

# Important Biogeographical Events - Miocene to Present

W.Stewart Grant

## North Atlantic Ocean

### ***Ocean Wide***

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## Eastern North Pacific

- Barth, J.A., S.D. Pierce & R.L. Smith. 2000. A separating coastal upwelling jet at Cape Blanco, Oregon and its connection to the California Current System. *Deep-Sea Research, Part II* 47: 783-810.
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- Sagarin, R.D. & S.D. Gaines. 2002. Geographical abundance distributions of coastal invertebrates: using one-dimensional ranges to test biogeographical hypotheses. *J. Biogeo.* 29: 985-997.
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## Tropical-South Pacific Ocean

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## Tropical-South Atlantic Ocean

### ***Closure of Isthmus of Panama: 3.1-4 Ma***

- Coates, A.G. and J.A. Obando. 1996. The geologic evolution of the Central American Isthmus. Pp. 21—56. In J.B.C. Jackson, A.G. Coates, and A. Budd (eds.). *Evolution and Environment in Tropical America*. Univ. Chicago Press, Chicago, IL.

### ***Age of St. Helena Island: 13.3—15.3 Ma***

- Baker, I. 1970 Geological history of Saint Helena in relation to its floral and faunal colonization. *Muse Royal de l'Afrique Centrale-Tervuren, Belgique Annales, Serie 8, Sciences Zoologiques* 181: 25—35.

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## ***Age of Ascension Island: 1.5 Ma***

Mitchell-Thome, R.C. 1982. The geological settings and characteristics of the Atlantic islands. *Acta Geologica Academiae Scientiarum Hungaricae* 25: 395—420.

## **Beginning of upwelling in SE Atlantic: Late Pliocene (about 2.5 MY)**

Shannon, L.V. 1985. The Benguela ecosystem. Part. I. Evolution of the Benguela physical features and processes. *Oceanogr. Mar. Biol. Ann. Rev.* 23:105-182.

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Gilbert, C.R. 1972. Characteristics of the western Atlantic reef fish fauna. *Quarterly Journal of the Florida Academy of Sciences* 35:130-144.

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Collette, B.B. and K. Rutzler. 1977. Reef fishes over sponge bottom off the mouth of the Amazon River. *Proceedings of the 3<sup>rd</sup> international coral reef symposium* 1:305-310.

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## **Mediterranean Sea**

### ***Closure of Tethys Sea***

Mostly widely accepted date 20 Ma; most recent proposed date 12 Ma

Robba, E. 1987. The final occlusion of Tethys: its bearing on Mediterranean benthic molluscs. Pp. 405—426. *In* K.G. McKenzie (ed.) *Shallow Tethys*. A.A. Balkema, Rotterdam.

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## **Paleo-temperatures**

### ***Major marine cooling events: 2.8-2.6 MY BP & 1.8-1.6 MY BP***

Williams, D.F., J. Peck, E.B. karabanov, A.A. Prokopenko, V. Kravchinsky, J. King, and M.I. Kuzmin. 1997. Lake Baikal record of continental climate response to orbital insolation during the past five million years. *Science* 278:1114-1117.

## **Paleo-sea levels**

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Josenhans, H. & others. 1997. Early humans and rapidly changing Holocene sea levels in the Queen Charlotte Islands-Hecate Strait, British Columbia, Canada. *Science* 277: 71-74.

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## **Paleocirculation**

- Bischof, J.F. & D.A. Darby. 1997. Mid- to Late Pleistocene ice drift in the western Arctic Ocean: evidence for a different circulation in the past. *Science* 277: 74-77.
- Kiefer et al. 2001. North Pacific response to millennial-scale changes in ocean circulation over the last 60 kyr. *Paleoceanography* 16(2): 179-189.
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- Broecker, W.S. 1997. Thermocline circulation, the Achilles heel of our climate system: will man-made CO<sub>2</sub> upset the current balance? *Science* 278: 1582-1588.

## **Paleoclimate**

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## **Biological responses to climate change:**

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[example of attempt to correlate climate change with human demography]
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