Reply to the comment of Shaviv and Veizer


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In this response, we are not commenting on caveats such as aerosols, other greenhouse gases, lags, feedbacks, ice sheets, etc. The topic of Shaviv and Veizer [2003] was the "primary" climate driver on Phanerozoic time scales, with no space, or need, for any more discussion than that. Furthermore, we fail to see how any of the above would make CO2 the ‘driver’ in the Antarctic cores, when the temperature rises preceded those of CO2 by centuries. We not only never denied but specifically highlighted the qualifying proposition that CO2 may act as an amplifier.

In conclusion, the above response demonstrates that the ‘critique’ of Rahmstorf et al. [2004] has little substance, in addition to the fact that it deals with time scales that are not even discussed in Shaviv and Veizer [2003]. Moreover, the statistical argument advanced in this issue of EOS as disproving the validity of the CRF/palaeotemperature correlation is simply invalid (for details, see http://www.phys.huji.ac.il/~shaviv/ClimateDebate/).

References


Veizer, J., et al. (1999), \( \delta^{13} \)C and \( \delta^{18} \)O evolution of Phanerzoic seawater, Chem. Geol., 161(1-5), 59–88.


—N. Shaviv, Racah Institute of Physics, Hebrew University of Jerusalem, Israel; and Ján Veizer, Institut für Geologie, Mineralogie und Geophysik, Bochum, Germany; and Ottawa-Carleton Geoscience Centre, University of Ottawa, Ontario, Canada
We also fully agree with Shaviv and Veizer that their results, even if they were correct, apply only to the multi-million-year time scale and cannot be applied to shorter time scales. We are glad they have clarified this point. Their media releases as well as their paper, in which they compare their climate sensitivity with the range given by the Intergovernmental Panel on Climate Change (IPCC, 2001), could have been misunderstood in this respect.

References

David Murr has been awarded the F.L. Scarf Award given annually to a recent Ph.D. recipient for outstanding dissertation research that contributes directly to solar-planetary sciences. Murr’s thesis is entitled “Magnetosphere- ionosphere coupling on meso- and macroscales.” He will be formally presented with the award on 14 December during the 2004 AGU Fall Meeting.

BOOK REVIEW

Measuring the Oceans from Space

IAN S. ROBINSON

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Given the growth in the number and complexity of ocean satellite systems since the launch of Seasat in 1978, combined with the fact that about twenty-five countries are now involved in such observations, this is an appropriate time for a new book on satellite oceanography. (Disclosure: the book reviewer has also just published an ocean remote sensing book.) The present book is an expanded version of Robinson’s 1985 book, Satellite Oceanography. It consists of two parts: fundamentals of satellite oceanography and remote sensing techniques. Although Robinson originally planned to include a third part on ocean applications, because of the length of the current book, that section will be published separately in 2005. The present book discusses for the ice-free ocean “what is measured and how it is done.” The five chapters in Part I occupy about a quarter of the text. The topics covered include a history of satellite oceanography, the electromagnetic spectrum, the different kinds of sensors, and a qualitative introduction to atmospheric radiative transfer. Topics also include platforms, orbits and their scales of temporal and spatial coverage, data encoding, and image processing.

Part II contains seven chapters: six on the various instruments, and a conclusion. The instrument chapters cover the visible (ocean color), infrared sea surface temperature (SST), passive microwave, scatterometry, synthetic aperture radar (SAR), and altimetry. Each chapter discusses the form of the atmospheric radiative transfer equation appropriate to the instrument, the interaction of this radiation with the ocean surface and interior, and how the instrument retrieves the property in question. The chapters next consider past, present, and near future instruments, with particular emphasis on European instruments, continue with applications, and

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