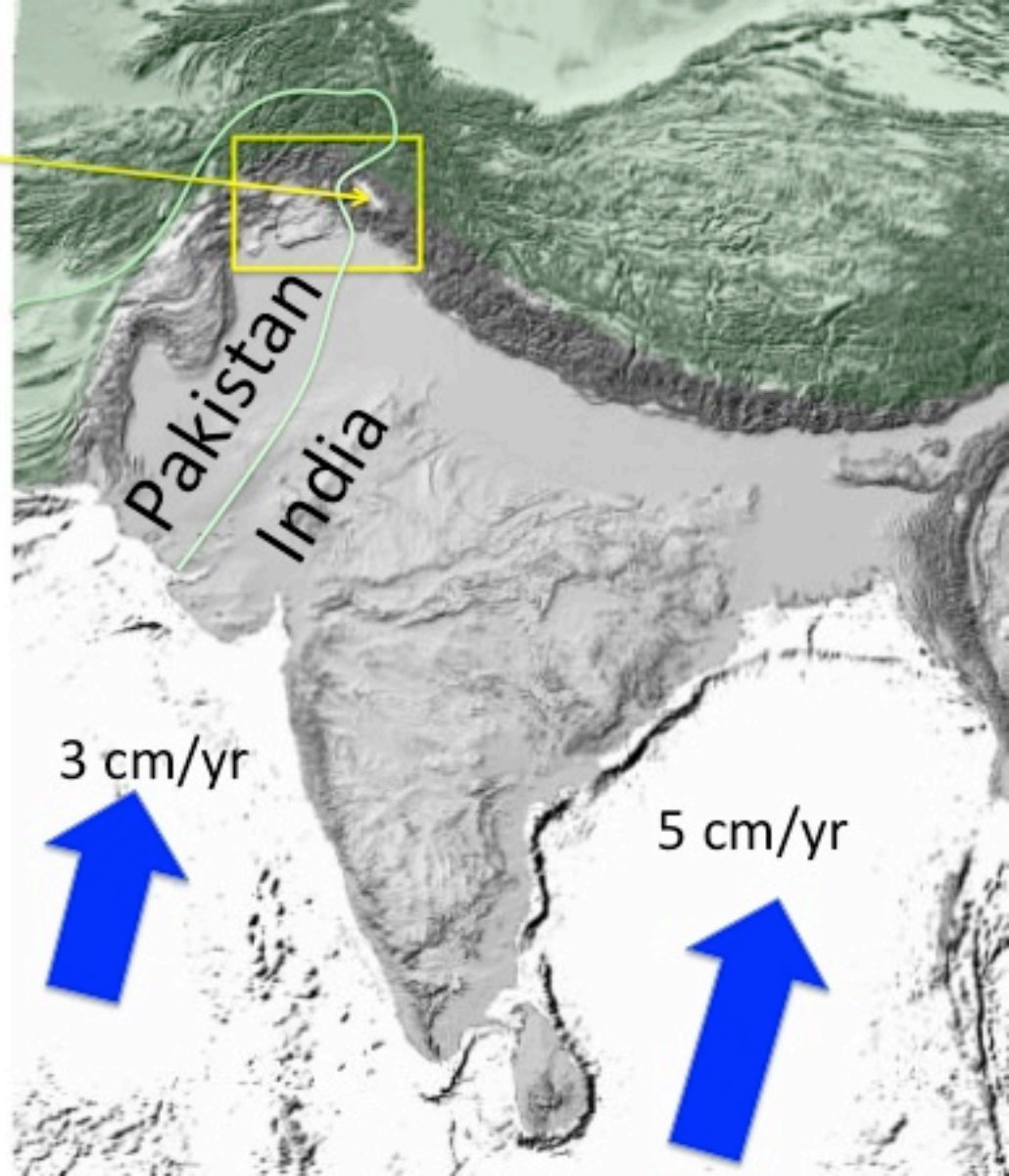


# Kashmir Valley

T54B-06  
American Geophysical  
Union Annual Meeting  
San Francisco  
December 2011

