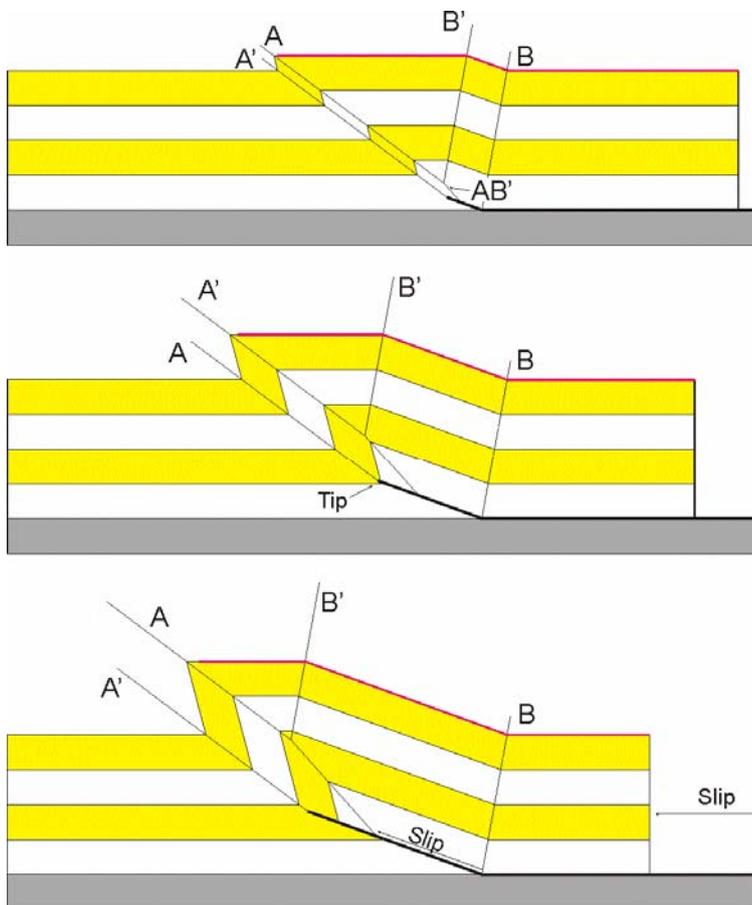
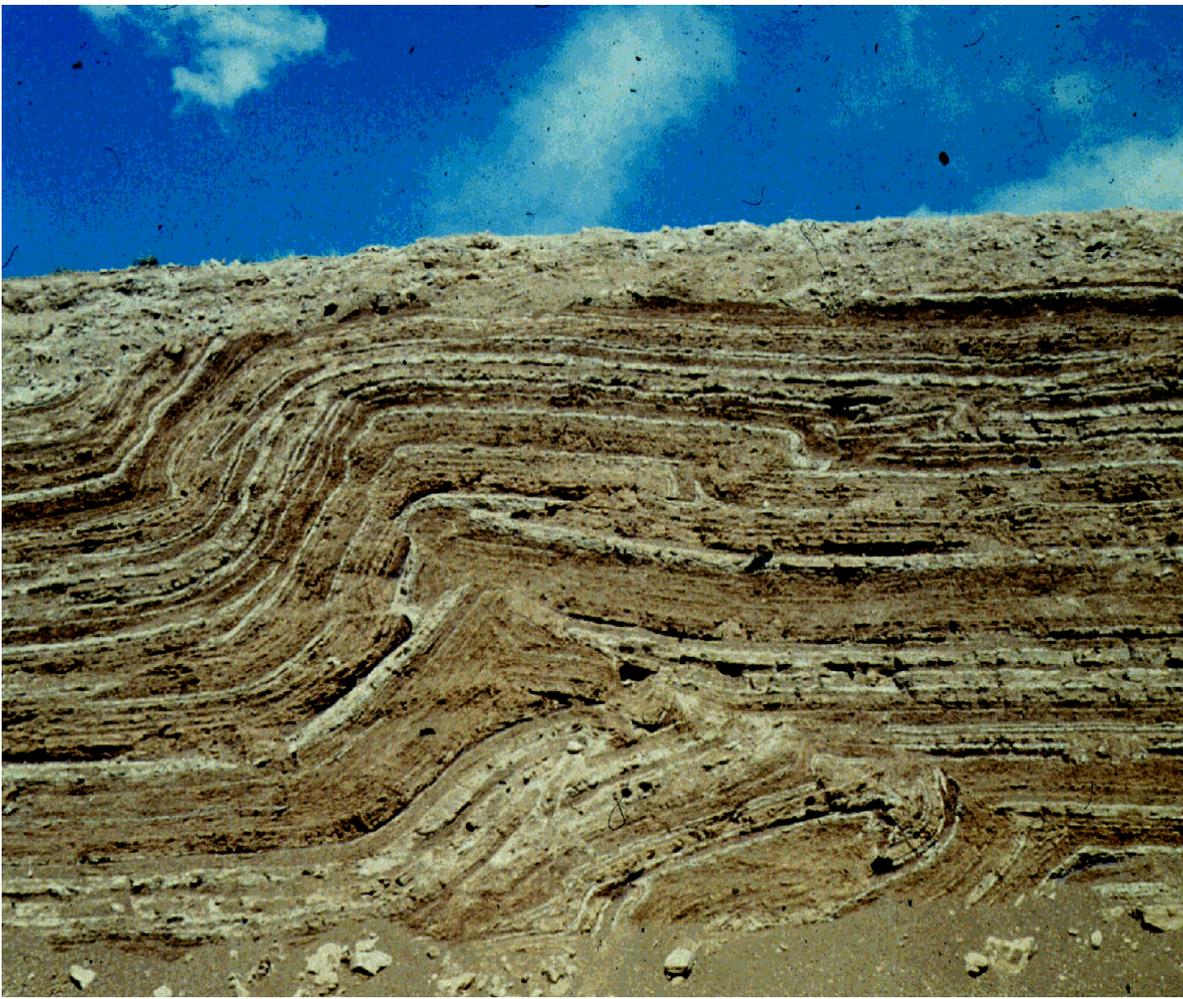
Foreland-directed thrusts

Hinterland-directed thrusts

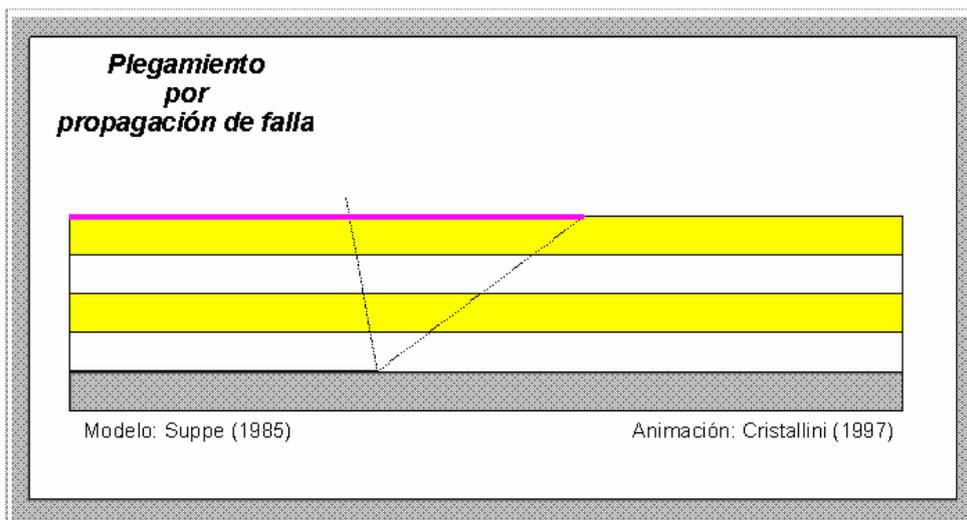


Zapata & Allmendinger, 1996

Pliegues por propagación de falla (fault-propagation-folds)

