

# Coordinated analysis of solar particle and gamma-ray emissions using ACE and CGRO

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## Abstract

Since late 1997, the instruments on the Advanced Composition Explorer (ACE) spacecraft have been providing a wealth of information on solar energetic particles, both electrons and nuclei, that reach the Earth's vicinity. During this period the Compton Gamma-Ray Observatory (CGRO) has continued monitoring hard X-ray and gamma-ray emission from the sun, among other sources. The high-energy photons provide information about both electrons, through bremsstrahlung continuum emission, and nuclei, through nuclear line emission, while they are still near the site of their acceleration. The COMPTEL instrument on CGRO can also measure energy spectra of solar neutrons, providing further information about the acceleration of nuclei in solar flares. Comparisons of ACE and CGRO measurements for the same events can reveal how representative the particles seen near Earth are of the population which is accelerated in solar flares. Analysis of different events may show correlations between the composition or charge state of the solar energetic particles and the occurrence of hard X-ray and gamma-ray flares.