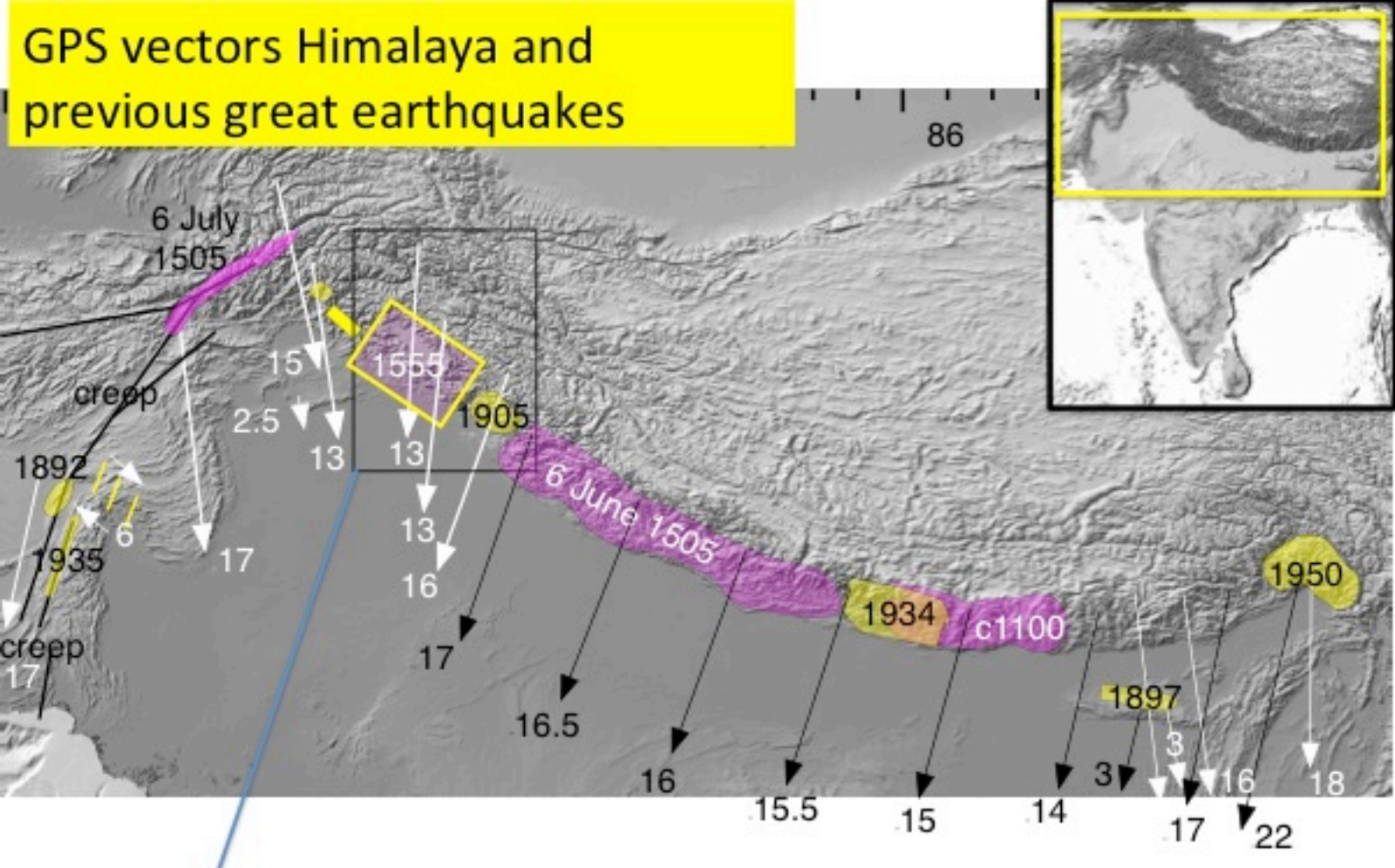
Velocity Field in the NW  
Himalayan Syntaxis: Implications  
for Future Seismicity

Roger Bilham, Walter  
Szeliga, Bikram S. Bali,  
Asif Khan, Abdul Wahab,  
Faisal Khan, Sufyan Qazi





# GPS vectors Himalaya and previous great earthquakes



GPS this study

From Apel et al.