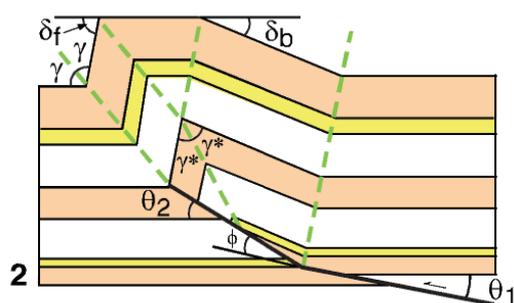


Suppe & Medwedeff, 1984



CRISTALLINI 2007

Constant thickness fault-propagation folds

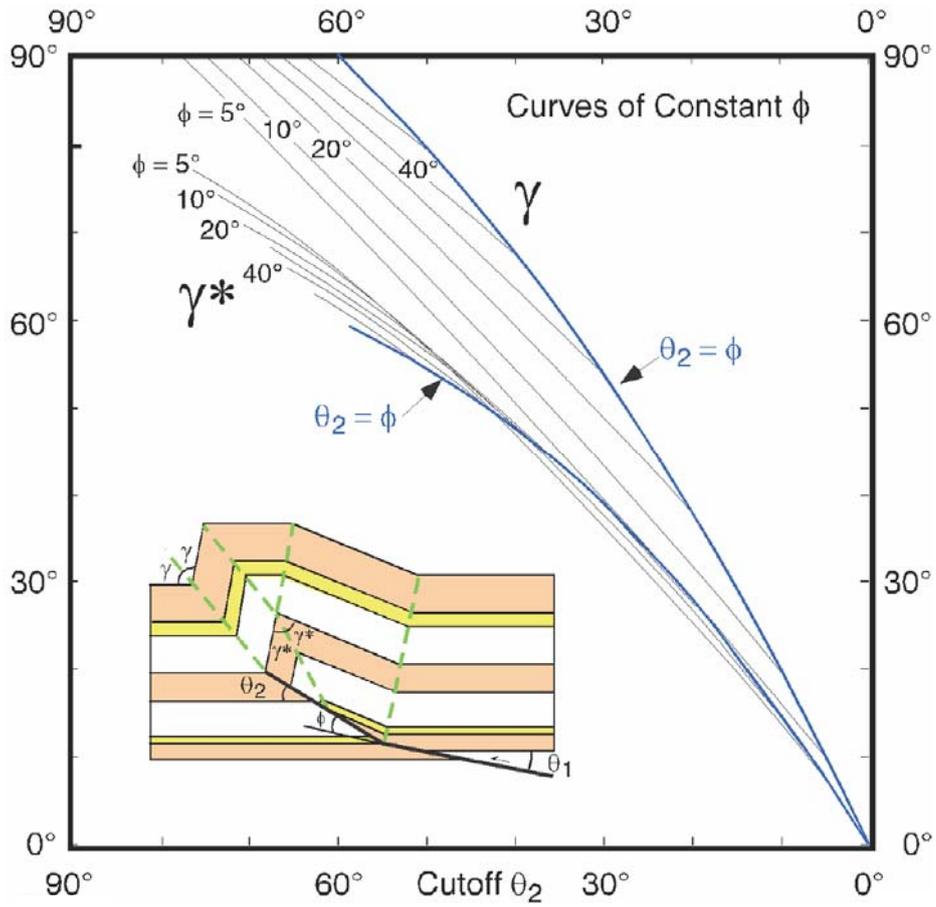


FPF terminology

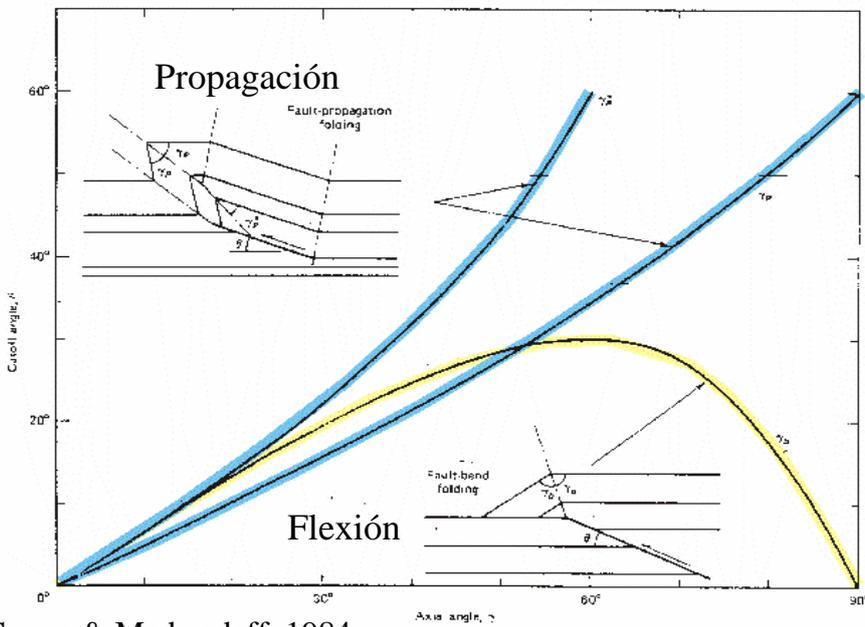
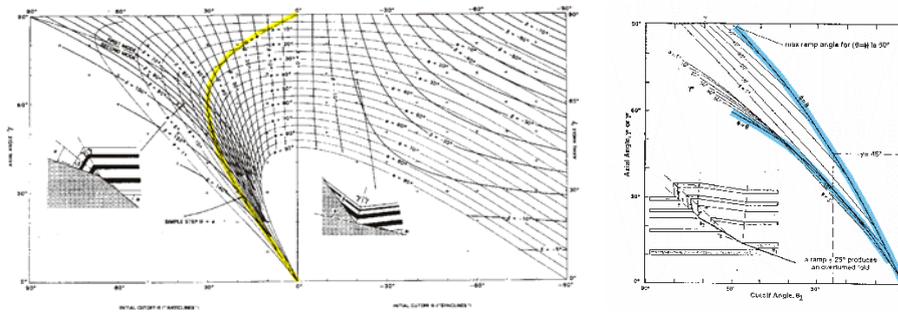
The following terms are used in the derivation and graphs that describe fault-propagation folds.

