

From source to mouth; Understanding the preserved successions of rivers

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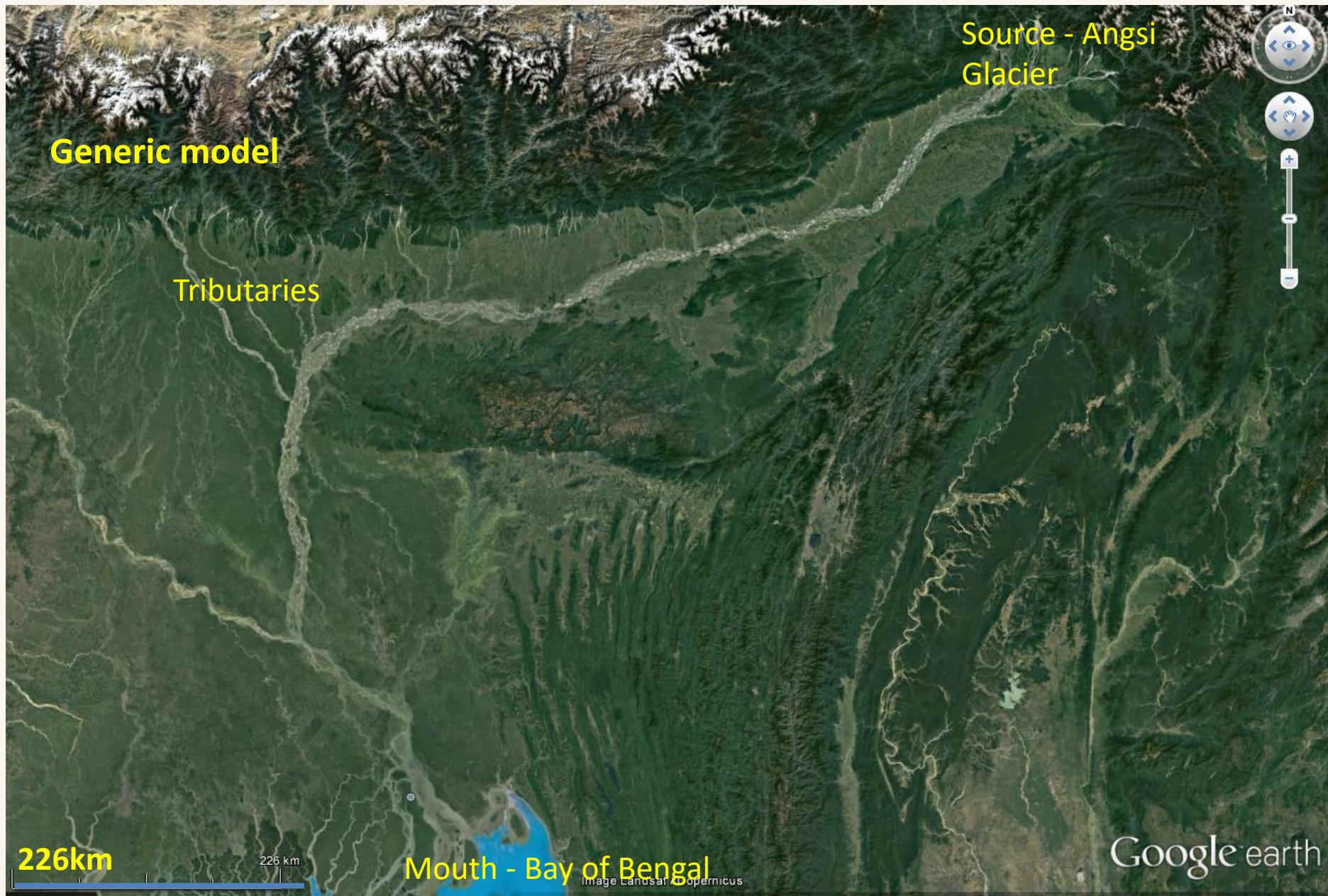
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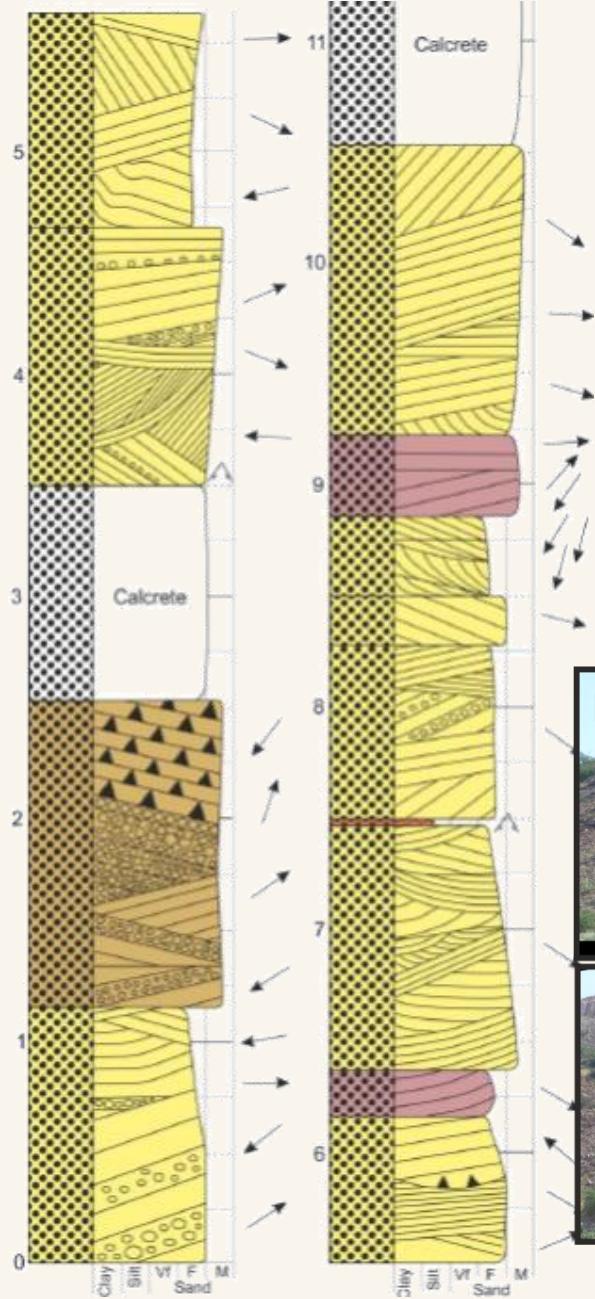




From this to this?!



How do we analyse sediments?



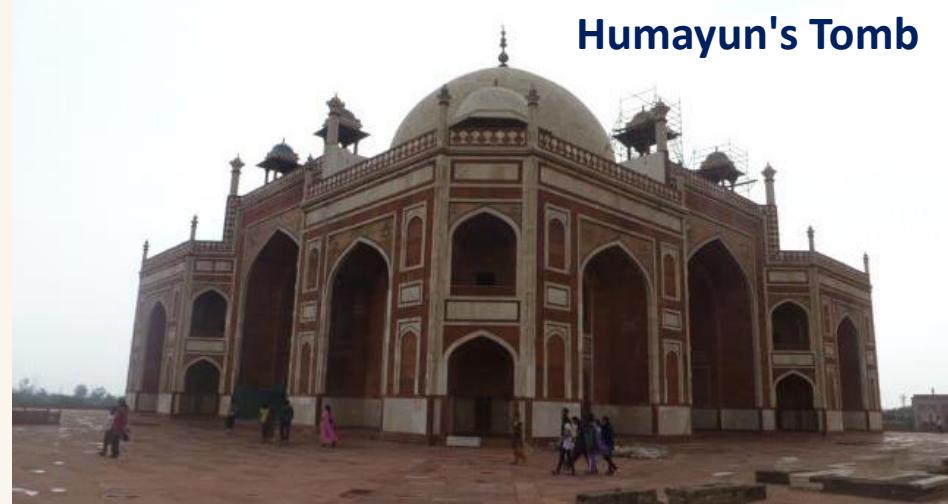
- Analysing sedimentary textures and structures
- Logging
- Panelling
- Petrography / SEM



Jodphur



Humayun's Tomb



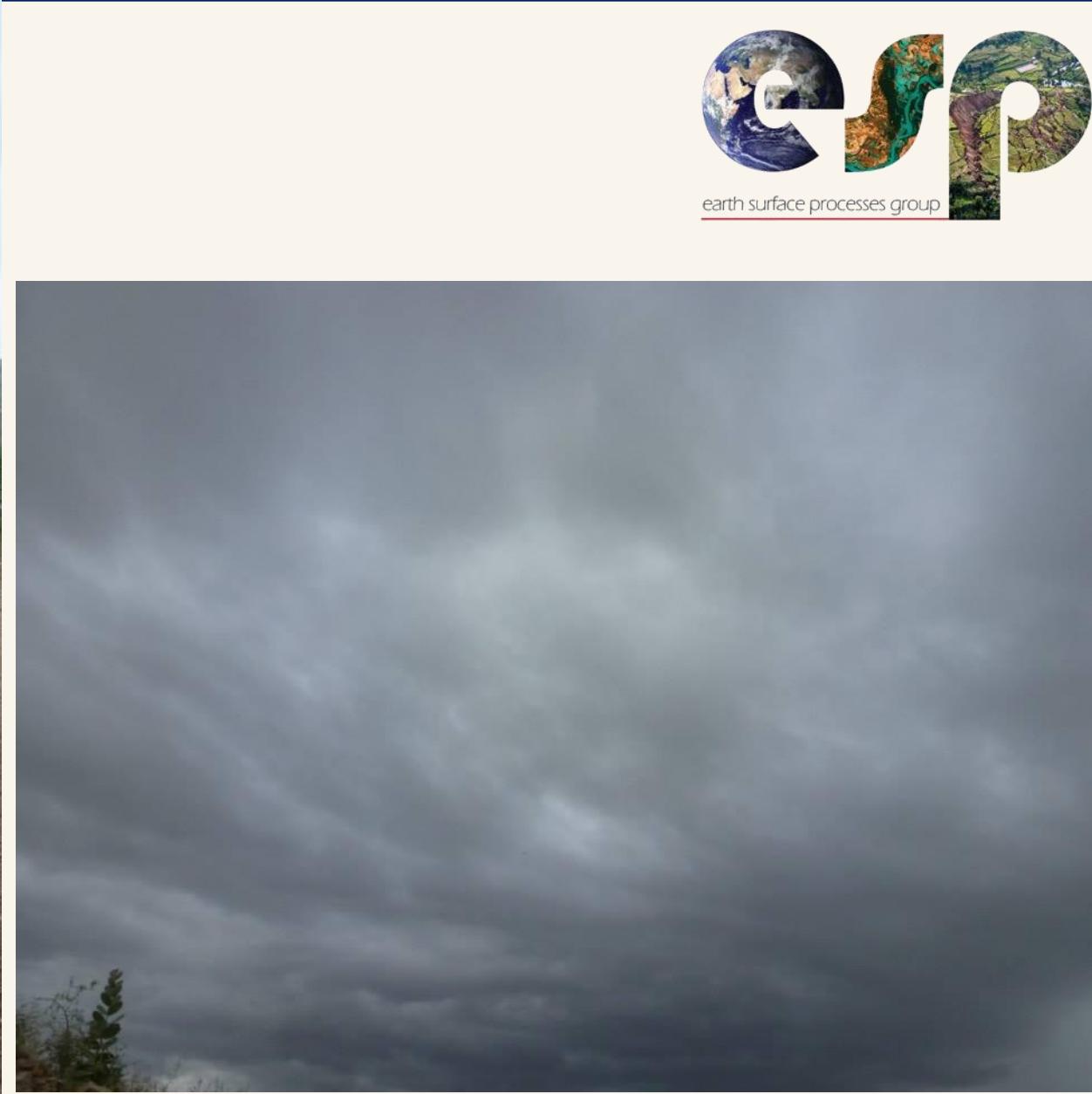
Holi festival



Jantar Mantar Observatory



It can rain...

