

Free Magnetic Energy and Coronal Heating

Amy Winebarger, Ron Moore, and David Falconer

Previous work has shown that the coronal X-ray luminosity of an active region increases roughly in direct proportion to the total photospheric flux of the active region's magnetic field (Fisher et al. 1998). It is also observed, however, that the coronal luminosity of active regions of nearly the same flux content can differ by an order of magnitude. In this presentation, we analyze 10 active regions with roughly the same total magnetic flux. We first determine several coronal properties, such as X-ray luminosity (calculated using Hinode XRT), peak temperature (calculated using Hinode EIS), and total Fe XVIII emission (calculated using SDO AIA). We present the dependence of these properties on a proxy of the free magnetic energy of the active region.