PERSONAL DATA:

Nicolas Fougere
Dassault Systemes
Tel: 1-774-556-3974
Email: nicolas.fougere@3ds.com
ORCID: 0000-0001-9626-004X
Linkedin: https://www.linkedin.com/in/nicolas-fougere/
Google Scholar: https://scholar.google.com/citations?user=55HOv74AAAAJ&hl=en

EDUCATION

- Ph.D. (Space Sciences), University of Michigan, Ann Arbor, MI, 2014
- MSE (Industrial and Operations Engineering), University of Michigan, Ann Arbor, MI, 2014
- MSE (Space Sciences), University of Michigan, Ann Arbor, MI, 2010
- MSE (Aeronautical & Aerospace Engineering), ISAE-Supaero, Toulouse, 2010

HONORS/AWARDS

- National Aerodynamics and Space Administration (NASA), Group Achievement Award for developing data analysis and modeling tools that merged data from many instruments on the Rosetta mission
- European Space Agency (ESA), Certificate in Recognition for Outstanding Contribution to the ESA Roesetta Mission

PROFESSIONAL EXPERIENCE

- 2026 – Present, Senior Manager Role Portfolio, Dassault Systemes, Royal Oak, MI
- 2019 – 2026, Manager Solution Consultant, Dassault Systemes, Royal Oak, MI
- 2019, Solution Consultant, Dassault Systemes, Livonia, MI
- 2018, Senior Aplication Engineer, Exa Corporation, Livonia, MI
- 2017 – 2018, Application Engineer, Exa Corporation, Livonia, MI
- 2014 – 2017, Research Fellow, University of Michigan, Climate and Space Sciences and Engineering, Ann Arbor, MI
- 2010 – 2014, Graduate Student Research Assistant, University of Michigan, Department of Atmospheric Oceanic and Space Sciences, University of Michigan, Ann Arbor, MI

PEER REVIEWED PUBLICATIONS & CONFERENCE PRESENTATIONS (Last updated June 2026):

2026

1. Sondak D, Fougere N, Higgins J, Jammalamadaka A, Laskowski G, Bi J, et al. Accelerating Design Space Exploration of Film Cooling with Parametric Machine Learning Based on High-Fidelity CFD. In: AIAA SCITECH 2026 Forum. 2026. p. 1966.

2. Higgins J, Fougere N, Sondak D, Senthooran S, Moron P, Jantzen A, et al. Machine Learning-Based Prediction of Wind-Induced Interior Noise in Ground Vehicles. In: WCX SAE World Congress Experience 370157. 2026.

2025

3. Shou Y, Combi M, Feaga L, Tenishev V, Farnham T, Fougere N. Surface activity of H2O and CO2 on comet 103P/Hartley2 derived from EPOXI/HRI images. Icarus. 2025;435:116557.

4. Rajagopal A, Wu J, Tio RS, Fougere N, Fager A, Bedairi BH, et al. Simulation of Erosive Effects on Part Durability and Fitness for Service. In: MECC. https://doi.org/10.5006/M2025_00728; 2025. p. 1–21.

5. Ihi R, Fougere N, Passador S, Woo S, Kim J, Desouky M. Flow-Induced Noise Prediction and Validation of a Heavy-Duty Electric Vehicle's HVAC System Using the Lattice Boltzmann Method. 2025.

6. Higgins J, Ngo Ngoc C, Fougere N, Hesse F, Oancea V, Sondak D. Transformer-based Prediction of Vehicle Aerodynamics. In: FKFS Conference on Vehicle Aerodynamics and Thermal Management. 2025.

7. Guleria A, Novacek J, Ihi R, Fougere N, Dasarathan D. Validation of Wind Noise for Class-8 Truck Using Lattice Boltzmann Method. SAE International Journal of Commercial Vehicles. 2025;18(02-18-03–0021).

8. DeMeo M, Parenti G, Martinez Navarro A, Shock R, Fougere N, Razi P, et al. Consistent Drag Prediction with CFD for a Vehicle with Bimodal Wake Cycling. In: WCX SAE World Congress Experience 288445. 2025.

2024

9. Rajagopal A, Higgins J, Fougere N. Machine Learning-Based Surrogate Model in Centrifugal Pump Design. In: Society of Petroleum Engineers - Gulf Coast Section. 2024.