# Southward convergence in velocity field

1842

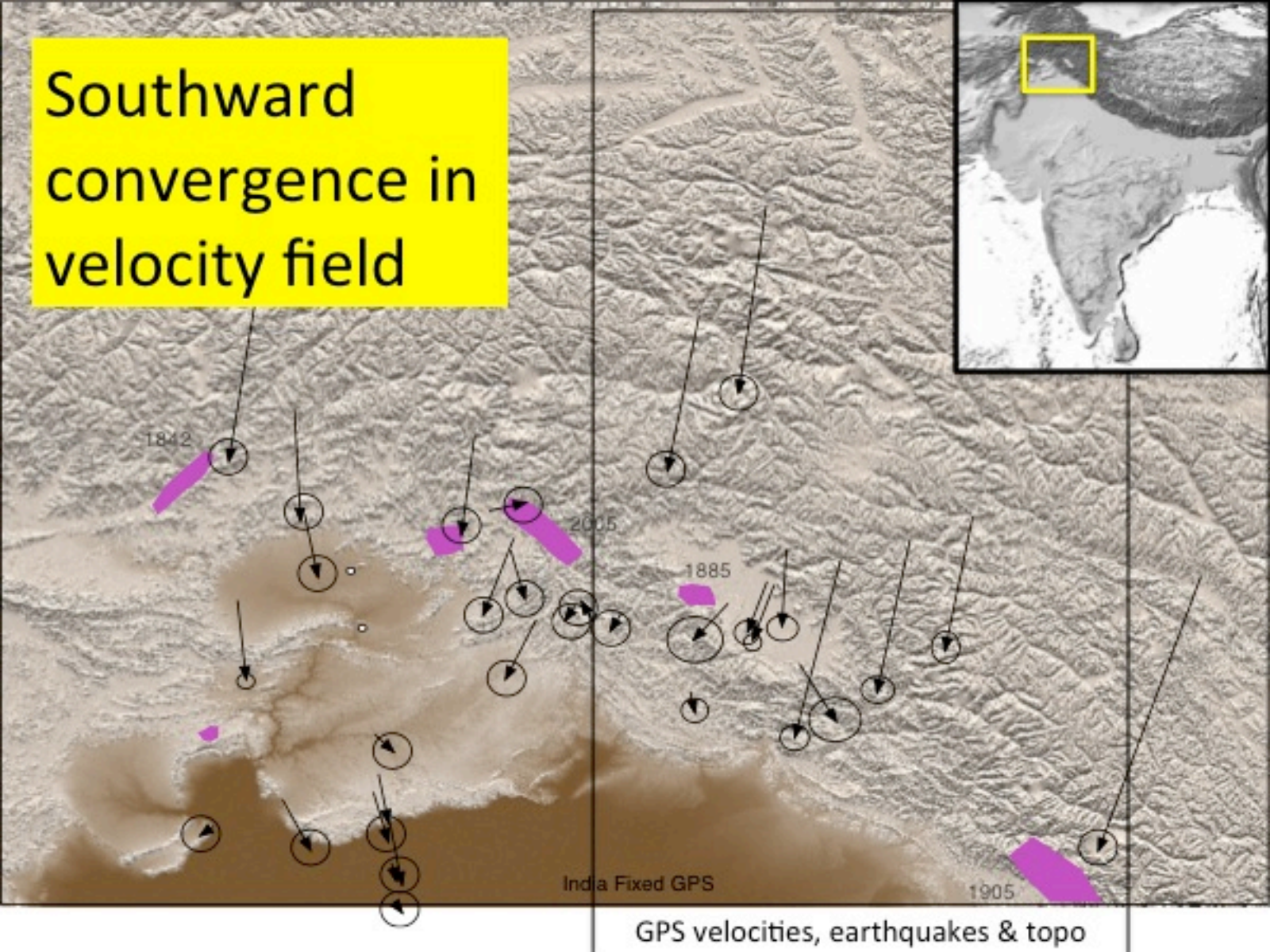
2005

1885

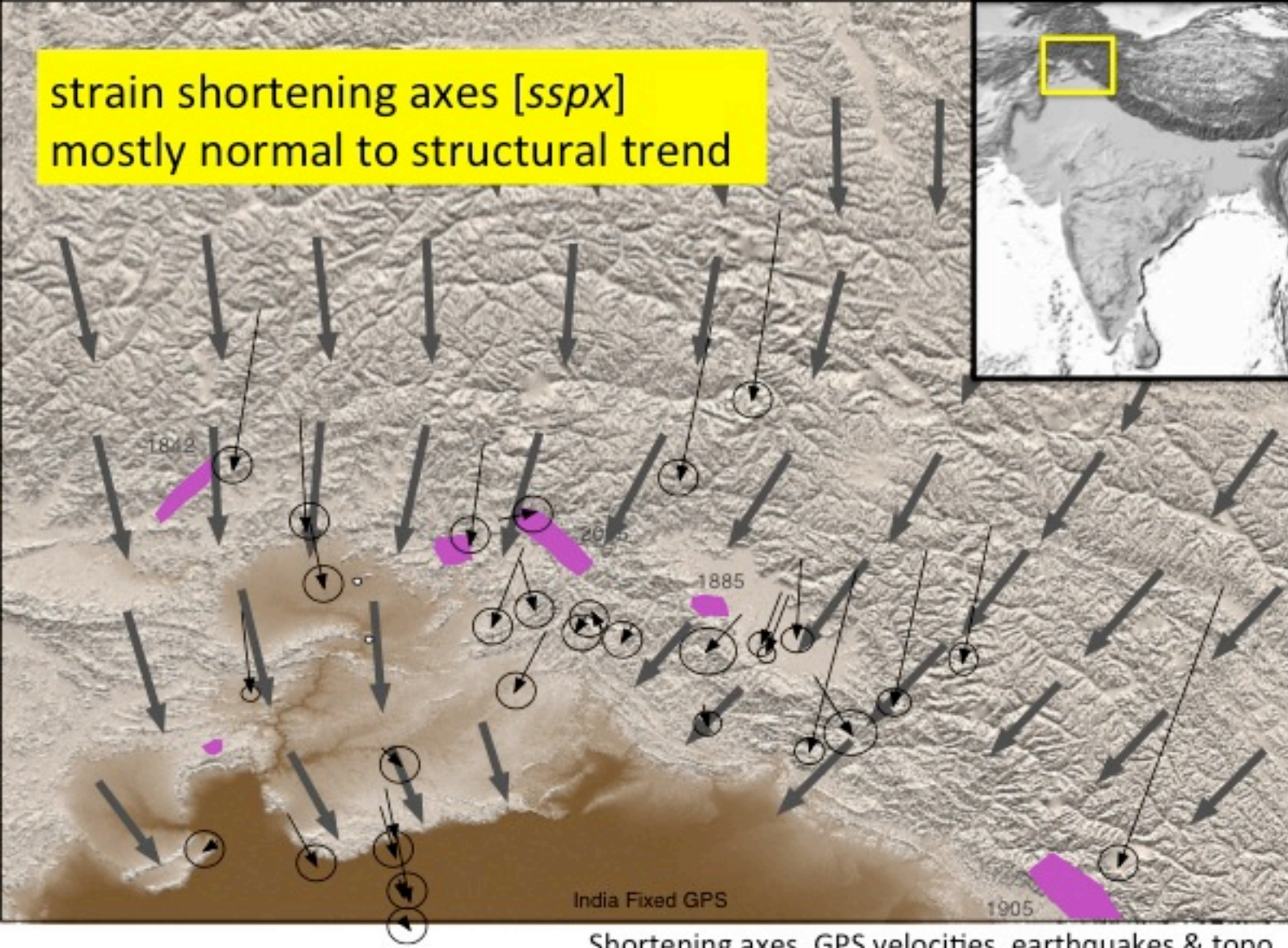
India Fixed GPS

1905

GPS velocities, earthquakes & topo

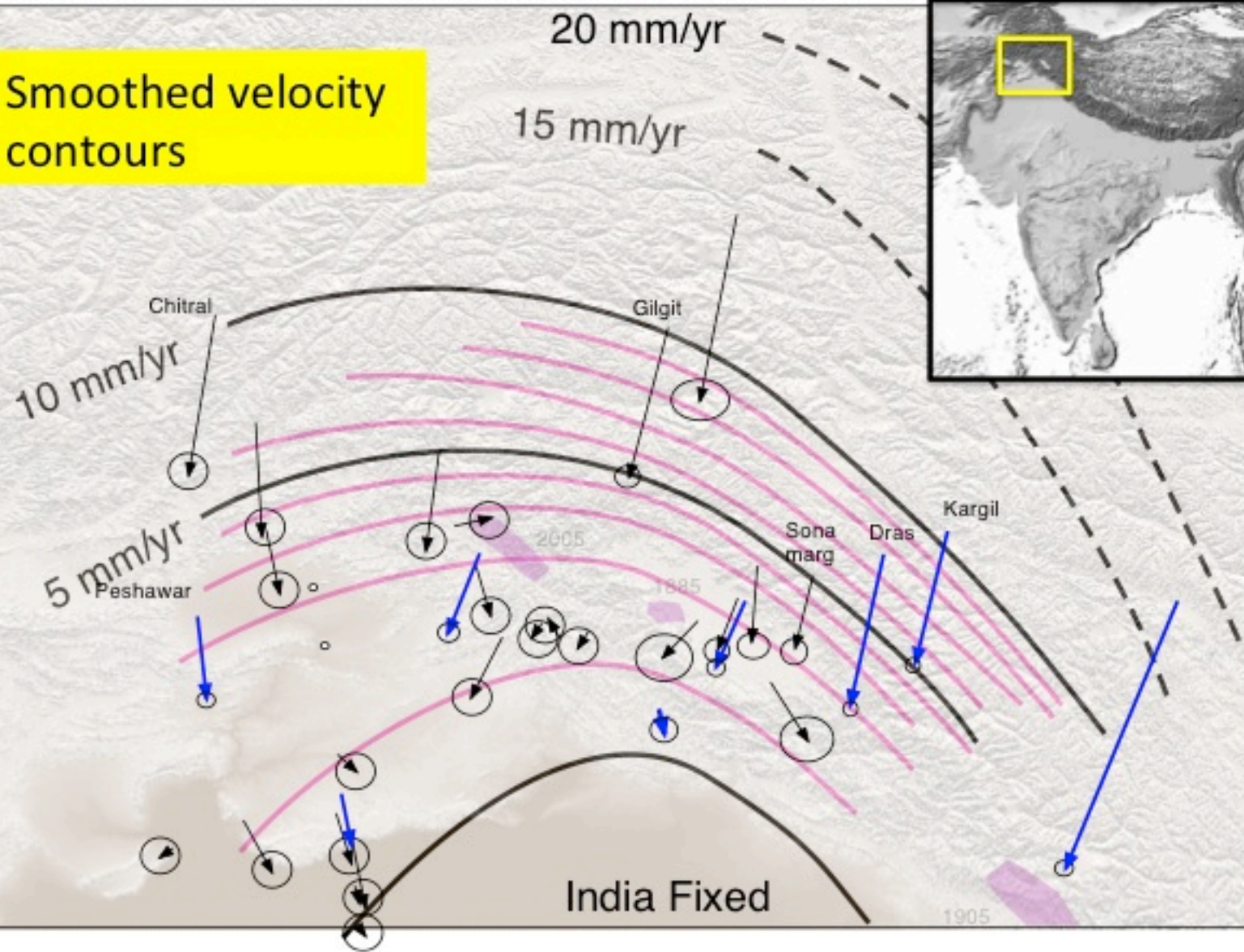


strain shortening axes [*sspx*]  
mostly normal to structural trend



