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## ATMOSPHERIC SCIENCE: Rethinking Earth's Early Atmosphere

Christopher F. Chyba

More than 50 years ago, Miller performed his groundbreaking experiments that showed that an atmosphere containing methane and ammonia could yield amino acids, the building blocks of proteins. Today, many authors favor a carbon dioxide-rich atmosphere, but such an atmosphere is much less suitable for producing organic molecules. In his Perspective, [Chyba](#) highlights the report by [Tian \*et al.\*](#), who propose instead that the early atmosphere was carbon dioxide--based but may have contained many times more molecular hydrogen than previously thought. Such an atmosphere would have supported the abiotic synthesis of organic molecules far better than a carbon dioxide atmosphere with very small amounts of hydrogen.

The author is at the SETI Institute, Mountain View, CA 94043, and in the Department of Geological and Environmental Sciences, Stanford University, Stanford, CA 94305, USA. E-mail: [chyba@seti.org](mailto:chyba@seti.org)

**The editors suggest these related resources at *Science*:**

- **A Hydrogen-Rich Early Earth Atmosphere**  
Feng Tian, Owen B. Toon, Alexander A. Pavlov, and H. De Sterck  
*Science* 13 May 2005: 1014-1017  
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