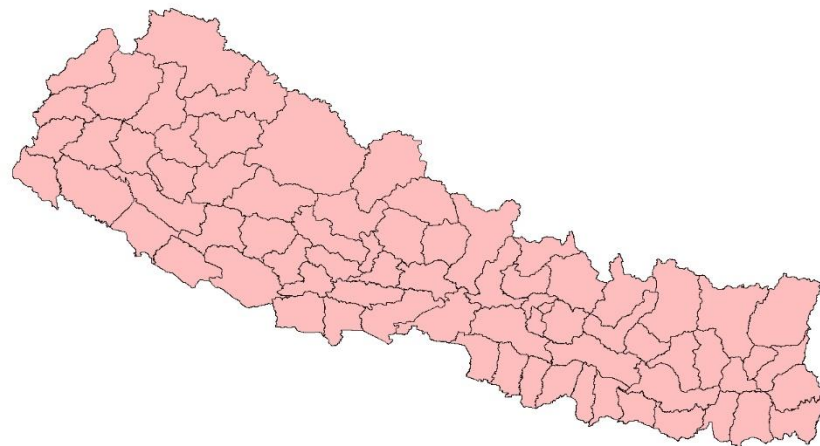


Geodetic history and options for developing new geodetic datum after April 25th, 2015 Gorkha earthquake

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Topics of Discussion

- ▶ Geodetic History of Nepal
- ▶ Effect of Earthquake in Geodetic Network
- ▶ Present Geodetic Status
- ▶ Looking for the Possibilities to Rebuild Geodetic Network

Geodetic History of Nepal

- ▶ Geodetic works started in 1970 A.D
- ▶ Adapted Everest Spheroid 1830
- ▶ The Datum origin was Kalayanpur
- ▶ The control established based on this DATUM was used for cadastral mapping for the country
- ▶ The new DATUM(Nepal DATUM) was defined in 1984 in collaboration with Ministry of defense United Kingdom(MODUK)
- ▶ The 1st order Geodetic Network of 68 controls was established
- ▶ Further densification of Geodetic control are based on this 1st order network
- ▶ The vertical DATUM was based on Indian mean sea level

Present Geodetic Status

- ▶ Nepal DATUM has served well as a fundamental base for both vertical and horizontal control network
- ▶ It is a static DATUM and has no mechanism to correct for crustal deformation
- ▶ The April 25th Earthquake has caused significant change in the geodetic network
- ▶ The preliminary study conducted in 5 different locations shows the following result

	dx	dy	dz	Resultant Distance	Change Ellipsoidal ht
Kumari	0.517	1.639	0.836	1.718606994	1.093
Nagarkot	0.3208	1.7964	0.9673	1.824819334	1.1584
Swyambhu	0.4551	1.5779	0.9512	1.642219358	0.9828
Fullchoki	0.1788	0.9051	0.3903	0.922591703	0.6312
Lakhedada	-0.086	0.99	0.213	0.993728333	0.77

Looking for the Possibilities to Rebuild Geodetic Network

- ▶ Definition of new DATUM aligned to realization of ITRF
- ▶ Common reference epoch after earthquake
- ▶ Determination of deformation model
- ▶ Establishment of top level CORS network
- ▶ Establishment of lower order control relative to CORS
- ▶ Determination of transformation parameters between Nepal DATUM and new system
- ▶ The effect on the vertical control is also crucial
- ▶ To overcome the height deformation the computation of the geoid

Earthquake affected area and pictures



Earthquake affected area and pictures



Earthquake affected area and pictures



Earthquake affected area and pictures



Thank you

The background features abstract, overlapping geometric shapes in various shades of green, ranging from light lime to dark forest green. These shapes are primarily located on the right side of the frame, creating a modern, layered effect against the white background.