Cite abstracts as **Author(s) (2007), Title, *Eos Trans. AGU, 88*(52), Fall Meet. Suppl., Abstract xxxxx-xx**

HR: 0800h
AN: **H11C-0644**
TI: Geologic Hazards Associated With a Proposed Dam on the Yarlung-Tsangpo River in SE Tibet
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AB: For a decade anecdotes and media reports have been circulating about a proposed dam on the Yarlung- Tsangpo River in SE Tibet. The proposed site is in the deep canyon of the Yarlung-Tsangpo where the river leaves the Tibetan Plateau across an immense knickpoint, falling ~2000 m along an irregular U-shaped reach ~100 km in length. The fundamental purpose of the dam is generation of ~40,000 MW of hydropower, to be used in diverting a portion of the impounded river to water-starved regions of northern China. Offsetting benefits that would accrue from improved water supply in the north, debate has centered on the water-flow and sediment-flux impacts that would be felt downstream in the Brahmaputra system in northeastern India and Bangladesh, as well as the impact of a dam and large lake on the pristine, ecologically and ethnographically diverse area around the Yarlung-Tsangpo canyon, an area of great significance to Tibetan Buddhists. We have been examining the geodynamic evolution of eastern Tibet, and have gathered considerable geophysical and geological data on the knickpoint region. The knickpoint traverses the Namche Barwa-Gyala Peri massif, one of the most geologically active regions on Earth. In this region, very rapid bedrock exhumation at rates of 7 mm/yr or more has exposed granites as young as 1 Ma, and these rates have been ongoing for at least the past 3 m.y. Detrital-dating evidence shows that these high rates continue at present and that erosion within the massif contributes fully 50% of the suspended-sediment load in the Yarlung-Tsangpo at the point where it enters the Brahmaputra (this would be about 100 Mt/yr derived from the massif). The steep slopes in the massif fail by pervasive landsliding and suggest a steady-state topography where the high erosion rates are balanced by equivalent rates of rock uplift accommodated by numerous active structures. At a more regional scale, GPS results show that steep three-dimensional velocity gradients exist across the region, in the easternmost Himalaya near Namche Barwa >50% of the Indian – Eurasian plate convergence is accommodated within the high-strain zone that reaches to the southern edge of the proposed reservoir. The 1950 Assam earthquake (M8.6) was one expression of the high local strain rates, and caused

considerable damage within the canyon area. Seismic results from our portable deployment show that the area beneath the massif and the Yarlung-Tsangpo canyon is exceptionally active, with over 1000 events ranging in magnitude from 1.0 to 5.6 (mb) taking place over a 15-month period. The events occur almost entirely in the mid to shallow crust and show a range of first motions. Together these data suggest that any dam placed within the Yarlung-Tsangpo canyon would be at high risk, with the dam being prone to failure due to pronounced seismic hazards and focused deformation. As it fills water pressure behind the dam could help trigger shallow earthquakes and landslides, and the dam would be difficult to maintain given the high frequency of landsliding and extreme local bedrock exhumation rates that would lead to rapid siltation at the dam site. Further, this impoundment of the Yarlung-Tsangpo would greatly starve the sediment flux downstream in the Brahmaputra and ultimately Bay of Bengal systems.
DE: 0468 Natural hazards
DE: 1803 Anthropogenic effects (4802, 4902)
DE: 1808 Dams
DE: 1834 Human impacts
DE: 1861 Sedimentation (4863)
SC: Hydrology [H]
MN: 2007 Fall Meeting

