

**Joseph J. Cione**  
Hurricane Research Division / National Center for Atmospheric Research  
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Education:

**Ph.D, 1996, NC State Univ, Meteorology** (*concentration in oceanography*)  
- *Diabatic forcing in association with East Coast winter cyclogenesis*  
- *Gulf Stream propagation and dynamics*

Employment:

**Lead Meteorologist/Senior Scientist (1997-present)**  
*Specialization in air-sea interaction, atmospheric thermodynamics, upper ocean structure*  
*NOAA PI/PM for all air-deployed sUAS hurricane research & operational reconnaissance*  
*Current US Government Clearance*

**US Weather Research Program Deputy Director (1995-1996)**

*Science and programmatic HQ liaison for NOAA's 12 Nat'l Environmental Laboratories*  
*Lead POC for USWRP activities with federal agencies and academic institutions*

Leadership:

**Management and Leadership Experience**

*USWRP Deputy Director; NOAA HRD Lead Scientist for New Observing Systems and Advanced Concepts of Operations; NOAA PI for low altitude UAS; HRD Field Program Senior Scientist; Hurricane Forecast Improvement Program Physics Evaluation Team Lead; NOAA Executive Leadership Program Graduate; NOAA SBIR Science Lead/PM TC sUAS activities (2018-)*

Panels/Committees:

**NCAR/NSF:** Observing Facilities Assessment Panel member (2015-2017)  
**IOC WESTPAC Typhoon Working Group:** Int'l Commission Member (2015-)  
**REcon sub Working Group to ICCAGRA:** Lead Scientist (2018-)  
**Observation Processes & Prediction (ETOPP) of the Working Group on Tropical Meteorology** (WMO): Expert Team Member (2018-)  
**Extreme Events Ocean Observing:** (NOAA CPO) Steering Committee (2020-)  
**New and Improved Observing Technologies And Enhanced Concept of Operations Working Group (NEOTAC)** Lead/Organizer

Experimentation:

**Interagency and/or International Aircraft and Research Vessel Experience**  
*TOGA COARE (1992); ASTEX (1992); NOAA Hurricane Annual Field Program (1997-)*  
*CAMEX3/4; NOAA/NASA/NASKW UAS Demo Projects (2005-2009);*  
*Navy/NOAA/Raytheon/Area-I/Barron/BlackSwift P-3-sUAS operations (2009-ongoing)*

Communication:

**Technical, Informal, External and Internal Communications Experience**

*On/off-camera interviews (Discovery Channel, BBC, NOVA, National Geographic, etc.); 100+ formal presentations (conferences, TED talks, symposia, colloquiums); Outreach (public and academic); Formal/informal briefings for internal management*

National Awards:

**2018 Aviation Week Laureate Award Winner for Defense (Dual Use)**

**2015 US Department of Commerce Silver Medal Award**

*For conducting the 1<sup>st</sup> air-deployed UAS mission into a hurricane using NOAA aircraft*

**2010 US Department of Commerce Bronze Medal Award**

*Executing the 1<sup>st</sup> launch and recovery of an unmanned aircraft into a tropical cyclone*

**John A. Knauss National Sea Grant Fellow**

*1<sup>st</sup> Meteorologist appointed as a National Sea Grant Fellow*

Funding (since 2014):

**2014: \$1.25M** - PI, Disaster Relief Appropriations Act (*sUAS and GPS IR Sonde*)  
**2015-2017: \$550K** – PI, NAVY; NOAA/OMAO; NOAA/OAR; NOAA/UASPO  
**2018-2019: \$1.2M** – PI, NOAA/OAR; NOAA/OMAO; NOAA/UASPO  
**2018-2021- \$1M** - Technical Lead/PM, NOAA/SBIR  
**2020-22 \$4M** - Co-PI, PRECIP2020 (NSF)  
**2020-23 \$1M** - Co-PI, TCRI (ONR)  
**2020-23 \$6.6M** – Co-PI, UxS Saildrone Operations in TCs (NOAA)  
**2021-23 \$600K** – PI, OAR/WPO sUAS Research to Operations  
**2021-24 \$2.4M** – PI, OMAO UxS Program Office

References:

*Federal, military, academic and private sector references available upon request.*

Select peer-reviewed publications and presentations (complete list available upon request):

Chen, X., J-F. Gu, J. A. Zhang, F. D. Marks, R. F. Rogers, and J. J. Cione, 2021: Boundary Layer Recovery and Precipitation Symmetrization Preceding Rapid Intensification of Tropical Cyclones under Shear. *J. Atmos. Sci.* (Accepted)