10. Fougere N, DeMeo M, Tuit Farquhar H, Oliveira D, Nastov A. Transient Aerodynamics Simulations of a Passenger Vehicle during Deployment of Rear Spoiler. In: WCX SAE World Congress Experience 288443. 2024.

2023

11. Sbeih K, Guzman A, Barrera Garcia D, Fougere N, Jeyasingham S, Shock R, et al. Accurate automotive spinning wheel predictions via deformed treaded tire on a full vehicle compared to full width moving belt wind tunnel results. In: WCX SAE World Congress Experience 288442. 2023.

12. Nagarajan V, Fougere N, Schechter-Perkins EM, Baker WE, Mann A, Jilesen J, et al. Predicting Contamination Spread Inside a Hospital Breakroom with Multiple Occupants Using High Fidelity Computational Fluid Dynamics Simulation on a Virtual Twin. Sustainability. 2023;15(15):11804.

2021

13. Tenishev V, Shou Y, Borovikov D, Lee Y, Fougere N, Michael A, et al. Application of the Monte Carlo method in modeling dusty gas, dust in plasma, and energetic ions in planetary, magnetospheric, and heliospheric environments. Journal of Geophysical Research: Space Physics. 2021;126(2):e2020JA028242.

14. Shou Y, Combi M, Fougere N, Migliorini A, Fink U, Bockelee-Morvan D, et al. Determining the volatile surface activity of comet 67P/CG from Rosetta remote sensing measurements. In: AAS/Division for Planetary Sciences Meeting Abstracts# 53. 2021. p. 210–1.

15. Khan Y, Gibb EL, Bonev BP, Roth NX, Saki M, DiSanti MA, et al. Testing short-term variability and sampling of primary volatiles in comet 46p/wirtanen. The Planetary Science Journal. 2021;2(1):20.

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16. Shou Y, Combi MR, Fougere N, Tenishev V, Migliorini A, Fink U, et al. Determining the volatile surface activity of comet 67P/CG from Rosetta remote sensing measurements. In: AGU Fall Meeting Abstracts. 2020. p. P035-0007.

17. Shou Y, Combi M, Feaga L, Tenishev V, Fougere N, Farnham T. Determining the potential surface activity distribution and surface production rates of H2O and CO2 on Hartley 2. In: AAS/Division for Planetary Sciences Meeting Abstracts. 2020. p. 511–01.

18. Roth NX, Gibb EL, Bonev BP, DiSanti MA, Russo ND, McKay AJ, et al. Probing the evolutionary history of comets: an investigation of the hypervolatiles CO, CH4, and C2H6 in the Jupiter-family Comet 21P/Giacobini–Zinner. The Astronomical Journal. 2020;159(2):42.

19. Mayyasi M, Clarke J, Combi M, Fougere N, Quemerais E, Katushkina O, et al. Ly α Observations of Comet C/2013 A1 (Siding Spring) Using MAVEN IUVS Echelle. The Astronomical Journal. 2020;160(1):10.

20. Combi M, Shou Y, Fougere N, Tenishev V, Altwegg K, Rubin M, et al. The surface distributions of the production of the major volatile species, H2O, CO2, CO and O2, from the nucleus of comet 67P/Churyumov-Gerasimenko throughout the Rosetta Mission as measured by the ROSINA double focusing mass spectrometer. Icarus. 2020;335:113421.

2019

21. Gibb E, Roth N, Bonev B, DiSanti M, Dello Russo N, Vervack R, et al. Volatile Compositions of Short Period Comets 2P/Encke and 21P/Giacobini-Zinner Across Apparitions. In: EPSC-DPS Joint Meeting 2019. 2019. p. EPSC-DPS2019.

2018

22. Ivanovski S, Rotundi A, Rubin M, Fougere N, Fulle M, Della Corte V, et al. Non-spherical dust dynamics in the 67P/Churyumov-Gerasimenko coma constrained by GIADA and ROSINA data. 42nd COSPAR Scientific Assembly. 2018;42:B1-1.

23. Huang Z, Tóth G, Gombosi T, Jia X, Combi M, Hansen K, et al. Hall effect in the coma of 67P/Churyumov–Gerasimenko. Monthly Notices of the Royal Astronomical Society. 2018;475(2):2835–41.