- θ_1 = hanging wall cut-off (lower fault segment)
- θ_2 = footwall cut-off (upper fault segment)
- ϕ = change in fault dip
- γ = forelimb syncline interlimb angle
- γ^* = anticlinal interlimb angle
- δ_b = backlimb dip
- δ_f = forelimb dip

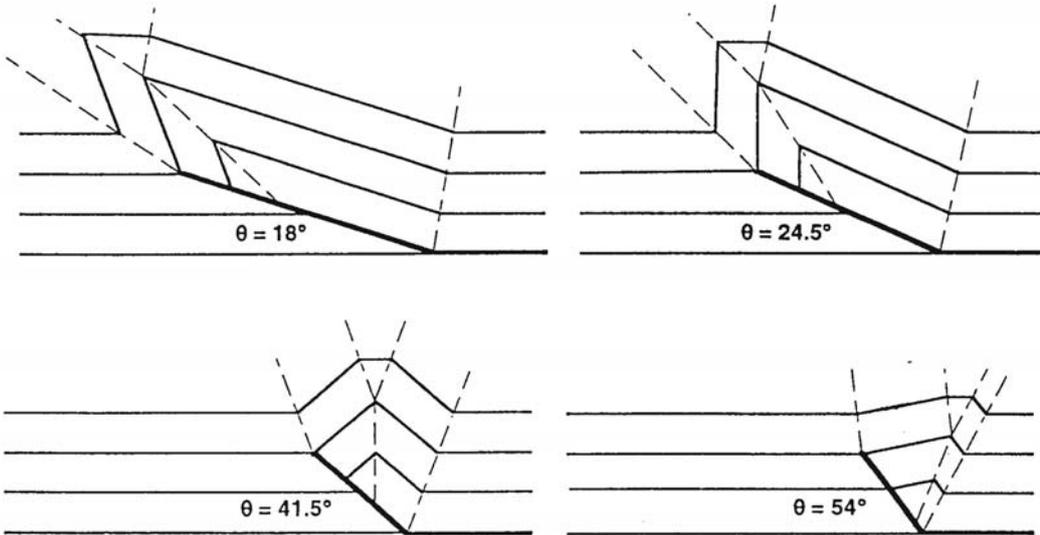
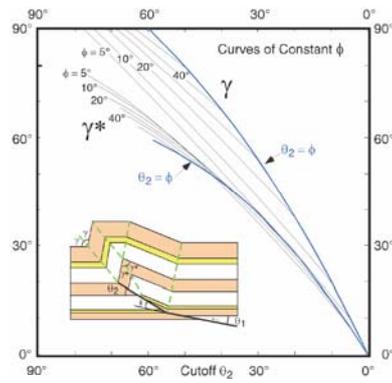
CRISTALLINI 2007



Suppe & Medwedeff, 1984 (en Shaw et al 2005)

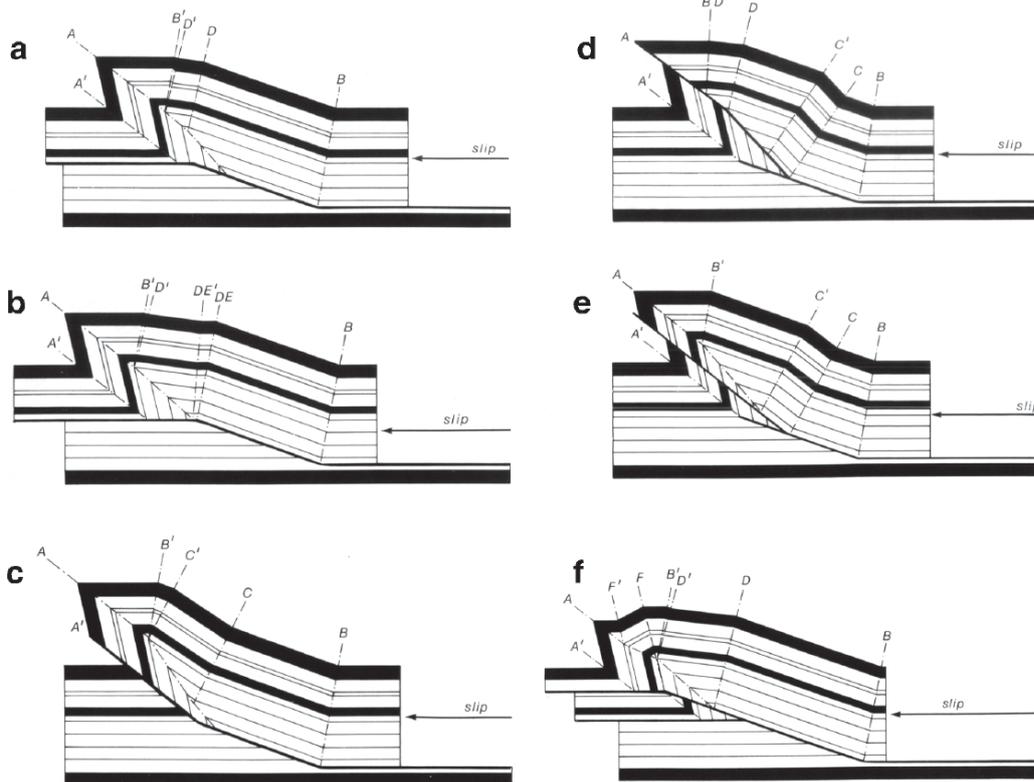


Suppe & Medwedeff, 1984



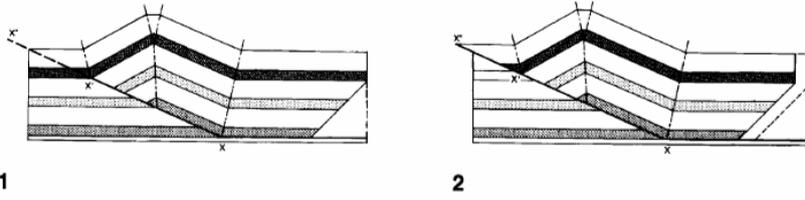
Allmendinger, 1999

Breakthrough styles

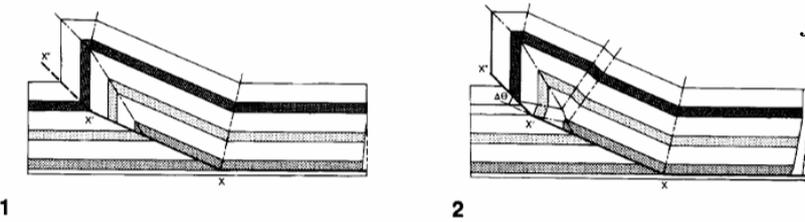


Suppe & Medwedeff, 1984

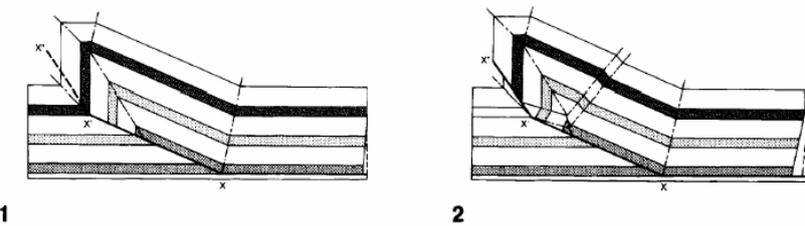
a PROPAGATION THROUGH UNDEFORMED SECTION