Shortening axes, GPS velocities, earthquakes & topo

# Smoothed velocity contours



zone of maximum contraction

20 mm/yr

15 mm/yr

10 mm/yr

5 mm/yr

Chitral

Gilgit

Peshawar

2005

1885

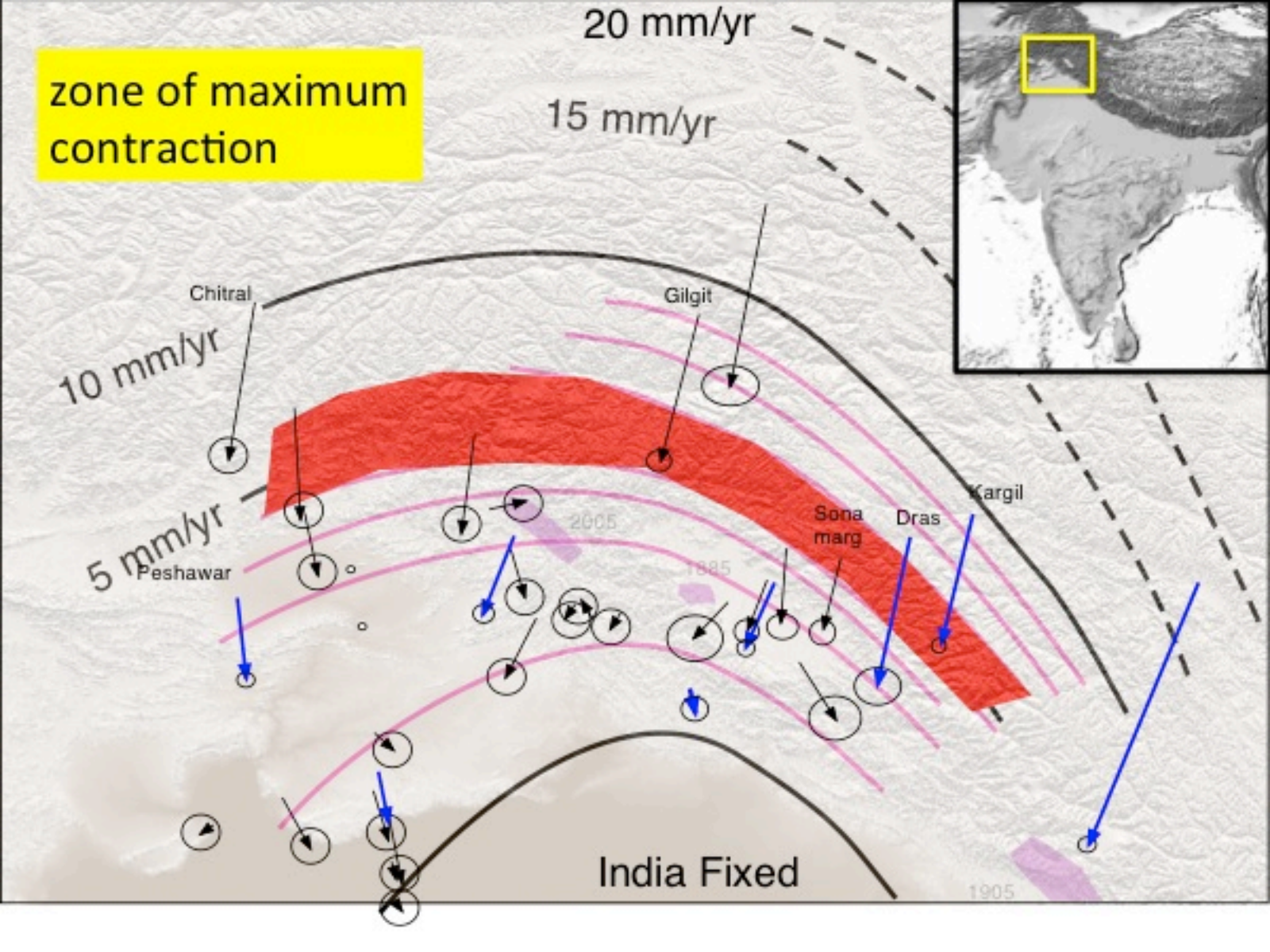
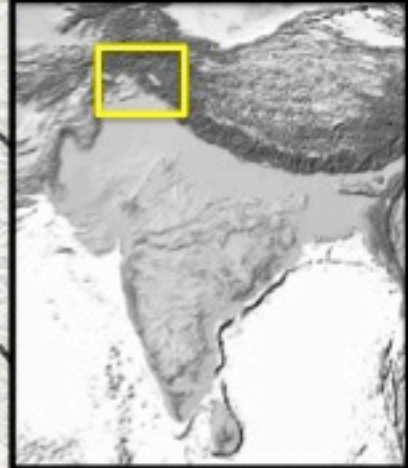
Sona marg

