Title: Simulated time lags of Hinode/XRT and SDO/AIA lightcurves as an indication of loop heating scenario.

Authors: Alexander, Caroline (1), Winebarger, Amy (1), Lionello, Roberto (2)

(1) NASA Marshall Space Flight Center, ZP 13, Huntsville, AL 35812, USA
(2) Predictive Science, Inc., 9990 Mesa Rim Road, Suite 170, San Diego, CA 92121-3933, USA

The precise nature of the heating mechanism (location, duration) in coronal loops is still a matter of enormous research. We present results from a 1D hydrodynamic loop simulation of a
 coronal loop which was run using different parameters such as loops length (50, 200, and 500 Mm), maximum temperature reached (3MK and 10MK), and abundances. For each scenario the model outputs were used to calculate the corresponding lightcurves as seen by XRT/Be-thin and various EUV AIA channels. The lag time between the peak of these lightcurves was computed using cross-correlation and plotted as a function of loop length. Additional results were computed using the 0D EBTEL code in order to test the compatibility of the two codes and to investigate additional loop lengths. Initial results indicate that the long (>5000s) lags observed in the ~100Mm loops of active regions can only be reproduced using photospheric abundances and much longer loop lengths.