

# Climate Change Corner

## Global warming and future sea-level rise in Hong Kong

Future sea-level rise is widely accepted as an indicator of global warming as it is controlled by the Earth's surface temperature and global ice balance. In the Intergovernmental Panel on Climate Change's Fourth Assessment Report, the mean rate of sea-level rise during 1961-2003 was found to be about 1.8 mm/year. An accelerated rate of 3.1 mm/year was found during 1993-2003 but it is uncertain whether this is a long-term trend or just variability.

All low-lying coastal areas including the coastal infrastructures in Hong Kong, such as land reclamations, cross-harbour tunnels, drainage services and water supplies are under threat.

Sea-level changes are detected by tide gauges and space gravimetry observations by satellites referred to as merged altimetry.

The conclusions drawn from previous studies:

1. Based on North Point and Quarry Bay tide gauge data during 1954-1986 and 1986-2003 respectively, the mean rate of sea-level rise was found to be 2.3 mm/year.
2. Based on the Quarry Bay tide gauge data during 1987-2003, the sea level rose at a mean rate of 22.1 mm/year during 1987-1999 and fell at a mean rate of 21 mm/year during 1999-2003.
3. Merged altimetry data showed sea level rose at a mean rate of 11.3 mm/year during 1993-2000.
4. Merged altimetry data showed sea level fell at a mean rate of 11.8 mm/year during 2001-2005.

A study of the implications of future sea-level rise for Victoria Harbour using scenarios involving a 0.5 m, 1 m and 2 m rise by 2100 was published in 1995. Follow-up studies are needed to provide a warning of future sea-level changes taking into account possible crustal instability caused by the prograding Pearl River Delta.

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