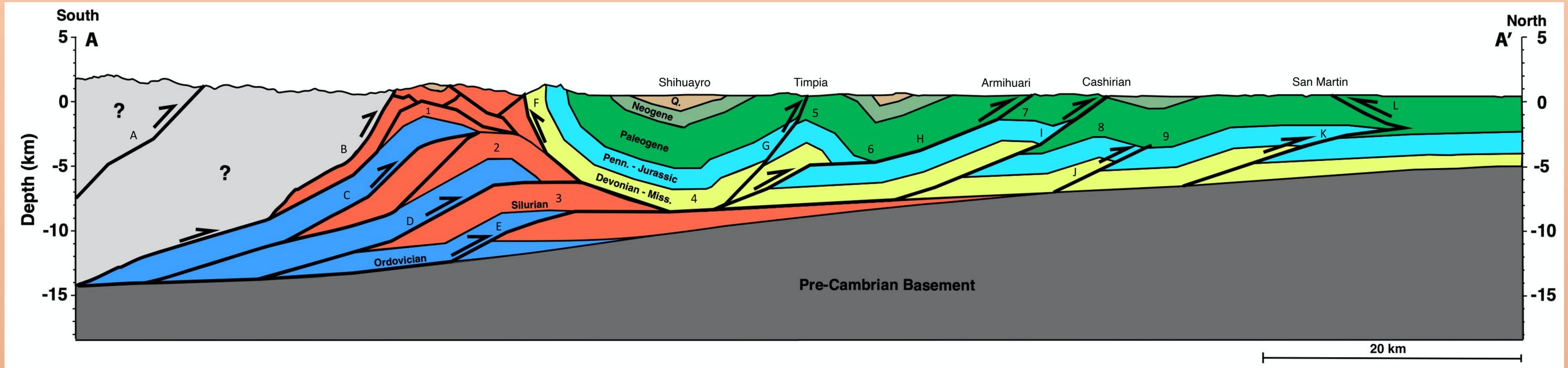


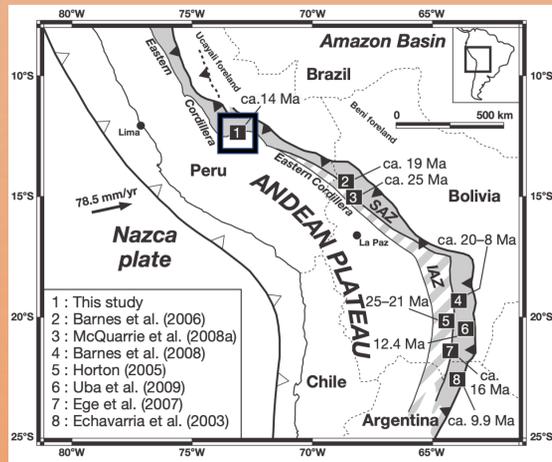
Shortening of the Camisea Basin in the Central Peruvian Subandean Zone

David Cantillo, GEOS 304

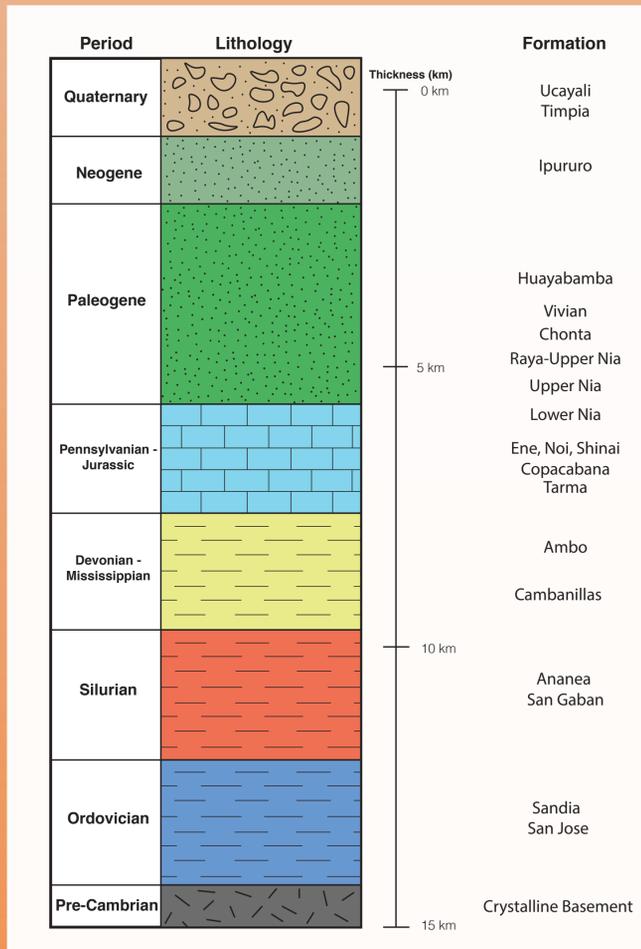
Geologic Cross-Section



Location Map



Simplified Stratigraphic Column



System of Structures

The Camisea Basin is composed of various fault structures, including:

