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Education and Training

Institution	Degree	Field	Dates
Eastern Washington Univ.	B.S.	Physics	1989
University of Idaho	Ph.D.	Atomic Physics	1995

Research and Professional Experience

2019 – now	Senior Research Associate, School of Met., Univ. of Oklahoma, Norman
2004 – 2019	Staff scientist level 4, Atmospheric Sciences and Global Change, PNNL
1999 – 2004	Staff scientist level 3, Climate Physics Group, PNNL
1995 – 1999	Post-doctoral fellowship, AWU/PNNL
1990 – 1995	Graduate research assistant, University of Idaho physics department
1985 – 1989	Undergraduate research assistant, Eastern Washington Univ. physics dept
1984 – 1985	Undergraduate, Honors Dept., Washington State Univ. No major

Synergistic Activities:

1. ARM instrument mentor from 1996 to current for numerous passive and active remote sensors including ceilometers (BLC and VCeil), micropulse lidar (MPL), depolarization lidar (MPLPS, MPLPol, MPLPolFS), high spectral resolution lidars (HSRL), Fourier Transform Spectrometers (AERI, ER-AERI, AERIX, ASSIST II, ASTI, SORTI), fiber-coupled grating spectrometers (SWS, SASZe, SASHe).
2. ARM Airborne Facility instrument mentor for PSAP, TAP, STAP, and nephelometers.
3. ARM Aerosol Working Group Translator responsible for facilitating routine production of aerosol products:
 - MFRSR / NIMFR Langley calibration and cloud-screened AOD, column intensive properties
 - Bulk and intensive aerosol optical properties from ARM Aerosol Observation Systems
4. 4STAR Instrument Team 2007 to present. Contributing to design, testing, and deployment of 4STAR-Ground prototype, 4STAR, 4STARB, 2STAR, and 5STAR. PI for successful aircraft hardening efforts funded by ARM's Airborne Facility.
5. Extensive field campaign experience in every climate regime: arctic (SHEBA), temperate (ALIVE, SEAC4RS), coastal (TCAP, KORUS-AQ, ORACLES), tropical (CRYSTAL FACE, TWP-ICE), desert (Niamey, Namibia), marine (MAGIC, ORACLES), and from wide ranging platforms: ground-based (many), ship-borne (Des Groslier Canadian icebreaker, Southern Surveyor Australian BOM), and airborne (DOE G-1, NASA DC8, C130, P-3).
6. Instrument design:
 - Designed and deployed lidar systems including polarized micropulse lidar (commercialized and routinely deployed worldwide), and a dual-polarization scanning elastic backscatter lidar deployed at Crystal FACE (2002), at MPACE (2004), and at TWP-ICE (2006).
 - Contributed to design of 4STAR sun and sky collectors for ground and air.

- Designed and deployed grating Solar Array Spectrometer systems for ARM composed of zenith radiance and solar irradiance (diffuse and direct components) from 350 – 1700 nm.

Bibliography >50 peer-reviewed journal articles (2 first-authored)

- Zuidema P., A. Sedlacek, **C. Flynn**, S.R. Springston, R. Delgado, J. Zhang, and A.C. Aiken, et al. 2018. "The Ascension Island boundary Layer in the remote southeast Atlantic is often smoky." *Geophysical Research Letters* 45, no. 9:4456-4465. PNNL-SA-131497. doi:10.1002/2017GL076926
- Silber I, J Verlinde, E Eloranta, **C Flynn**, and D Flynn. 2018. "Polar liquid cloud base detection algorithms for high spectral resolution or micropulse lidar data." *Journal of Geophysical Research: Atmospheres*, , 10.1029/2017JD027840.
- Kassianov E.I., E.A. Riley, J. Kleiss, C.N. Long, L.D. Riihimaki, D.M. Flynn, and **C. Flynn**, et al. 2017. "Macrophysical properties of continental cumulus clouds from active and passive remote sensing." In *Remote Sensing of Clouds and the Atmosphere XXII*, September 11-14, 2017, Warsaw, Poland. Proceedings of the SPIE, edited by A Comeran, EI Kassianov and K Schafer, 10424, Paper No.104240A. Bellingham, Washington:SPIE. PNNL-SA-128406.doi:10.1117/12.2278029
- Randles CA, AM da Silva, V Buchard, PR Colarco, A Darmanov, R Govindaraju, A Smirnov, B Holben, R Ferrare, J Hair, Y Shinozuka, and **CJ Flynn**. 2017. "The MERRA-2 Aerosol Reanalysis, 1980 – Onward, Part I: System Description and Data Assimilation Evaluation." *Journal of Climate*. 30(17). 6823–6850. DOI:10.1175/JCLI-D-16-0609.1. Published 9/2017, PNNL-SA-125181
- Kassianov E, J Barnard, **C Flynn**, L Riihimaki, L Berg, and D Rutan. 2017. "Areal-Averaged Spectral Surface Albedo in an Atlantic Coastal Area: Estimation from Ground-Based Transmission." *Atmosphere*. 8(7). 123. DOI:10.3390/atmos8070123. Published 7/12/2017, PNNL-SA-124561
- Kassianov E., MS Pekour, **CJ Flynn**, LK Berg, et al., Large Contribution of Coarse Mode to Aerosol Microphysical and Optical Properties: Evidence from Ground-based Observations of a Trans-Pacific Dust Outbreak at a High-Elevation North American Site, *J. Atmos. Sci.*, JAS-D-16-0256.1, 2017.04.17
- Yang, W, A Marshak, PJ McBride, JC Chiu, Y Knyazikhin, KS Schmidt, **C Flynn**, ER Lewis, EW Eloranta, Observation of the spectrally invariant properties of clouds in cloudy-to-clear transition zones during the MAGIC field campaign. *Atmospheric Research*, 182, 294-301, DOI:10.1016/j.atmosres.2016.08.004. Published December 15, 2016; PNNL-SA-121739
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- Kassianov E., **CJ Flynn**, JC Barnard, LK Berg, "New Shortwave Array Spectroradiometer-Hemispheric (SAS-He): Hyperspectral Design and Initial Applications." *Proceedings of the SPIE* (accepted) 2016b
- Segal-Rosenheimer, M., R.R. Johnson, **C.J. Flynn**, P.B. Russell, B. Schmid, J. Redemann, J.M. Livingston, S.E. Dunagan, Shinozuka, Y., Herman, J., A. Cede, N. Abuhassan, J.M. Comstock, J.M. Hubbe, Zelenyuk, A., Wilson, J., Tracking Elevated Pollution Layers with a Newly Deployed Hyperspectral Sunphotometer (4STAR): Results from TCAP 2012-13 Campaign, *J. Geophys. Res.*, 2014
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- Kassianov E., **C.J. Flynn**, A.S. Koontz, C. Sivaraman, J Barnard, Failure and Redemption of Multifilter Rotating Shadowband Radiometer (MFRSR)/Normal Incidence Multifilter Radiometer (NIMFR) Cloud Screening: Contrasting Algorithm Performance at Atmospheric Radiation

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