Session Information

Hydrology

2007 Fall Meeting

Monday Morning 1			
Time	**Session**	**Location**	**Title**
0800	**H11C**	**MS Exh Hall B**	**General Hydrology Posters** ***Presiding: V Lakshmi, University of South Carolina*** *Print-friendly session details*
0800	H11C-0634	MS Exh Hall B	Character of Submarine Groundwater Discharge (SGD) at the Coast of Mallorca Island *R Coffey, H J Bokuniewicz, G Basterretxea, A Tovar Sánchez POSTER Abstract
0800	H11C-0635	MS Exh Hall B	Geochemical baseline survey based on streamwater chemistry of small mountainous watersheds in the Kanamaru area, Japan *K Okuzawa, Y Seki, K Naito, A Kamei, N Takeno POSTER Abstract
0800	H11C-0636	MS Exh Hall B	Mathematical Model for Solute Transport in a Single Borehole Dipole Flow Tracer Test *J Chen, Y Chan, C Liang POSTER Abstract
0800	H11C-0637	MS Exh Hall B	pH Control for Effective Anaerobic Bioremediation of Chlorinated Solvents *C Robinson, D Barry, J I Gerhard, I Kouznetsova POSTER Abstract
0800	H11C-0638	MS Exh Hall B	River junction and reach vulnerability prediction in urban watershed: a methodology for identifying structural uncertainty *Y He, R E Beighley POSTER Abstract
0800	H11C-0639	MS Exh Hall B	Effect of impervious area estimation methods on simulated peak discharges *M Kargar, Y He, R E Beighley POSTER Abstract
0800	H11C-0640	MS Exh Hall B	Stability Analysis of a Large-scale Landslide Mass: a Case Study From Three Gorges Reservoir, China *Y Li, A Aydin, S Gui POSTER Abstract
0800	H11C-0641	MS Exh Hall B	Helium Isotopic Characteristics Dissolved In Groundwater In The Area Of Heavy Soil Subsidence In The Saga Plain, Japan *Y Mahara POSTER Abstract
0800	H11C-0642	MS Exh Hall B	Spatial Variation of Deep-seated Carbon Contribution in Groundwater, Central Japan *H A Takahashi, M Takahashi, K Kazahaya, H Handa, A Hirota, M Yasuhara, N Morikawa, M Ohwada, A Inamura, A Nakama POSTER Abstract
0800	H11C-0643	MS Exh Hall B	Routing Water and Sediment in the Rillito River Using IALLUVIAL2: A Comparison Study. *M A Yaeger, J G Duan POSTER Abstract

0800	H11C-0644	MS Exh Hall B	Geologic Hazards Associated With a Proposed Dam on the Yarlung-Tsangpo River in SE Tibet *P K Zeitler, A S Meltzer, B Hallet, W S Kidd, P O Koons POSTER Abstract
0800	H11C-0645	MS Exh Hall B	Nitrate Variability in Hydrological Flowpaths for a Mid-Appalachian Forested Catchment Following a Large-Scale Defoliation *A L Riscassi, T M Scanlon POSTER Abstract
0800	H11C-0646	MS Exh Hall B	Using oceanic-atmospheric oscillations for long lead-time streamflow forecasting in the Upper Colorado River Basin *A Kalra, S Ahmad POSTER Abstract
0800	H11C-0647	MS Exh Hall B	Methodology of Historical Flood Evaluation from Korean Historical Documents during AD 1392 to 1910 *H B Cho, H Kim, S Noh, C Jang POSTER Abstract
0800	H11C-0648	MS Exh Hall B	Isotopic approach to understanding the groundwater flow system within an andesitic stratovolcano in a temperate humid region: case study of Ontake volcano, central Japan *K Asai, H Satake, M Tsujimura POSTER Abstract
0800	H11C-0649	MS Exh Hall B	Recourse to Dry Land Farming as a Possible Way to Arrest the Degradation of Groundwater, Soil and Land in Haryana, India *A Sharma, S Lunkad POSTER Abstract
0800	H11C-0650	MS Exh Hall B	The seasonal variation for the discharge and water quality of a stream in volcanic island, Korea *K Ha, D Moon, K Park POSTER Abstract
0800	H11C-0651	MS Exh Hall B	Isotopic Exchange Rate Constant between Snow and Liquid Water *J Lee, X Feng, E S Posmenrier, A M Faiia POSTER Abstract
0800	H11C-0652	MS Exh Hall B	Comparing Least Squares and Robust Methods in Linear Regression Analysis of the Discharge of the Flathead River, Northwestern Montana. *A L Bell, J N Moore, M C Greenwood POSTER Abstract
0800	H11C-0653	MS Exh Hall B	Development of Floating Wave Barriers for Cost Effective Protection of Irrigation and Catfish Pond Levees *Y Ozeren, D G Wren, C V Alonso POSTER Abstract
0800	H11C-0654	MS Exh Hall B	The Effect of Land-Surface Subsidence Processes on the Remaining Peat in the Sacramento-San Joaquin Delta, California, USA *C S de Fontaine, J Z Drexler POSTER Abstract
0800	H11C-0655	MS Exh Hall B	Markov processes for Advection-Diffusion Transport in Non-Smooth Media: Skew Brownian Motion and the Generalized Taylor-Aris Formula. *J M Ramirez, E Thomann, E Waymire, B Wood, J Chastanet, R Haggerty POSTER Abstract
0800	H11C-0656	MS Exh Hall B	Eliminating kinetic effects on the pore size distribution as determined from water-retention curves *a g hunt, t e skinner POSTER Abstract

