

PUBLICATIONS

Articles in Refereed Journals: Published or Accepted

Student names (or postdoctoral fellows) are in **bold type**.

- [1] **An, J.**, W. Huang, E. W. Gill, “A Self-Adaptive Wavelet-Based Algorithm for Wave Measurement Using Nautical Radar”, *IEEE Trans. Geosci. Remote Sens.*, 2014. (Accepted)
- [2] **El-Darymli, K.**, P. McGuire, E.W. Gill, D. Power, C. Moloney, The Effect of Detection on Spatial-Resolution in {SAR} Imagery, and Mitigation through Upsampling, *J. App. Rem. Sensing*, 2014. (Accepted)
- [3] Huang, W., E.W. Gill, and **J. An**, Iterative Least-squares-based Wave Measurement Using X-band Nautical Radar, *IET Radar, Sonar and Navigation*, 2014. (Accepted)
- [4] **Shen, C.**, E. W. Gill, W. Huang, HF Radar Cross Sections of Swell Contaminated Seas for a Pulsed Waveform, *IET Radar Sonar Navig.*, vol. 8, no. 4, pp. 382-395 2014.
- [5] Walsh, J., W. Huang, W., and E.W. Gill, The Second-order High Frequency Radar Ocean Surface Foot-scatter Cross Section for an Antenna on a Floating Platform, *IEEE Trans. Antennas Propag.*, vol. 61, no. 11, pp. 5833-5838, 2013.
- [6] Huang, W. and E. Gill, “Surface Current Measurement under Low Sea State Using Dual Polarized X-band Nautical Radar,” *IEEE J. Sel. Topics Appl. Earth Observ. Remote Sens. (JSTARS)*, Vol. 5, No. 6, pp. 1868-1873, 2012.
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- [10] Walsh, J., **J. Zhang**, and E.W. Gill, High Frequency Radar Cross Section of the Ocean Surface for an FMCW Waveform, *IEEE J. Oceanic Eng.*, Vol. 36, No. 4, pp. 615-626, 2011.

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- [13] **Green, D.**, E.W. Gill, and W. Huang, Extraction of Wind Speed from High Frequency Ground Wave Radar Oceanic Backscatter, *IEEE Transactions on Geoscience and Remote Sensing*, Vol. 47, No. 10, pp. 3338-3346, 2009.
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Submitted or In Preparation for Submission to Refereed Journals

- [27] **Shen, C.**, W. Huang, E. W. Gill, “Retrieval of Surface Current Information from X-band Marine Radar Images based on a Polar Sinusoidal Curve Fitting”, *IEEE*, 2014. (To be submitted)
- [28] **El-Darymli, K.**, E.W. Gill, P. McGuire, D. Power, and C. Moloney, Unscrambling Nonlinear Dynamics in Synthetic Aperture Radar Imagery, *IEEE Trans.. Aero. Electron. Systems*. (To be submitted)
- [29] **El-Darymli, K.**, P. McGuire, E.W. Gill, D. Power, and C. Moloney, Characterization and Statistical Modeling of Phase in Single-Channel SAR Imagery, *IEEE Trans.. Aero. Electron. Systems*. (To be submitted)
- [30] **El-Darymli, K.**, P. McGuire, E.W. Gill, D. Power, and C. Moloney, Features for Target Classification in SAR Imagery: A Novel Approach Based on Holistic Worldview, *IEEE Trans.. Aero. Electron. Systems*. (To be submitted)
- [31] Walsh, J., E.W. Gill, W. Huang, **S. Chen**, On the Development of a High Frequency Radar Cross Section for Ionosphere-ocean Propagation. (To be submitted)
- [32] **Liu, Y.**, W. Huang, E. W. Gill, D. Peters, and R. Vicen-Bueno, “Comparison of Algorithms for Wind Parameters Extraction from X-band Shipborne Marine Radar

Images”, *IEEE J. Sel. Topics Appl. Earth Observ. Remote Sens. (JSTARS)*, 2014. (under revision)

- [33] Huang, W., **Y. Liu**, E.W. Gill, “Texture-Analysis-Incorporated Wind Parameters Extraction from Rain-contaminated X-band Nautical Radar Images”, *IEEE*, 2014. (under revision)

