

## Continental Shelves and Quaternary Climatic Changes

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The main aim of IGCP 396 initiated in 1996 is to study Quaternary sequences on shelves to permit global correlation of sea-level changes and climatic changes.

Examples of long term record obtained from shelves include:

1. Wanganui Basin in New Zealand with 47 shallow marine sedimentary cycles preserved in a convergent basin margin.
2. Uplifted coral reef terraces in Sumba, Indonesia dating back to oxygen-isotope stage 29.
3. Great Barrier Reef in Australia with 8 reef sequences separated by diagenetic boundaries.
4. Siliciclastics-dominated shelf sequence off Hong Kong dating back to oxygen-isotope stage 12.

Examples of short term record obtained from shelves include:

1. Coral skeleton *Porites*.
2. Other marine organisms such as the giant clam *Tridacna*.

In this presentation, the siliciclastics-dominated shelf sequence off Hong Kong and a modern *Porites* from Hong Kong are chosen for illustrations. The Quaternary sequence found in Hong Kong is in agreement with the five glacial-interglacial cycles identified in the Vostok ice core. Interglacial periods are represented by marine deposits while glacial periods are represented by either terrestrial deposits or palaeo-desiccated crust formed by the sub-aerial exposure of marine deposits during low sea-level stands. The *Porites* specimen from Hong Kong was studied for oxygen and carbon isotopes. In spite of a growth rate of ca. 6 mm/annum, the coral shows a 9-year record with almost weekly resolution. Both seasonal temperature changes and low salinity episodes resulting from heavy rainfall can be detected.

Continental shelves in the Quaternary are therefore important in advancing our understanding on past global changes.