Human impact on the sediment transfer over the past 30 years, Pearl River Estuary, China

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The river discharge and sediment flux to the Pearl River Estuary has been changed significantly due to human activities in the upstream rivers, where bloom economic developments have been experienced in the Pearl River Delta over the past 30 years. Among others the sand mining has mainly droved to change the more flow from West River to North River and has resulted in an increase of total water discharge since 1990s. Land reclamation and dredging in the river mouths also caused the geo-morgraphic and hydrological environment change which in turn affect the grain size distribution pattern according to the data analysis for 1975 and 2003-2005. The impact on basic pattern of the surface sediment is minor which may be caused by either stream sediment load increase or the increase of hydrodynamic influence or both over the last 30 years. The fact that the hydrological and sedimentary situation changes are resulted from human activities should be much more concerned in the future riverine and estuarine management.

The current status and long-term changes in the phytoplankton community in Lake Illawarra: a case study of a eutrophicated coastal area in NSW, Australia

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Lake Illawarra has been an important asset in the Illawarra region, NSW, Australia. However, human activities have significantly impacted the lake and its surrounding catchment, particularly since the arrival of Europeans some 200 years ago. From December 2004 to October 2006 three locations within the lake (one close to a freshwater inlet, one in the middle and one near the seawater entrance) were sampled bimonthly. The spatial and temporal dynamics of salinity, water temperature, nutrients, chlorophylla, phytoplankton cell abundance and species composition were observed and analysed to establish the phytoplankton ecological status of Lake Illawarra. In addition, the diatom flora in two sediment cores from Lake Illawarra were analysed in order to trace the response of diatoms to environmental change over the past 100 years. Phytoplankton cell abundance and chla in Lake Illawarra showed an obvious spring maximum as is found in many temperate waters. Low N:P ratio suggested that DIN was the limited factor for the phytoplankton growth in Lake Illawarra. An uneven horizontal distribution of phytoplankton indicated the impact of freshwater input, seawater exchange and seagrass competition on the phytoplankton assemblage in Lake Illawarra. In addition, jellyfish blooms from May to June are regarded as an important contributor to the low biomass and dinoflagellate dominance in winter in Lake Illawarra. The long-term climate change, eutrophication history and their link to the diatom diversity and abundance in sediments will be discussed along the history of European settlement.

Sea level rise in Bangladesh and its impacts on the coastal communities

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Bangladesh is an active delta that receives 1-2 billion tons of sediment every year from GBM basin discharge. Sediments received by the delta area are loose and compacts with the passing of time. Sedimentation causes higher river/ coastal bed but compaction lowers it. Thus compaction and sedimentation balances each other. However, it is expected that the country will gain a net SLR. Tidal level in Hiron Point, Char Changa and Cox's Bazar rose by 4.0 mm/year, 6.0 mm/year and 7.8 mm/year respectively, during the period of 1977-1998. If the GMB basin receives abnormal volume of rain water, it causes flood in the lower basin that contribute to local level sea level change. The flood of 1998 contributed to the SLR along Bangladesh coast. It is expected that there will be 60-90 cm SLR in the coastal zone of Bangladesh by 2100 AD.