Refereed International and National Conferences

- [34] **Ryan, B.** and E.W. Gill, A Derivation of the Radar Cross Section of an Iceberg for a Pulsed High Frequency Radar, *Proc. 16th International Symposium on Antenna Technology and Applied Electromagnetics (ANTEM)*, Victoria, BC, Jul. 13-17, 2014. (Full-paper review, accepted)
- [35] Walsh, J., **S. Chen**, E. Gill, and Weimin Huang, High Frequency Radar Clutter Power for Mixed Ionosphere-Ocean Propagation, *Proc. 16th International Symposium on Antenna Technology and Applied (ANTEM)*, Victoria, BC, Jul. 13-17, 2014. (Full-paper review, accepted)
- [36] **El-Darymli, K.**, C. Moloney, E. Gill, P. McGuire, D. Power, Design and Implementation of a Low-Power Synthetic Aperture Radar, *IEEE International Geoscience and Remote Sensing Symposium*, Quebec, Canada, 2014. (accepted)
- [37] **El-Darymli, K.**, C. Moloney, E. Gill, P. McGuire, D. Power, Recognition of Nonlinear Effects of Dispersive Scatterers in SAR Imagery, *IEEE International Geoscience and Remote Sensing Symposium*, Quebec, Canada, 2014. (accepted)
- [38] **Liu, Y.**, W. Huang, and E. W. Gill, Intensity-level-selection-based Wind Retrieval from Shipborne Nautical X-band Radar Data, *IEEE International Geoscience and Remote Sensing Symposium*, Quebec, Canada, 2014. (accepted)
- [39] **Shen, C.**, W. Huang, and E. W. Gill, An Alternative Method for Surface Current Extraction from X-band Marine Radar Images, *IEEE International Geoscience and Remote Sensing Symposium*, Quebec, Canada, 2014. (accepted)
- [40] **El-Darymli, K.**, P. McGuire, E. Gill, D. Power, C. Moloney, Understanding the Significance of Radiometric Calibration for Synthetic Aperture Imagery, *Canadian Conference on Electrical and Computer Engineering*, Niagara Falls, Ontario, 2014.
- [41] **Ryan, B.**, E.W. Gill, An Analysis of the Backscattered Electric Field from an Iceberg for a Pulsed High Frequency Radar, *Canadian Conference on Electrical and Computer Engineering*, Toronto, Ontario, 2014.

- [42] **Wang, W.**, E. Gill, and W. Huang, High-resolution Spectral Estimation of HF Radar Data for Current Measurement Applications, *The 2nd Ocean Radar Conference for Asia-Pacific*, Kaohsiung, Taiwan, 2014.
- [43] **Al-Habashneh, A.**, C. Moloney, E. Gill, Wavenumber Mapping in Ocean Wave Spectrum Estimation from Marine Radar Data Using the Polar Fourier Transform, *Oceans 2014 MTS/IEEE*, Taipei, Taiwan.
- [44] **Liu, Y.** W. Huang, E.W. Gill, Dual-Curve-Fitting Based Wind Retrieval from Shipborne Nautical X-Band Radar Data, *Oceans 2014 MTS/IEEE*, Taipei, Taiwan.
- [45] **Wang, W.**, and E. Gill, Comparison of a Modified Periodogram and Standard Periodogram for Current Estimation by an HF Surface Radar, *Oceans 2014 MTS/IEEE*, Taipei, Taiwan.
- [46] **El-Darymli, K.**, C. Moloney, E. Gill, P. McGuire, D. Power, Nonlinearity and the Effect of Detection on Single-Channel Synthetic Aperture Radar Imagery, *Oceans 2014 MTS/IEEE*, Taipei, Taiwan.
- [47] **Shen, C.**, W. Huang, E. W. Gill, “The derivation of high frequency radar cross sections for swell contaminated seas”, *IEEE International Geoscience and Remote Sensing Symposium*, Melbourne, Australia, pp. 1278--1281, 2013.
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- [49] **Wang, W.** and E.W. Gill, Evaluation of Beamforming and Direction Finding for a Phased Array HF Ocean Current Radar, *International Radar Symposium (IRS)*, Dresden, Germany, 2013.
- [50] **Al-Habashneh, A.**, C. Moloney, E. Gill, Towards ocean wave spectrum estimation from marine radar data by the Polar Fourier Transform, *Oceans 2013 MTS/IEEE*, Bergen, Nor., 2013.
- [51] **Shen, C.**, E. W. Gill, and W. Huang, “Extraction of Swell Parameters from Simulated Noisy HF Radar Signals”, *IEEE RadarCon'13*, Ottawa, Canada, 2013.
- [52] **An, J.**, W. Huang, **E. W. Gill**, “2-D Continuous Wavelet Based Algorithm for Extracting Wave Information from Nautical Radar Images”, *IEEE RadarCon'13*, Ottawa, Canada, 2013. (**Best Student Paper Award**)
- [53] Huang W., **E. W. Gill**, “An Alternative Algorithm for Wave Information Extraction from X-band Nautical Radar Images”, *IET International Radar Conference*, Xi'an, Shanxi, China, 2013.