J. Zawislak, R. Rogers, S. Aberson, G. Alaka, G. Alvey, A. Aksoy, L. Bucci, J. Cione, N. Dorst, J. Dunion, M. Fischer, J. Gamache, S. Gopalakrishnan, A. Hazelton, H. Holbach, J. Kaplan, H. Leighton, F. Marks, S. Murillo, P. Reasor, K. Ryan, K. Sellwood, J. Sippel, J. Zhang, 2021: Accomplishments of NOAA's Airborne Hurricane Field Program and a Broader Future Approach to Forecast Improvement" *Bull. Amer. Meteor. Soc.* (Accepted)

Wadler, J. B., J. Cione, J. Zhang, E. Kalina and John Kaplan 2021: The effects of environmental wind shear direction on tropical cyclone boundary layer thermodynamics and intensity change from multiple observational datasets. Accepted *Mon. Wea. Rev.*

Wadler, J. B., J. Cione, R. Rogers and M. Fischer 2021: On the Distribution of Convective and Stratiform Precipitation in Tropical Cyclones from Airborne Doppler Radar and its Relationship to Intensity Change and Environmental Wind Shear Direction. Submitted to *Mon. Wea. Rev.*

Wadler, J. B., D. Nolan, J. Zhang, L. Shay, J. Olsen and J. Cione 2021: The Effect of Advection on the Distribution of Turbulent Kinetic Energy and its Generation in Idealized Tropical Cyclone Simulations. To be submitted to *J. Adv. Model. Earth Syst.*

Aksoy, A., J. Cione and B. Dahl 2021: Tropical Cyclone Data Assimilation with Coyote Uncrewed Aircraft System, Observations, Very-Frequent Cycling, and A New Online Quality Control. Submitted *Mon. Wea. Rev.*

Dobosy, R., J. Zhang, J. Wadler, X. Chen, G. de Boer, G. Bryan, A. Farber and J. Cione 2021: New perspectives on tropical-cyclone momentum fluxes from remotely piloted aircraft systems. Submitted to *JTECH*.

Cione, J.J., G. Bryan, R. Dobosy, J. Zhang, G. de Boer, A. Aksoy, J. Wadler, E. Kalina, B. Dahl, K. Ryan, J. Neuhaus, E. Dumas, F. Marks, A. Farber, T. Hock and X. Chen 2020: Eye of the Storm: Observing Hurricanes with a Small Unmanned Aircraft System. *Bull. Amer. Meteor. Soc.*  
<https://doi.org/10.1175/BAMS-D-19-0169.1>

de Boer, G., B. Argrow, J. Cassano, J. Cione, E. Frew, D. Lawrence, G. Wick and C. Wolff, 2018: Advancing unmanned aerial capabilities for atmospheric research. *Bull. Amer. Meteor. Soc.* doi: 10.1175/BAMS-D-18-0254.1

Goni, G.J., R. Todd, S. Jayne, G. Halliwell, S. Glenn, J. Dong, R. Curry, R. Domingues, F. Bringas, L. Centurioni, S. DiMarco, T. Miles, J. Morell, L. Pomales, H. Kim, P. Robbins, G. Gawarkiewicz, J. Wilkin, J. Heiderich, B. Baltes, J. Cione, G. Seroka, K. Knee and E. Sanabia 2017: Autonomous and Lagrangian Ocean Observations for Atlantic Tropical Cyclone Studies and Forecasts. *Oceanography*. DOI: [10.5670/oceanog.2017.227](https://doi.org/10.5670/oceanog.2017.227)

Kalina, E.A., S. Matrosov, J. Cione, F. Marks, J. Vivekanandan, R. Black, J. Hubbert, M. Bell, D. Kingsmill, and A. White 2017: The Ice Water Paths of Small and Large Ice Species in Hurricanes Arthur (2014) and Irene (2011). *J. Appl. Meteorol.* DOI: <http://dx.doi.org/10.1175/JAMC-D-16-0300.1>

J. A. Zhang, J. Cione, E. Kalina, T. Hock and J. Smith 2017: Infrared measurements of sea surface temperature in Hurricane Edouard (2014) using GPS dropsondes. J. Ocean Atmos. Tech. DOI: 10.1175/JTECH-D-16-0211.1.

Aksoy, A., J. A. Zhang, B. W. Klotz, E. W. Uhlhorn, and J. J. Cione, 2017: Axisymmetric initialization of the atmosphere and ocean for idealized coupled hurricane simulations. J. Adv. Model Earth Sy., 9. <https://doi.org/10.1002/2017MS000977>

Cione, B. Dahl, H. Christophersen and R. Atlas 2017: Evaluating the Impact of Hurricane Observations from the Unmanned Coyote Aircraft in Observing System Simulations Experiments; 97th Annual American Meteorological Society Annual Meeting, 22-27 Jan 2017, Seattle, Wa.

