



# An Ancient Universe: How Astronomers Know the Vast Scale of Cosmic Time

No. 56 - Fall 2001

Click [here](#) for a printable pdf version of this newsletter.

Click [here](#) for an updated and expanded color pdf (large file, 800KB) booklet based on this newsletter. (Note this booklet has more text than the newsletter but does not include all the resources for teachers at the end of the version below.)

by Andrew Fraknoi (Foothill College), George Greenstein (Amherst College), Bruce Partridge (Haverford College) and John Percy (University of Toronto)

A Special Edition of  
"The Universe in the Classroom"  
A Newsletter on Teaching Astronomy in Grades 3-12

Published by the  
[American Astronomical Society](#)  
and the  
[Astronomical Society of the Pacific](#)

© Copyright 2001, American Astronomical Society. Permission to reproduce in its entirety for any non-profit, educational purpose is hereby granted. For all other uses contact the publisher: Astronomical Society of the Pacific, 390 Ashton Ave., San Francisco, CA 94112.

## Table of Contents

- [\*\*Home\*\*](#)
- [\*\*Introduction\*\*](#)
- [\*\*The Universe: An Overview\*\*](#)
- [\*\*The Process of Science\*\*](#)
- [\*\*The Ancient Universe\*\*](#)
  - [The Age of the Expanding Universe](#)
  - [The Age of the Oldest Stars](#)
  - [The Age of Light From Distant Galaxies](#)
  - [The Age of the Chemical Elements](#)
- [\*\*The Changing Universe\*\*](#)
  - [Changes in the Solar System](#)
  - [Changes in Stars](#)
  - [Changes in the Universe](#)
- [\*\*Science and Religion\*\*](#)
- [\*\*Resource Guide\*\*](#)
- [\*\*Activities\*\*](#)

[next page >>](#)

[back to Teachers' Newsletter Main Page](#)