



CONCLUSIONS OF GEOCRYOGENIC CONDITIONS BETWEEN THE ANDES AND THE HIMALAYAS

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In spite of the fact that there are differences in the material presentation in both reports, some key processes like the permafrost lowest limit, gradient, and elevation can be compared. The himalayan information indicates large cryogenic features in the colder dryer continental side while in the more oceanic climate are more prevalent the features associated with thawing and debris accumulation processes. Also in the Andes, large cryoplanation features, big sorted patterns and polygons are indicated for the continental side and not in the Pacific area. In the lower regions of the continental side are more prevalent the features associated to thawing and accumulation of various types of debris.

In both sections it is indicated that permafrost and periglacial features and processes are deepening from lower to higher latitudes (Fig.1); this gradient is similar in the Andes and in the Himalayas (1,2-1,4 m/km). The East-West transect from Santiago Chile to Mendoza at 33° S.L. shows that the lower permafrost limit is deepening from the oceanic climate to the more continental climate in the east side of the Andes. This oceanic-continental longitudinal gradient is several times greater than the latitudinal one. For the Himalayan region both gradients can not be separated because of the latitudinal orientation of the chain.

The sections also shows that in the Andes the permafrost lowest limit is located 1.000 m. below the asiatic limit. Which is the cause for this higher elevation of the permafrost lower limit in the Himalayas compared to the Andes? The best explanation, must be related to the temperature influx of oceanic moisture in both regions. The oceanic moisture in the central Andes comes from the Pacific anticiclón which is blowing cold antarctic moisture to the Andes chains; while the monsoons are blowing warm equatorial waters. This is the main reason why all geographical limits are at higher elevations in the Himalayas than in the Andes.

One aspect which requires further field verification is on the existence of upper level of no cryoturbation or of no extrusion features which, for the Andes (at lat. 33°) it is postulated at 5.300 m.

For the Himalayan region processes of freeze-thaw seems to operate even to the top of mount Everest.(8.848 m.)

Lati-altitudinal expression
of P. Permafrost lower boundary
for the same comparative
Latitudes
Himalayas - Andes

- Himalayas Khumbu Hidden Valley Fujii + Higuchi (1976)
- Andes ac. (Fig.1)
- Andes of Chile oceanic side Marangunic (1978)
- Middle Asia Gorbunov (1983)
- Cui Zhijui (1985) Himalayas

