

Nanga Parbat-Haramosh Massif

Geological Map

Map Units - for bedrock units, darker colour shows observed outcrop; paler colour extrapolated/interpreted - the order of the bedrock units in this key is not intended to imply any relative ages

- Q Unconsolidated river terrace and alluvial fan gravels and sands (only large areas shown, in Indus Valley) - shown darker where tilted and/or gently folded
- Js Jalipur sandstone, conglomerate (strongly folded; not dated but probably Pleistocene)

Kohistan-Ladakh Series Rocks

- K Less-deformed mafic rocks: amphibolite, metabasite, metadiorite/gabbro, etc.
- Km Strongly foliated to mylonitic mafic gneisses of the Main Mantle Thrust shear zone
- Ku from TM image interpretation - ultramafics/serpentine
- Kd hornblende diorite/quartz diorite

Rocks of the Indian metasedimentary "cover" and Himalayan mylonite zones

- M6 Marbles, calc-schists, and pelitic schists, interlayered with large amphibolite/mafic gneiss sheets and boudins
- M5 Metapelitic schists (typically garnetiferous) interlayered with lesser marbles, amphibolites, graphitic schists, and psammitic schists (the latter mostly in the upper part). Minor ultramafic u and eclogite e inclusions (meta-melange?). red diagonal lines - contains abundant deformed granite sheets
- M4 Large amphibolite sheet in east Indus Gorge section. Local ultramafic rock at base. Possibly ophiolite-derived, or Panjal Trap equivalent.
- M3 Grey porphyroclastic mylonitic quartzofeldspathic gneisses (porphyroclasts sparse to moderate abundance, and small)
- M2 Megacrystic feldspar-porphyroclastic garnetiferous mylonitic gneisses. Coarse and abundant megacrysts. Locally lower-strain (near Rama Valley)
- M1 Planar-foliated, non-porphyroclastic, very highly strained mylonitic gneisses (quartzofeldspathic, pelitic)

Plutonic Rocks of the Raikhot-Diamir and Rupal-Chhichi Shear Zones

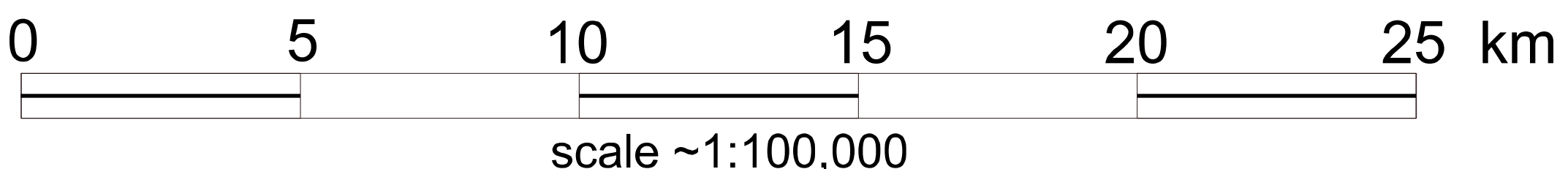
- G4 K-feldspar porphyroclastic gneisses, mostly S/C mylonite fabrics (coarse and abundant porphyroclasts)
- G3 Biotite Granite with abundant and distinctively clumped biotite aggregates (Jahni Granite). Much is moderately to strongly foliated, with asymmetric shear zone fabrics

Other Plutonic Rocks

- G2 Granite and leucogranite - little to moderately deformed
- G1 Strongly lineated granite in the Raikhot shear zone near Tato and moderately foliated to mylonitic leucogranite near Garol in Biji Gah