Aksoy, A., J. Cione, B. Dahl, H. Christophersen and R. Atlas 2017: Evaluating the Impact of Hurricane Observations from the Unmanned Coyote Aircraft in Observing System Simulations Experiments; 97th Annual American Meteorological Society Annual Meeting, 22-27 Jan 2017, Seattle, Wa.

Cione, J. J. 2016: Hurricane Technology Congressional Briefing: NOAA's Use of Unmanned Aircraft Systems. U.S. Senate, 24 May 2016, Capitol Hill, Washington D.C.

Cione, J. J., E. Kalina, E. Uhlhorn, and A. Damiano 2016: Coyote Unmanned Aircraft System Observations in Hurricane Edouard (2014). Earth Space Sci., doi:10.1002/2016EA000187

Cione, J.J. E. Kalina 2016: Factors that Impact Air-Sea Structure in Hurricanes; 32nd Conference on Hurricanes and Tropical Meteorology, 12-18 April, 2016, San Juan, Puerto Rico.

Aksoy, A., J. Cione, H. Christophersen and B. Dahl, 2016: Assessing the Value of the Coyote UAS Platform and Observations from the Perspective of Tropical Cyclone Data Assimilation and Prediction; 32nd Conference on Hurricanes and Tropical Meteorology, 12-18 April, 2016, San Juan, Puerto Rico.

Hyun-Sook, K., G. Halliwell, V. Tallapragada, P. Black, S. Chen, J. Cione, I. Ginis, B. Liu, L. Miller, S. Jayne, E. Sanabia, L. Shay, E. Uhlhorn, L. Zhu, 2016: Ocean Model Impact Study for Coupled Hurricane Forecasting: An HFIP Initiative; 32nd Conference on Hurricanes and Tropical Meteorology, 12-18 April, 2016, San Juan, Puerto Rico.

Green, B., H Winterbottom, E. Kalina, J. Cione 2016: Toward Identifying and Understanding Errors in Numerically Simulated Tropical Cyclones: A Case Study of Hurricane Edouard (2014); 32nd Conference on Hurricanes and Tropical Meteorology, 12-18 April, 2016, San Juan, Puerto Rico

Kalina, E.A., S. Matrosov, F. Marks, J. Cione, D. Kingsmill, M. Bell, R. Black, J. Hubbert, W. Lee, J. Vivekanandan, P. Dodge, R. Rogers, 2016: The Fall Speeds and Ice Water Paths of Small and Large Ice Species in Hurricane Arthur (2014); 32nd Conference on Hurricanes and Tropical Meteorology, 12-18 April, 2016, San Juan, Puerto Rico.

Zhang, J. A., J. Cione, E. Kalina, T. Hock, J. Smith 2016: Novel Measurements of Sea Surface temperatures in Tropical Cylcones Obtained from GPS Dropsonde; 32nd Conference on Hurricanes and Tropical Meteorology, 12-18 April, 2016, San Juan, Puerto Rico.

Cione, J.J. 2015: The relative roles of the ocean and atmosphere as revealed by buoy air-sea observations in hurricanes. *Mon. Wea. Rev.* doi: 10.1175/MWR-D-13-00380.1

Kaplan, J., C. M. Rozoff, M. DeMaria, C. R. Sampson, J.P. Kossin, C. S. Velden, J. J. Cione, J. P. Dunion, J. A. Knaff, J. A. Zhang, J. F. Dostalek, J. D. Hawkins, T. F. Lee, J. E. Solbrig 2015: Evaluating environmental impacts on tropical cyclone rapid intensification predictability utilizing statistical models. *Wea. Forecasting*, doi: 10.1175/WAF-D-15-0032.1

Cione, J.J. 2014: The truth about 26°C and the relative roles of the ocean and atmosphere at the hurricane air–sea interface. AMS 31th Conference on Hurricanes and Tropical Meteorology. 30 March – 04 April 2014, San Diego, CA.

Aksoy, A., B. W. Blotz, J. Zhang, E. Uhlhorn, J. J. Cione 2014: Model Sensitivity to Perturbations of Environment, Structure, and Model Parameters in Idealized, Ocean-Coupled Tropical Cyclone Simulations. AMS 31th Conference on Hurricanes and Tropical Meteorology. 30 March – 04 April 2014, San Diego, CA.