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- [59] Huang, W. and E. Gill, Extraction of Sea Surface Wind Direction from Bistatic High-Frequency Radar Doppler Spectra, *Oceans'11, IEEE Conference and Exhibition*, Hawaii, USA, 2011. (Extended abstract review)
- [60] Huang, W. and E. Gill, Sea Surface Current Measurements at Long Range using Lower-band High-Frequency Radar, *Oceans'11, IEEE Conference and Exhibition*, Santander, Spain, 2011. (Extended abstract review)
- [61] Walsh, J., **B. Ryan**, E. Gill, and Jacques El Khoury, Further Analysis of the Modulation of High Frequency Radar Spectra due to Sea-induced Antenna Platform Motion, *Oceans'10, IEEE Conference and Exhibition*, Sydney, Australia, 2010. (Extended abstract review)
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- [76] **Bobby, P., K. Hickey**, and E.W. Gill, Techniques for Surface Current Measurement on the Grand Banks Using High Frequency Surface Wave Radar, *Proc. Canadian Meteorological and Oceanic Society Symp.*, Ottawa, Canada, 2003.
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 - [80] **Hickey, K., E. Gill, and J. Walsh**, Some Fundamental Statistics associated with the Estimation of Ocean Surface Currents Using a Dual Station, Long-range, High Frequency Ground Wave Radar, *Proc. International Geoscience and Remote Sensing Symposium (IGARSS'02) and the 24th Canadian Symposium on Remote Sensing*, Toronto, 2002. (Invited paper).
 - [81] Gill, E.W., and J. Walsh, High Frequency Cross Sections of the Ocean Surface – Comparisons and Recent Enhancements, *Proc. XXVIIth URSI General Assembly*, Maastricht, Netherlands, 2002.
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Radiowave Oceanography Workshop Contributions

This is an international 4-day workshop of 35 to 40 HF radar experts and users (mainly physicists and engineers) where the latest models and applications of the science and technology associated with the remote sensing of the oceans via HF radar, as well as required research directions, are discussed. While it is **not a 'refereed'** workshop, it is probably the single most important venue for the dissemination of research expertise in this field and input is invited from a small group of experts. Our group at Memorial University is among a minority of participants who are deeply involved with the basic and applied science underlying the technology.

- [91] **Wang, W.**, E.W. Gill, and **B. Ryan**, A combined beamforming/direction finding scheme for phased arrays and other recent developments, *Radiowave Oceanography 12th International Workshop*, Savannah, Georgia, USA, 2014.
- [92] **Norga, M.**, **C. Shen**, E. Gill, and W. Huang, Scattering of High Frequency Electromagnetic Radiation in a Noisy Environment and Simulation of HF Radar Cross Sections for Swell Contaminated Seas, *Radiowave Oceanography 11th International Workshop*, Toulon, France, 2012 (Invited Presentation).
- [93] Walsh, J., **J. Zhang**, and E. Gill, Ocean Cross Section Characteristics for FMCW Waveforms, *Radiowave Oceanography 10th International Workshop*, Mount Hood, Oregon, USA, 2010. (Invited Paper).