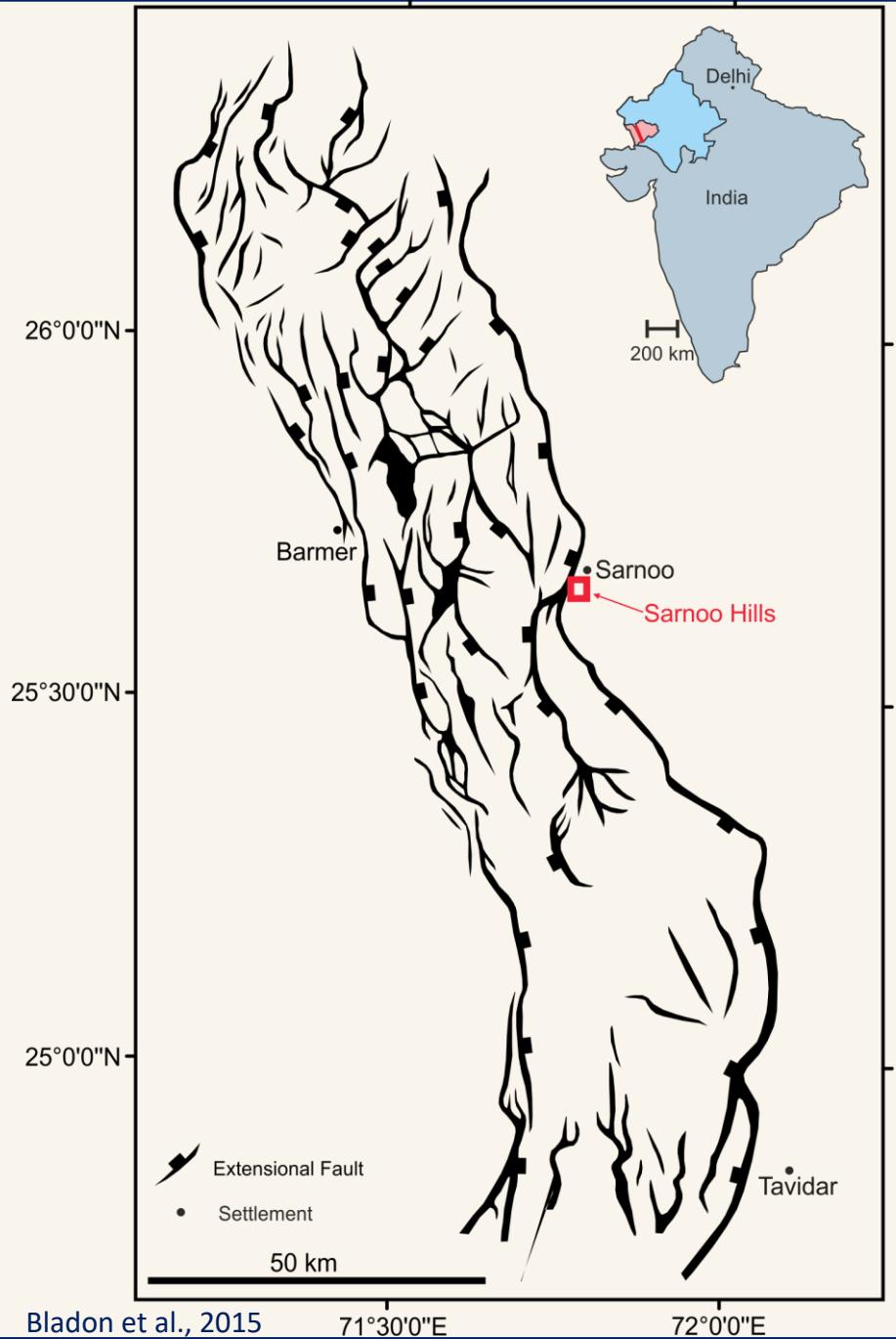






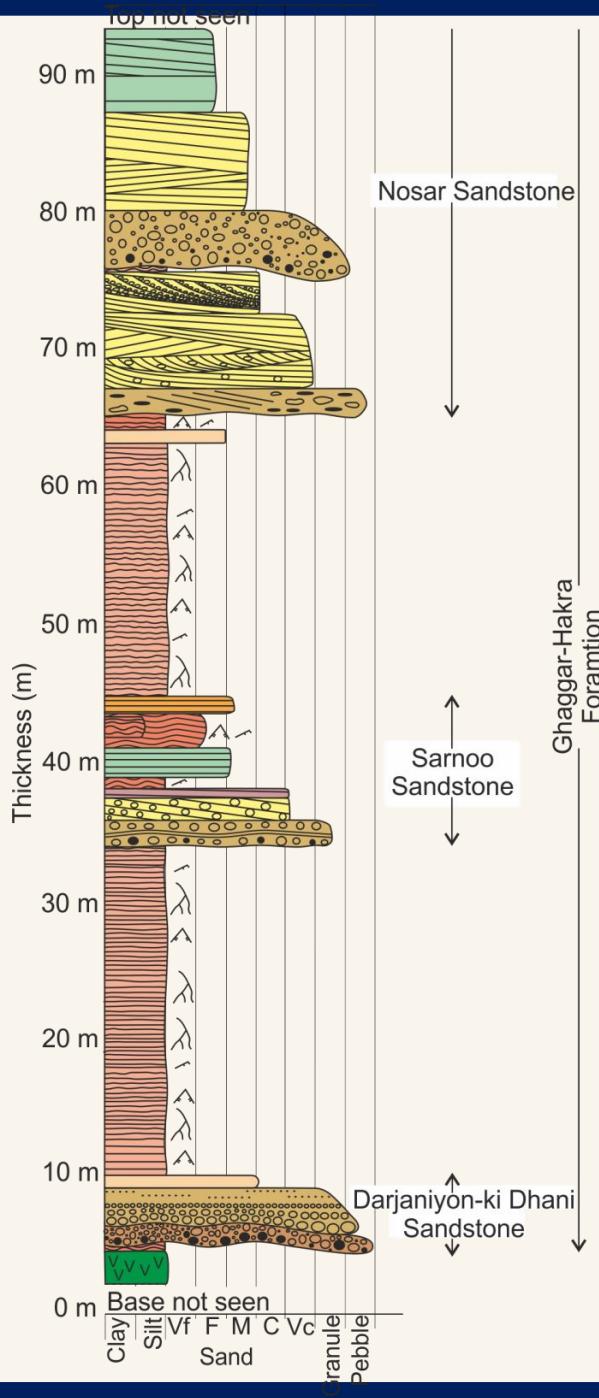


Background and problem

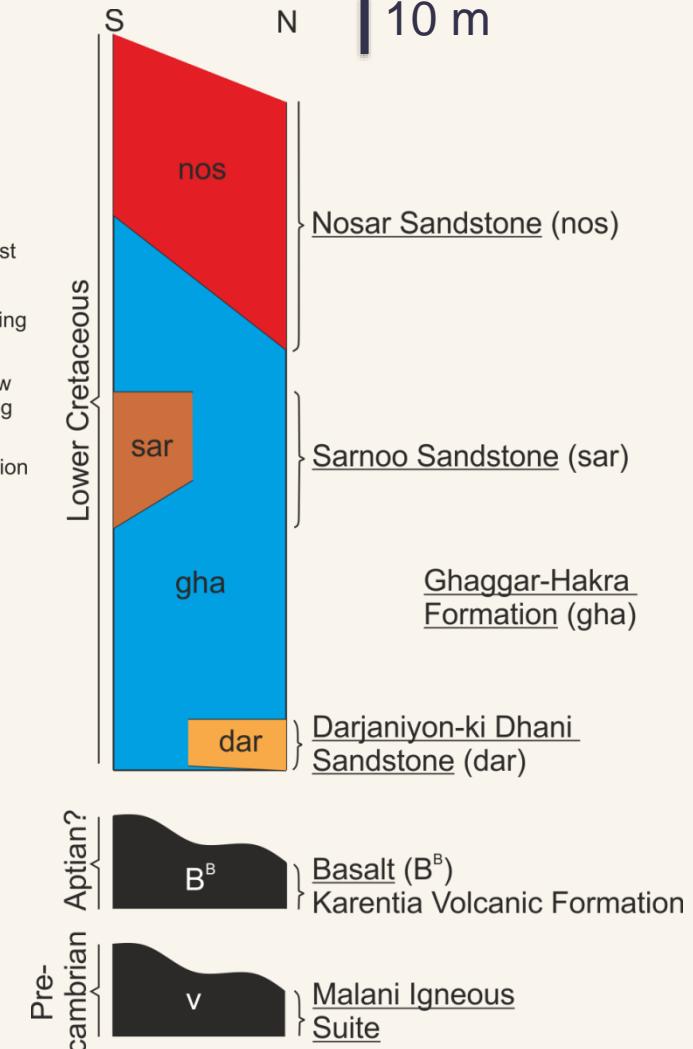




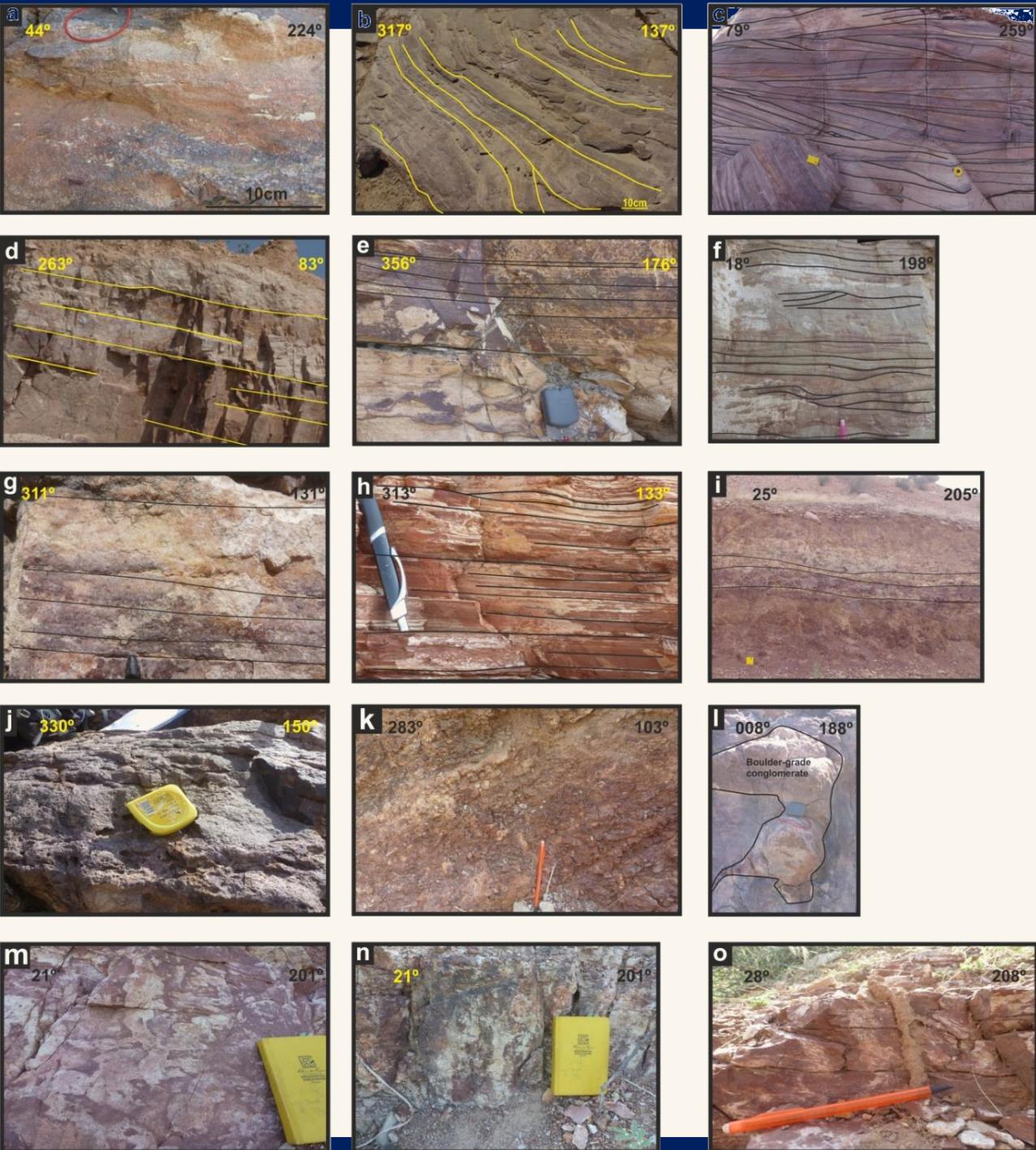
Ghaggar-Hakra Formation



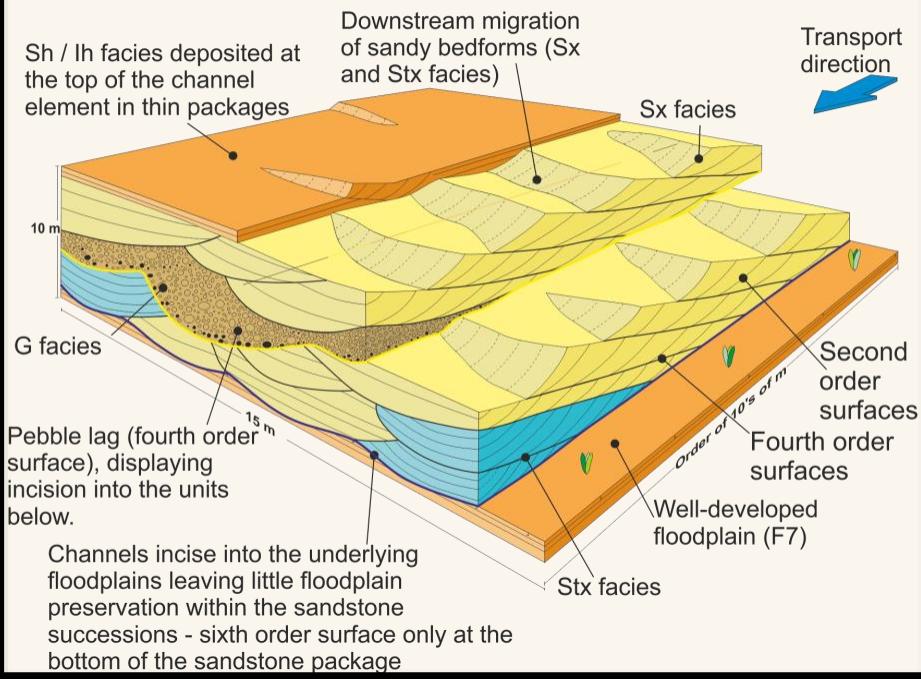
Bladon et al., 2015



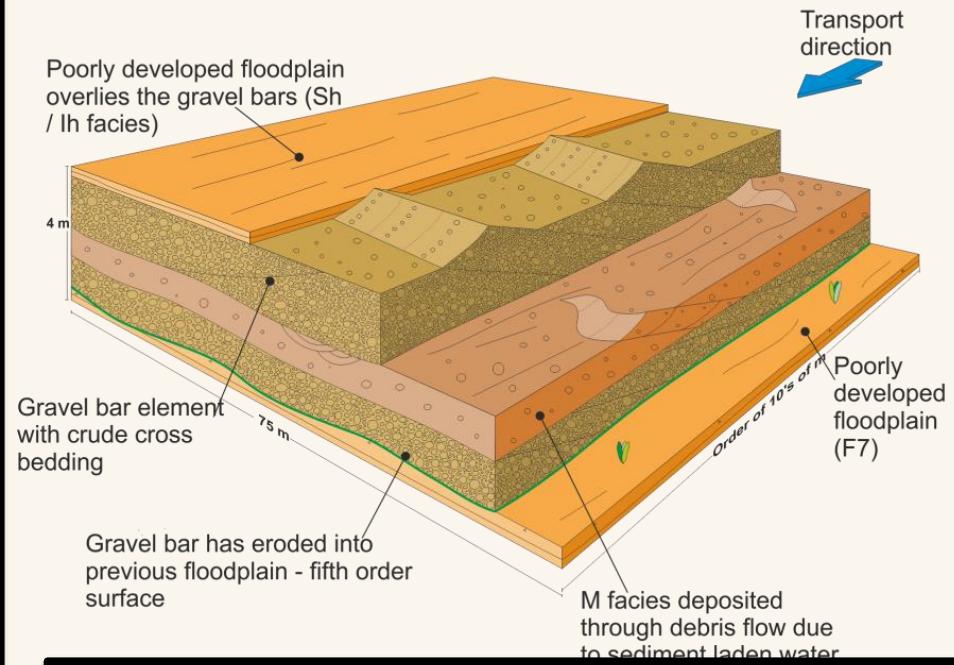
Facies (the depositional regimes)