b PROPAGATION THROUGH AXIAL PLANE OF SYNCLINE



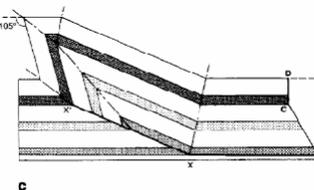
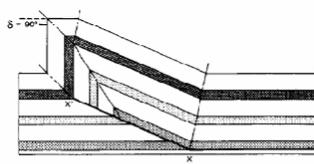
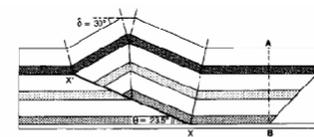
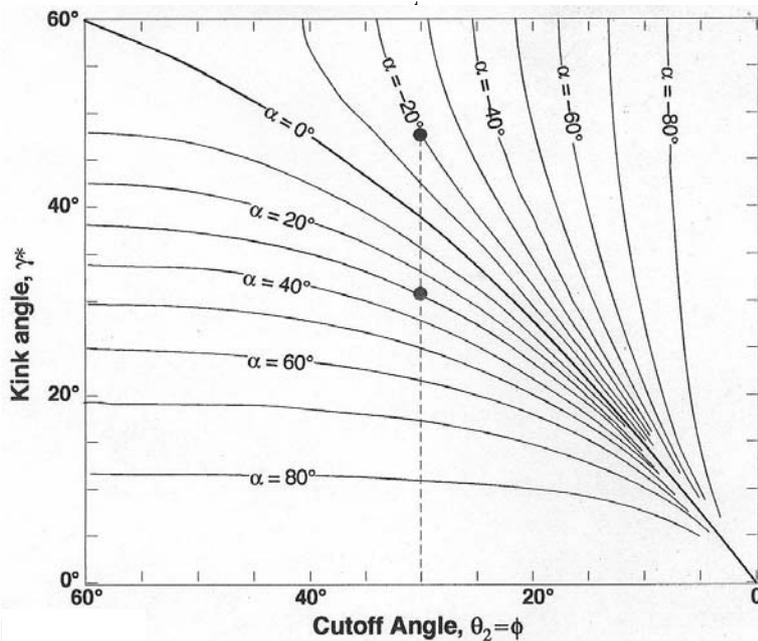
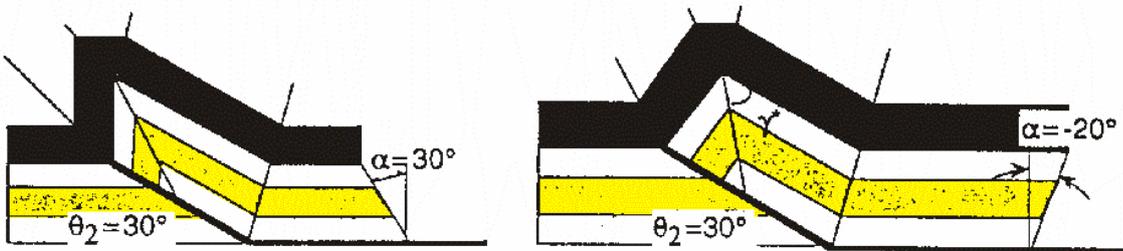
c PROPAGATION THROUGH ANTICLINAL FORELIMB



Pliegues de propagación de falla transportados

Mitra, 1990

CRISTALLINI 2007

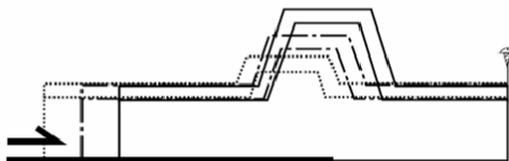


Suppe & Medwedeff, 1984

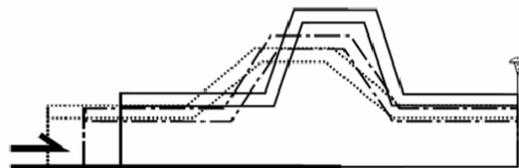
CRISTALLINI 2007

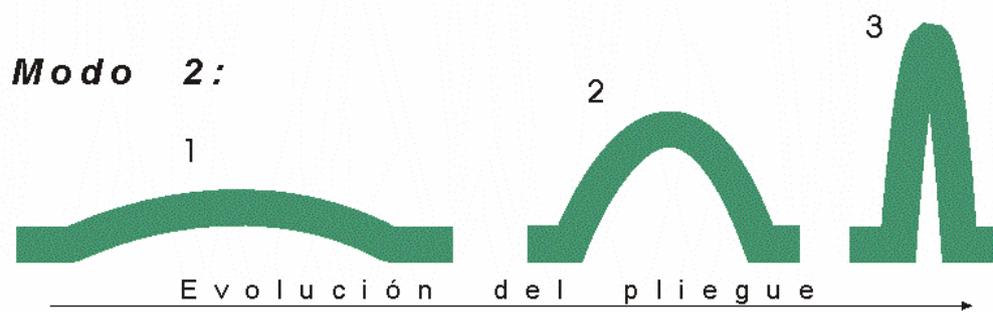
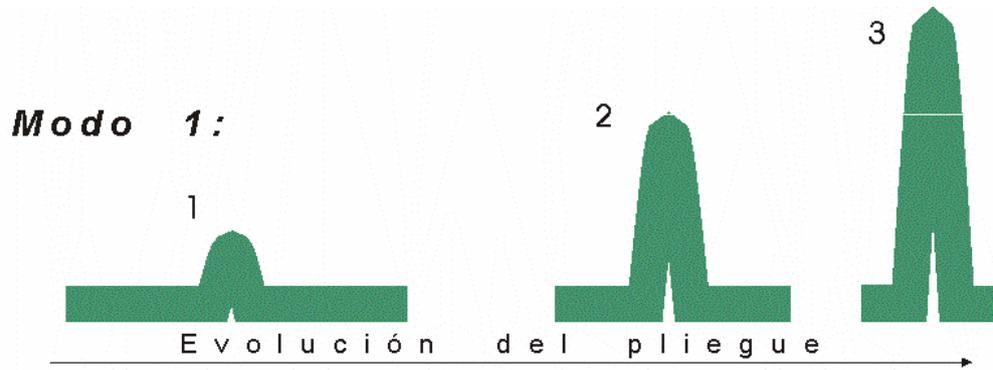
Pliegues por despegue (detachment-folds)

