Nanga Parbat-Haramosh Massif

Geological Map

Map Units

- Glacier
- Unconsolidated sediment (outside main glacier bodies)
- Jalipur sandstone, conglomerate

Kohistan-Ladakh Series Rocks

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

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

- Marbles, calc-schists, and pelitic schists, interlayered with large amphibolite/mafic gneiss sheets and boudins
- 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 (melange). red diagonal lines - contains abundant deformed granite sheets
- Large amphibolite sheet in east Indus Gorge section. Local ultramafic rock at base. Possibly ophiolite-derived.
- Grey porphyroclastic mylonitic quartzofeldspathic gneisses (porphyroclasts sparse to moderate abundance, and small)
- Megacrystic feldspar-porphyroclastic garnetiferous mylonitic gneisses. Coarse and abundant megacrysts. Locally lower-strain (near Rama Valley)
- Planar-foliated, non-porphyroclastic, very highly strained mylonitic gneisses (quartzofeldspathic, pelitic)

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

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

Other Plutonic Rocks

- Granite and leucogranite - little to moderately deformed
- Strongly lineated granite in the Raikhot shear zone near Tato

Rocks of the Nanga Parbat Core

- dominantly metasedimentary gneisses (mainly non-garnetiferous pelite) and amphibolite gneisses
- mixed metasedimentary (mainly non-garnetiferous pelite, and calcsilicate) and granitoid gneisses; local marble. Purple diagonal lines in central Indus Gorge - contains abundant mylonitic zones
- dark biotite-rich (?metasedimentary) gneisses and strongly foliated/lineated pale granitic layers
- Migmatitic garnetiferous (pelitic) gneisses
- Planar-foliated, mostly non-porphyroclastic, very highly strained mylonitic gneisses (quartzofeldspathic, amphibolite)
- dominantly medium-highly strained granitoid gneisses with some metasedimentary component (pelite, quartzite, marble, amphibolite)
- Iskere granite gneisses/migmatite (low-medium strain)
- Migmatitic quartzofeldspathic gneisses, often prominently layered, with contorted foliation, and more homogeneous granitoid gneisses (Niat section has abundant amphibolite layers)

0 5 10 15 20 25

kilometers

1:100,000

(~1:106,400 when fit to page on Designjet 2500CP)

Contribution of the collaborative project "Crustal Reworking during Orogeny" funded by NSF Continental Dynamics Program

Map symbols

- gneissic foliation or schistosity
- fabric lineation (typically a stretching lineation; w- weak)
- crenulation-type lineation
- fold hinge; antiform, synform, overturned synform
- contact
- fault (triangles in dip direction of thrust fault)
- fold axial trace; antiform, overturned antiform
- 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-Kspar isograd
- lithology observed in float from local upslope area
- distinctive lithology forming minor part of outcrop
- locality, with number (M Edwards; W Kidd), unnumbered
- road; paved, dirt; C - police/military checkpoint
- village
- hot spring

Rupal-Chhichi shear zone extents - note that the northward continuation of this zone is the dominantly metasedimentary and amphibolite gneiss unit

Diamir-Raikhot shear zone extents

Map sources

Compiled by W.S.F. Kidd from:
field data of M. A. Edwards (1995, 1996, 1997), W.S.F. Kidd (1996, 1997), and M.A. Khan (1997);
published maps of Madin et al., (1989); Lemmenicier et al., (1996); Pecher and LeFort (1999), and 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 enlarged from US Army Map Service Series U502, Gilgit, Mundik, Baltit, Kargil sheets; Transverse Mercator projection
original scale 1:250,000, modified locally from Landsat Thematic Mapper image of 8 October 1995

Madin, I. P., 1986. Unpublished MSc Thesis. Oregon State University.
Madin, I.P., R.D. Lawrence, and S. Ur-Rehman, 1989. Geol. Soc. Amer. Spec. Pap., 232: 169-182
Butler, R.W.H., George, M., Harris, N.B.W., Jones, C., Prior, D.J., Treloar, P.J., and Wheeler, J., 1992. J. Geol. Soc., 149, 557-567.
Lemennicier, Y., Le Fort P., Lombardo, B., Pecher, A., and Rolfo, F., 1996. Tectonophys., 260, 119-143.
Laurs, B.M., Dilles, J.H., Wairrach, Y., Kausar, A.B., and Snee, L.W., 1996. unpublished manuscript.
Edwards, M.A., 1998. Unpublished PhD dissertation, University at Albany, 308 p.
Pecher, A., and LeFort, P., 1999. Geol. Soc. Amer. Spec. Pap. 328, 145-158.

WSFK 2000