Abstract
The Himalayan belt, bounded by 25°-40°N and 65°-85°E, was investigated for seismogenic source
identification and earthquake hazard assessment. An analysis of the database for the period 1853 to 10 Oct 2005 indicates
that the seismic activity in whole area is linked to the
ubiquitous tectonic features of the region. The study
confirms that the Hindukush and its surrounding areas
are highly active and are responsible for maximum percentage
of total activity compared with other regions. About 99% of
intermediate earthquakes are confined to the
Hindukush region between 35.2°-38.8 deg N and 68.2°-74.9 deg E. It is observed that
the intermediate and shallow focus events contributed equally to the seismicity of Hindukush and its
close vicinity. The peaks of annual frequency for shallow and intermediate events correspond to the occurrence of large
earthquakes since 1963, which are preceded and followed by low seismicity of varying periods.
The seismicity of the Western Syntaxis and the
Himalayan Frontal Arc are analogous to each other. The
distribution of earthquake foci in the Hindukush and its surrounding areas is located in a
vertical column, suggesting a V-shaped structure of the
region. Based on other seismological criteria, potential zones
have been delineated and earthquake hazard in each zone is
forecast.

Introduction
Three distinct tectonic zones
based on seismic activity (b-values, the
spatio-temporal patterns of seismic activity, the focal depth
distribution of events, and the energy release pattern)

Discussion and Conclusions
The tectonic activity associated with study region is
due to the collision of Indian and Eurasian plates. The
seismicity and stress patterns of the Hindukush-
Pamir region is structurally controlled by the relative
movements of large rigid lithospheric blocks of the
Indian plate from the south, the Tarim block in the
northeast, Tarax plate in the west and Afghan block in the
southwest. The peaks of annual frequency for shallow and
intermediate events correspond to the occurrence of large
earthquakes since 1963, which are preceded and followed by low seismicity of varying periods.
The seismicity of the Western Syntaxis and the
Himalayan Frontal Arc are analogous to each other. The
intermediate events occur most frequently in the
depth range of 180-270 km in a localized area
bounded by 36.2°-36.6°N and 70°-71.5°E. The
distribution of cumulative number of earthquake with time (CNET) for various magnitude ranges
reveals that prior to the Indo-Iran earthquake, there is
decrease of seismic activity in the region and a
seismic rate change is observed after the occurrence of large earthquakes.
The study of the applicability of the regional line
and magnitude-predictable seismicity model for
earthquake sequence and different regions is significant for
long-term earthquake hazard evaluation. The earthquake forecast made in 17 seismogenic
sources can be used for preparedness measures in
those areas which are in or closed to the
seismogenic regions for which a high probability is
forecast for the occurrence of strong earthquakes during
the impending years has been estimated.

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