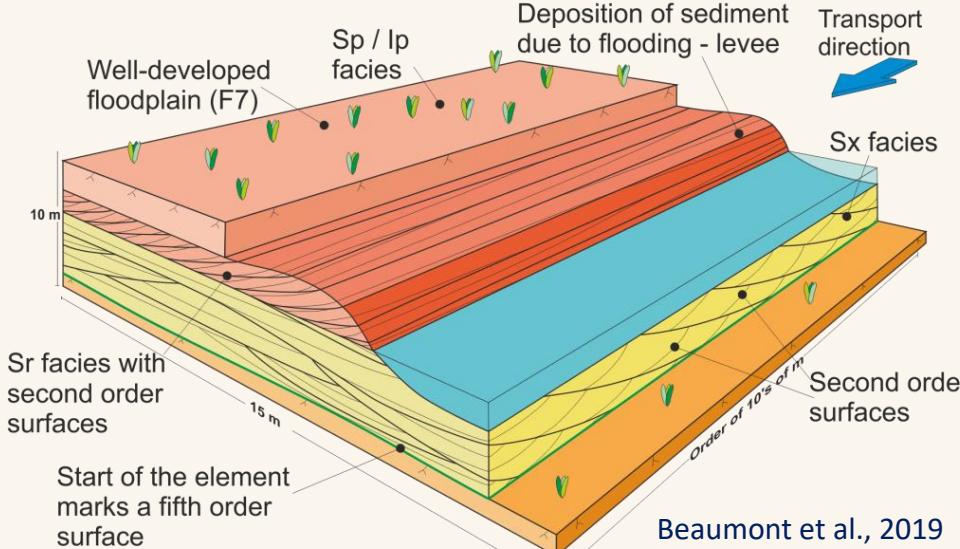
Element F1: Channel element



Element F3 : Gravel bar element

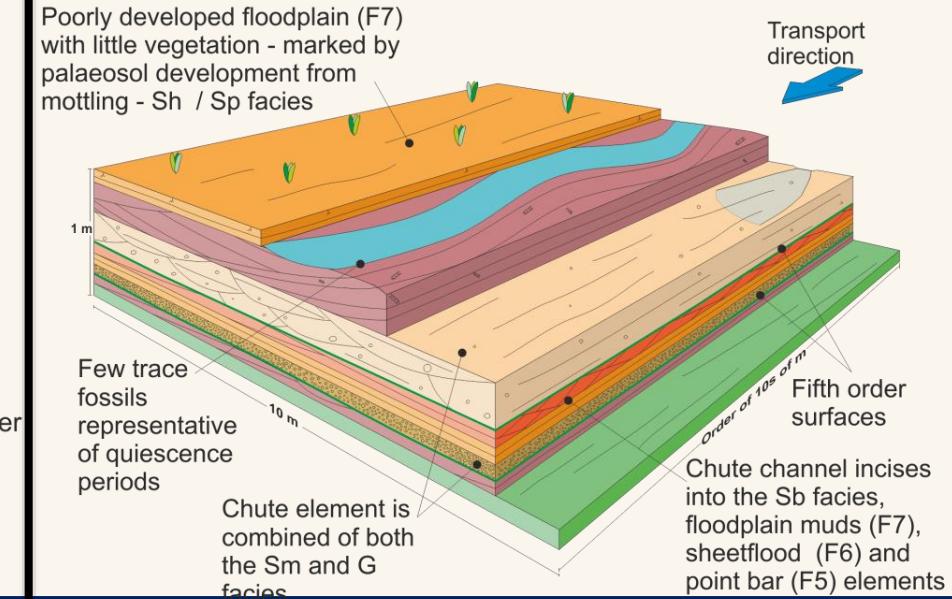


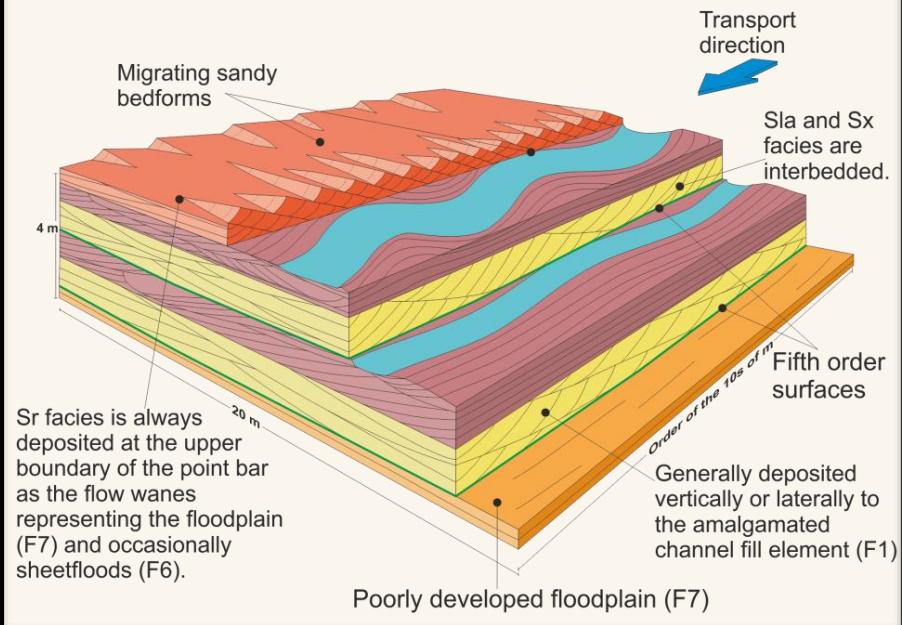
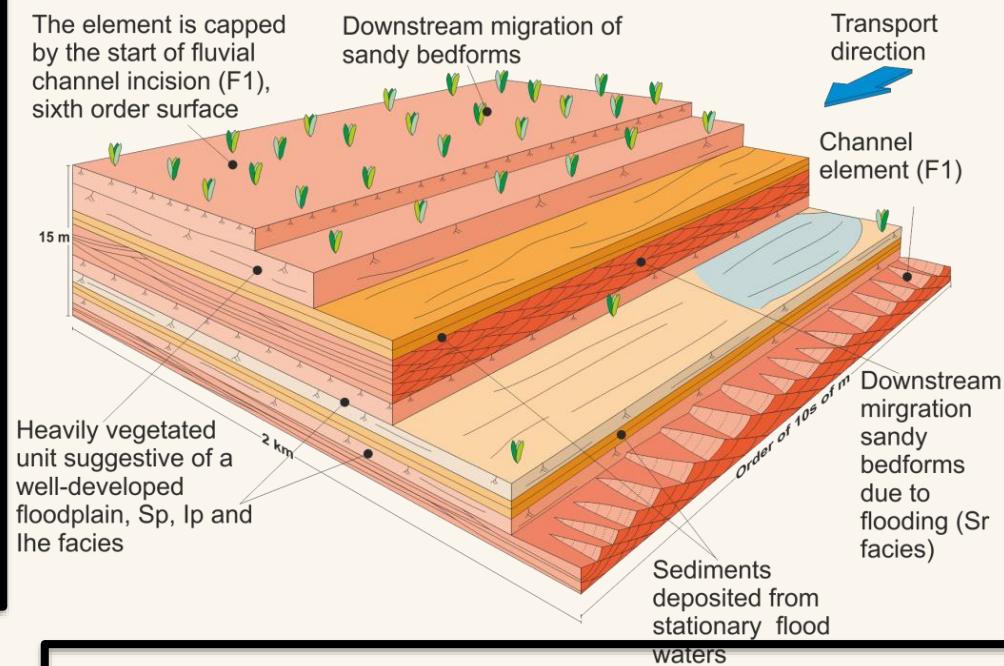
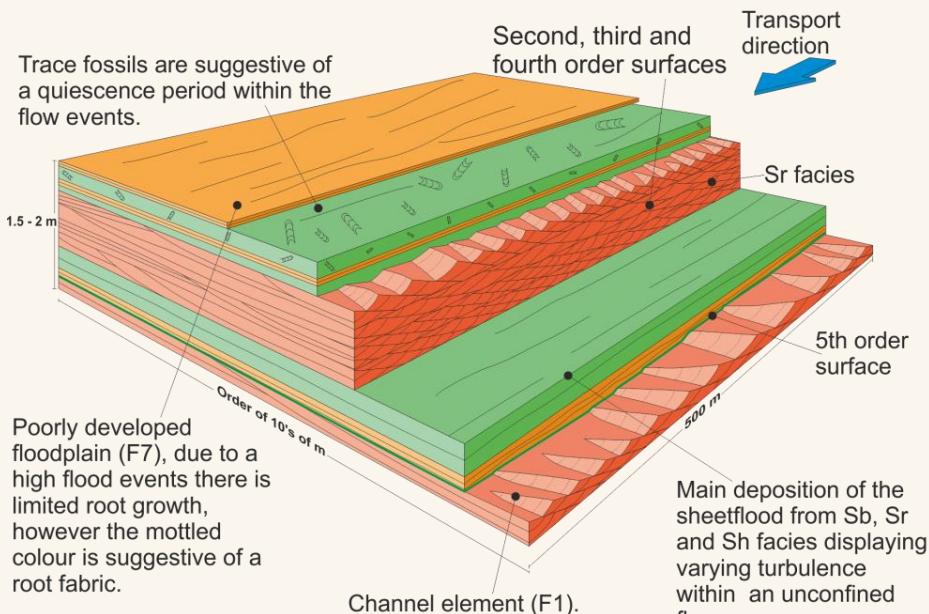
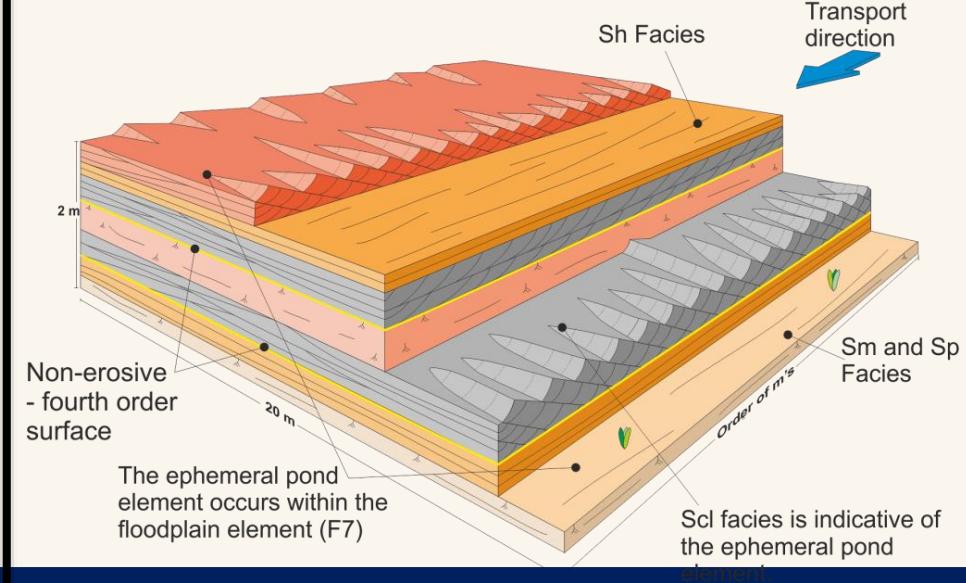
Element F2: Channel margin element



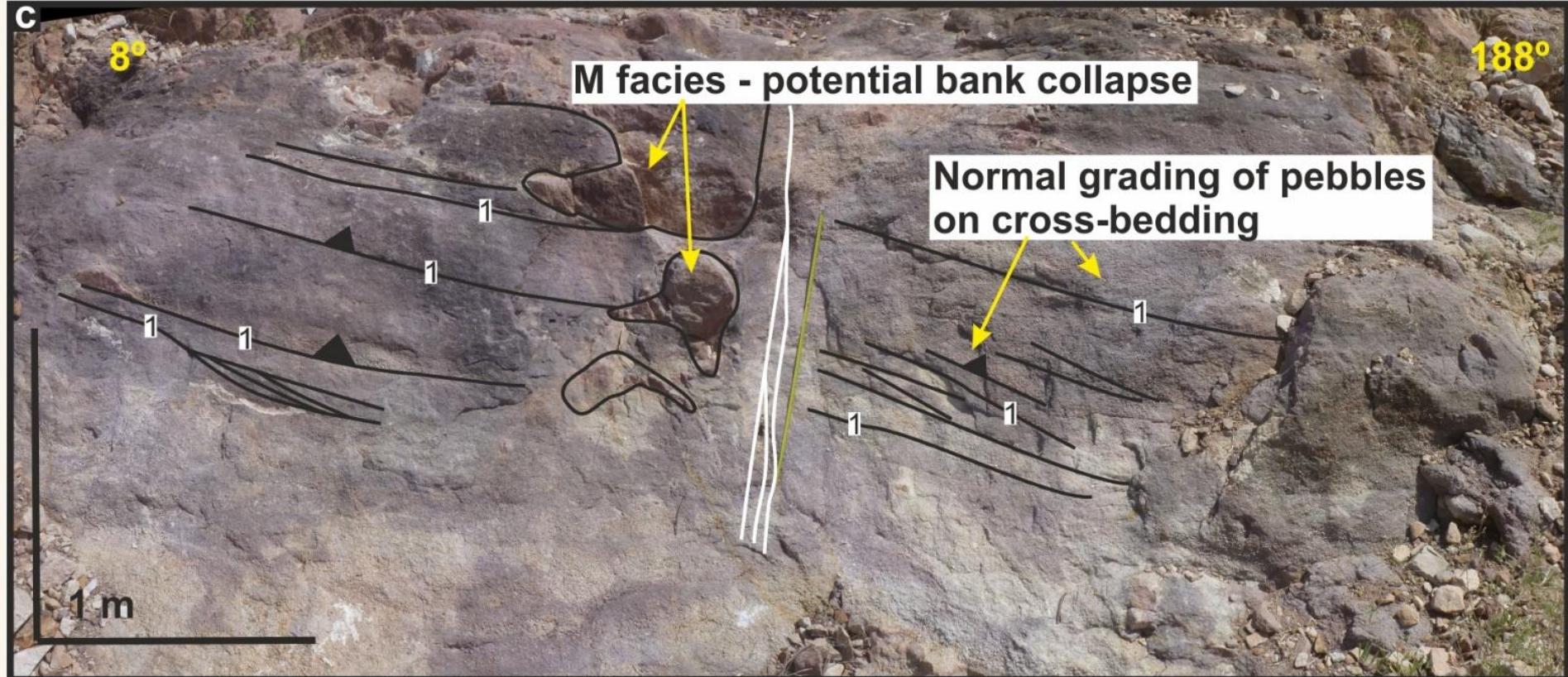
Beaumont et al., 2019

Element F4: Chute channel element



Element F5: Point bar element**Element F7: Floodplain element****Element F6: Sheetflood element****Element F8: Ephemeral pond element**