constant limb dip and
variable limb length
Model 1

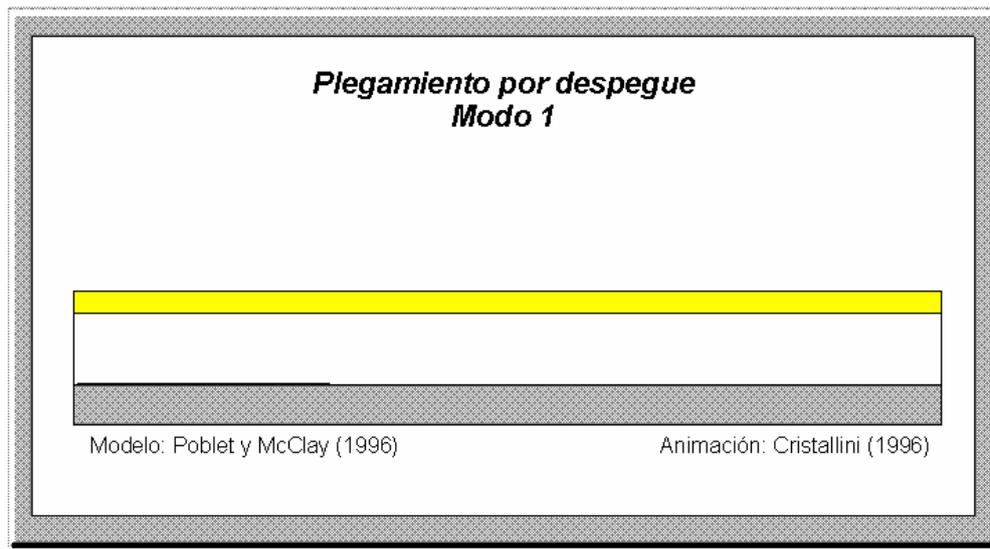


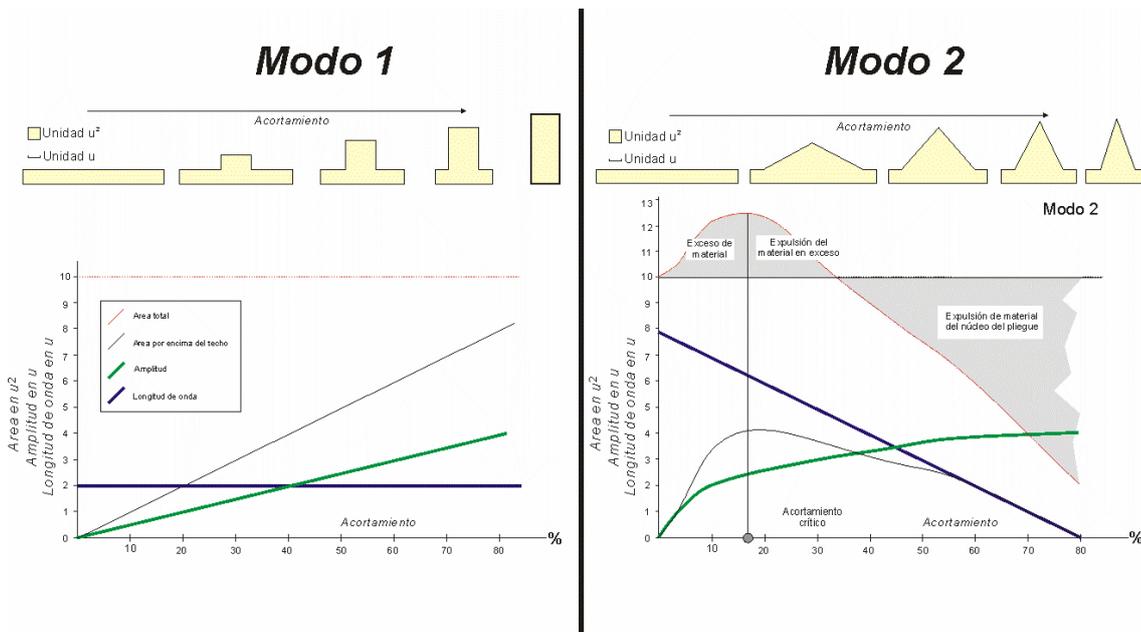
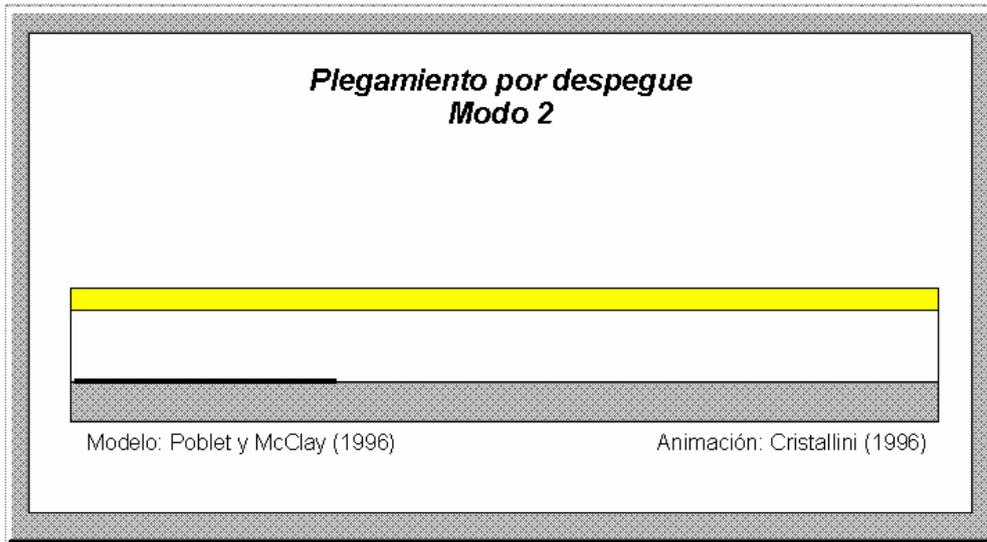
variable limb dip and
constant limb length
Model 2