2017

24. Tenishev V, Fougere N, Rubin M, Tzou C, Combi MR, Altwegg K, et al. End-of-mission ROSINA/COPS measurements as a probe of the innermost coma of comet 67P/Churyumov-Gerasimenko. In: AGU Fall Meeting Abstracts. 2017. p. P51D-2634.

25. Tenishev V, Combi MR, Fougere N, Rubin M, Tzou CY, Shou Y, et al. Analysis of the ROSINA/COPS end-of-mission measurements of the coma of comet 67P/Churyumov-Gerasimenko. In: AAS/Division for Planetary Sciences Meeting Abstracts# 49. 2017. p. 509–05.

26. Shou Y, Combi MR, Tenishev V, Toth G, Hansen KC, Huang Z, et al. A new hybrid particle/fluid model for cometary dust. In: AGU Fall Meeting Abstracts. 2017. p. P51D-2641.

27. Shou Y, Combi M, Toth G, Tenishev V, Fougere N, Jia X, et al. A New 3D Multi-fluid Dust Model: A Study of the Effects of Activity and Nucleus Rotation on Dust Grain Behavior at Comet 67P/Churyumov–Gerasimenko. The Astrophysical Journal. 2017;850(1):72.

28. Shinnaka Y, Fougere N, Kawakita H, Kameda S, Combi MR, Ikezawa S, et al. Imaging observations of the hydrogen coma of comet 67P/Churyumov–Gerasimenko in 2015 September by the Procyon/Laica. The Astronomical Journal. 2017;153(2):76.

29. Mayyasi M, Clarke J, Combi M, Fougere N, Quemerais E, Katushkina O, et al. Constraining the Water Production Rate and Impact on Mars' Ionosphere of Comet Siding Spring. Icarus. 2017;237:202–10.

30. Knight MM, Weaver HA, Vervack RJ, A'Hearn M, Bertaux JL, Feaga LM, et al. Spatial and Temporal Variations of Atomic Species in the Coma of Comet 67P/Churyumov-Gerasimenko as Observed by Rosetta's ALICE UV Spectrograph during Great Circle Scans. In: AAS/Division for Planetary Sciences Meeting Abstracts# 49. 2017. p. 509–04.

31. Ivanovski SL, Della Corte V, Rotundi A, Fulle M, Fougere N, Bieler A, et al. Dynamics of non-spherical dust in the coma of 67P/Churyumov–Gerasimenko constrained by GIADA and ROSINA data. Monthly Notices of the Royal Astronomical Society. 2017;469(Suppl_2):S774–86.

32. Ivanovski S, Della Corte V, Rotundi A, Fulle M, Fougere N, Bieler A, et al. The 67P/Churyumov Gerasimenko Dusty Coma Analysed with Aspherical Dust Dynamical Simulations Constrained by GIADA Measurements in February and March 2015. LPI CONTRIBUTION. 2017.

33. Huang Z, Toth G, Gombosi TI, Jia X, Hansen KC, Combi MR, et al. Five-moment multi-fluid plasma simulation for comet 67P/Churyumov-Gerasimenko. In: AGU Fall Meeting Abstracts. 2017. p. P51D-2629.

34. Hoang M, Garnier P, Lasue J, Reme H, Altwegg K, Balsiger HR, et al. 2 years with comet 67P/Churyumov-Gerasimenko: H 2 O, CO 2, CO as seen by ROSINA RTOF. In: AGU Fall Meeting Abstracts. 2017. p. P51D-2630.

35. Hoang M, Altwegg K, Balsiger H, Beth A, Bieler A, Calmonte U, et al. The heterogeneous coma of comet 67P/Churyumov-Gerasimenko as seen by ROSINA: H2O, CO2, and CO from September 2014 to February 2016. Astronomy & Astrophysics. 2017;600:A77.

36. Heritier KL, Altwegg K, Balsiger H, Berthelier JJ, Beth A, Bieler A, et al. Ion composition at comet 67P near perihelion: Rosetta observations and model-based interpretation. Monthly Notices of the Royal Astronomical Society. 2017;469(Suppl_2):S427–42.

37. Hansen KC, Altwegg K, Berthelier JJ, Combi MR, De Keyser J, Fiethe B, et al. Gas Production at Comet 67P/Churyumov-Gerasimenko as Measured by the ROSINA Instrument: Long Term Trends and Correlations with H 2 O and CO 2. In: AGU Fall Meeting Abstracts. 2017. p. P54D-03.

