Thomas R. Metcalf SPD Travel Award 2018 Conference Report

Milan Gošić (IRIS postdoc at LMSAL/BAERI)
Hinode-12 Science Meeting "The Many Suns"

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Bio

Milan Gošić is a post-doctoral researcher on the Interface Region Imaging Spectrograph (IRIS) mission at Lockheed Martin Solar and Astrophysics Laboratory/Bay Area Environmental Research Institue (USA) working with Dr. Bart De Pontieu. He received his Ph.D. in 2015 from the University of Granada working with Dr. Luis Ramón Bellot Rubio. Milan is an expert for the evolution of quiet Sun (QS) magnetic fields. His results promoted internetwork fields (IN) as a crucial ingredient of the QS magnetism. Milan currently works on the contribution of IN fields to the energetics and dynamics of the QS atmosphere, while also being involved in operation of the IRIS satellite.

Invited Oral Presentation given on Monday, September 10th.

In recent years it became clear that the areas outside of active regions, the so-called QS, are not quiet at all. Indeed, they represent a highly dynamical environment in which magnetic fields are organized on a broad range of spatial and temporal scales. The most conspicuous features in the QS are network (NE) magnetic structures. In between them, we detect small IN fields continually appearing and disappearing. Upon appearance, these fields are in constant motion and often interact with each other. Many IN magnetic elements disappear in situ or through cancellation, which may be an important mechanism for chromospheric heating. Otherwise, they are dragged by convective flows toward the boundaries of supergranular cells where they maintain the NE. In the last years we have made significant progress in understanding QS magnetic fields, despite their weak polarization signals. This has been possible thanks to high sensitivity and high spatiotemporal resolution measurements from space and from the ground. In this talk I reviewed our current understanding of the evolution of QS magnetic fields, with particular emphasis on IN structures. During the talk, I presented the results of my PhD thesis about the evolution of small-scale IN fields and their contribution to the QS magnetism. Our results showed that IN regions are the main source of flux for the NE and QS in general. We also described in a consistent way for the first time how individual supergranular cells gain and lose magnetic flux due to the evolution of IN fields.

Benefits from the meeting

I am particularly grateful to the Solar Physics Division of American Astronomical Society for the Metcalf Travel Award, which supported my attendance at the Hinode-12 Science Meeting where I presented my research work as a Metcalf Lecturer. This provided me with a unique opportunity to have many fruitful discussions with the other participants of the meeting, which allowed me to continue with already established and initiate some new collaborations.