Model one

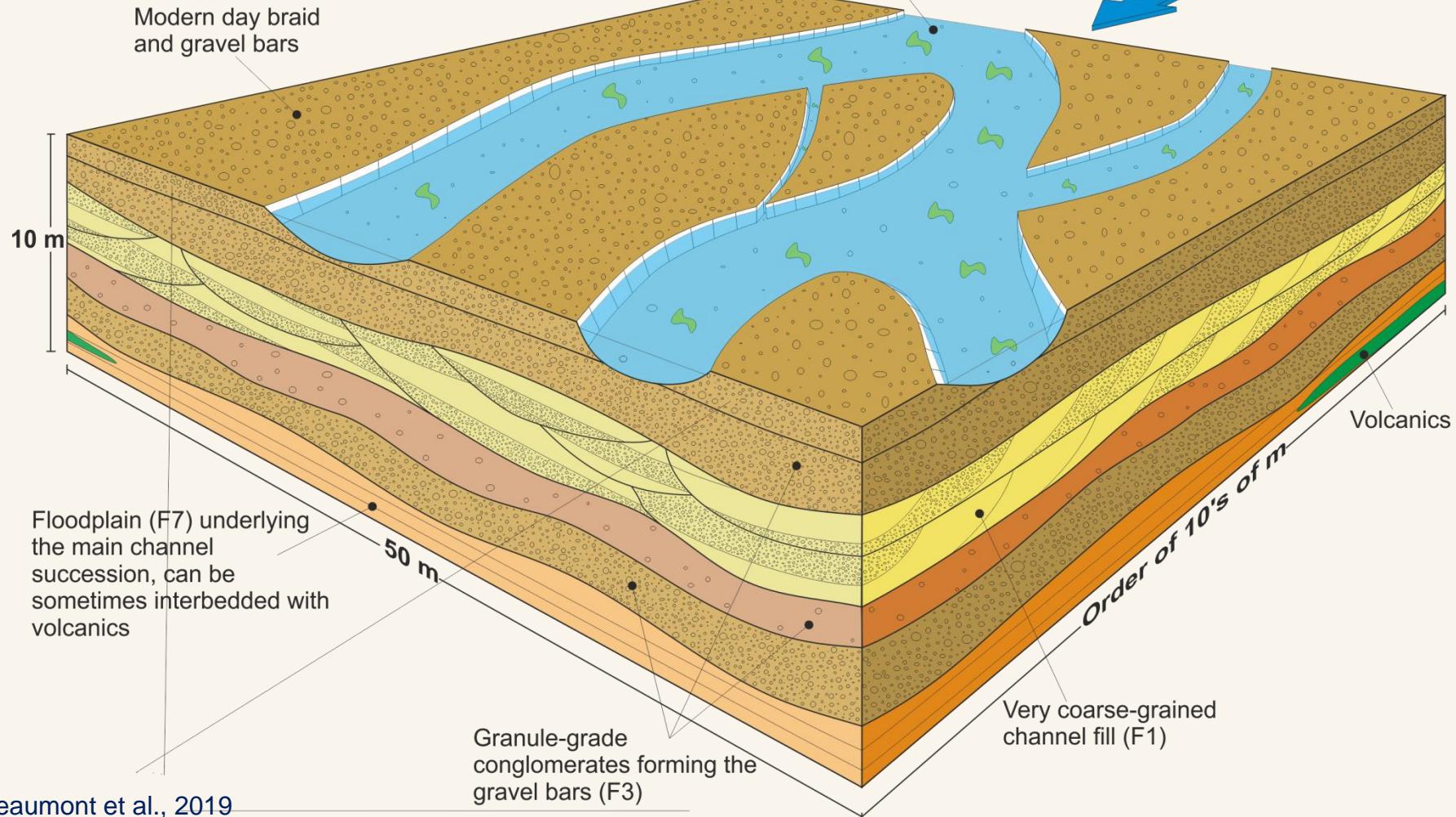


Gravel bedload, low sinuosity

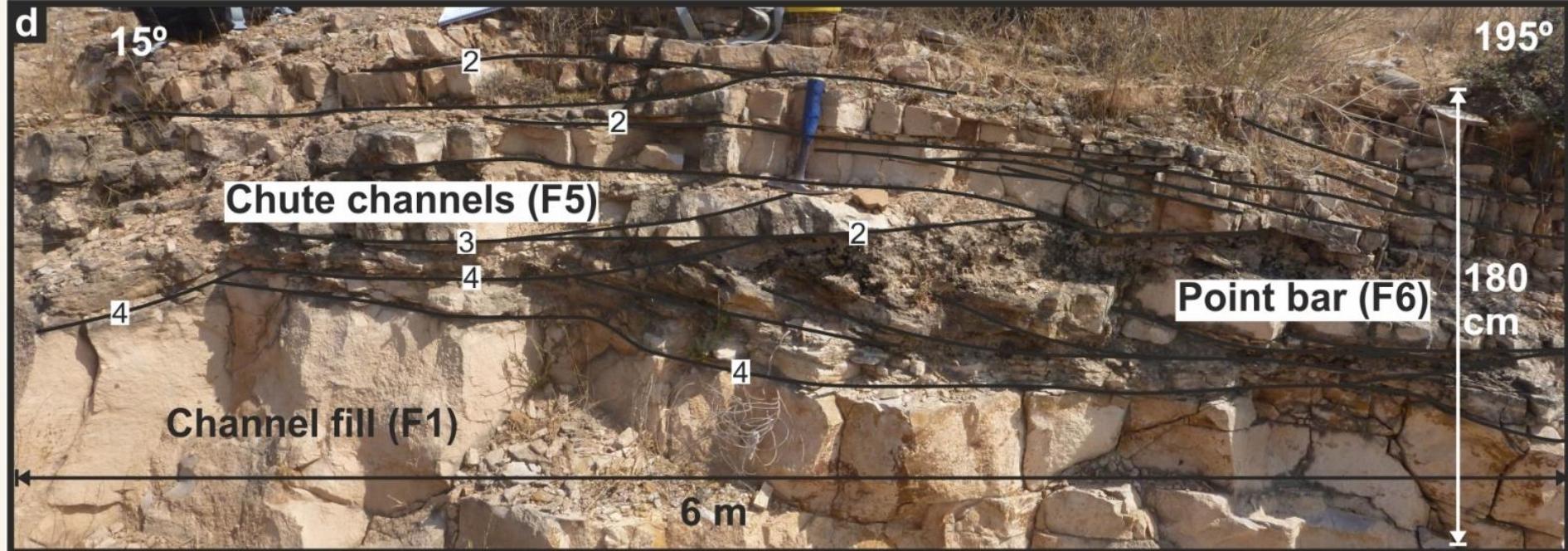
Darjaniyon-ki Dhani Sandstone



Modern day river channel, with medium-grained sand to granule-grade conglomerates and sinuous crested bedforms

