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## **KEVIN ZAHNLE - NASA AMES RESEARCH CENTER**

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### **Related Experience Summary**

Effects of impacts, atmospheric chemistry, carbonate cycling, Hadean Earth.

### **Employment History**

Research Scientist, Space Science Division, NASA Ames Research Center

Department of Geophysics, Stanford University (1987-1989)

NRC Research Associate NASA/Ames Research Center (1985-1987)

### **Education**

1978 B.S. (Honours, Physics) McGill University, Montreal, Quebec

1985 Ph.D. (Atmos. Sci. and Astronomy), Univ. of Michigan, Ann Arbor

### **Professional Societies**

AGU, AAS

### **Awards and Honors**

NASA Exceptional Scientific Achievement Medal 1996.

Ames Associate Fellow 2001.

### **Selected Relevant Publications**

K. J. Zahnle (1986). "Photochemistry of methane and the formation of hydrocyanic acid (HCN) in the Earth's early atmosphere." *J. Geophys. Res.* 91, 2819–2834.

N. H. Sleep, K. J. Zahnle, J. F. Kasting, and H. Morowitz (1989). "Annihilation of ecosystems by large asteroid impacts on the early Earth." *Nature* 342, 139–142.

D. C. Catling, C.P. McKay, & K. J. Zahnle (2001). "Biogenic methane, hydrogen escape, and the irreversible oxidation of the early Earth." *Science* 293, 839-843.

N. H. Sleep & K. J. Zahnle (2001). "Carbon dioxide cycling and implications for climate on ancient Earth." *J. Geophys. Res.* 106, 1373-1399.

A. D. Anbar, G. L. Arnold, S. J. Mojzsis, & K. J. Zahnle (2001). "Extraterrestrial Iridium, Sediment Accumulation and the Habitability of the Early Earth's Surface." *J. Geophys. Res.* 106, 3219-3236.

N. H. Sleep, K. J. Zahnle and P. S. Neuhoff (2001). "Initiation of clement surface conditions on the earliest Earth." *Proc. Nat. Acad. Sci.* 98, 3666-3672.

D.C. Catling, C. R. Glein, C. P. McKay, and K. Zahnle (2005). "Why O<sub>2</sub> is required by complex life on habitable planets and the concept of planetary 'oxygenation time.'" *Astrobiology* 5, 415-438.

K. J. Zahnle & N. H. Sleep (2006). "Impacts and the early evolution of life." In *Comets and the Origin of Life*, P. Thomas, R. Hicks, C. F. Chyba, & C. P. McKay, eds. Springer, Berlin-Heidelberg, pp. 207-252.

K.J. Zahnle (2006). "Earth's first atmosphere." *Elements* 2, 217-222.

K.J. Zahnle, N. Arndt, C. Cockell, A. Halliday, E. Nisbet, F. Selsis, & N. H. Sleep (2007).

"Emergence of a Habitable Planet" *Space Science Reviews* 129, 35-78.