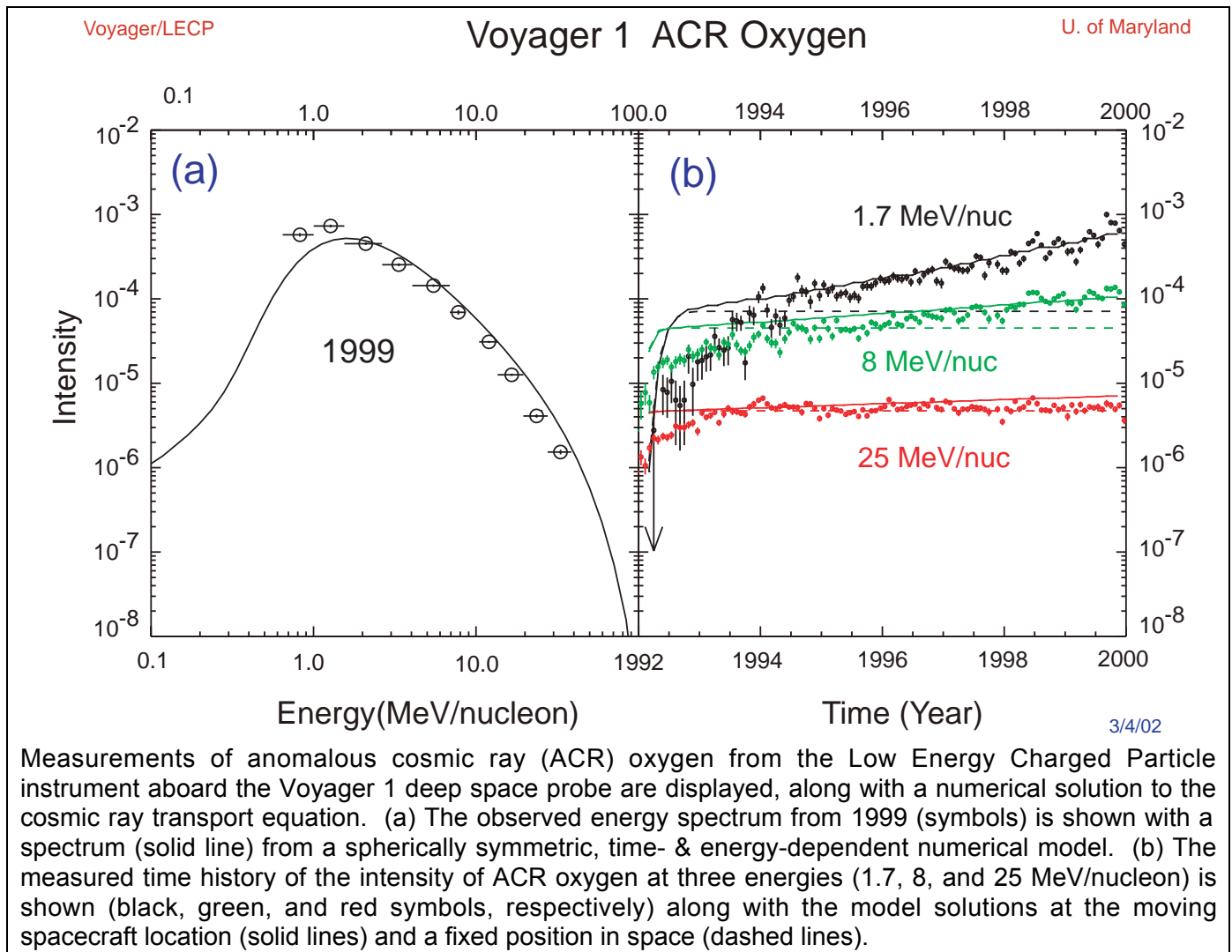


Propagation of Low-Energy Anomalous Cosmic Rays from the Termination Shock



Anomalous cosmic rays (ACRs) are thought to be “pick up” ions that have been accelerated at the solar wind termination shock. Observations of ACR energy spectra (panel a) are valuable tools to investigate ACR transport processes and to compare with computer models.

An uncomplicated model of ACR propagation, along with other evidence, suggests that the large exponential increase in the intensity of low-energy ACRs (e.g., 1.7 & 8 MeV/nucleon Oxygen in panel b) after 1994 is due primarily to the motion of the Voyager spacecraft through sizeable positive intensity gradients as the Voyager spacecraft approach the ACR source region at termination shock.

The agreement between the ACR O time histories (panel b) and the model is among the evidence indicating that the termination shock is the source of ACRs.

Contributed by Dr. Matthew E. Hill and Professor Douglas C. Hamilton, Univ. of Maryland, Dept. of Physics. Reference: Hill, M.E., Ph.D. Thesis, Univ. of Maryland, College Park, 2001.