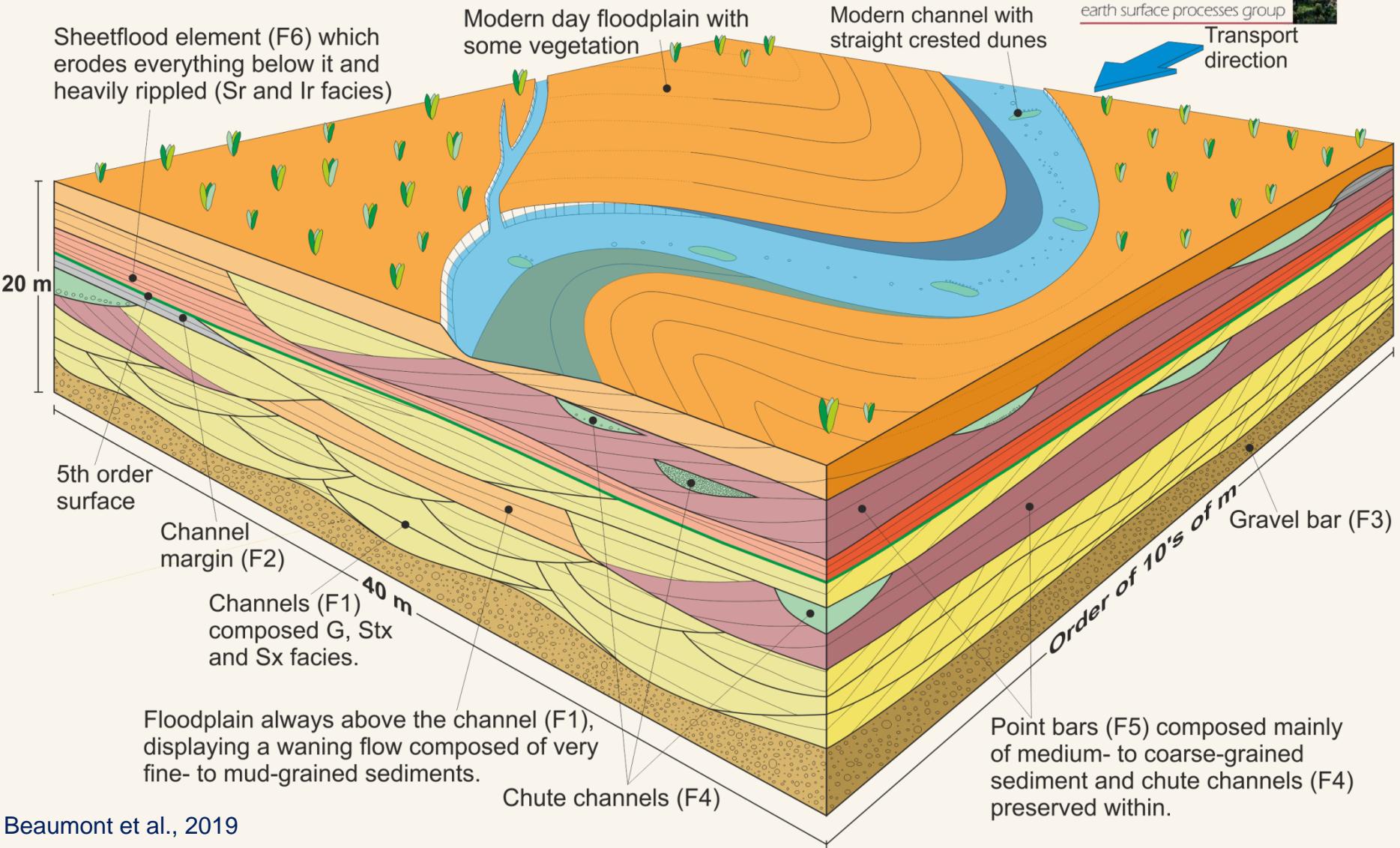


Model two

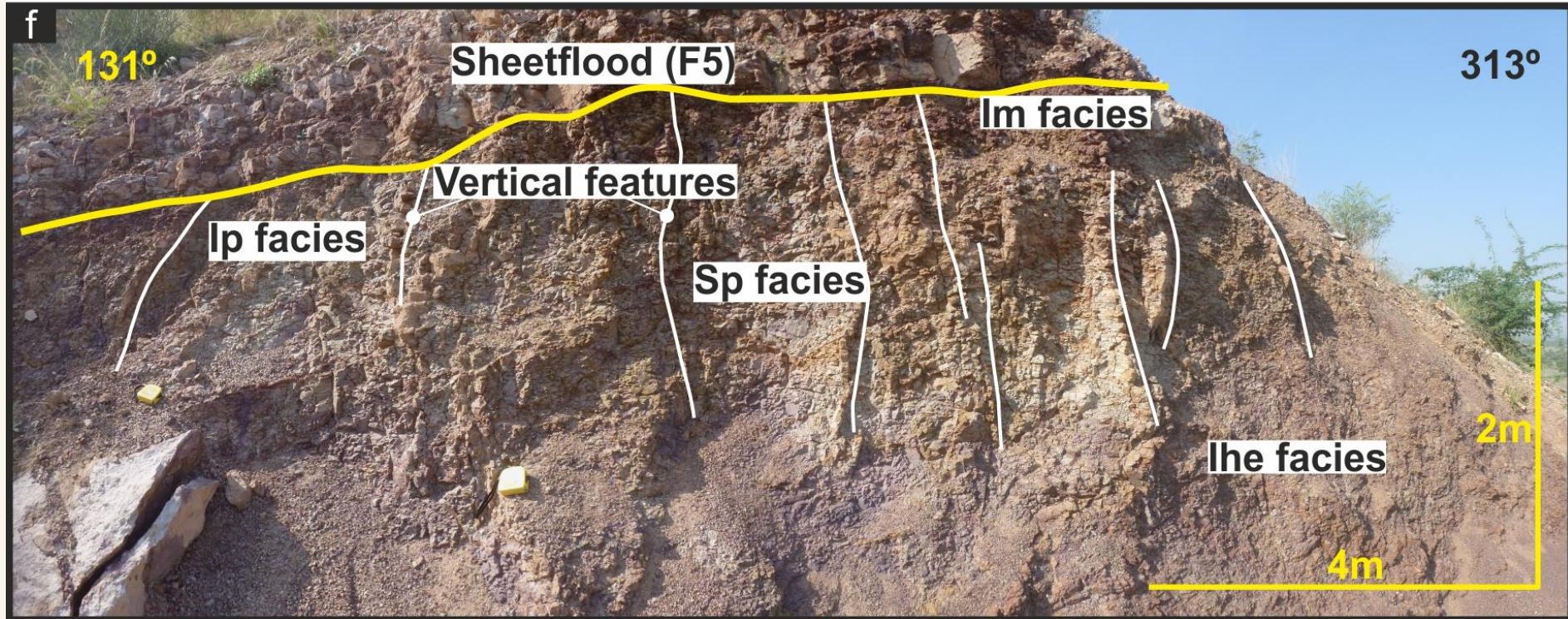


High sinuosity

Sarnoo Sandstone

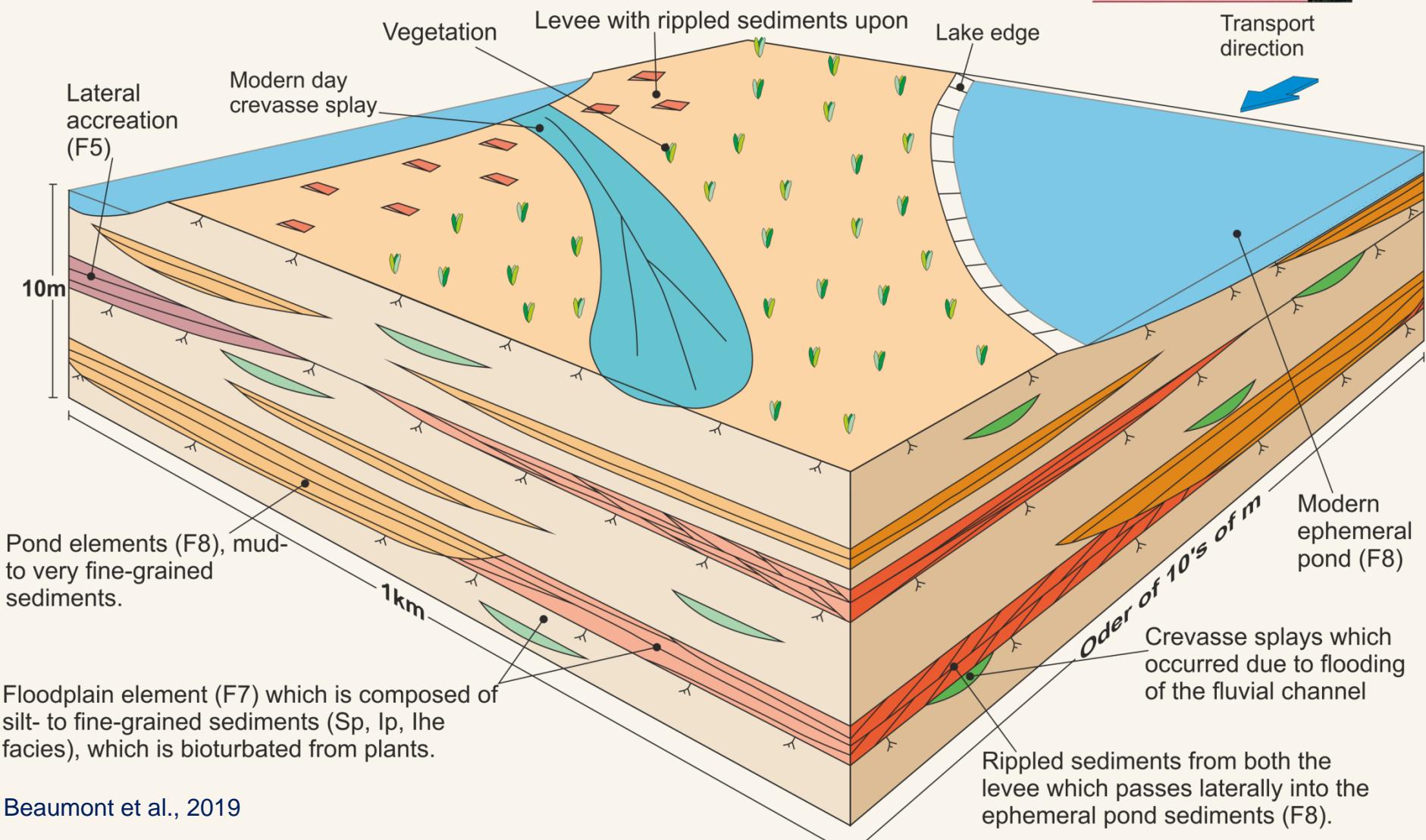