Dras

Kargil

India Fixed

1905



corresponds to  
3.5 km contour

20 mm/yr

15 mm/yr

10 mm/yr

5 mm/yr

Chitral

Gilgit

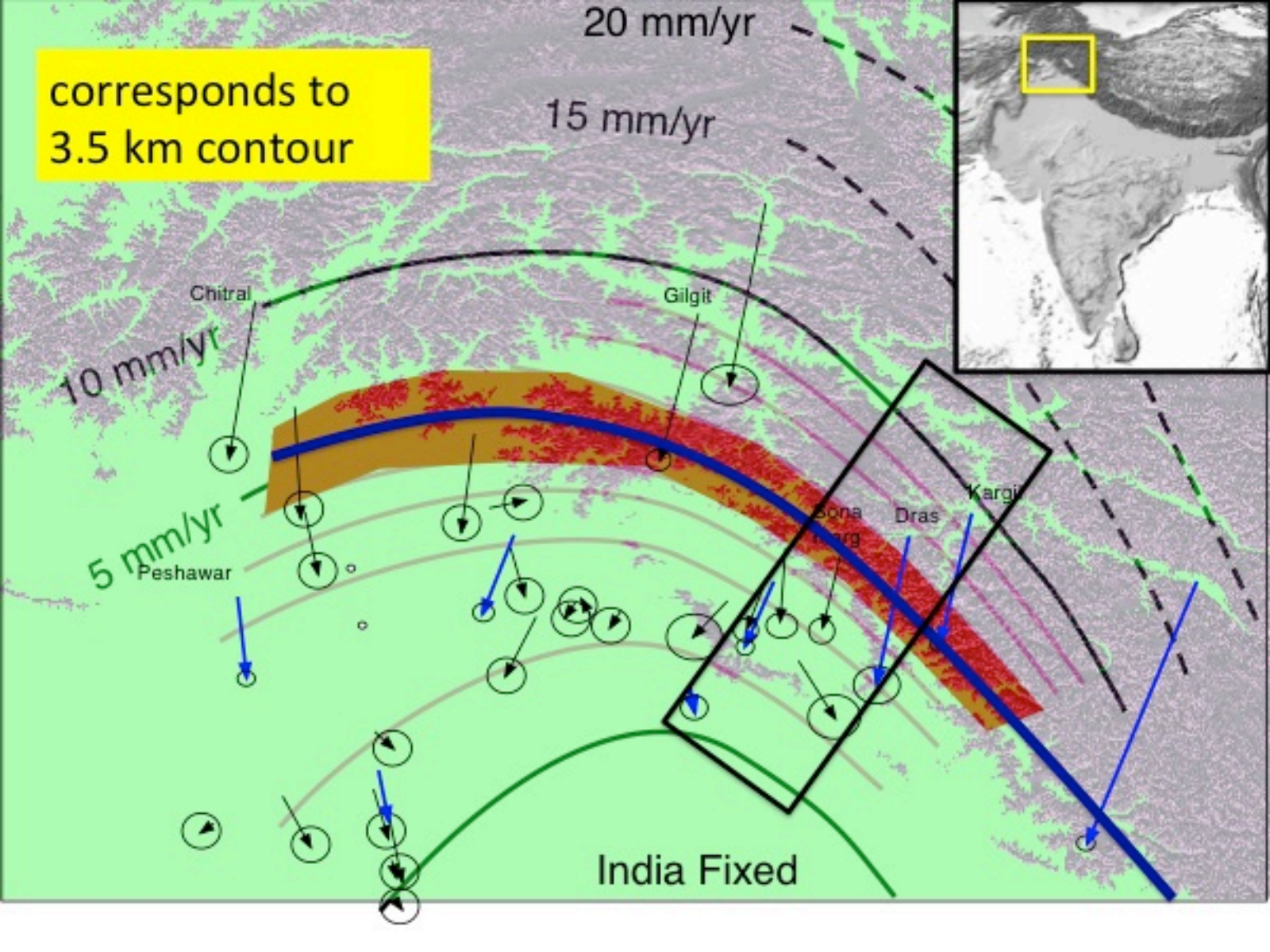
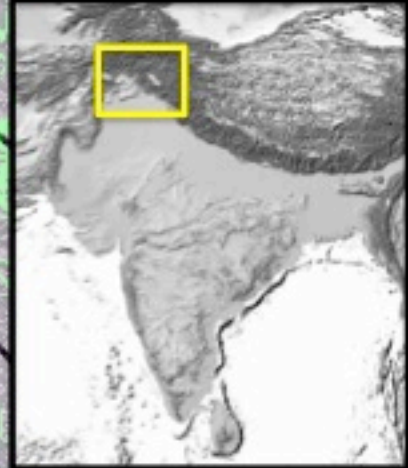
Peshawar