Cione, J.J., E. A. Kalina, J. A. Zhang, E. W. Uhlhorn 2013: Observations of air-sea interaction and intensity change in hurricanes. *Mon. Wea. Rev.*, **141**, 2368–2382.

Rogers, R.F., S.D. Aberson, A. Aksoy, B. Annane, M. Black, J. Cione, N. Dorst, J. Dunion, J. Gamache, S. Goldenberg, S. Gopalakrishnan, J. Kaplan, B. Klotz, S. Lorsolo, F. Marks, S. Murrillo, M. Powell, P. Reasor, K. Sellwood, E. Uhlhorn, T. Vukicevic, J. Zhang, and X. Zhang, 2013: NOAA's Intensity Forecasting Experiment (IFEX): A Progress Report. *Bull. Amer. Meteor. Soc.*, **94**, 859–882.

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Stansbury, R., M. Towhidnejad, J. Clifford, M. Dop, R. Hoffman, J. Cione, K. Twinning, M. DuPuis 2012: The Gale UAS for tropical cyclone measurements: An update and lessons learned. Infotech@Aerospace June 2012.

Stansbury, R., M. Towhidnejad, I. Demirkiran, J. Clifford, M. Dop, T. Koung, J. Cione, N. Ash, "A P-3 Deployable Unmanned Aircraft for Scientific Measurement of Tropical Cyclones," AIAA Infotech@Aerospace, AIAA-2011-1421, <http://dx.doi.org/10.2514/6.2011-1421>

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Cione, J.J., J. Zhang and E. Uhlhorn 2010: Near-surface temperature and moisture observations from tropical cyclones from 1975-2007: Axisymmetric and asymmetric structural analysis. AMS 29th Conference on Hurricanes and tropical Meteorology. 10-14 May 2010, Tucson, AZ.

Cione, J.J., E. W. Uhlhorn, G. Casella, S. J. Majumdar, C. Sisko, N. Carrasco, M. D. Powell, P. Bale, G. Holland, P. Turlington, D. Fowler, C. W. Landsea, and C. L. Yuhas 2008: The first successful unmanned aerial system (UAS) mission into a tropical cyclone (Ophelia 2005) with preliminary UAS observations from hurricane Noel (2007). AMS 88th Annual Conference, 20-25 January 2008, New Orleans, NO.

Rogers, R.F., S.D. Aberson, M.L. Black, J. Cione, P. Dodge, J. Dunion, J. Gamache, J. Kaplan, M. Powell, N. Shay, N. Surgi, and E. Uhlhorn, 2006: The Intensity Forecasting Experiment (IFEX): A NOAA Multi-year Field Program for Improving Tropical Cyclone Intensity Forecasts. *Bull. Amer. Meteor. Soc.*, **87**, 1537.

Aberson, S.D., M.L. Black, R.A. Black, R.W. Burpee, J.J. Cione, C.W. Landsea, and F.D. Marks 2006: Thirty years of tropical cyclone research with the NOAA P-3 aircraft. *Bull. Amer. Meteor. Soc.*, **87**(8): 1039-1055 1537.

Fitzpatrick, P.J., Q. Xiao, G.Holland, Y.Kuo, and J.Cione 2006: Analysis of Hurricanes Using Unmanned Aircraft Systems (UAS) and COSMIC Satellite Data. 11th Symposium on Integrated Observing and Assimilation Systems for the Atmosphere, Oceans, and Land Surface AMS Conference on Coastal Oceanic and Atmospheric Prediction; San Antonio, Texas, 14-18 January 2007.

Cione, J.J., J. Kaplan, C. Gentemann and M DeMaria 2005: Developing an Inner-Core SST Cooling Predictor for Use in SHIPS. Session on funded projects from NOAA's Joint Hurricane Testbed, 59th Interdepartmental Hurricane Conference, March 1-7, 2005, Jacksonville, FL.

Cione, J.J. and E. W. Uhlhorn 2004: Atmospheric boundary layer and upper-ocean observations in Hurricane Lili (2002). 26th Conference on Hurricanes and Tropical Meteorology, May 3-7 2004, Miami, FL.

Cione, J.J., J. Kaplan, C. Gentemann and M DeMaria 2004: Developing an Inner-Core SST Cooling Predictor for Use in SHIPS, Session on funded projects from NOAA's Joint Hurricane Testbed, 58th Interdepartmental Hurricane Conference, March 1-5, 2004, Charleston, SC.

Cione, J.J., and E. W. Uhlhorn 2003: Sea surface temperature variability in hurricanes: Implications with respect to intensity change. *Mon. Wea. Rev.*, **131**: 1783-1796.

