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Spacecraft Measurements of the Relative Abundances of Cosmic-Ray Nuclides from Boron through Nickel[1] M.E. WIEDENBECK, Jet Propulsion Laboratory, California Institute of Technology, W.R. BINNS, Washington University, E.R. CHRISTIAN, NASA/Goddard Space Flight Center, A.C. CUMMINGS, California Institute of Technology, G.A. DE NOLFO, NASA/Goddard Space Flight Center, A.J. DAVIS, California Institute of Technology, M.H. ISRAEL, Washington University, A.W. LABRADOR, California Institute of Technology, K.A. LAVE, Washington University, R.A. LESKE, R.A. MEWALDT, E.C. STONE, California Institute of Technology, T.T. VON ROSENVINGE, NASA/Goddard Space Flight Center — Since the original discovery of heavy nuclei in the cosmic radiation more than 60 years ago (Freier et al., Phys. Rev. 74, 213, 1948), the composition of this nuclear component has been providing important clues to the origin of the cosmic rays. Over the past two solar minima, the Cosmic Ray Isotope Spectrometer (CRIS) on NASA's Advanced Composition Explorer (ACE) mission has been measuring the relative abundances and energy spectra of essentially all stable and long-lived nuclides (both elements and isotopes) from He to beyond Ni in the energy range between ∼50 and ∼500 MeV/nuc. We report precise determinations of nuclidic composition obtained from this 14-year data set. In addition, we discuss the implications of these data for the composition of cosmic-ray source material and for the time scales associated with the acceleration and transport of cosmic-rays in the Galaxy.

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