Hazel Miller Bain

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Education and Appointments

2017 - present	Research Scientist II, University of Colorado, Boulder
2013 - 2017	Assistant Researcher, University of California, Berkeley
2010 - 2013	Postdoctoral Associate, University of California, Berkeley
2006 - 2010	STFC PhD Studentship, University of Glasgow (Dr Lyndsay Fletcher)
	Thesis : Hard X-ray and radio studies of solar flares
2002 - 2006	MSci (Hons), Physics and Astronomy (2:1), University of Glasgow

Research Topics

- Solar energetic particles.
  - Co-I on the funded "*Observer global shock connectivities inferred from ENLIL runs and SEP measurements*" NASA Heliophysics Living With a Star Science grant (NNH14ZDA001N-LWS).
  - Member of the Living With a Star TR&T Focused Science Topic team: *Physics-based methods to predict connectivity of SEP sources to points in the inner heliosphere, tested by location, timing, and longitudinal separation of SEPs.*
- Geoeffectiveness of Earth directed interplanetary CMEs
- Type II radio burst emission and association with CMEs.
- Hard X-ray, radio and EUV emission from solar flares.

Software Development

• Developer of tools and data products for space weather forecasting, using real-time solar wind data from the Deep Space Climate Observatory (DSCOVR) spacecraft (Python, Git).

• Developer of the Ground Support Equipment software (GSE) for the NASA funded GRIPS balloon project (C, Python, SVN). Critical for flight, the GSE software, incorporates telecommunications and commanding support for the balloon, in addition to on-the-ground data pipeline, data processing and a graphical user interface. GRIPS completed its first flight in Antarctica in January 2016.

• Contributor to the Google Summer of Code 2015 SunPy project for the development of data pipeline tools to support Solar Energetic Particle research (Python).

• Fluent in IDL, Python and C. Experience with Subversion. Proficient in Linux, Windows and Mac operating systems. Adept in LaTeX, HTML. Working knowledge of PHP and MySQL.

Affiliations

- American Geophysical Union
- American Astronomical Society Solar Physics Division
- Institute of Physics (IoP), Associate Member

Awards

2013	NASA Group Achievement Award to the RHESSI Science Team
2009	Royal Society of Edinburgh/Cormack Bequest Postgraduate Research Prize
2009	Solar Physics Division studentship Award
2008	UK Solar Physics poster prize

2007 J. I. Khan, **H. M. Bain** and L. Fletcher, ***The relative timing of supra-arcade downflows in solar flares***, Astronomy and Astrophysics, Volume 475, August 2007, pp.333-340

2008 **H. M. Bain** and L. Fletcher, ***Solar flare impulsive-phase footpoints in Extreme UV, Soft X-Rays and Hard X-Rays***, Announcing First Results from Hinode ASP Conference Series, Vol. 397, Astronomical Society of the Pacific, 2008., p.157

2009 P. Romano, F. Zuccarello, L. Fletcher, F. Rubio da Costa, **H. M. Bain**, L. Contarino, ***Evolution of an eruptive flare loop system***, Astronomy and Astrophysics, Volume 498, Issue 3, 2009, pp.901-907

2009 **H. M. Bain** and L. Fletcher, ***Hard X-ray emission from a flare-related jet***, Astronomy and Astrophysics, Volume 508, Issue 3, 2009, pp.1443-1452

2012 Shih, A. Y., Lin, R. P., Hurford, G. J., et al. ***The Gamma-Ray Imager/Polarimeter for Solar flares (GRIPS)***, 2012SPIE.8443E..4HS

2012 J. C. Martinez Oliveros, C. L. Raftery, **H. M. Bain**, Y. Liu, V. Krupar, S. Bale and S. Krucker. ***The 2010 August 1 Type II Burst: A CME-CME Interaction and its Radio and White-light Manifestations***, 2012ApJ...748...66M

2012 **H. M. Bain**, Krucker, S., Glesener, L. and Lin, R. P. ***Radio imaging of shock-accelerated electrons associated with an erupting plasmoid on the 3rd of November 2010***, 2012ApJ...750...44B

2013 Duncan, N., Shih, A., Hurford, G., et al. ***Detector and imaging systems for the gamma-ray imager/polarimeter for solar flares (GRIPS) instrument***, 2013SPIE.8862E..0WD

2013 S., Glesener, S. Krucker, **H. M. Bain** and Lin, R. P. ***Observation of Heating by Flare-accelerated Electrons in a Solar Coronal Mass Ejection***, 2013ApJ...779L..29G

2014 **H. M. Bain**, S. Krucker, P. Saint-Hilaire and C. L. Raftery, ***Radio imaging of a type IVM radio burst on the 14th of August 2010***, 2014ApJ...782...43B

2014 J. C. Martinez Oliveros, S. Krucker, H. S. Hudson, et al. ***Chromospheric and Coronal Observations of Solar Flares with the Helioseismic and Magnetic Imager***, 2014ApJ...780L..28M

2014 P. Saint-Hilaire, J. Schou, J. C. Martinez Oliveros, et al. ***Observations of Linear Polarization in a Solar Coronal Loop Prominence System Observed near 6173 Å***, 2014ApJ...786L..19S

2014 S. Kim, K. Shibasaki and **H. M. Bain**, K. S. Cho ***Plasma Upflows and Microwave Emission in Hot Supra-arcade Structure Associated with an M1.6 Limb Flare*** 2014ApJ...785..106K

2014 J. P. Byrne, H. Morgan, D. B. Seaton, **H. M. Bain** and S. R. Habbal ***Bridging EUV and White-Light Observations to Inspect the Initiation Phase of a Two-Stage Solar Eruptive Event*** 2014SoPh..tmp..118B

2014 J. C. Martinez-Oliveros, C. L. Raftery, **H. M. Bain** et al. ***STEREO-Wind Radio Positioning of an Unusually Slow Drifting Event*** 2015SoPh..290..891M

2016 **H. M. Bain**, M. L. Mays, J. G. Luhmann, Y. Li, L. K. Jian, D. Odstrcil ***Shock Connectivity in the August 2010 and July 2012 Solar Energetic Particle Events Inferred from Observations and ENLIL Modeling*** 2016ApJ...825....1B

2016 Duncan, N., Saint-Hilaire, P., Shih, A., et al. ***First flight of the Gamma-Ray Imager/Polarimeter for Solar flares (GRIPS) instrument***, 2016SPIE.9905E..2QD

2017 Lario, D., Kwon, R.-Y., Richardson, I. G., et al. ***The Solar Energetic Particle Event of 2010 August 14: Connectivity with the Solar Source Inferred from Multiple Spacecraft Observations and Modeling***, 2017ApJ...838...51L

2017 Luhmann, J. G., Mays, M. L., Odstrcil, D., et al. ***Modeling solar energetic particle events using ENLIL heliosphere simulations***, 2017SpWea..15..934L