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Evolution and spatial variability of heavy metals in mussels (*Mytilus edulis* L.) in the Scheldt estuary (1996-2002)

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This paper presents data on the heavy metal contamination of the soft tissues of marine mussels along the Scheldt Estuary. The study considered both arms of the Scheldt estuary, i.e. the relatively polluted Western Scheldt (WS) and the now marine tidal bay of the Eastern Scheldt (ES). The two systems present an ideal opportunity to investigate, in a field situation, the role of physico-chemical and pollution gradients on metal accumulation in mussels. In the WS, depending on the metal, tissues concentrations decreased by 2 – 6 times from Hansweert (the landward limit for mussels) to Westkapelle on the North Sea coast. Similar decreases were also observed in the ES. With a few exceptions (i.e. Cd, Cu), there were no clear differences in tissue metal concentrations between WS and ES. The study also showed strong positive correlations between tissue metal concentrations and distance from the sea in both systems for most metals. Similar trends were observed for both WS and ES indicating that salinity and metal gradients are not entirely responsible for increasing metal tissue levels towards the inland. Additionally, the influence of the constructed storm surge barrier was evident as heavy metal levels in mussels at sites around the barrier were considered elevated. Furthermore, there were only modest decreases in metal concentrations in mussel tissues between 1996 to 2002, further indication that even in the cleaner ES, efforts to reduce the impact of environmental metal pollution take time to give results.