

Solar Wind Charge Exchange X-ray Emission through the solar Cycle

H.-R. Mueller (1,2), M. Bzowski (3), V. Kharchenko (4)

(1) Dartmouth College, New Hampshire, USA (hans.mueller@dartmouth.edu), (2) IGPP-UCR, California, USA, (3) Space Research Centre, Polish Academy of Sciences, Poland, (4) Harvard-Smithsonian Center for Astrophysics, Massachusetts, USA

Global plasma/neutral models of the entrance of interstellar neutral hydrogen and helium into the heliosphere describe the detailed neutral particle distributions in the inner heliosphere as they vary through the solar activity cycle. Charge exchange between the neutrals of interstellar origin (and secondary neutrals) and solar wind heavy ions produces characteristic X-ray emission. In the downwind region the helium cone is a major source of X-ray emission, and helium is responsible for most of the emission within about 1 AU from the Sun, while neutral hydrogen dominates around a maximum emission region at 2 AU in the upwind direction. We evaluate the time-dependent X-ray (volume) emission of both species, and present line-of-sight integrated X-ray intensity predictions from different vantage points. The integration mixes features from different phases in the solar cycle, and some lines-of-sight add contributions from both H and He dominated emission regions.