38. Gicquel A, Rose M, Vincent JB, Davidsson B, Bodewits D, A'Hearn MF, et al. Modelling of the outburst on 2015 July 29 observed with OSIRIS cameras in the Southern hemisphere of comet 67P/Churyumov–Gerasimenko. Monthly Notices of the Royal Astronomical Society. 2017;469(Suppl_2):S178–85.

39. Gicquel A, Rose M, Vincent JB, Davidsson B, Bodewits D, Hearn M, et al. Modeling of the outburst on July 29th, 2015 observed with OSIRIS cameras in the southern hemisphere of comet 67P/Churyumov-Gerasimenko. arXiv preprint arXiv:170602729. 2017.

40. Fougere N, Combi MR, Tenishev V, Migliorini A, Bockelée-Morvan D, Fink U, et al. Surface Activity Distributions of Comet 67P/Churyumov-Gerasimenko Derived from VIRTIS Images. In: AGU Fall Meeting Abstracts. 2017. p. P51D-2642.

41. Bonev BP, DiSanti MA, Roth N, Dello Russo N, Vervack RJ, Gibb EL, et al. The Inner Coma Physical Environments of Ecliptic Comets 45P/Honda-Mrkos-Pajdusakova, 2P/Encke, and 41P/Tuttle-Giacobini-Kresak Revealed Through Long-Slit Spectroscopy at NASA IRTF. In: AAS/Division for Planetary Sciences Meeting Abstracts# 49. 2017. p. 414–06.

42. Blum J, Gundlach B, Krause M, Fulle M, Johansen A, Agarwal J, et al. Evidence for the formation of comet 67P/Churyumov-Gerasimenko through gravitational collapse of a bound clump of pebbles. Monthly Notices of the Royal Astronomical Society. 2017;469(Suppl_2):S755–73.

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43. Tenishev V, Fougere N, Borovikov D, Combi M, Bieler A, Hansen K, et al. Analysis of the dust jet imaged by Rosetta VIRTIS-M in the coma of comet 67P/Churyumov-Gerasimenko on April 12, 2015. Monthly Notices of the Royal Astronomical Society. 2016;stw2793.

44. Shou Y, Combi MR, Toth G, Fougere N, Tenishev V, Huang Z, et al. A new 3D multi-fluid dust model: a study of the effects of activity and nucleus rotation on the dust grains' behavior in the cometary environment. In: AGU Fall Meeting Abstracts. 2016. p. P43A-2099.

45. Shou Y, Combi M, Toth G, Tenishev V, Fougere N, Jia X, et al. A new 3D multi-fluid model: A study of kinetic effects and variations of physical conditions in the cometary coma. The Astrophysical Journal. 2016;833(2):160.

46. Rubin M, Toth G, Tenishev V, Fougere N, Huang Z. The interaction between the solar wind and the heterogeneous neutral gas coma of comet 67P/Churyumov-Gerasimenko. 41st COSPAR Scientific Assembly. 2016;41:C3-2.

47. Rinaldi G, Fink U, Doose L, Tozzi G, Capaccioni F, Filacchione G, et al. Properties of the dust in the coma of 67P/Churyumov–Gerasimenko observed with VIRTIS-M. Monthly Notices of the Royal Astronomical Society. 2016;462(Suppl_1):S547–61.

48. Migliorini A, Piccioni G, Capaccioni F, Filacchione G, Bockelée-Morvan D, Erard S, et al. Water and carbon dioxide distribution in the 67P/Churyumov-Gerasimenko coma from VIRTIS-M infrared observations. Astronomy & Astrophysics. 2016;589:A45.

49. Migliorini A, Filacchione G, De Sanctis MC, Capaccioni F, Piccioni G, Bockelée-Morvan D, et al. Relationship between inner coma water emissions and ice deposits in comet 67P/Churyumov-Gerasimenko. In: EGU General Assembly Conference Abstracts. 2016. p. EPSC2016-7911.

50. Migliorini A, Filacchione G, Capaccioni F, Piccioni G, Bockelee-Morvan D, Érard S, et al. Investigating the correlations between water coma emissions and active regions in comet 67P/Churyumov-Gerasimenko. In: AAS/Division for Planetary Sciences Meeting Abstracts# 48. 2016. p. 206–8.

