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A Personal View of pH Measurements in Surface Seawater: Past, Present, and Future

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Abstract

In the last decade, looming global warming and ocean acidification have generated much interest in the marine chemistry of CO_2 of which the measurements of pH and pCO2 of seawater are arguably the most important. This review retraces the early observations of pH measurements in seawater and of the new understanding of the "drivers" that control pH and CO2 flux in the world ocean. The early difficulties with the accurate electrometric measurement of pH fostered the establishment of seawater pH standards, the development of colorimetric pH techniques, and the current trend towards direct pCO_2 measurements. Nevertheless, in this presentation, I will argue that the electrometric determination of pH should be revisited because assessment of the spatial and temporal CO2 variability inherent in the very dynamic surface ocean can only be performed by remote sensing in conjunction with ships of opportunity equipped with durable, but inexpensive, electrometric pH systems.

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