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# *Earth and Space Sciences and California*

In the past year there have been ample examples in California, the U.S., and the Indian Ocean of the need for Earth and Space Sciences (E&SS--including geology, geophysics, soil science, oceanography, astronomy, and atmospheric science) knowledge on the part of populations as a whole. Particularly in California, lying on a major complex plate boundary region, E & SS knowledge has a direct impact upon welfare of every resident.

For example, E&SS provide 1) good background for biology, chemistry, and physics, 2) are tangible and hook students into science; 3) are good for disadvantaged students; 4) are exciting and inspiring, with two revolutions (plate tectonics and planetary) to draw from in instruction; 5) are needed in CA for daily life (e.g. landslide, earthquake, volcanic, flood, water, aggregate, energy, health, soil issues). Furthermore, California has two major space science facilities--JPL and NASA-Ames, and the state has been and remains a major source of petroleum and other minerals.

The Earth and Space Sciences are a crucial part of K-12 science education. The Council of Scientific Society Presidents, the AAAS, and the NRC (1996) National Science Education Standards all list E & SS on a co-equal basis with physical sciences (physics and chemistry) and life sciences (biology, etc.). Nevertheless, in contrast to states such as New York and North Carolina where virtually every high school student takes Earth Science, only about 10% of California high school students take college-eligible E&SS classes. There is reluctance in some circles to approve the E & SS as a 9-12 class satisfying university admission requirements for laboratory science. Many academics perceive of E&SS as being inferior to physics, chemistry and biology, despite the growing general need for such knowledge. There is still a perception on the part of some that science education needs to emphasize a reductionist approach, as exemplified by physics or chemistry, rather than the broad, holistic view of E&SS.

To win approval of E & SS as a laboratory science for admission to a University, as provided for in the NRC Standards, requires convincing both University faculty (mostly) and, to a lesser extent, administration of the desirability of such a move. A statewide mobilization of E & SS professionals and other interested people could help move this process along.

**Biography: Eldridge Moores** is Professor of Geology and author of several major books on the subject. He holds the Ph.D. from Princeton University (1963). The UC Davis website describes his research interests to include tectonics, structural geology and petrology; ophiolites of western U.S. and Tethyan belt, geology of Greece, Cyprus, and Pakistan; tectonic development of Sierra Nevada and Alpine--Himalayan systems. Recent projects have included geology and tectonics of the northern Sierra Nevada; processes of ophiolite emplacement; tectonics of spreading centers; late Precambrian correlations between Antarctica and North America (SWEAT); and late Precambrian environmental change. Dr. Moores was Vice President and President of the Geological Society of America in 1995 and1996, respectively. He was editor of the journal *Geology* from 1982-1987, and is credited with turning the journal to a world-class publication. For this achievement, Dr. Moores was awarded one of the first GSA Distinguished Service Awards. Dr. Moores joined the Ocean Drilling Project Tectonics Panel in 1989 and became Chair the following year. Other honors include the 1994 Geological Association of Canada Medal and an honorary D.Sc. in 1997 from the College of Wooster. In 1991 Dr. Moores also proposed the SWEAT hypothesis, that Antarctica was the Neoproterozoic conjugate rift margin to western North America which has stimulated significant research in the Antarctica and generated many Late Proterozoic continental margin reconstructions. He additionally is a highly regarded populist and pundit, subject; for example, of the best selling book *Assembling California*, published in 1993 by the *New Yorker* writer John McPhee.