0800	H11C-0657	MS Exh Hall B	Landuse affects on Bankfull Discharge in Agricultural and Urban Regions in South Western Wisconsin *J Haucke, K F Clancy POSTER Abstract
0800	H11C-0658	MS Exh Hall B	Modeling of Thin-Film Flows: Some Hydrologic Applications. *A S Telyakovskiy, K M Hayden, S Wheatcraft POSTER Abstract
0800	H11C-0659	MS Exh Hall B	Spatial and Temporal Variability in Flood Conveyancing in a Semi-Arid Australian Catchment: Implications for Floodplain Deposition. D Purvis-Smith, *J C Croke, C J Thompson POSTER Abstract
0800	H11C-0660	MS Exh Hall B	Characterizing the Response of an Unconfined Aquifer to Pumping with Borehole Ground Penetrating Radar *T P Ferre, J A Vrugt, G von Glinski, A C Hinnell POSTER Abstract
0800	H11C-0661	MS Exh Hall B	Identification of groundwater contamination sources of nitrate and sulfate in shallow alluvial aquifers using a dual-isotope approach in an agricultural area *D Kaown, D Koh, B Mayer, Y Hyun, G Bae, K Lee POSTER Abstract
0800	H11C-0662	MS Exh Hall B	Evaluation of Distributed Model Structures in Catchment Scale Modeling to Capture Heterogeneous Landscape Characteristics *S Julich, L Breuer, K B Vaché, H Frede POSTER Abstract
0800	H11C-0663	MS Exh Hall B	Estimation Of Groundwater Residence Times By A Multi-tracer Approach In A High Alpine Catchment Area, Switzerland *C Haemmig, T Tokunaga, K Asai, K Asai, T Hayashi POSTER Abstract
0800	H11C-0664	MS Exh Hall B	Estimation method of slip surface by ground surface displacement *K Ishida, K Fujisawa, S Kojima, H Tanaka POSTER Abstract
0800	H11C-0665	MS Exh Hall B	Baseflow Recession Model Dependence on Drainage Basin Spatial Characteristics *R N Eli, S J Lamont, J J Fletcher POSTER Abstract
0800	H11C-0666	MS Exh Hall B	Model selection criteria for flood frequency analysis *G Di Baldassarre, F Laio POSTER Abstract
0800	H11C-0667	MS Exh Hall B	Fingerprinting Persistent Turbidity in Sheep Creek Reservoir, Owhyee, Nevada *R N Ransom, R L Hooper, D Kerner, S Nicols POSTER Abstract
0800	H11C-0668	MS Exh Hall B	Assessment of Filter Materials for Removal of Contaminants From Agricultural Drainage Waters *B J Allred POSTER Abstract
0800	H11C-0669	MS Exh Hall B	Flow resistance in step-pool channels *F Canovaro, G Bechi, L Solari POSTER Abstract
0800	H11C-0670	MS Exh Hall B	Global Sea Level Variation Due to Water Impoundment in Artificial Reservoirs *B F Chao, Y Wu POSTER Abstract
0800	H11C-0671	MS Exh Hall B	Examining Sources of Water in Springs, Wetlands, and Oases in Coachella Valley *R Aguirre-Robertson, B Hibbs, M Kelliher, R Andrus POSTER Abstract