Model three

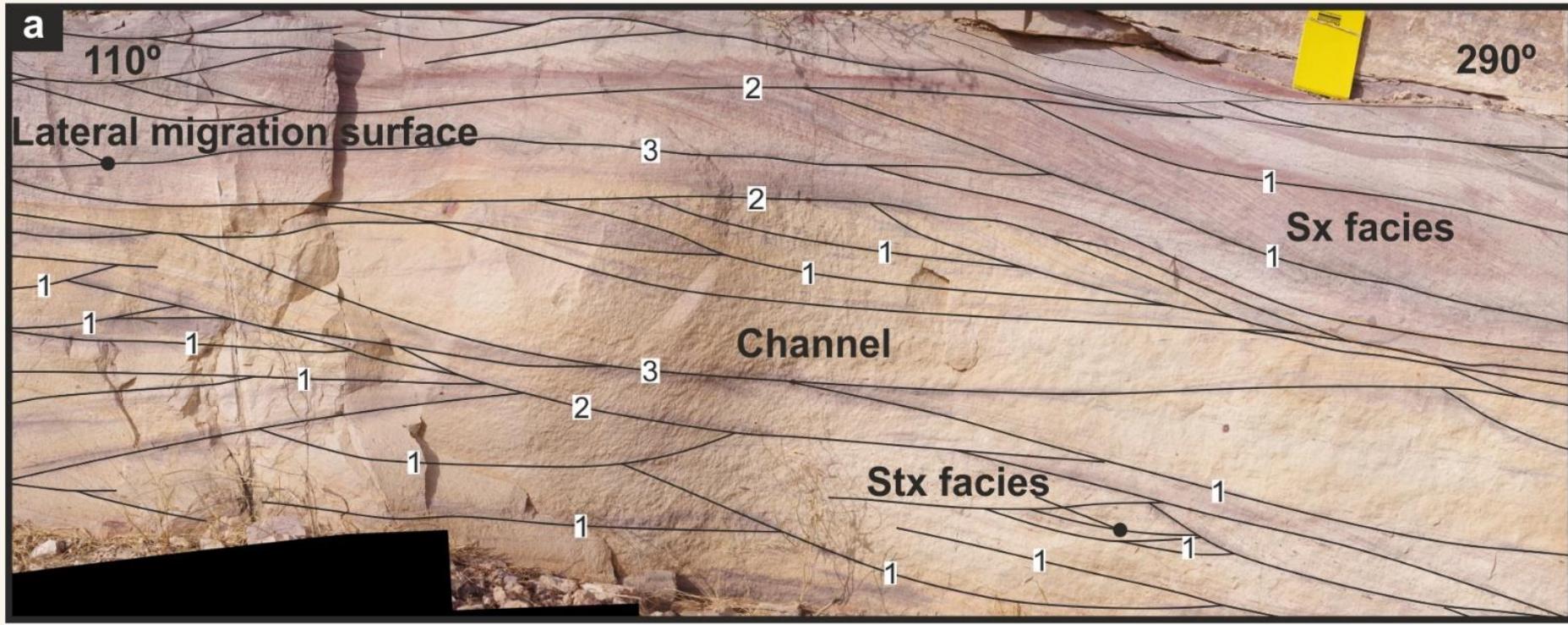


Floodplain

Ghaggar-Hakra Undivided

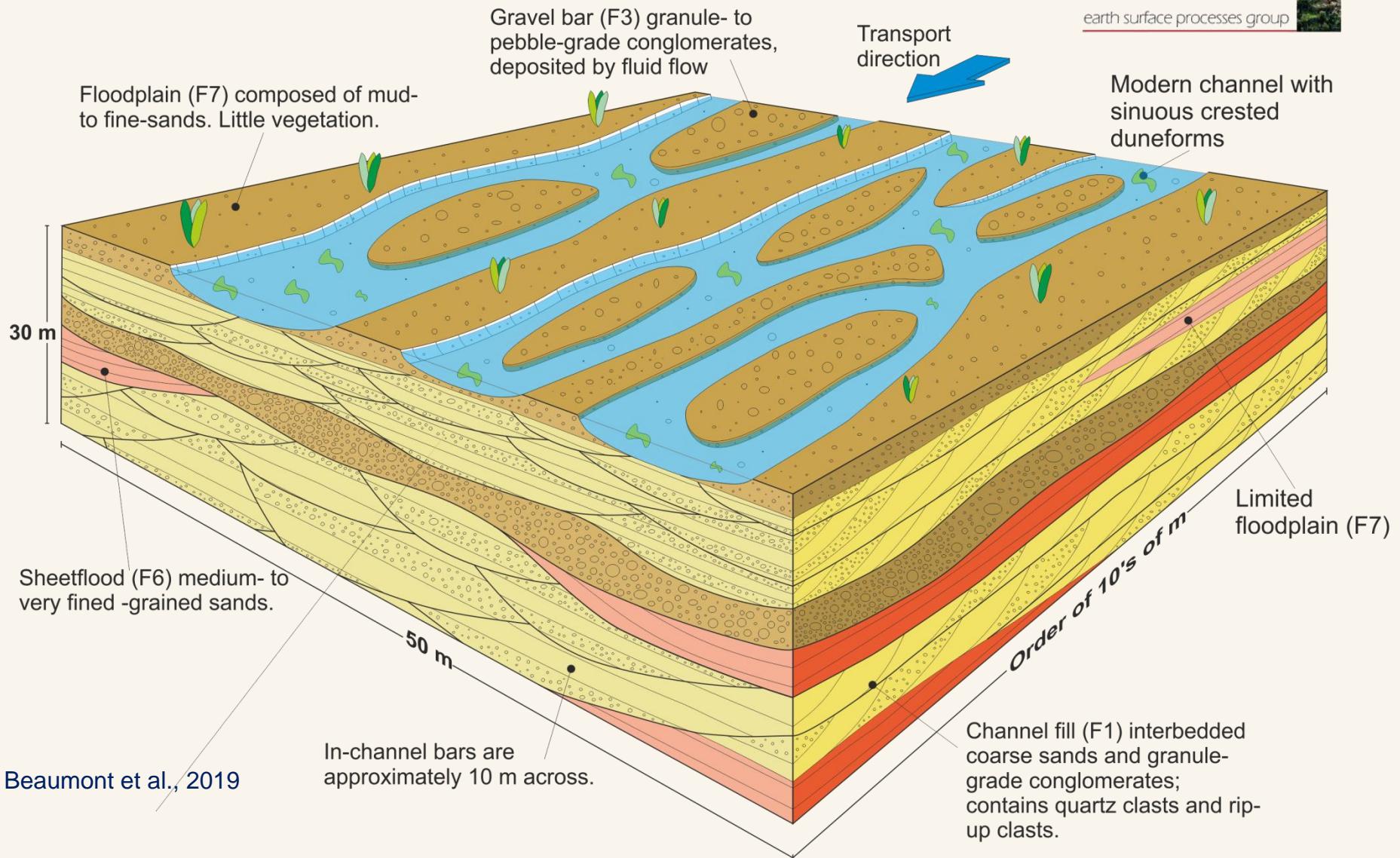


Model four

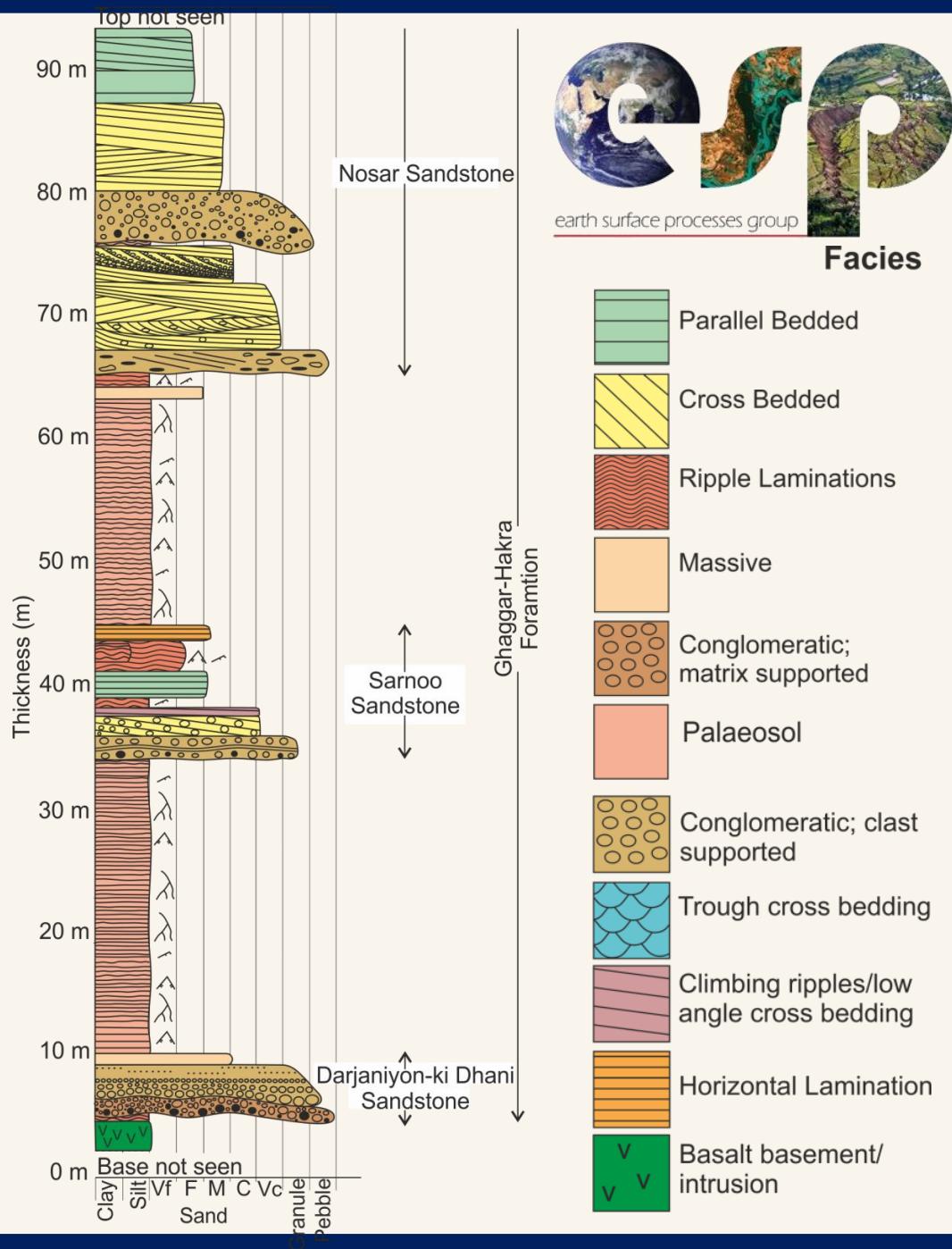