Cristallini, 1996



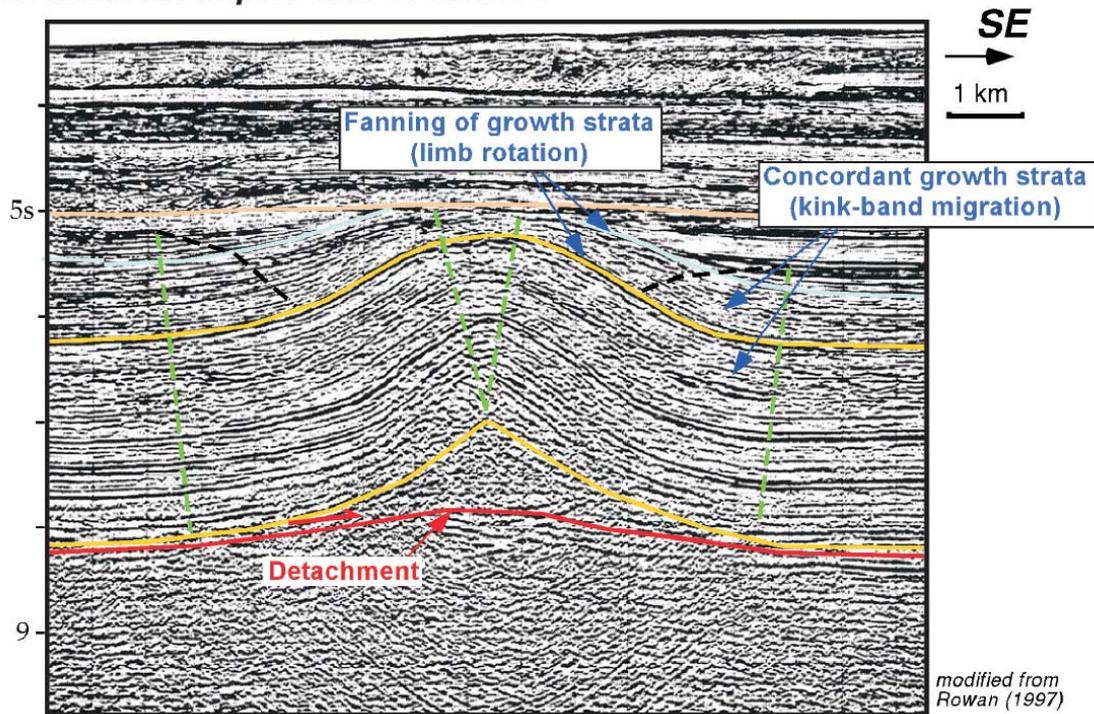




Cristallini, 1996

CRISTALLINI 2007

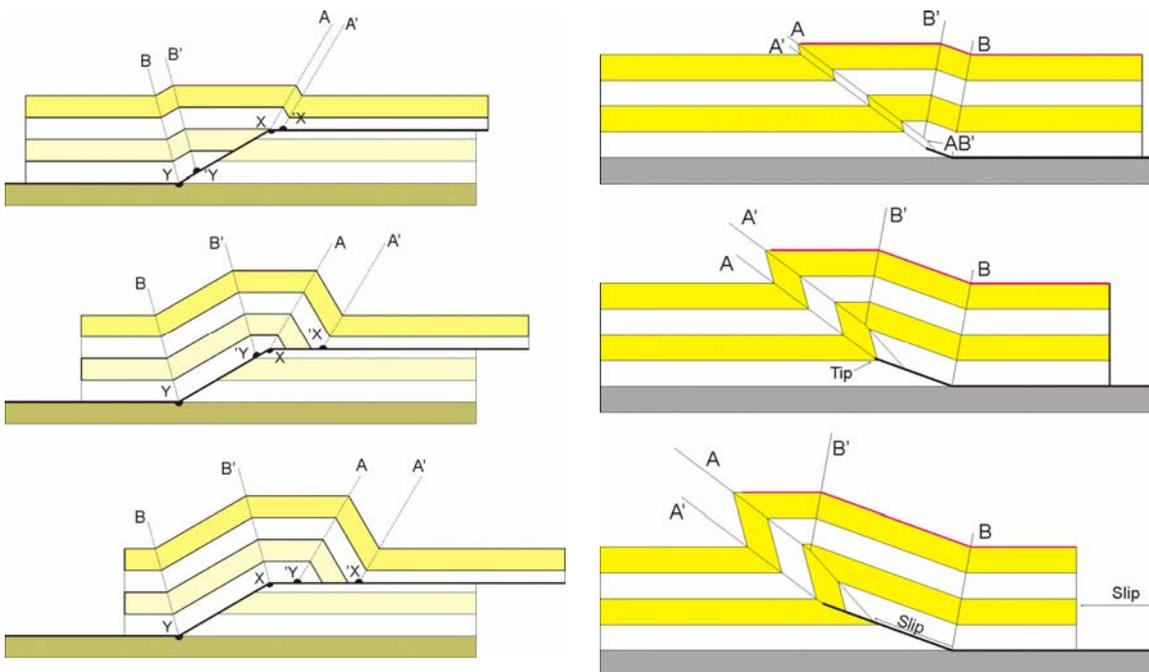
Seismic Example: Gulf of Mexico



CRISTALLINI 2007

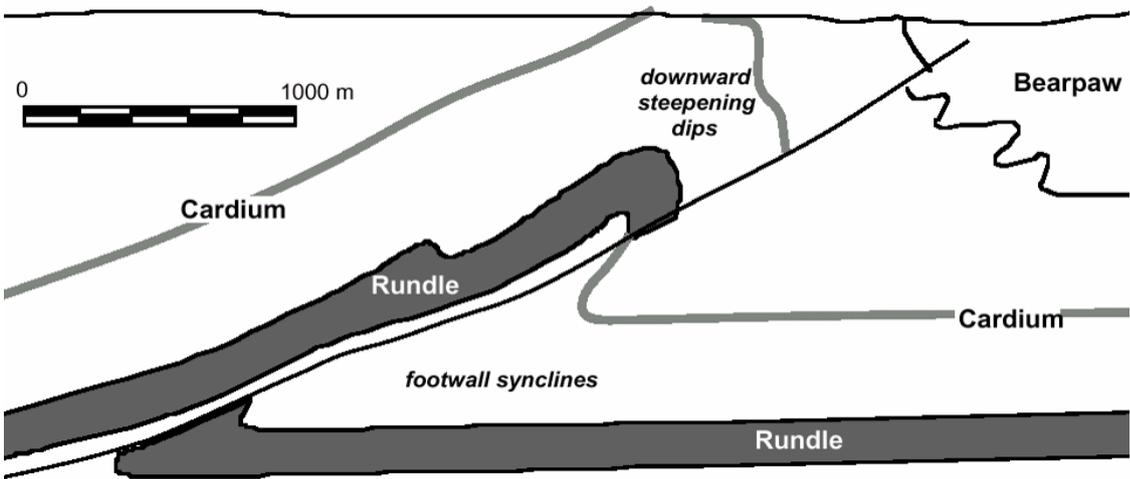
Pliegues por propagación de falla de cizalla triangular

(trishear fault-propagation-folds)



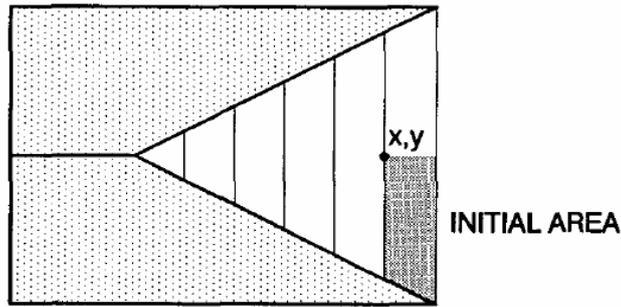


Autor: Emilio A. Ahumada

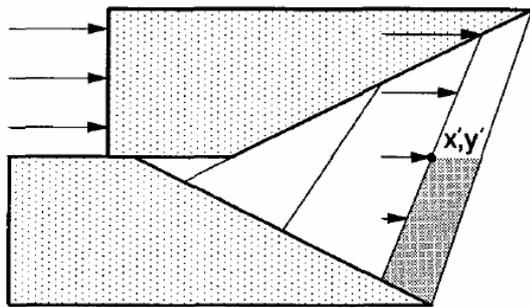


Anticlinal de Turner Valley en Alberta, dicutado por Dahlstrom (1979) y Suppe y Medwedeff (1990)

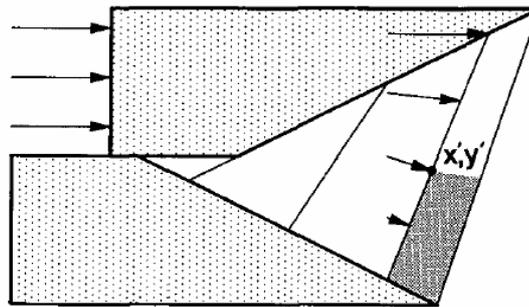
A. Initial Geometry



B. Simple Shear

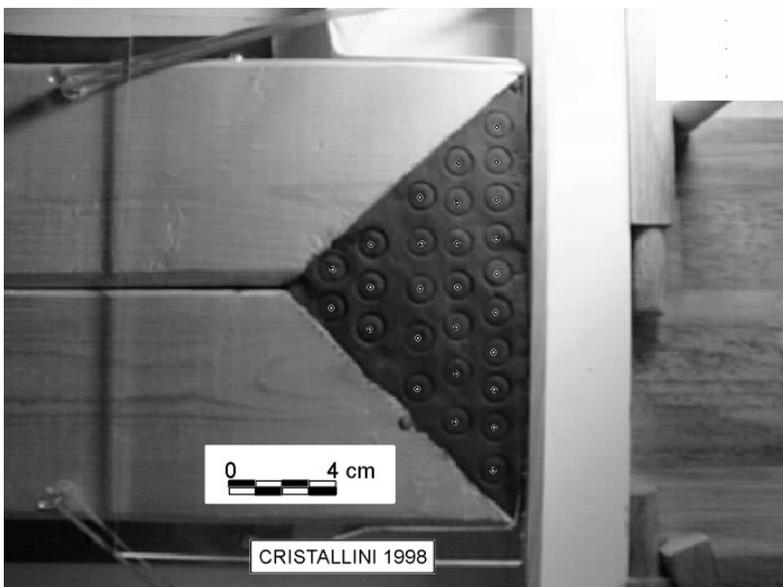
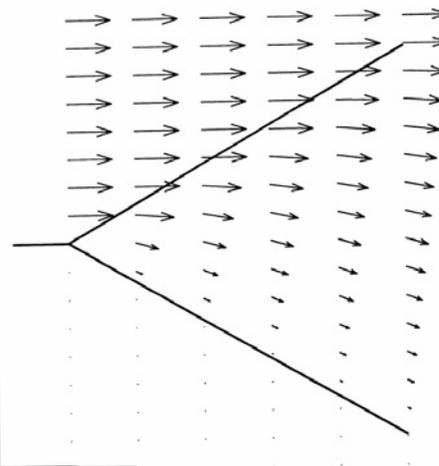