- [94] Walsh, J., E. Gill, and W. Huang, Further Analysis of Antenna Platform Motion, *Radiowave Oceanography 9th International Workshop*, Split, Croatia, 2009. (Invited Paper).
- [95] **Zhang, J.**, E.W. Gill, and J. Walsh, A Consideration of Bragg Fluctuations in High Bandwidth FMCW Spectra and Other Recent Results, *Radiowave Oceanography 8th International Workshop*, Honolulu, Hawaii, 2008. (Invited Paper).
- [96] **Zhang, J.**, E.W. Gill, and J. Walsh, The Effect of Transmitter Pulse Width on Bragg Positions in Pulsed Doppler Radar, *Radiowave Oceanography 6th International Workshop*, Hamburg, Germany, 2006. (Invited Paper).
- [97] **Zhang, J.**, E. Gill, **D. Green**, and J. Walsh, 2005. Examination of Fluctuations in the Bragg Peaks Under the Assumption of a Stationary Gaussian Process and Other Recent Developments, *Radiowave Oceanography 5th International Workshop*, Costanoa, California, May, 2005. (Invited Paper).
- [98] Gill, E.W., **W. Huang**, and J. Walsh, HF Surface Wave Radar in the Eastern Canada Context – Toward Bistatic Operation, *Radiowave Oceanography 4th International Workshop*, Magnetic Island, Townsville, Australia, 2004. (Invited Paper).
- [99] Gill, E.W., and J. Walsh, A Note on Near-forward Scattering in the Context of HF Bistatic Radar Operating in a Marine Environment. *Radiowave Oceanography 2th International Workshop*, Landeda, France, 2003. (Invited Paper).

Other Conference/Workshop Contributions

(All, but one, of the following were presentations at the local yearly Newfoundland Electrical and Computer Engineering Conference (NECEC) and appear in the Proceedings.)

- [100] **Liu, Y.**, W. Huang, E. Gill, *Wind Direction Retrieval From Shipborne Nautical X-Band Radar Data*, NECEC, St. John's, Newfoundland, 2013.
- [101] **Zhang, S.**, W. Huang, E. Gill, B. Wen, *The HF Radar Doppler Spectra Variation during Typhoon Bolaven*, NECEC, St. John's, Newfoundland, 2013.
- [102] **Chen, S.**, E. Gill, W. Huang, *The modelling of the ionosphere reflection coefficient for HF radar ionospheric clutter*, NECEC, St. John's, Newfoundland, 2013.
- [103] **Al-Habashneh, A.**, C. Moloney, E. Gill, *Wave number mapping in ocean wave spectrum estimation from marine radar data by the Polar Fourier Transform*, NECEC, St. John's, Newfoundland, 2013.
- [104] **Al-Habashneh, A.**, C. Moloney, E. Gill, *Marine Radar Image Processing Using Polar Fourier Transform*, *IEEE NECEC Conference*, Newfoundland, Canada, 2012.
- [105] **M. Norga**, E. Gill, *The Scattering of High Frequency Electromagnetic Radiation From the Ocean Surface-A Time Domain Model Incorporating Additive White Gaussian*

- Noise Model and a Pulse Signal *IEEE NECEC Conference*, Newfoundland, Canada, 2012.
- [106] **J. An**, W. Huang, E. Gill, Extraction of Fundamental Wave Components Information from X-band Nautical Radar Images, *IEEE NECEC Conference*, Newfoundland, Canada, 2012.
- [107] **C. Shen**, E. W. Gill, W. Huang, “The shallow water HF radar cross sections for swell contaminated seas”, *IEEE NECEC Conference*, Newfoundland, Canada, 2012.
- [108] **Al-Habashneh, A.**, C. Moloney, E. Gill, 3D Fourier transform methods for estimating sea state from marine radar signals, *IEEE NECEC*, St. John's, Newfoundland, 2011.
- [109] **An, J.**, W. Huang, and E. Gill, Numerical Simulation of X-Band Marine Radar Imaging, *IEEE NECEC*, St. John's, Newfoundland, 2011. (**Oceanic Eng. Soc. Paper First Prize Award**)
- [110] Gill, E.W., High Frequency Radar Ocean Surface Operations in Placentia Bay and Beyond, *IEEE NECEC*, St. John's, Newfoundland, 2010.
- [111] Walsh, J., W. Huang, **A. Myrden**, and E.W. Gill, The Second-order HF Radar Cross Section for an Antenna with Barge Motion, *IEEE NECEC*, St. John's, Newfoundland, 2008.
- [112] **Zhang, J.**, E. W. Gill, J. Walsh, and K. Gurgel Comparison of Simulated HF Radar Data with Field Data for a Frequency Modulated Continuous Wave (FMCW) Source, *IEEE NECEC*, St. John's, Newfoundland, 2008. (**Best Student Paper Award**)
- [113] **Zhang, J.**, E.W. Gill, and J. Walsh, HF Radar Remote Sensing with Frequency Modulated Sources, *IEEE NECEC*, St. John's, Newfoundland, 2007.
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* The **Governor-General's Gold Medal** is a University-wide honour awarded for the highest academic standing in the doctoral program.

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