Verlauf der quartären und tertiären Schichtgrenzen und den Verlauf der Felslinie des paläozoischen Grundgebirges westlich des Schlossberges, im Bereich des denkmalgeschützten Admonterhofs und des sogenannten Stöckls. Weiterhin wurde ein hydrogeologisches Modell erstellt, das den Einfluss des Bauwerks auf das Grundwasserregime prognostiziert.

Etwa ein Viertel der Grundfläche ist bebaut. Für die Errichtung ist eine vollständige Unterfangung des historischen Admonterhofs und des Stöckls notwendig. 22 Großbohrpfähle (Längen bis zu 25 m, Pfahllasten bis über 4 MN) nehmen die Bauwerkslasten des Admonterhofs (50 MN) und des Stöckl (etwa 20 MN) über Streichträger auf. Aufwendige Hebungsmaßnahmen kompensieren dabei die Pfahlsetzungen, Trägerdurchbiegungen und elastische Verformungen.

Die Baugrubenumschließung erfolgt durch eine überschnittene Bohrpfahlwand und durch Düsenstrahlwände, die z.T. auch als Unterfangungskörper der Nachbargebäude dienen. In den Bereichen, in denen das paläozoische Grundgebirge in die Bauwerkskontur hineinreicht, werden die Düsenstrahlwände auf den Fels aufgestellt und verdübelt. Nach derzeitigem Prognosestand sind ca. 3000 m³ Dolomit auszubrechen.

Zur Hintanhaltung von Wasserzutritten durch Kluftwasser und zur Sicherstellung der Auftriebssicherheit werden umfangreiche Dichtinjektionen im Fels und im Bedarfsfalle auch im tertiären Untergrund notwendig.

Zusammen mit dem enggesteckten Terminrahmen (Fertigstellung Juni 2003) und den Koordinierungsnotwendigkeiten mit dem Lieferverkehr für das Warenhaus und dem Straßenverkehr auf dem angrenzenden Kaiser-Franz-Josefs-Kai stellt das Projekt eine der anspruchsvollsten Planungsaufgaben im innerstädtischen Tiefbau der letzten Jahre dar.

Water-vapour adsorption: evaluating heavy metal adsorption on sediments and soils

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Objectives: Soils and Sediments are an important sink and source for heavy metals, due to their adsorption capacity. Therefore they are of particular interest in environmental, especially groundwater research. Lithogenic input from different geologic background can cause differences in actual metal concentrations due to changing binding capacities, which are influenced by the ligand concentration. Therefore they depend on the geochemical composition, formation of oxo-hydroxides and elements derived from the geologic background occupying potential binding sites.

Metals are bound and remobilised mainly as a result of changing chemical conditions (pH-, redox-potential, electric conductivity) and available ligands. The main ligands we analysed for are: organic matter (humic acids), clay minerals, diagenetically formed Fe-, Mn-, Al-oxohydroxides and biogenic silica (diatoms). Some of the metal scavengers are able to adsorb water-vapour by the same binding mechanisms, caused by the polarity of water molecules. Previous investigations (KRALIK, 1999) showed positive correlations of water and heavy metal uptake in sediments. The aim of this study was to qualify the importance of mineral composition and include the factor soil to the overall picture. Possible pathways and distribution of pollutants in groundwater can be evaluated by the ability of soils and sediments to hold back or release contaminants in the recharge area.

Methods: The dried fine fraction (<0,04 mm for sediments; <2 mm for soils) was stored at 70% relative humidity for three days and then dried again to obtain the specific water content of each sample. Lead and cadmium have been used as key metals with soil and sediment samples.

The batch experiments were carried out with river water from the sampling site (sediments) and distilled water (soils). The contact time never exceeded two hours. During the contact time pH, electric conductivity, redox potential and temperature were recorded.

Results: The main factor controlling the water adsorption in the *sediment samples* was the content of organic carbon binding metal ions by surface complexation on particulate organic matter. The content of clay minerals showed no significant influence on the water adsorption but indicated positive correlations with the uptake of Cadmium.

