Modelling DIC and DOC transport from the Baltic Sea catchment

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The aim of this study is to develop a model, simulating the stream concentrations of dissolved inorganic and organic carbon (DIC and DOC) in all major watersheds draining into the Baltic Sea.

Available data on general water chemistry are applied in the CSIM model [1] to simulate DIC concentrations. A DOC model [2] is implemented in the LPJ-GUESS dynamic global vegetation model [3, 4] to simulate production of DOC as well as sorbed organic carbon in the soil. The fluxes of DOC are then applied in the CSIM model for integration over the watersheds in the Baltic Sea catchment area.

Modelled concentrations of DIC show reasonable agreement with observed concentrations (Fig. 1). These results will be presented along with results for DOC in selected catchments. Further, temporal and spatial variability will be discussed.

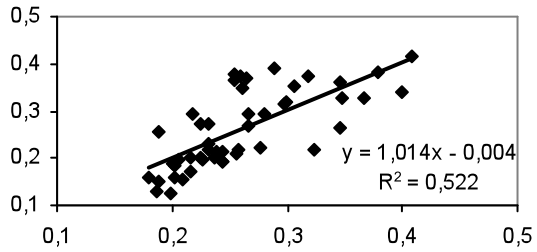

Figure 1: Modelled (x-axis) versus observed (y-axis) DIC concentrations (mmol L^{-1}), Råne river (Sweden)

[1] Mörth *et al*. (2007) *Ambio* **36**, 124–133. [2] Yurova *et al*. (2008) *Water Res Res* **44**, W07411 [3] Smith *et al*. (2001) *Global Ecol. Biogeogr*. **10**, 621–637 [4] Sitch S *et al*. (2003) *Global Change Biol*. **9**, 161–185.

New evidence for a Cambrian suture associated with the North Qaidam UHPM belt

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Although recent progress has been made in understanding the Paleozoic tectonic formation of northern Tibet, uncertainty remains regarding the pre-Devonian history of the area. We present here new evidence for a Cambrian suture in the Qaidam-Qilian terrane, ~400 km southwest of the early Paleozoic North Qilian, Franciscan-type ophiolite. Of particular significance is the juxtaposition of this Cambrian ophiolite complex with the North Qaidam ultrahigh-pressure (UHP) metamorphic belt across the Luliang Shan detachment, which is the structure believed to have emplaced the UHP rocks into the lower crust.

The ophiolite complex, which has been metamorphosed to epidote-amphibolite facies, consists of four mappable units: (1) serpentinized ultramafic rocks including quartz-phlogopite veins; (2) meta-gabbro containing rare plagiogranite; (3) a sheeted dike complex, and (4) a thin, discontinuous sequence of vesicular basalt interlayered with metasediments and marble. Whole-rock geochemistry of the meta-basalts suggests formation in a supra-subduction zone (SSZ) setting; for example, Ti concentrations are lower than typical mid-ocean ridge basalt (MORB), and V and Th are higher [1, 2].

Plagiogranite samples from the meta-gabbro unit were collected at two localities ~20 km apart, and zircons from these samples were dated by SHRIMP at Stanford. Zircons were generally fragmented, oscillatory-zoned, prismatic grains ~100 μm wide by up to ~200 μm long. Low U content produced large errors on individual spot ages, but the samples yielded weighted mean ages of 514 ± 9 Ma (MSWD = 1.8) and 519 ± 8 Ma (MWSD = 1.06). Zircon trace element geochemistry plots in the oceanic crust field of Grimes *et al*. 2007 [3].

[1] Pearce (2003) *GSA Special Paper* **373**, 269–293. [2] Metcalf & Shervais (2008) *GSA Special Paper* **438**, 191–222. [3] Grimes *et al*. (2007) *Geology* **35**, 643–646.