Thomas Metcalf Travel Award

Summary of work presented at LWS/SDO 2013 workshop on 6 March 2013 by Dr Caroline E. Alexander, PDRA at the University of Central Lancashire, UK

Caroline Alexander completed her PhD at the University of Central Lancashire with Dr Robert Walsh in September 2012. She is currently working there as a PDRA where her work involves studying solar coronal loops and other features using data from various solar satellites. She holds a BSc (Hons) Astrophysics from the University of Edinburgh and and MSc from University College London. She will be taking a place at Marshall Space Flight Center in Huntsville, Alabama in September 2013 after being awarded a NASA Postdoctoral Fellowship.

Contributed talk entitled "Dynamic anti-parallel flows observed within an active region filament with SDO/AIA and Hi-C".

This work details an exciting new data-set that was captured by the Hi-C instrument (High-resolution Coronal Imager) and some of the results this data has revealed. Hi-C is a new instrument developed by NASA's Marshall Space Flight Center that captured its first data on July 11, 2012. Launched on a sounding rocket, the instrument imaged a large active region with the highest degree of spatial resolution ever achieved in the extreme-ultraviolet (EUV) wavelength regime (five times higher spatial resolution compared to the SDO**/**AIA instrument).

The magnetically complicated active region that was imaged contained a wide variety of coronal features. One such feature was a small active region filament located along the border of a large sunspot. The high spatial resolution of the imager identified some curious bi-directional flows along the length of the filament which were investigated further. Counter-streaming flows within prominences have been previously observed using H-alpha data but this type of flow is something that has not been directly observed at EUV wavelengths before and shows the imaging power of Hi-C (Alexander et al. 2013, in prep). These flows can point to the physical mechanisms behind mass injection**/**draining within prominences and can help to interpret their small-scale evolution. It is therefore crucial to examine them in as much detail as possible.

The work presented at the SDO conference highlighted these flows and measured their parameters. Additionally, this work showed that these flows could not be seen or measured by the Solar Dynamics Observatory's Atmospheric Imaging Assembly (AIA) instrument (due to its larger pixel size). This highlights the importance of this increase in spatial resolution and is something that is very important to keep in mind when developing future missions. Presenting this work at the SDO conference was very beneficial for my work and allowed a number of interesting discussions and possible collaborations to take place.