Generally the samples from crystalline background had a higher amount of metal scavengers and a higher adsorption capacity of cadmium and water compared to the carbonate dominated samples. The adsorption of lead was higher in the carbonate-dominated areas, where water adsorption was significantly lower. This might be due to precipitation of lead carbonates, a mechanism not influencing the water adsorption. Hence the parameters cannot be compared concerning lead adsorption in carbonate areas where the dissolved carbonate concentration is at saturation. The applicability in crystalline dominated background is not fully confirmed here but may be possible.

However, *soil samples* (green land and forest) of the same areas indicate negative trends for both cadmium and lead with the water adsorption but showed positive trends with the dissolved (mobile!) organic matter in both cases.

Reading the Paleoclimate Record of Lunana: Quaternary Research and Glacial History in the Bhutan - Himalaya

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Lunana is a heavily glaciated area in the northwest of Bhutan with recurrent catastrophic glacial lake outburst floods. This work comprises the first quaternary insights into a unique glaciated landscape of the Himalaya Range, hitherto only described by A. Gansser (1983).

A succession of Pleistocene to Holocene moraine-complexes and ice marginal deposits excellently documents the decay of a huge ice stream net and thus the transition from glacial to interglacial climatic conditions in the Lunana area.

As remnants of Pleistocene glaciation an erosional trimline, thick sequences of lodgement till and huge lateral moraines, raising 500 m above the valley bottom, are preserved. The process of oversteepening valley slopes by carving Pleistocene ice flow leads to impressive U–shaped valley geometries.

A loess covered terminal moraine complex at an altitude of 4100 m asl. has been interpreted as a Late Glacial stage (THANZA STAGE). A glacier advance of 19 km (relative to the watershed boundary) is accompanied by an approximate ELA – depression of 300 m (relative to the recent situation). Ongoing OSL dating of this Pleistocene remnant will help to understand the timing and spacing of local glacier fluctuations, thus revealing the climatic change for this part of the Eastern Himalaya at the Pleistocene/Holocene transition.

The Holocene and Neoglacial moraines are restricted to the recent glaciers. The Raphstreng glacier shows particularly well developed multiple terminal moraines and multigenetic lateral moraines, indicating repeated glacier advance and decay at the scale of a few kilometers during the last 10 000 years. Special attention has been paid to the multigenetic Holocene lateral moraines. Their formation is characterized by dumping of supraglacial debris with each glacier advance. Ongoing ^{14}C dating of buried paleo-soils within these lateral moraines and in similar stratigraphic positions could help to reconstruct Holocene glacier fluctuations in detail.

Since the Little Ice Age, continuous vertical ablation of the glacier tongues occurred, since 1950 supraglacial lakes merge together and glacier tongues start retreating with rates up to 20 m per year. Time series analysis based on high resolution satellite images and field observations were carried out for a better quantification of this rapid glacier decay. Thus the retreat of the glaciers from their Neoglacial maxima provides insights into the glacial geological processes and the remarkable recent climatic change.

The „Glacier Elevation Index“, as a proper approximation of the Equilibrium Line Altitude, was calculated for each glacier resulting in an average altitude of 5300 m for Lunana. This strongly depressed value compared to the Western Himalaya (e.g. Mount Everest region 5550 m) may reveal the more humid climatic conditions in northwest Bhutan. The occurrence of a probably active rock glacier marks the lower limit of recent permafrost at 4700 m a.s.l.

Gansser, A., 1983: Geology of the Bhutan Himalaya: Denkschrift Schweiz. Naturforsch. Ges., 96, 1-181.

Palaeoecological, amphibianfaunal comparisons between the localities Richardhof and Götzendorf/Miocene of the Vienna Basin

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Richardhof and Götzendorf/Sandberg, Upper Miocene localities of the Southern Vienna Basin, Lower Austria, both belong to the Neogene Mammal Zone MN 9. While Götzendorf/Sandberg can precisely be classified into the