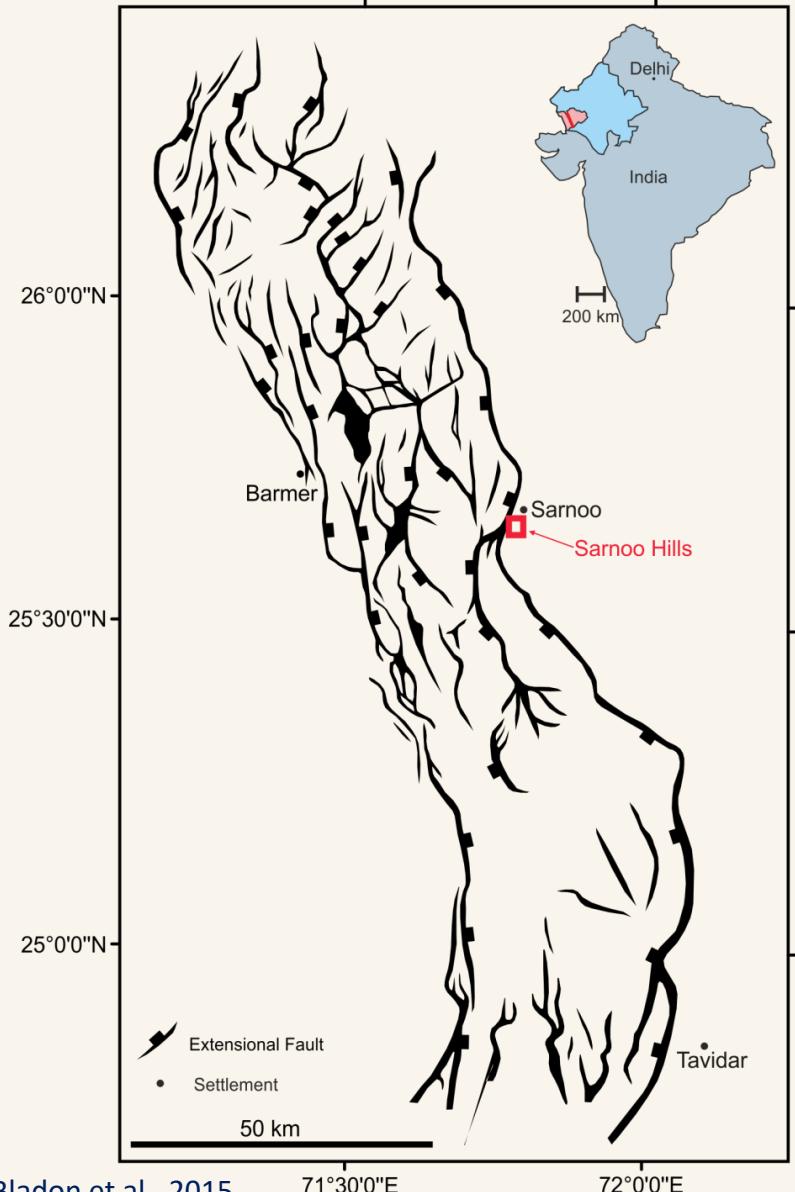


Well-developed, low sinuosity

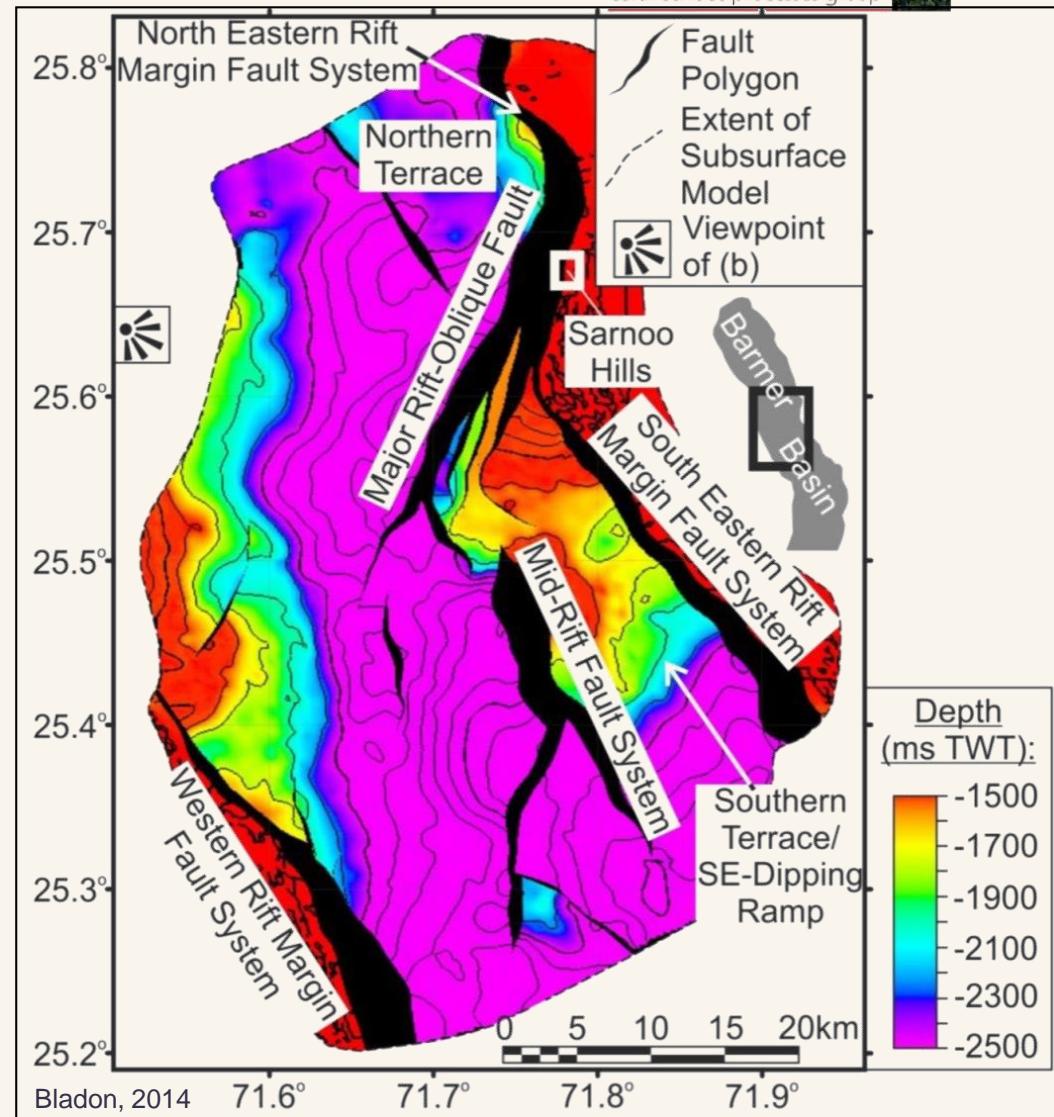
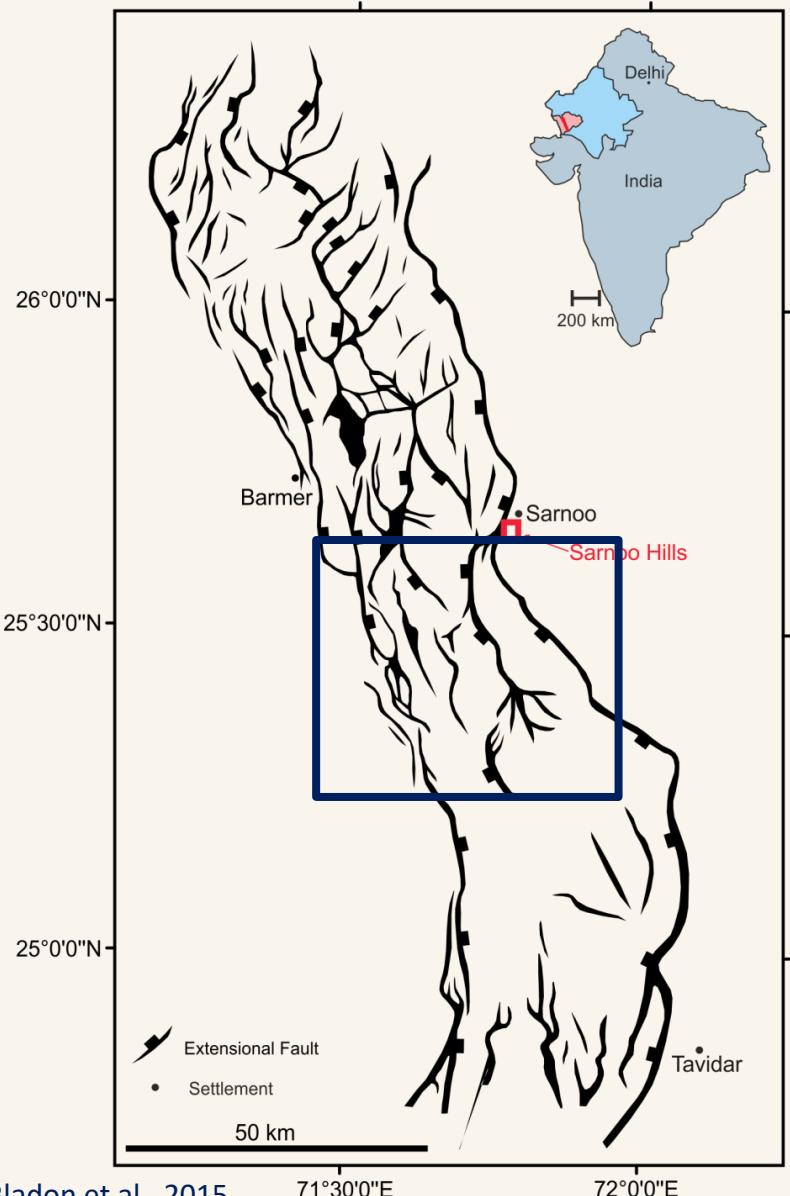
Nosar Sandstone



