# ***Joseph J. Cione***

Hurricane Research Division / National Center for Atmospheric Research

Miami Florida / Boulder, Colorado

305.213.0886 Joe.Cione@Noaa.gov

## Education:

**Ph.D, 1996, NC State University, Meteorology** *(concentration in oceanography)*

 *- Diabatic forcing in association with East Coast winter cyclogenesis*

 *- Gulf Stream propagation and dynamics*

Employment:

**Lead Meteorologist, New Technologies** *(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-)*

***NEOTAC*** *(NEw Observational Technologies and Advanced Conops) Lead (2020-)*

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-)

Field Work:

#### 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)*

Communications*:*

#### 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*

Awards/Inventions*:*

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

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

# *For conducting the 1st air-deployed UAS mission into a hurricane using NOAA aircraft*

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

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

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

 *1st Meteorologist appointed as a National Sea Grant Fellow*

**Co-Inventor: Aquavator:** *A Kite Towed Buoy for Profiling the Marine Boundary Layer and Capturing Sea Surface Information (2021)*

## 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, sUAS NOAA/SBIR

### **2020-23 $5M** -Co-PI, PRECIP2020 (NSF),Tropical Cyclone Rapid Intensification (ONR)

 **2020-23 $6.6M** –Co-PI, UxS Saildrone Operations in TCs (NOAA)

 **2018-23 $300K** – PI, United States-Republic of Korea Joint Project Agreement (JPA)

**2021-23 $600K** –PI, sUAS, OAR/WPO sUAS Research to Operations

**2021**-**24** **$3.0M** – PI, sUAS, 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):

Wadler, J.B., J.J. Cione, J.A. Zhang, E.A. Kalina, and J. Kaplan, 2022: The Effects of Environmental Wind Shear Direction on Tropical Cyclone Boundary Layer Thermodynamics and Intensity Change from Multiple Observational Datasets. *Mon. Wea. Rev.,* **150**, 115-134, [https://doi.org/10.1175/MWR-D-21-0022.1](https://doi.org/10.1175/MWR-D-21-0022.1%22%20%5Ct%20%22_blank)

Aksoy, A., J. Cione and B. Dahl and P. D Reasor, 2022: Tropical Cyclone Data Assimilation with Coyote Uncrewed Aircraft System, Observations, Very-Frequent Cycling, and A New Online Quality Control Techneique. *Mon. Wea. Rev.* [https://doi.org/10.1175/MWR-D-21-0124.1](https://doi.org/10.1175/MWR-D-21-0124.1%22%20%5Ct%20%22_blank)

Wadler. J.B., D.S. Nolan, J.A. Zhang, L. K. Shay, J. Olson, J.J Cione, 2022: The Effect of Advection on the Distribution of Turbulent Kinetic Energy and its Generation in Idealized Tropical Cyclone Simulations, J. Adv. Model. Earth Syst. In review.

Wadler. J.B., J. J. Cione, R.F. Rogers, and M.S. Fischer, 2022: 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, In preparation for *Monthly Weather Review.*

Wadler. J.B., J. J. Cione, G. Chirokova, M. DeMaria, and S. Michlowitz, 2022: Improving the Statistical Prediction of In-Storm Sea Surface Temperature Cooling from Fixed Buoy Measurements, In preparation for *Weather and Forecasting*,

Dobosy, R., J. Zhang, J. Wadler, X. Chen, G. de Boer, G. Bryan, A. Farber, and J. Cione, 2022: On the use of small remotely piloted aircraft systems to measure tropical-cyclone momentum fluxes, J. Tech., In Review

Zhang, G, W. Perrie, B. Zhang, J. J. Cione and J. A. Zhang, 2022: Vortex Rossby Wave Signatures Detected in Tropical Cyclone Surface Wind Fields using Synthetic Aperature Radar. In preparation for *Remote Sensing of Environment.*

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. Sellwood1, 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.* [https://doi.org/10.1175/BAMS-D-20-0174.1](https://doi.org/10.1175/BAMS-D-20-0174.1%22%20%5Ct%20%22_blank)

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.*
https://doi.org/10.1175/JAS-D-20-0252.1

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. Chen2020: 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*](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](http://dx.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](https://doi.org/10.1002/2017MS000977%22%20%5Ct%20%22_blank)

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.

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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.

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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 26oC 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.

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Cione, J.J. 2012: Hurricane intensity change and inner-core SST: Warmer is not always better. AMS 30th Conference on Hurricanes and tropical Meteorology. 15-20 April 2012, Ponte Vedra, FL.

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>

Aberson, S.D., J. Cione, C-C. Wu, M.M. Bell, J. Halverson, C. Fogarty, and M. Weissmann 2010: Global Perspectives on Tropical Cyclones: From Science to Mitigation, J.C.L. Chan and J.D. Kepert (eds.). World Scientific Publishing Company, 2nd edition, 227-240, 2010.

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. Cascella, 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.

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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.

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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.

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