

Data repository item Fig. DR1: location of studied section shown in Fig. DR2. A: in relation to regional geology; B: geographical map. Figure adapted from DeCelles et al. (2004).

Data repository item Fig. DR2: sedimentary log of studied section, located in data repository item Fig. DR1. All sample numbers (prefix DB02-) relate to illite crystallinity analyses (data repository Table DR2), except those labelled (FT) which were sampled for the purpose of analysing fission track ages of detrital zircons. Those samples which proved suitable for fission track analysis are given in Table 2. Height in metres. Abbreviations: S = siltstone, VF = very fine grained sandstone, F = fine grained sandstone, M = medium-grained sandstone, C = coarse-grained sandstone, VC = very coarse-grained sandstone. Figure adapted from DeCelles et al. (2004)

In the logged section, the Amile-Bhainskati contact could be drawn at the height of 20m above the base of the measured section, if the contact is defined at the lowest occurrence of Bhainskati-type black shales, or at the 30m height, if the highest occurrence of Amile-like pebbly sandstones are used to indicate the contact. Whilst zircon fission track data (this study) and XRF analyses (DeCelles et al., 2004), show that the rocks in this Amile-Bhainskati “transition zone” have a weak affinity to the underlying Amile Formation, U-Pb ages of detrital zircons show a strong similarity to samples from the overlying Bhainskati Formation (DeCelles et al., 2004).

Data repository item Table DR1: Zircon fission track data. Samples can be located on Fig. DR2.

Data repository item Table DR2: Illite crystallinity data. Samples can be located on Fig. DR2.

Table DR1

Sample (prefix DB02) & Formation	No. of Grains	ρ_d	N_d	ρ_s	n_s	ρ_i	n_i	χ^2	RE%	Central Age (Ma)	Principal age components
21J - Dumre	62	0.349	2437	5.418	5752	1.903	2020	<1	73.5	50±5	30±1 (69%); 304±34 (18%); 117±15 (7%); 61±9(6%)
21F - Dumre	50	0.353	2437	5.602	3688	2.994	1971	<1	48.3	40±3	32±1 (84%); 355±56 (8%); 77±8 (8%)
21N-Bhainskati	32	0.351	2437	14.97	3589	14.22	341	<1	106.9	199±40	343±40 (59%); 119±18 (21%); 45±5 (20%)
21Z Amile- Bhainskati transition.	38	0.352	2437	10.33	6526	2.221	1404	<1	52.1	100±9	72±7 (42%); 266±31 (26%); 60±8 (24%); 107±20 (6%)

Notes:

- (i). Track densities ($\rho_{d,s,i}$) are ($\times 10^6 \text{ tr cm}^{-2}$) with numbers of tracks counted ($N_{d,s,i}$) shown in brackets; Zeiss Axioplan microscope, 1250x total magnification; 100x dry objective;
- (ii). analyses by external detector method using 0.5 for the $4\pi/2\pi$ geometry correction factor; only crystals with prismatic sections parallel to c-crystallographic axis analysed;
- (iii). irradiation in thermal facility of Risø Reactor, National Research Centre, Roskilde, Denmark (cadmium ratio for Au >400) using dosimeter glass CN-5 to monitor neutron fluence;
- (iv). ages calculated using $\zeta_{\text{CN5}} = 339 \pm 5$ calibrated by >33 analyses of IUGS apatite age standards;
- (v). $P\chi^2$ is probability for obtaining χ^2 value for ν degrees of freedom, where $\nu = \text{no. crystals} - 1$;
- (vi). central age is a modal age, weighted for different precisions of individual crystals.

Table DR2

Formation	Sample no	FWHM	Hbrel
Dumre	DB02-21E	0.70	331
Dumre	DB02-21G	0.56	265
Dumre	DB02-21H	0.48	227
Bhainskati	DB02-21C	0.45	213
Bhainskati	DB02-21L	1.30	615
Bhainskati	DB02-21M	0.42	199
Bhainskati	DB02-21Q	NO PEAK	-
Bhainskati	DB02-21R	0.41	194
Bhainskati	DB02-21S	0.73	345
Bhainskati	DB02-21U	0.72	341
Bhainskati	DB02-21V	0.84	398
Bhainskati	DB02-21W	0.71	336
Bhainskati	DB02-21X	0.86	407
Bhainskati	DB02-21HX	1.36	644
Amile-Bhainskati transition	DB02-21BX	1.25	592
Amile-Bhainskati transition	DB02-21CX	0.91	431
Amile-Bhainskati transition	DB02-21DX	1.35	639
Chachare Conglomerate	DB02-21KX	0.78	369