- Thrust faults, which occur at a dip angle of less than 45°
- Reverse faults, which occur at a dip angle of more than 45°
- Listric faults, which dip steeply at the surface and curve at depth
- Blind faults, which fail to reach the surface
- Antithetic faults, which dip in the opposite direction as most faults in the region

There are also several fold structures, including:

- Anticlines, which are convex in the direction of younger strata
- Synclines, which are convex in the directions of oldest strata

Tectonic Origin

Internal duplex and series of thrust-related anticlines illustrate regional shortening

- The Camisea Basin lies adjacent to the Andean Plateau, which experiences large-scale shortening due to the convergence of the Nazca and South American Plate
- The Nazca Plate is moving towards the NE at a rate of 78.5 mm/yr (see location map)
- The Andean Plateau transferred shortening to the Subandean Zone near 14 Ma.
- Espurt et al. (2011) calculated a horizontal shortening of 53 km (39%)

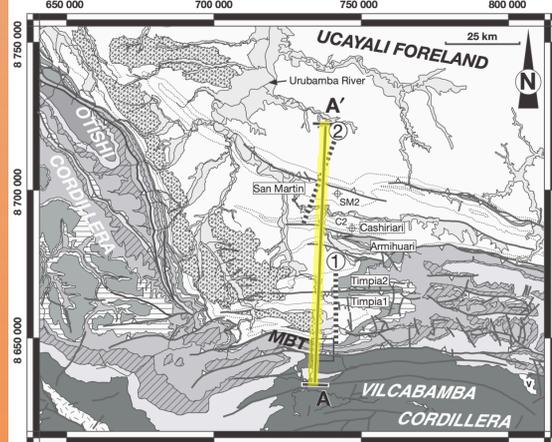
Table of Fault Structures

	Type	Orientation	Slip Direction	Offset
A	Thrust	090, 40	Dip-Slip	Unknown
B	Listric Reverse	095(?), 60	Dip-Slip	~ 17 km
C	Reverse	095(?), 50	Dip-Slip	~ 10 km
D	Thrust	095(?), 30	Dip-Slip	~ 8 km
E	Thrust	095(?), 25	Dip-Slip	~ 5 km
F	Antithetic Listric Reverse	285, 65	Dip-Slip	Unknown
G	Reverse	090, 70	Dip-Slip	~ 0.7 km
H	Thrust	100, 30	Dip-Slip	~ 5 km
I	Thrust	100, 30	Dip-Slip	~ 5 km
J	Blind Thrust	105(?), 25	Dip-Slip	~ 2 km
K	Blind Thrust	110, 20	Dip-Slip	~ 4 km
L	Antithetic Thrust	290, 30	Dip-Slip	Unknown

Table of Fold Structures

	Type	Tightness	Height	Orientation	Style
1	Anticline	130°, Open	~ 7 km	285(?), 75, Slightly inclined	Similar
2	Anticline	130°, Open	~ 6 km	285(?), 90, Upright	Similar
3	Anticline	140°, Open	~ 4 km	285(?), 85, Slightly Inclined	Similar
4	Syncline	110°, Open	~ 9 km	285, 80, Slightly Inclined	Concentric
5	Anticline	100°, Open	~ 3 km	090, 80, Slightly Inclined	Concentric
6	Syncline	110°, Open	~ 3.5 km	095, 75, Slightly Inclined	Concentric
7	Anticline	150°, Open	~ 3 km	280, 80, Slightly Inclined	Concentric
8	Anticline	145°, Open	~ 1 km	280, 90, Upright	Concentric
9	Syncline	145°, Open	~ 1.5 km	100, 85, Slightly Inclined	Concentric

Above: Tectonic Map of Central Andes and Andean Plateau



Reference

Nicolas Espurt, Jocelyn Barbarand, Martin Roddaz, Stéphane Brusset, Patrice Baby, Marianne Saillard, Wilber Hermoza; A scenario for late Neogene Andean shortening transfer in the Camisea Subandean zone (Peru, 12°S): Implications for growth of the northern Andean Plateau. *GSA Bulletin*; 123 (9-10): 2050–2068.