C. Trishear

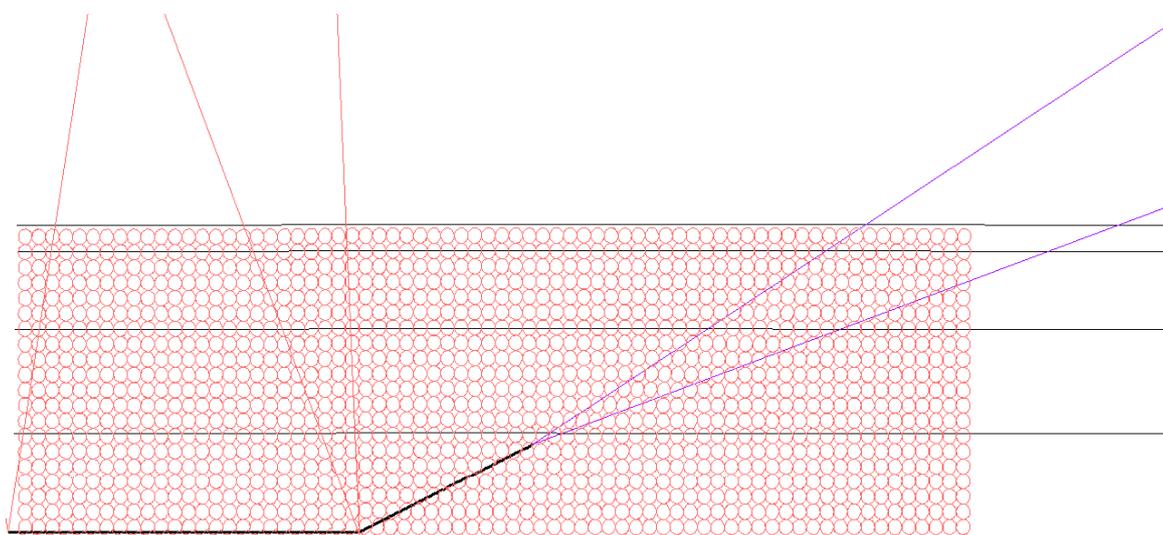
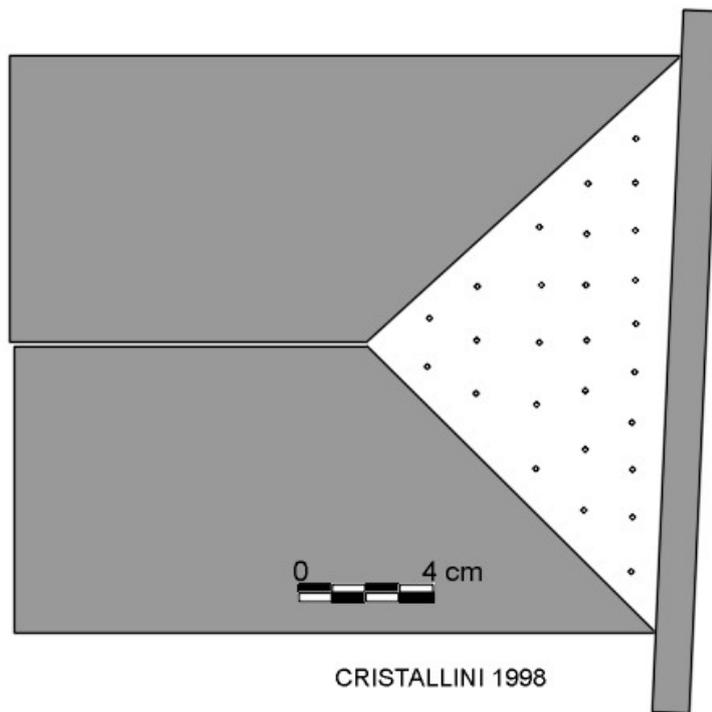


