



***The battle for North Carolina's Coast - Evolutionary History, Present Crisis, & Vision for the Future***, by Stanley R. Riggs, Dorothea V. Ames, Stephen J. Culver & David J. Mallinson, 2011.

The University of North Carolina Press, Chapel Hill, NC (www.uncpress.unc.edu). Cloth bound, xvii + 142 pages. Price USD 25.00. ISBN 978-0-8078-3486-2.

Most people think that System Earth is stable (and consequently they think that we have a 'right' to have a stable climate and a stable sea level). Geologists know better: System Earth is dynamic, but a classical geological idea is that processes changing the face of the Earth take geologically-long time-spans. Sedimentologists, however, know even better: the Earth surface changes mainly by events - relatively rare, fairly extreme occurrences with often dramatic consequences. Sedimentologists know also, perhaps better than researchers in any other earth-science discipline, that such events form a natural part of almost every environment, and that the forces involved are far stronger than human capabilities to control them.

Nevertheless, Man will possibly never admit that some battles against Nature cannot be won. This is shown not only by the worldwide attempts of politicians to control the climate (will they intentionally burn all surficial and subsurface fossil fuels when a new ice age is believed to start?), but also by their attempts to undo the results of the sea-level rise that started after the last glaciation and that still continues.

As a Dutchman, I have grown up in a country that is known for its continuous battle against the water. Most times we win, thanks to expertise built up during centuries. But sometimes we fail: during a stormy night and spring flood in February 1953, the SW part of the country became flooded and almost 2000 people lost their lives. And still in January 2012, people in the NE part of the country had to be evacuated because of the threat that dikes would fail. We certainly will lose the battle eventually, in spite of all measures taken, mostly in the form of ever higher dikes. But how high should they become? Not only does the sea level continue to rise, but in addition the North Sea Basin continues to subside!

All coastal areas, apart from those where tectonic uplift takes place, face comparable problems. North Carolina has such a threatened coast. A huge section of its coast is characterized by barrier islands, sometime stretching over long distances, sometimes frequently interrupted by inlets. It seems, unfortunately, that - possibly apart from some earth scientists and environmentalists - few people understand that the origin of these barrier islands is closely connected with the post-glacial sea-level rise, and that rightful attempts to save these wonderful places will be in vain, as long as the battle against destruction by natural processes is based on insufficient understanding of the genesis of these barriers, their role in the coastal environment and the natural sequence of developments that, ultimately, will destroy these islands when the sea-level rise has come to an end.

The islands are wonderful places, indeed, for living, for recreation, etc. And they are certainly worth to be preserved as long as reasonably possible. But the measures should be reasonable, indeed: who would still enjoy the barrier islands if large dikes would be built to fix them, simultaneously preventing a sight at the sea (or the shore of the mainland) and taking

away the fun of running from the barrier directly into the water? That is not a realistic option. It is, however, no option either not to take any measures: several dramatic photos in the book show the devastation of the front of the barriers by natural forces, for instance, truly undermining hotels and houses that had been built at quite some distance from the 'normal' shoreline. So, other measures have to be taken. But which ones?

Here comes the expertise of the book's authors into the picture. They show, for instance, that repeated sand supply is of no use if you don't know where exactly to supply the sand because you don't know how and where the natural processes in this environment are active. And they show how carelessly given permissions to build houses, etc. at specific places can result not only in large economic damage, but also can facilitate further or stronger erosion.

This book is not aimed primarily at sedimentologists. Yet, I feel that few books about depositional and erosional environments have so much contributed to my insight. The authors make you feel being physically on the North Carolina barrier islands, and they make you see how both gradual processes and events shape the barriers, erode inlets, close inlets again, etc. So, though the book is aimed primarily at the general public and at policy makers involved in protection measures for the barrier islands, I think that this book is not only interesting reading for sedimentologists, but that it can be an eye-opener. The numerous, beautiful and sometimes dramatic full-color illustrations highly contribute to this finding. Now, let's hope that this book will be an eye-opener also for those who are charged with preserving this wonderful (and geologically rare) environment, if only because sedimentologists can, when visiting such a barrier, learn so much about the dynamics of a coastal zone.

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