Bona

Dras

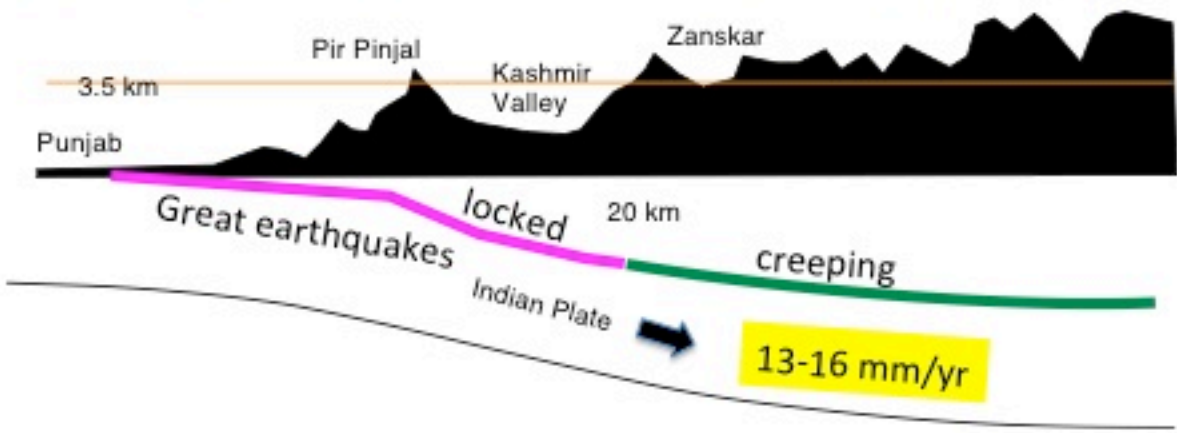
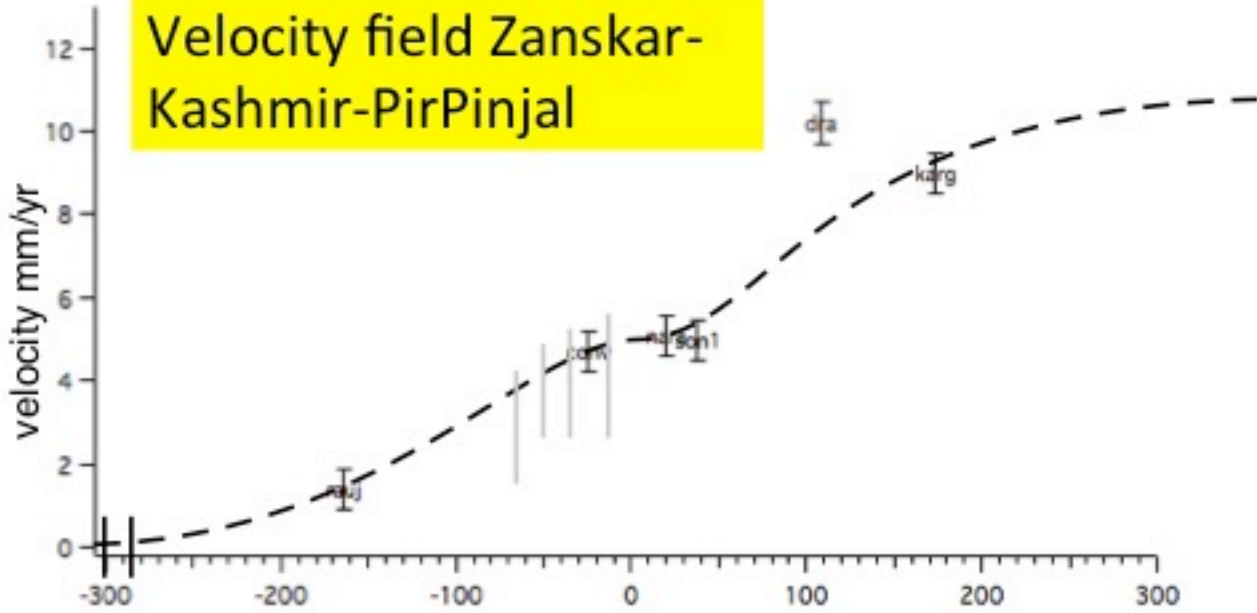
Kargil