Erslev, 1991

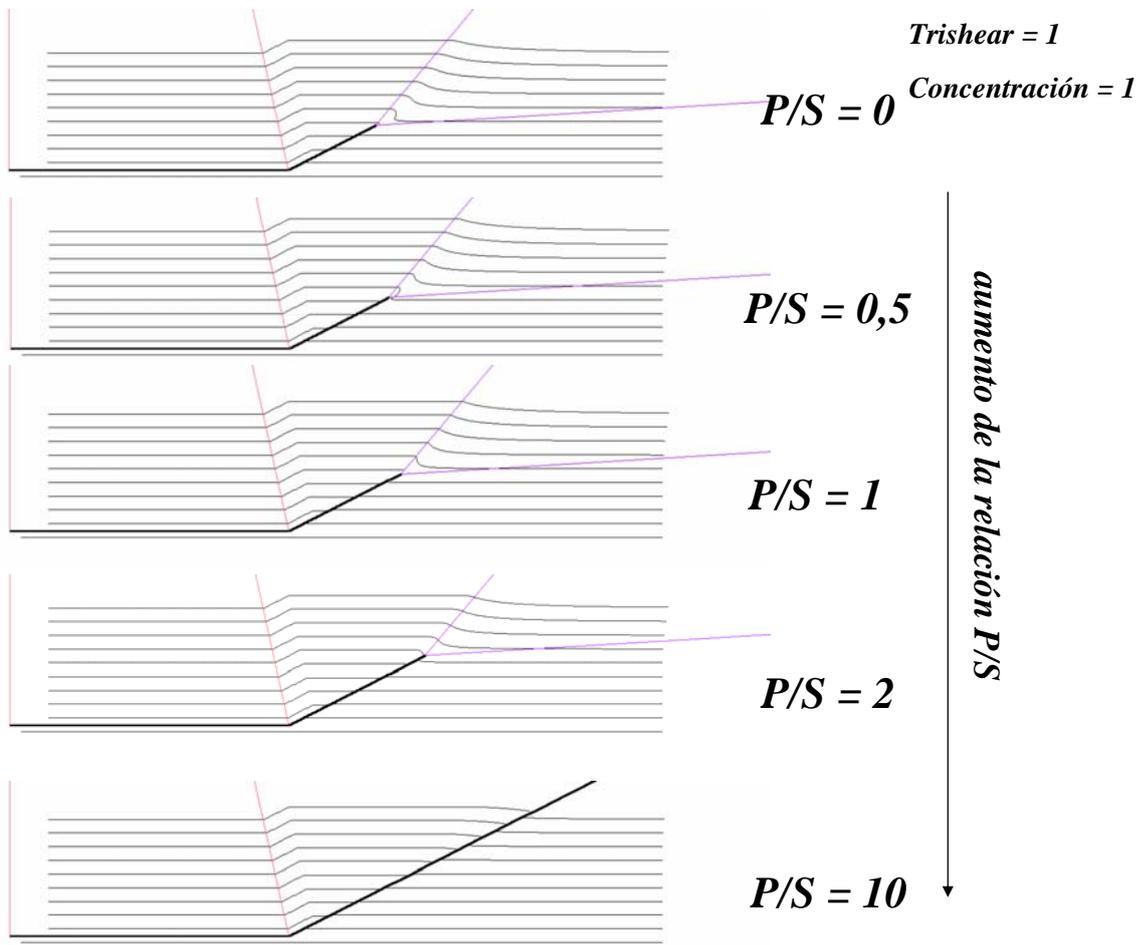
CRISTALLINI 2007



CRISTALLINI 2007

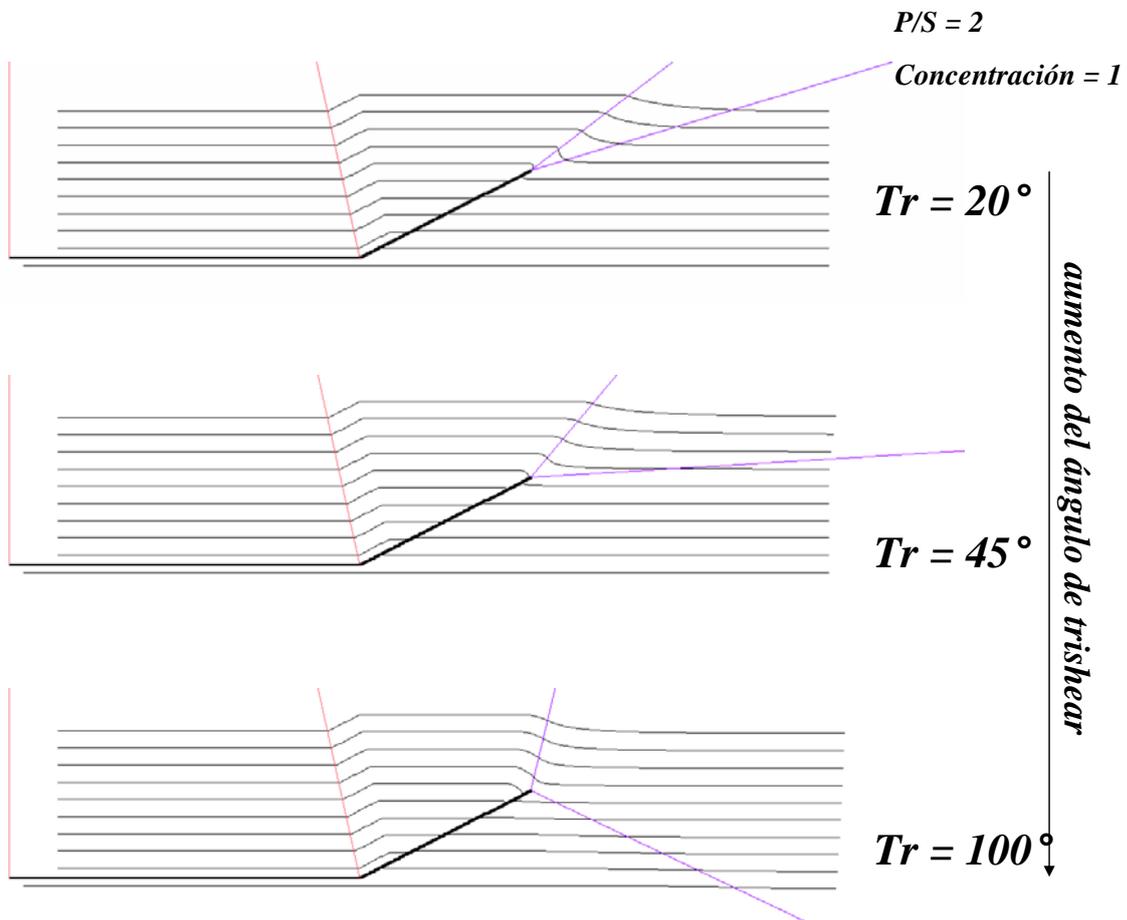


Trishear y back-limb trishear
Con calculo de deformación.
(software PLIEGUES 2D)



Cristallini, 2002

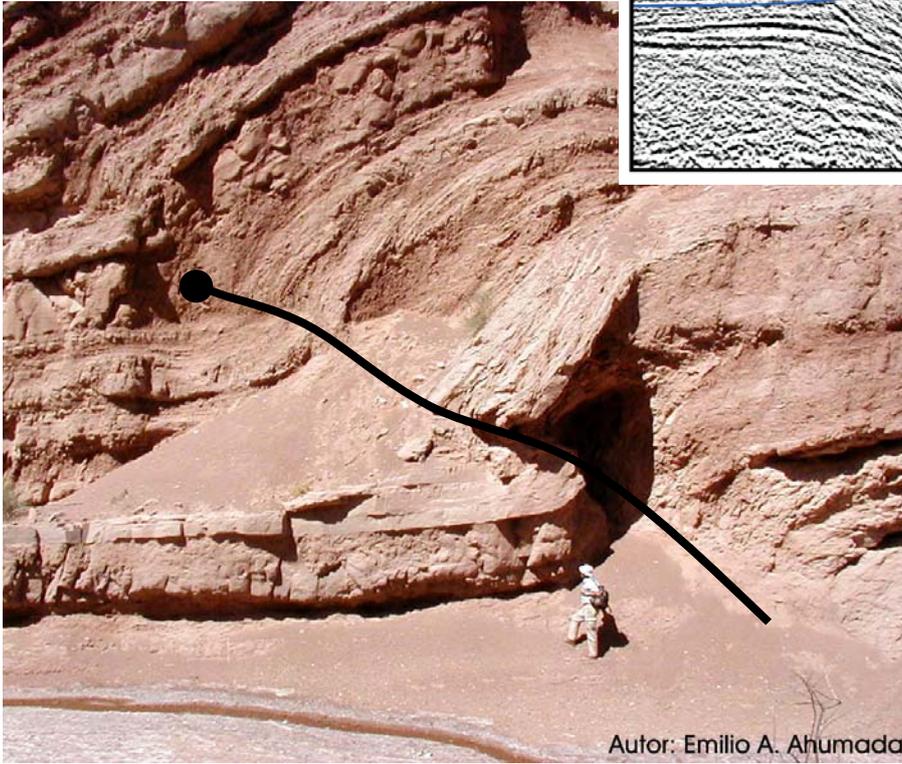
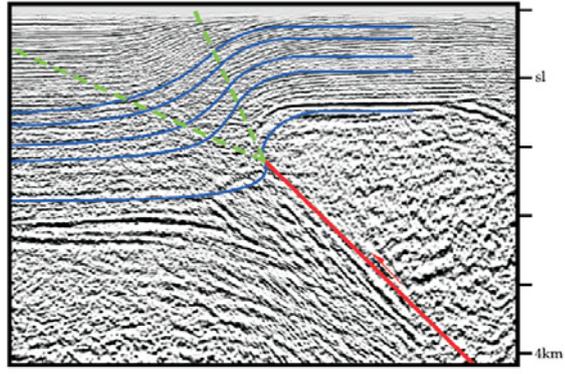
CRISTALLINI 2007



Cristallini, 2002

CRISTALLINI 2007

Trishear interpretation



FIN!