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Joshua Szekely Receives 2023 Larry D. Welch Award for Best External Publication

ALEXANDRIA, VA (November 2023) – Joshua Szekely received the 2023 Larry D. Welch Award for Best External Publication for "Statistical Cluster Analysis of Global Aerosol Optical Depth for Simplified Atmospheric Modeling." The article was published in the Journal of Applied Meteorology and Climatology, Vol. 61, No. 2 (February 2022): 109-128. Szekely is a research staff member in the System Evaluation Division (SED) at one of the three federally funded research and development centers operated by IDA.

IDA established the award in 2011 in honor of retired U.S. Air Force General Larry D. Welch, who was IDA's president from 1990 to 2003 and again from 2006 to 2009.

Szekely's fellow award recipients are co-authors Noah Plymale, a research staff member in SED, and Anna Rubinstein, a former SED research staff member who is now the chief of responsible AI at the National Geospatial-Intelligence Agency.

"The authors' article exemplifies General Welch's high standards of analytic excellence and relevance," said IDA President Norty Schwartz.

Atmospheric modeling is a method for measuring climate parameters and quantifying changes in atmospheric phenomena. One atmospheric modeling parameter is aerosol optical depth (AOD), which is critical to photon transmission, absorption, and scattering in the atmosphere. AOD has many applications for national security. The authors document research on the use of a data-clustering algorithm (k-means) to reduce large geographical datasets of AOD so that statistically similar clusters can be presented graphically and accessed through compact look-up tables. The work represents an innovative contribution that could facilitate analysis where approximate or typical aerosol conditions are provided in the form of simple look-up tables.

"I am honored to be a recipient of the 2023 Larry D. Welch Award for Best External Publication alongside my co-authors," said Szekely. "Many thanks are owed to the IDA community that supported and encouraged this work, recognizing its value to both the scientific community and national security."

Szekely earned his bachelor's degree in chemistry and mathematics from Ohio Northern University in 2011 and his doctoral degree in physical chemistry from Northwestern University in 2016.

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