0800	H11C-0672	MS Exh Hall B	Improving lakebed sediment quality in an urban estuary, Presque Isle Bay, Lake Erie, USA *A M Foyle, K P Norton POSTER Abstract
0800	H11C-0673	MS Exh Hall B	Development of a Hydrologic Model to Assess the Feasibility of Water Leasing in the Middle Rio Grande Basin *C B Garner, D P Boyle, G W Lamorey, S D Bassett POSTER Abstract
0800	H11C-0674	MS Exh Hall B	Infiltration History and Spatial Variability Derived from Chloride Mass Balance J C Walton, *A Jaimes, A Woocay POSTER Abstract
0800	H11C-0675	MS Exh Hall B	Evaluating Channel Head Conditions for Environmental Impact Assessment in Northwestern Sonoma County, California *M N Sherwood, M O'Connor, R Pennington POSTER Abstract
0800	H11C-0676	MS Exh Hall B	Water Well Record Studies of Geologic History in Indiana Including Examples of Geomorphology of Buried River Valleys, Geomorphic Expression of Earthquake Faults, and Deep Groundwater Flow Paths. *A C Samuelson POSTER Abstract
0800	H11C-0677	MS Exh Hall B	Statistical and Spatial Analysis of Borderland Ground Water Geochemistry *G K Agrawala, A Woocay, J C Walton POSTER Abstract
0800	H11C-0678	MS Exh Hall B	Numerical Modeling of Dam Break/Removal Hydraulics and Morphology *S Li, C J Duffy POSTER Abstract
0800	H11C-0679	MS Exh Hall B	Evaluation of Ensemble Meteorological Forcing in a Distributed Hydrological Model: Decomposing the Nonlinear Basin Response *K Tai, E Vivoni, D Gochis POSTER Abstract
0800	H11C-0680	MS Exh Hall B	A Portable Membrane-based Gas Sampler for Gases Dissolved in Groundwater P Alexander, *B Loose, M Stute POSTER Abstract
0800	H11C-0681	MS Exh Hall B	Corps Water Management System (CWMS) Decision Support Modeling and Integration Use in the June 2007 Texas Floods *W J Charley, M Luna POSTER Abstract
0800	H11C-0682	MS Exh Hall B	Long-Term Springflow Reconstructions Based On Instrumental And Tree Ring Climate Records In The Missouri Ozarks R Muzika, *J A Hubbart, R Guyette, M Stambaugh POSTER Abstract
0800	H11C-0684	MS Exh Hall B	Sources of Nitrate to Tucson, Arizona Groundwaters. *N Dejwakh, T Meixner, J McIntosh POSTER Abstract
0800	H11C-0685	MS Exh Hall B	Uranium Geochemistry in Hypersaline Soda Lakes in Eastern Mongolia *B S Linhoff, P Bennett, T Puntsag POSTER Abstract
0800	H11C-0686	MS Exh Hall B	Numerical Simulation of Water Distribution in Plenum Within the Inclined Plate Settler *A Abrishamchi, M Kayhanian POSTER Abstract
0800	H11C-0687	MS Exh Hall B	Slope instability risk at North part from State of Colima, Mexico analysing the hydrology, topography and erosion of deposits *J J RAMIREZ-RUIZ, V H JOSE ARMANDO, J G PEREZ-MARMOLEJO, M BRETON-GONZALEZ

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