

## **SEDIMENTATION AND CO<sub>2</sub> RELEASE FROM CARBONATE SHELVES SINCE 20 KA**

1VECSEI, A. and 2BERGER, W.H. 1Geologisches Institut, Albertstraße 23B, 79104 Freiburg i. Br., Germany; 2Scripps Institution of Oceanography, La Jolla, CA 92093, USA

The 'coral reef hypothesis' states that neritic tropical-subtropical carbonate sedimentation has added to the atmospheric CO<sub>2</sub> buildup since the last glacial maximum via the acidification of the surface ocean. Our assessment of neritic carbonate production suggests several pulses of increased sedimentation and CO<sub>2</sub> release and their strong increase when the deglacial sea-level rise decelerated. A pulse of increased neritic carbonate sedimentation occurred when the edges of the siliciclastic continental shelves in -130 to -100 m present depth were flooded around 16 ka. The strength of this pulse is as yet unknown. The widespread flooding of and deposition on isolated carbonate platforms (banks and atolls) and on many continental and insular shelves started at ca. -70 m (ca. 13 ka). Many platforms continued to be flooded until ca. 6 ka. The fast rate of sea-level rise resulted in mostly thin reef veneers, and in rapid platform drowning followed by diverse but poorly known deep-neritic sedimentation. The slower sea-level rise from ca. 8 ka resulted in very important neritic carbonate production and CO<sub>2</sub> release, as many reefs and platforms were in the highly productive 1-10 m depth. The huge Bahama Banks were flooded during this period. This phase ended when reefs and platforms reached the sea-level at ca. 6 ka in many parts of the Indopacific but during the last few kyr in the Atlantic. Since ca. 6 ka sea-level has risen slowly in most regions. Carbonate production and CO<sub>2</sub> output are now reduced because the reefs and platforms have aggraded to sea-level. Thus today the fore-reefs are the most productive areas, in contrast to earlier Holocene times when the wide reef-flats were equally important.