QUARTZ FWHM - 0.2°

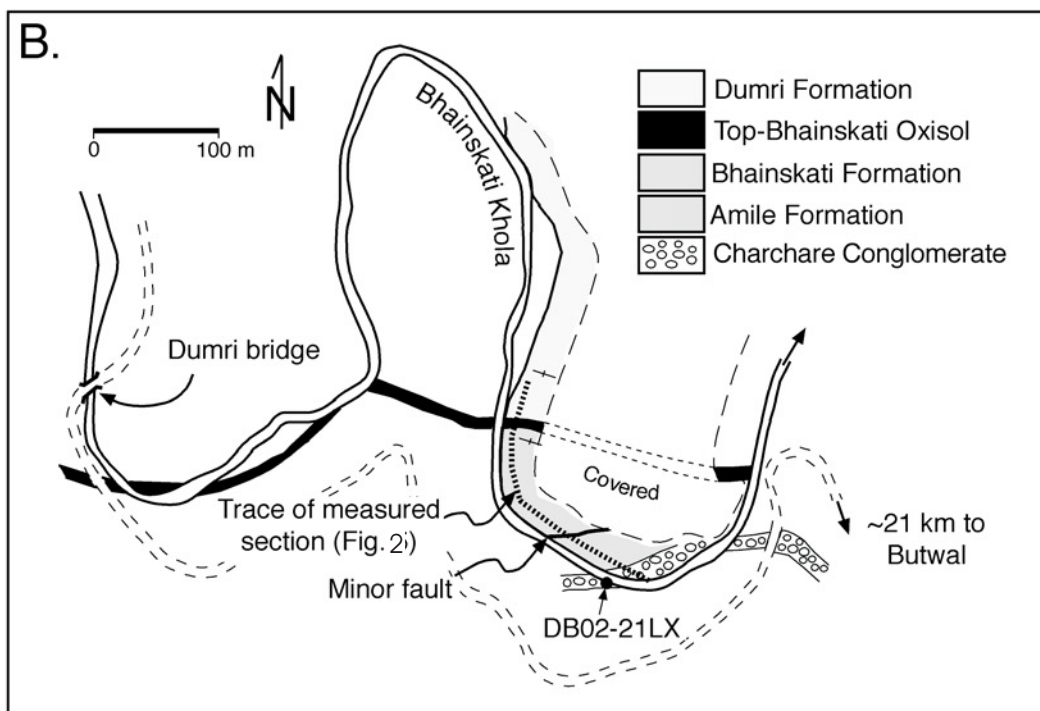
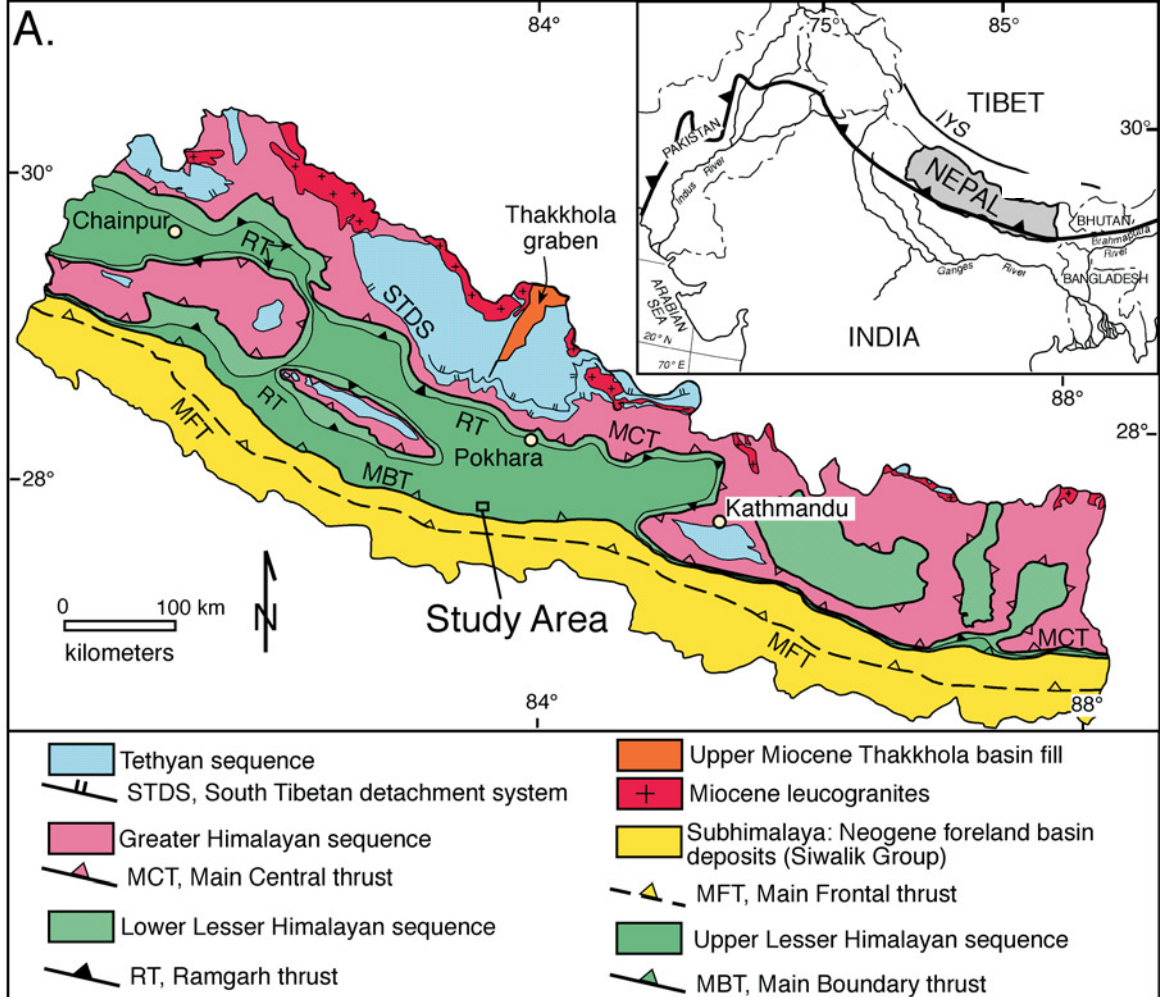
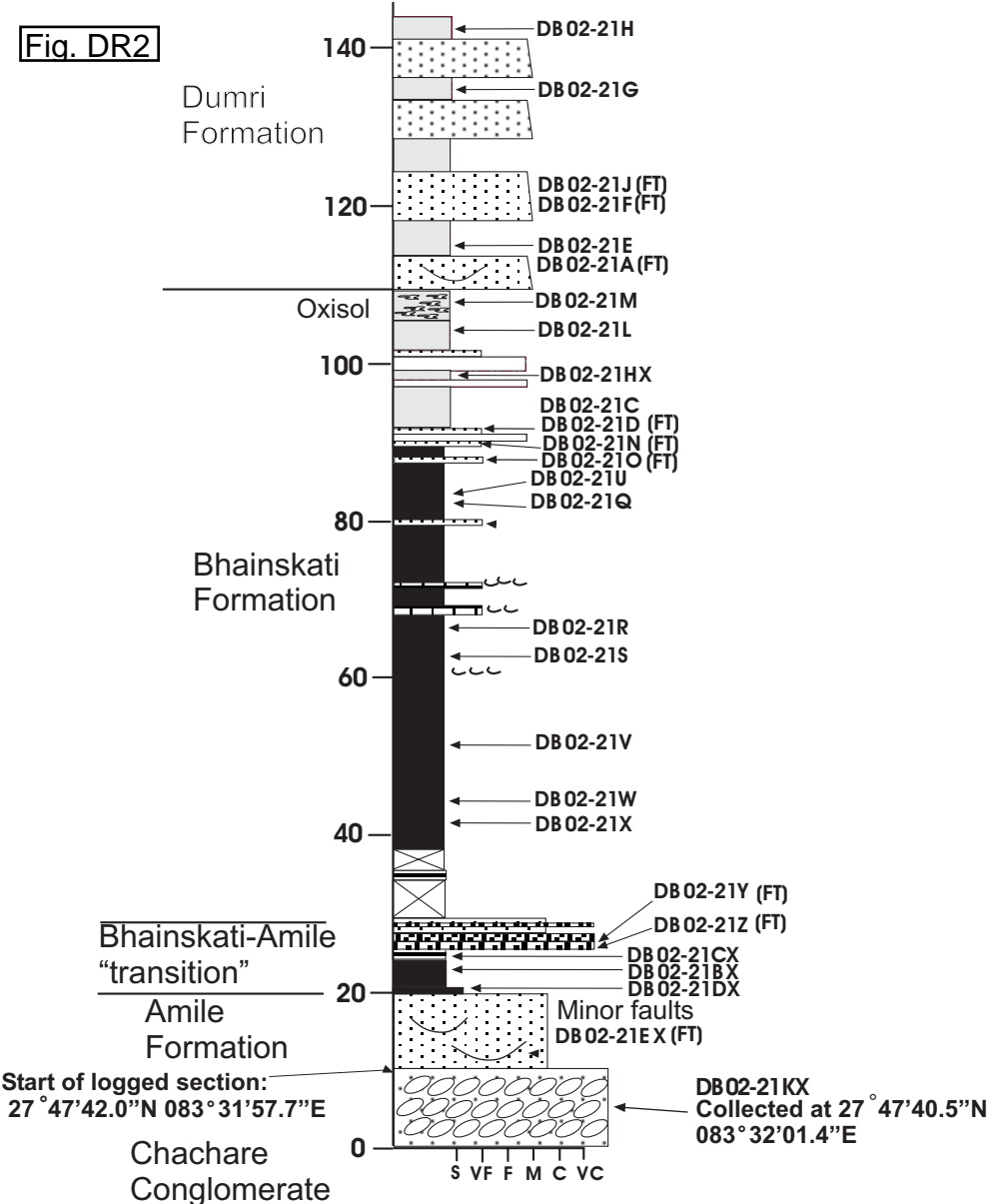










Fig. 1

Fig. DR2



-  Red siltstone
-  Gray / black shale
-  Fossiliferous limestone
-  Hematitic oolite

-  Molluskan debris
-  Sandstone
-  Granular sandstone / cgl.
-  Imbricated cobble conglomerate