Cione, J.J. and E.W. Uhlhorn 2003: Hurricane intensity and storm-cooled sea. Spotlight Article. *Bull. Amer. Met Soc.*, **84**..

Cione, J.J. and E. W. Uhlhorn 2001: Upper ocean heat content and energy extracted by the storm: An analytical look. Preprint from the 25th Conference on Hurricanes and Tropical Meteorology, 29 April- 3 May 2002, San Diego, CA.

Uhlhorn, E.W. and J. J. Cione 2001: Real-time simulation of hurricane inner-core ocean cooling as a gauge for intensity change. Preprint from the 25th Conference on Hurricanes and Tropical Meteorology, 29 April - 3 May 2002, San Diego CA.

Cione, J.J., P. J. Black and S. Houston 2000: Surface observations in the hurricane environment. *Mon. Wea. Rev.*, **128**: 1550-1561.

Cione, J.J., P. Molina, J. Kaplan and P. G. Black 2000: SST time series directly under Tropical Cyclones: Observations and implications. Preprint from the 24th Conference on Hurricanes and Tropical Meteorology, 29 May - 2 June 2000, Fort Lauderdale, FL.

Cione, J.J., E.. W. Uhlhorn and P. G. Black 2000: Atmospheric boundary layer and upper ocean structure in Hurricane Erika (1997). Preprint from the 24th Conference on Hurricanes and Tropical Meteorology, 29 May - 2 June 2000, Fort Lauderdale, FL.

Uhlhorn, E. W., P. G. Black, L. K. Shay, J. J. Cione, S. D. Jacob and G. Goni 2000: Warm core ocean features in the central and eastern Gulf of Mexico. Preprint from the 24th Conference on Hurricanes and Tropical Meteorology, 29 May - 2 June 2000, Fort Lauderdale, FL

Shay, L. K., G. Goni, P. G. Black, S. D. Jacob, J. J. Cione and E. W. Uhlhorn 2000: Global analogues of deep warm upper ocean layers: Hurricane heat potential estimates. Preprint from the 24th Conference on Hurricanes and Tropical Meteorology, 29 May - 2 June 2000, Fort Lauderdale, FL.

Goni, G. J, L. K. Shay, G. J. Goni, P. G. Black, S. D. Jacob, T. M. Cook, J. J. Cione and E. W. Uhlhorn 2000: Role of the upper ocean structure on the intensification of hurricane Bret (1999) from satellite altimetry. Preprint from the 24th Conference on Hurricanes and Tropical Meteorology, 29 May - 2 June 2000, Fort Lauderdale, FL.

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Parrish, J. R., M. L. Black, S. H. Houston, P.P Dodge and J. J. Cione 2000: The structure of Hurricane Irene (1999) over South Florida. Preprint from the 24th Conference on Hurricanes and Tropical Meteorology, 29 May - 2 June 2000, Fort Lauderdale, FL

Cook, T. M, L. K. Shay, P. G. Black, G. J. Goni, M. M. Huber, S. D. Jacob and J. J. Cione 2000: Coupled air-sea interactions during Hurricane Bonnie (1998).. Preprint from the 24th Conference on Hurricanes and Tropical Meteorology, 29 May - 2 June 2000, Fort Lauderdale, FL

Cione, J.J., P. Black, S. Houston and S. Feuer 1999: Cooling and drying within the hurricane near surface environment? Preprint from the AMS Conference on Tropical Meteorology and Hurricanes; Dallas, Texas, 11-15 January 1999.

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Shay, L., G. Goni, F. Marks, J. Cione and P. Black 1998: Role of warm ocean features on intensity change. Preprint from the Conference on Tropical Cyclone Intensity Change; Phoenix, Arizona, 11-16 January 1998.

Niyogi, D. S., J. Cione, S. Raman 1998: Gulf Stream influence on the North Carolina meso-climate. Preprint from the Second Conference on Coastal Atmospheric and Oceanic Prediction and Processes; Phoenix, Arizona, 11-16 January 1998.

Black, P., S. Houston, J. Cione and M. Hopkins 1997: Analysis of air-deployed drifting buoys in hurricane Fran over the eastern Atlantic in 1996. 51st Interdepartmental Hurricane Conference, OFCM; Miami, Florida, March 1997.

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Cione, J.J., and S. Raman, 1995: A numerical investigation of surface-induced mesocyclogenesis near the Gulf Stream. *Tellus*, **47A**, 815-833.

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Cione, J.J., and S. Raman, 1994: Two-dimensional numerical simulations of Gulf Stream-enhanced offshore cold advection. Preprint from the Sixth Conference on Mesoscale Processes; Portland, Oregon, 18-22 July 1994, 270-273.

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