

Late Quaternary relative sea-level variations in the North Atlantic: comparison of mid-Holocene highstands to the last interglacial (isotope stage 5e) highstands

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We have sea-level curves covering the last 16,000 years from several locations in Maritime Canada but the most interesting part of the record is the last 8000 years when there is a combination of water level and land level changes that interact to produce some complex sea-level records. From Texas to Nova Scotia we have accelerated sea-level rise between about 6000 to 4000ybp and in South Carolina we are able to see a drop after 4200ybp. In most places in the North Atlantic there are no higher than present Holocene sea levels except perhaps Texas. However we do see, especially in Nova Scotia, what have been called "stage 5e" shorelines which predate the last glacial and are 5-10m above present sea level. These have been discussed in the past as correlative with the worldwide stage 5e highstands of sea level, but are they really time correlative? Sea level is presently rising all along the Atlantic coast of North America and nowhere is it rising faster than in Nova Scotia. This rise has been going on for at least the last 7000 years at a rate of 20-30cm/century with an acceleration between 5000 and 4000 ybp where rates of rise were up to a metre/century. With the exception of the rapid

acceleration, we believe this rise is a result of crustal adjustment following deglaciation and it if the present is the key to the past this would have happened in the last interglacial also. Most of the mid-Holocene highstands that are above present sea level are in South America or Africa where there was no glacial-isostatic adjustment-these levels are comparable to the stage 5e shorelines in the same areas. However in the North Atlantic we have not attained the highstand yet and hence probably the "stage 5e" shorelines in Nova Scotia are not really time correlative with other stage 5e shorelines. They also do not represent the climatic optimum but some time after related to when either another glacial (stage 4) commenced or the earth finally adjusted isostatically. Judging by the Holocene experience that would be at least 4000 to 5000 years AFTER the climatic optimum of stage 5e. This same relationship must also be true for many other North Atlantic shorelines, especially in the UK where the sea-level history is similar to Nova Scotia.