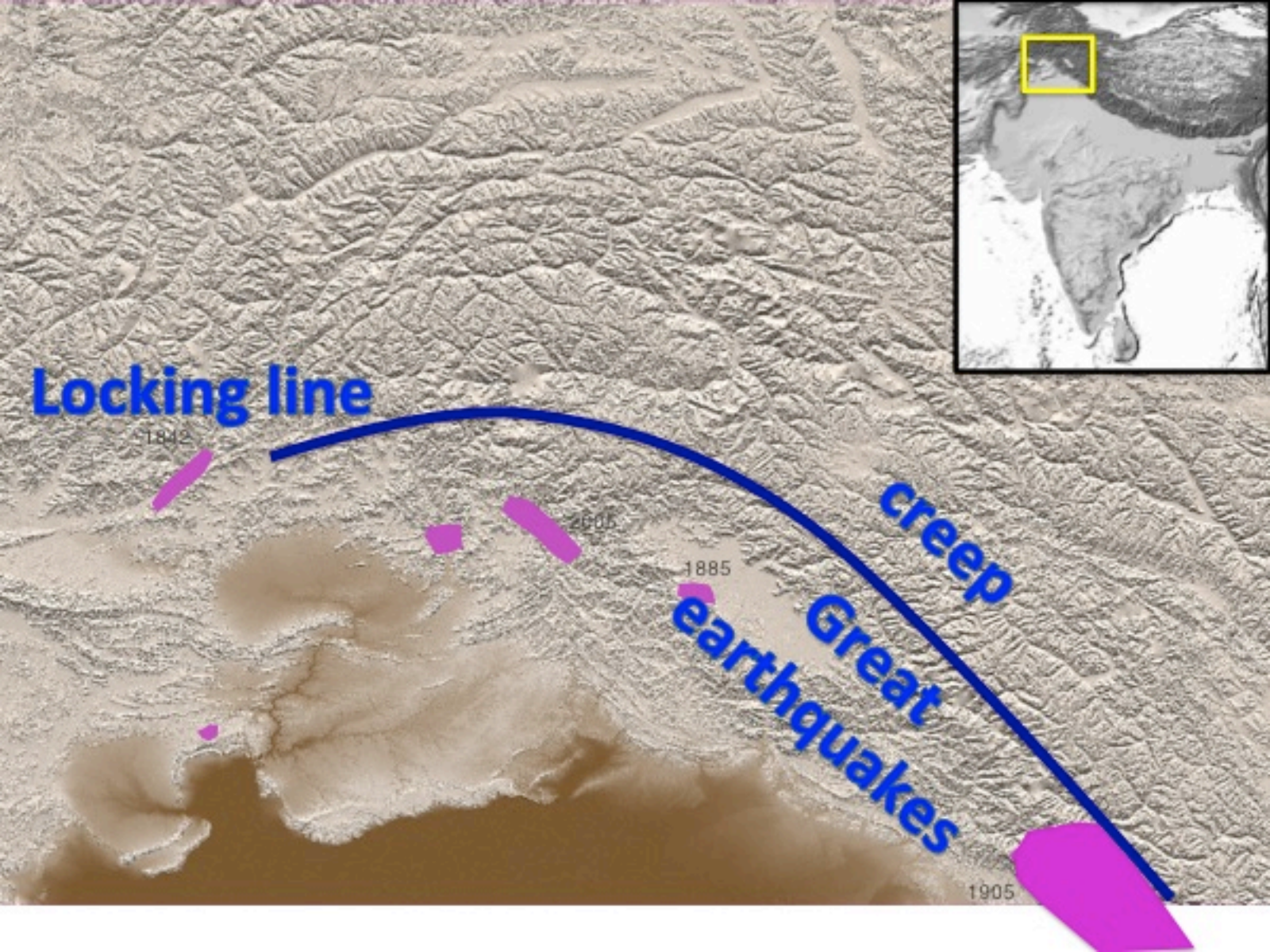
India Fixed





# Velocity field Zanskar-Kashmir-PirPinjal





**Locking line**

1842

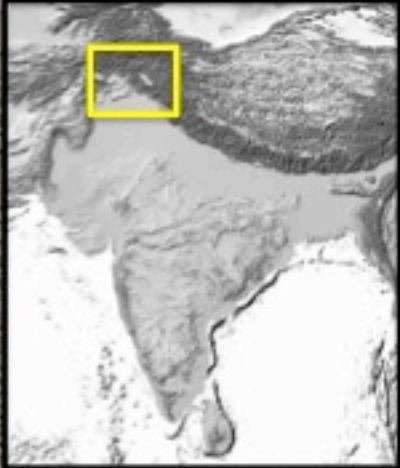
2005

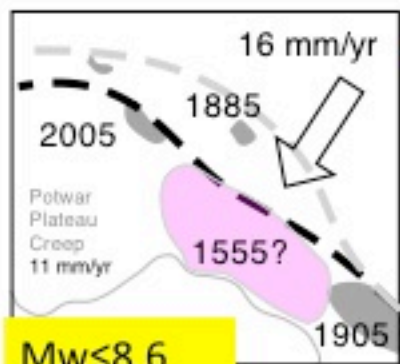
1885

1905

**creep**

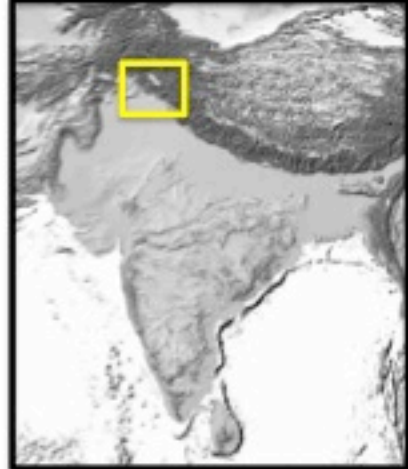
**Great earthquakes**



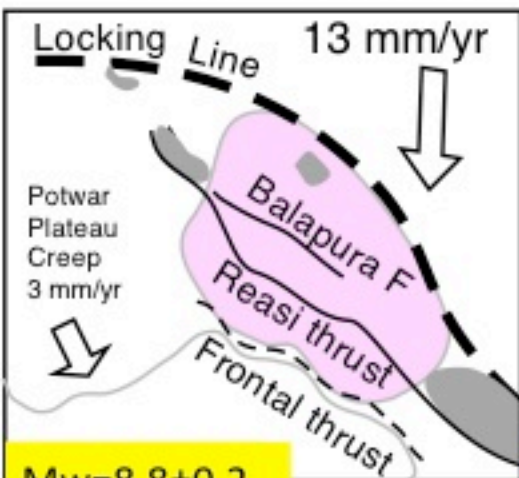


Now obsolete earthquake scenario for 1555 earthquake beneath the Pir Pinjal