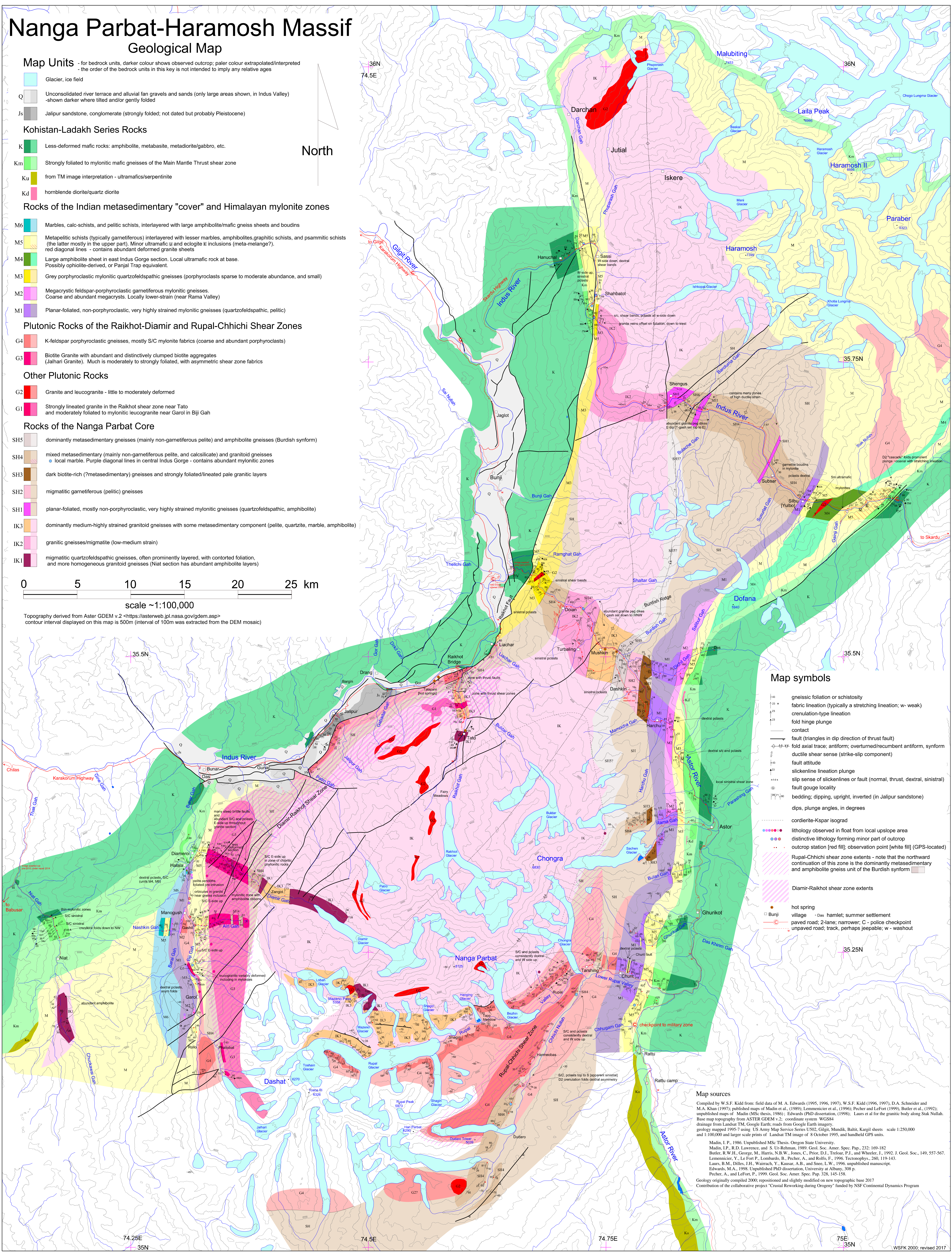
Rocks of the Nanga Parbat Core

- SH5 dominantly metasedimentary gneisses (mainly non-garnetiferous pelite) and amphibolite gneisses (Burdish syform)
- SH4 mixed metasedimentary (mainly non-garnetiferous pelite, and calc-silicates) and granitoid gneisses - local marble. Purple diagonal lines in central Indus Gorge - contains abundant mylonitic zones
- SH3 dark biotite-rich (?metasedimentary) gneisses and strongly foliated/lineated pale granitic layers
- SH2 migmatitic garnetiferous (pelitic) gneisses
- SH1 planar-foliated, mostly non-porphyroclastic, very highly strained mylonitic gneisses (quartzofeldspathic, amphibolite)
- IK3 dominantly medium-highly strained granitoid gneisses with some metasedimentary component (pelite, quartzite, marble, amphibolite)
- IK2 granitic gneisses/migmatite (low-medium strain)
- IK1 migmatitic quartzofeldspathic gneisses, often prominently layered, with contorted foliation, and more homogeneous granitoid gneisses (Niat section has abundant amphibolite layers)



Topography derived from Aster GDEM v.2 <https://asterweb.jpl.nasa.gov/gdem.asp>
contour interval displayed on this map is 500m (interval of 100m was extracted from the DEM mosaic)

North



Map symbols

- gneissic foliation or schistosity
- fabric lineation (typically a stretching lineation; w- weak)
- crenulation-type lineation
- fold hinge plunge
- contact
- fault (triangles in dip direction of thrust fault)
- fold axial trace; antiform; overturned/recumbent antiform, synform
- ductile shear sense (strike-slip component)
- fault attitude
- slickenline lineation plunge
- slip sense of slickenlines or fault (normal, thrust, dextral, sinistral)
- fault gouge locality
- bedding; dipping, upright, inverted (in Jalipur sandstone)
- dips, plunge angles, in degrees
- cordierite-Kespar isograd
- lithology observed in float from local upslope area
- distinctive lithology forming minor part of outcrop
- outcrop station [red fill]; observation point [white fill] (GPS-located)
- Rupal-Chhichi shear zone extents - note that the northward continuation of this zone is the dominantly metasedimentary and amphibolite gneiss unit of the Burdish syform
- Diamir-Raikhot shear zone extents
- hot spring
- village
- Das hamlet; summer settlement
- paved road; 2-lane; narrower; C - police checkpoint
- unpaved road; track, perhaps jeepable; w - washout

Map sources

Compiled by W.S.F. Kidd from: field data of M.A. Edwards (1995, 1996, 1997), W.S.F. Kidd (1996, 1997), D.A. Schneider and M.A. Khan (1997); published maps of Madin et al. (1989); Lemmenicier et al. (1990); Butler et al. (1992); unpublished maps of Madin (MSc thesis, 1986); Edwards (PhD dissertation, 1998); Laurs et al for the granitic body along Stak Nullah. Base map topography from ASTER GDEM v.2; coordinate system WGS84 drainage from Landsat TM, Google Earth; roads from Google Earth imagery geology mapped 1995-7 using US Army Map Service Series U502, Gilgit, Muzik, Baltit, Kargil sheets scale 1:250,000 and 1:100,000 and larger scale prints of Landsat TM image of 8 October 1995, and handheld GPS units.

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Geology originally compiled 2000; repositioned and slightly modified on new topographic base 2017
Contribution of the collaborative project "Crustal Reworking during Orogeny" funded by NSF Continental Dynamics Program