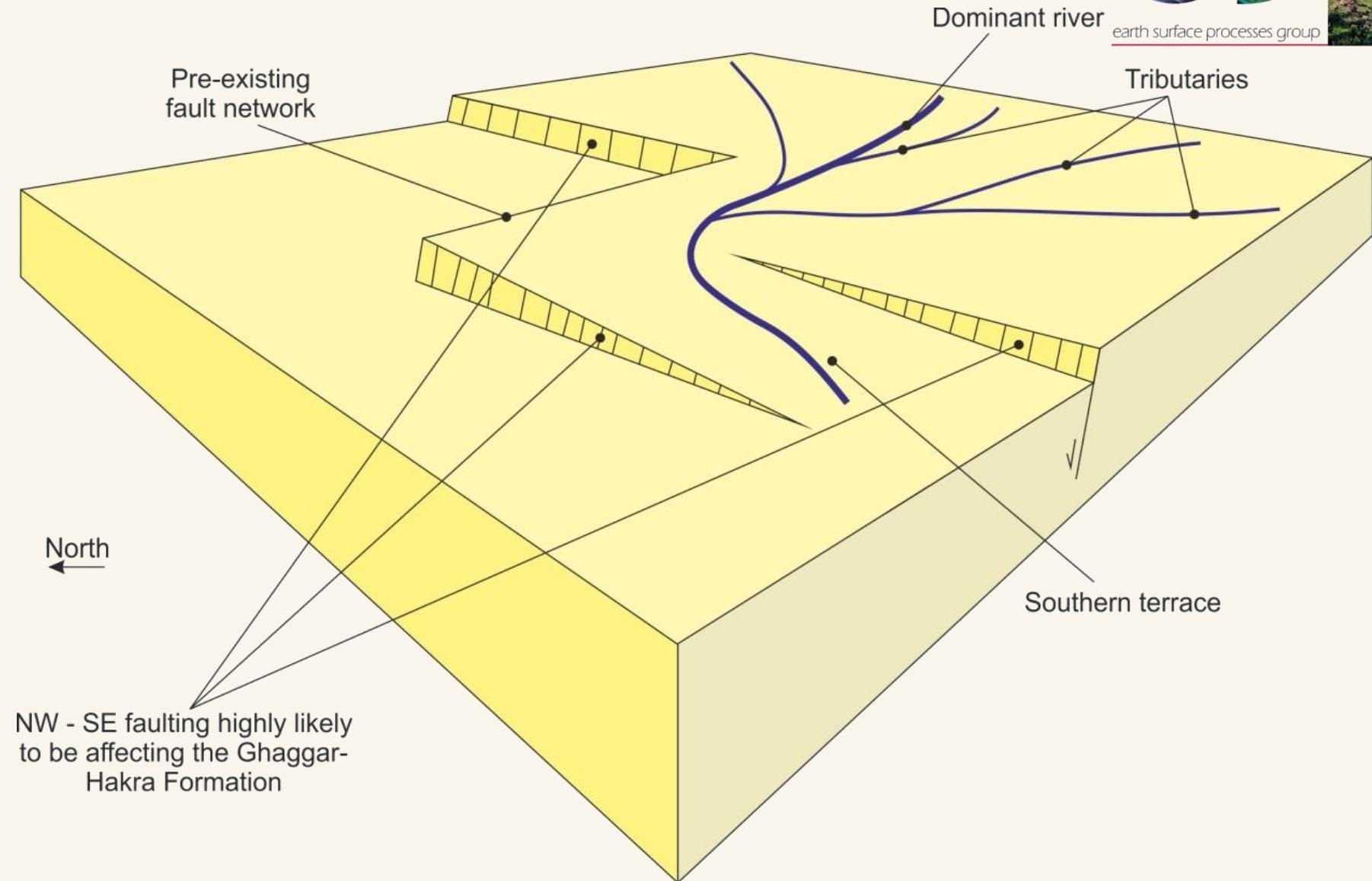
Ghaggar-Hakra Formation

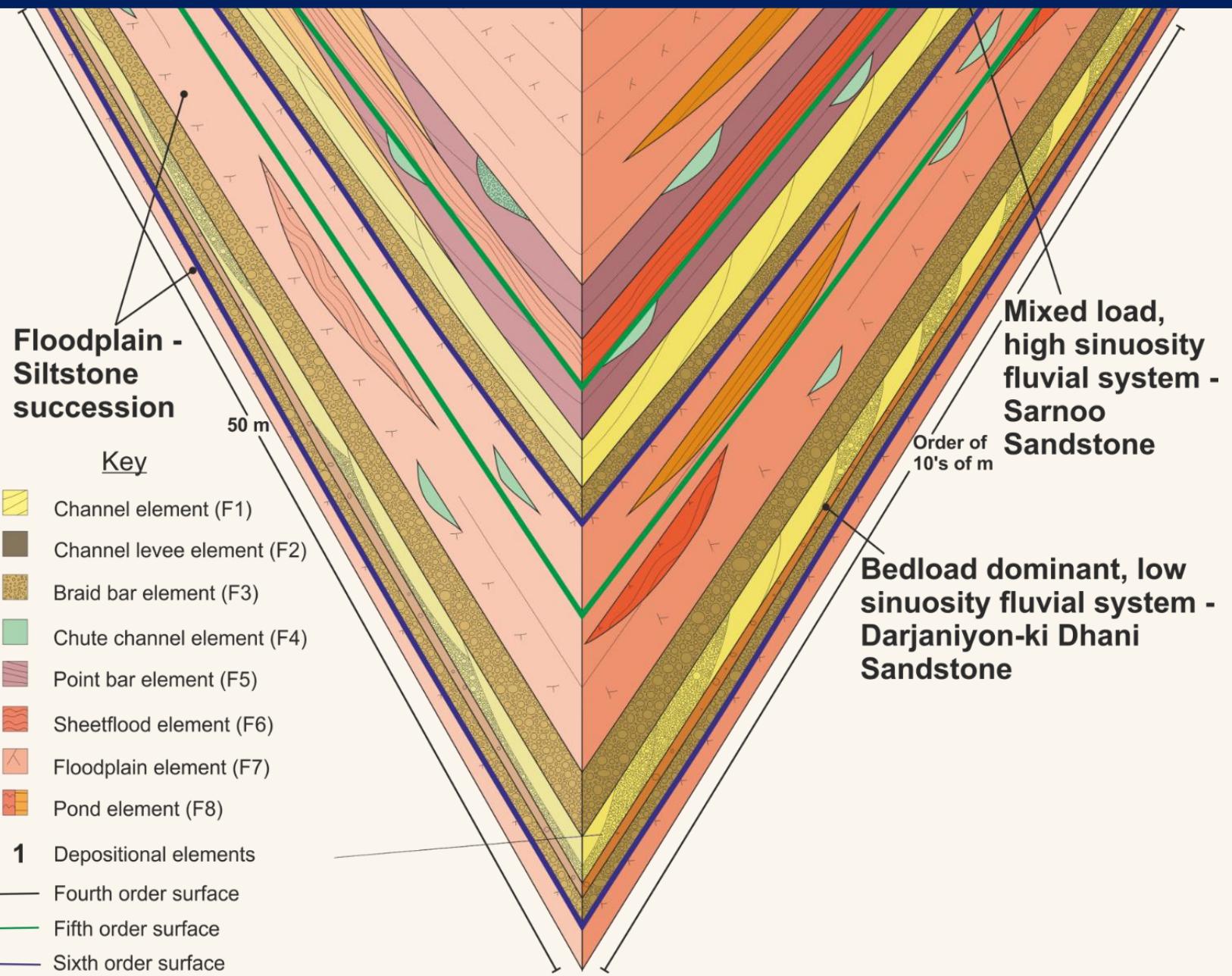


Timing of faulting

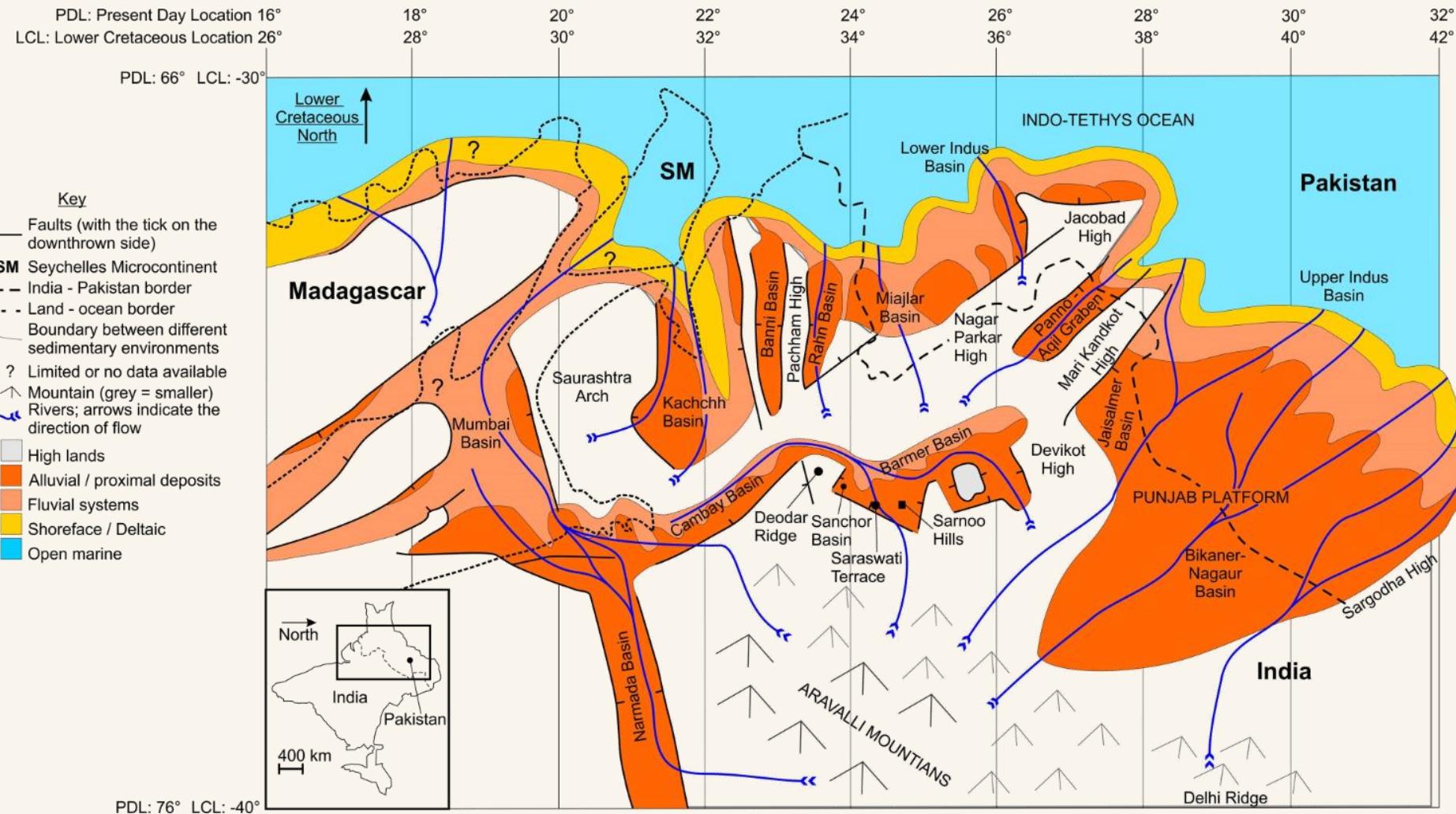


Tectonic influences





Provenance



Summary



- The Darjaniyon-ki Dhani Sandstone is a gravel bedload, low sinuous fluvial system
- The Sarnoo Sandstone is a mixed load, high sinuous system
- The Nosar Sandstone is a well-developed, bedload dominant, low sinuous system.
- Changes in fluvial style between the Darjaniyon-ki Dhani and Sarnoo sandstones relate to the growth of the fluvial system
- The changes between the Sarnoo and the Nosar sandstone are related to the growing fault network.
- Four key architectural elements which are: channel fill, braid bars, point bars and the floodplain
- Sometimes the core is better preserved than the outcrops



- We want to promote the importance of geoscience in a more sustainable society, and to advocate for equality, diversity and inclusion for all in geoscience
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#AskAGeo 

Any Questions?!

Acknowledgements

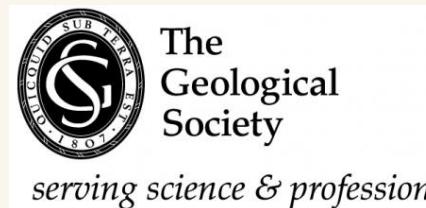
- James Solan, Andrew Bladon and Bhanwar Lal for field assistance
- Cairn for funding and administrating all field work
- Cairn and Ichron for providing essential help and reading materials

References

- Bladon A.J., Burley S.D., Clarke S.M. and Beaumont H. Geology and regional significance of the Sarnoo Hills eastern rift margin of the Barmer Basin, NW India, *Basin Research*, Accepted Article, DOI: 10.1111/bre.12093



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