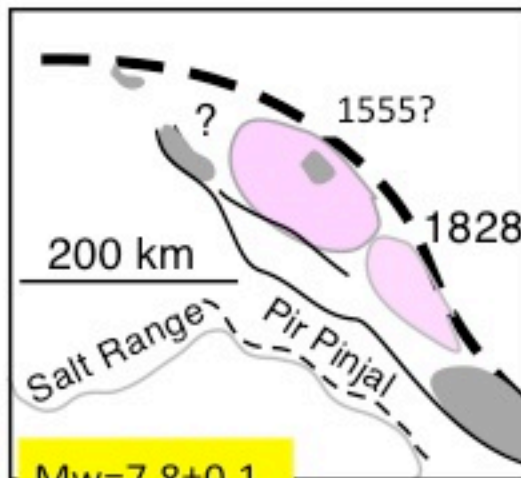
Mw≤8.6



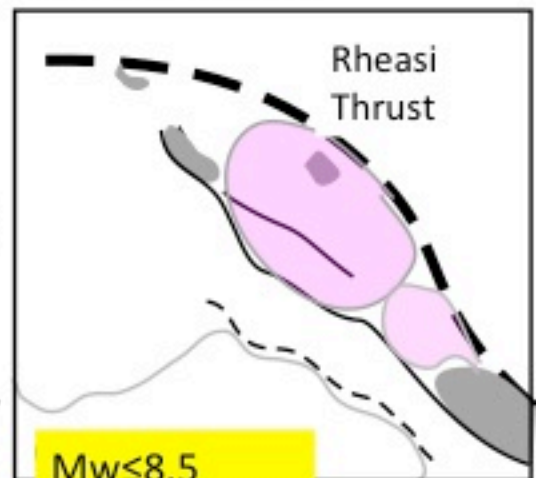
Scenario earthquakes based on a Zanskar locking line and global scaling laws



Mw=8.8±0.2

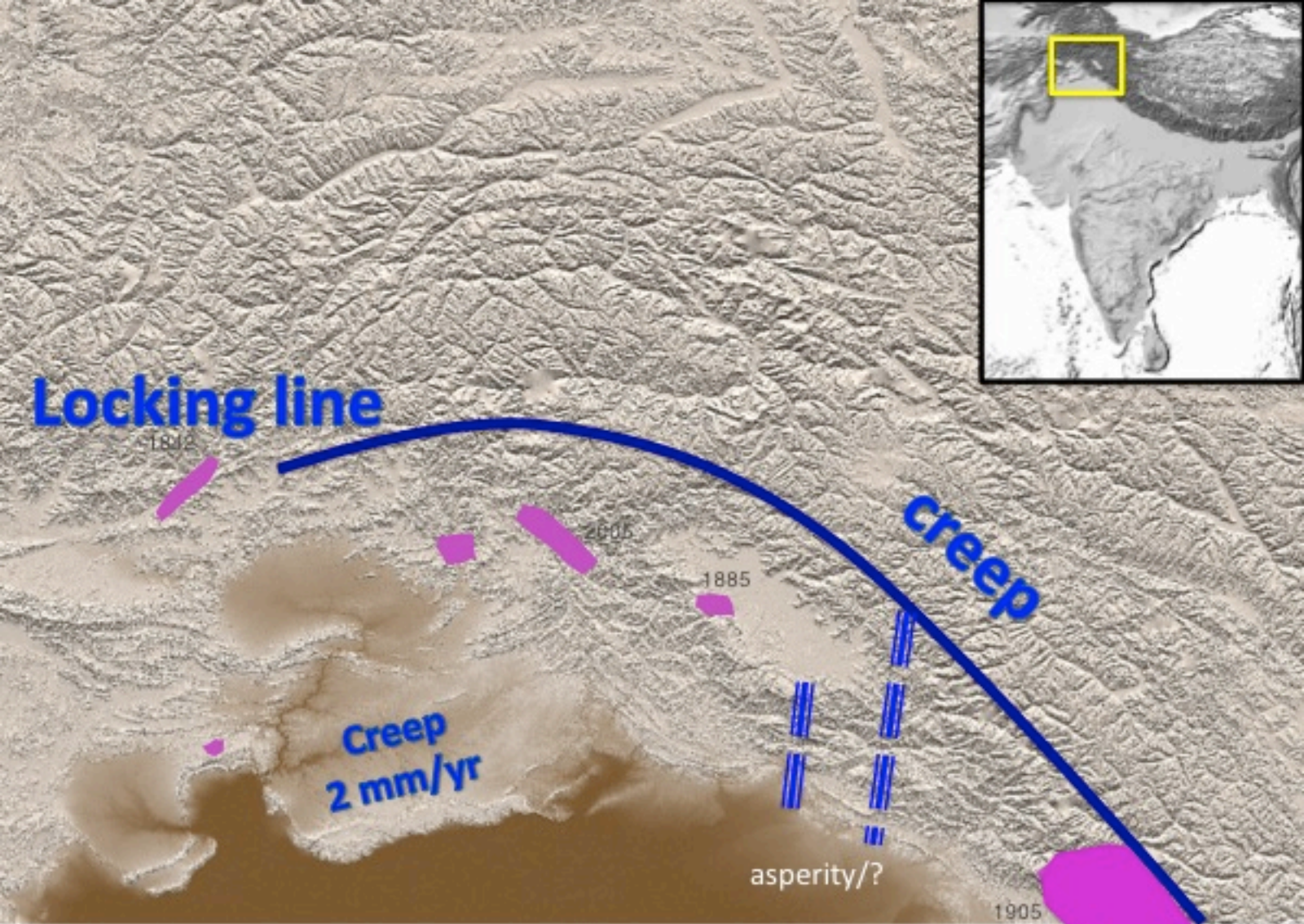


Mw=7.8±0.1



Mw≤8.5

600-1500 year recurrence? [Slip 6 m since 1555AD, 16 m since 833AD]



Do reentrants and normal-faulting result from along-arc segmentation of ruptures in Kashmir ?