51. Migliorini A, Filacchione G, Capaccioni F, Piccioni G, Bockelee-Morvan D, Erard S, et al. CN and OH emissions in the 67P/Churyumov-Gerasimenko coma with Rosetta/VIRTIS-M spectrometer. In: Comets Symposium: A new vision after Rosetta and Philae. 2016. p. 5.

52. Huang Z, Toth G, Gombosi T, Bieler A, Combi MR, Hansen KC, et al. A Possible Mechanism for the Formation of Magnetic Field Dropouts Observed by RPC-MAG in the Inner Coma of Comet 67P/Churyumov-Gerasimenko. In: AAS/Division for Planetary Sciences Meeting Abstracts# 48. 2016. p. 116–20.

53. Huang Z, Toth G, Gombosi TI, Bieler AM, Combi MR, Hansen KC, et al. Increased electron pressure as possible origin of magnetic field dropouts observed by RPC-MAG of comet 67P/Churyumov-Gerasimenko. In: AGU Fall Meeting Abstracts. 2016. p. P43A-2091.

54. Huang Z, Tóth G, Gombosi TI, Jia X, Rubin M, Fougere N, et al. Four-fluid MHD simulations of the plasma and neutral gas environment of comet 67P/Churyumov-Gerasimenko near perihelion. Journal of Geophysical Research: Space Physics. 2016;121(5):4247–68.

55. Huang Z, Tóth G, Gombosi T, Bieler A, Combi M, Hansen K, et al. A possible mechanism for the formation of magnetic field dropouts in the coma of 67P/Churyumov–Gerasimenko. Monthly Notices of the Royal Astronomical Society. 2016;462(Suppl_1):S468–75.

56. Hansen KC, Altwegg K, Bieler A, Berthelier JJ, Calmonte U, Combi MR, et al. An empirical model of H 2 O, CO 2 and CO coma distributions and production rates for comet 67P/Churyumov-Gerasimenko based on ROSINA/DFMS measurements and AMPS-DSMC simulations. In: AAS/Division for Planetary Sciences Meeting Abstracts# 48. 2016. p. 116–23.

57. Hansen KC, Altwegg K, Berthelier JJ, Bieler A, Biver N, Bockelée-Morvan D, et al. Evolution of water production of 67P/Churyumov–Gerasimenko: an empirical model and a multi-instrument study. Monthly Notices of the Royal Astronomical Society. 2016;462(Suppl_1):S491–506.

58. Hansen K, Altwegg K, Berthelier JJ, Bieler A, Calmonte U, Combi M, et al. Pre-and Post-equinox ROSINA production rates calculated using a realistic empirical coma model derived from AMPS-DSMC simulations of comet 67P/Churyumov-Gerasimenko. In: EGU General Assembly Conference Abstracts. 2016. p. EPSC2016-17905.

59. Fougere N, Berthelier JJ, Bieler A, Bockelee-Morvan D, Calmonte U, Capaccioni F, et al. Direct Simulation Monte-Carlo Modeling of the Major Volatile Species of Comet 67P/Churyumov-Gerasimenko observed by ROSINA and VIRTIS. In: AAS/Division for Planetary Sciences Meeting Abstracts# 48. 2016. p. 116–10.

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Gerasimenko observed by the VIRTIS and ROSINA instruments on board Rosetta. Astronomy and Astrophysics. 2016;588:A134.

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63. Fougere N, Altwegg K, Berthelier JJ, Bieler A, Bockelée-Morvan D, Calmonte U, et al. Direct simulation Monte Carlo modelling of the major species in the coma of comet 67P/Churyumov-Gerasimenko. Monthly Notices of the Royal Astronomical Society. 2016;462(Suppl_1):S156–69.

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65. Fink U, Doose L, Rinaldi G, Bieler A, Capaccioni F, Bockelée-Morvan D, et al. Investigation into the disparate origin of CO2 and H2O outgassing for Comet 67/P. Icarus. 2016;277:78–97.

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2015

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71. Ivanovski SL, Zakharov V, Della Corte V, Rotundi A, Crifo JF, Fulle M, et al. Near Nucleus Dust Coma Analysis on the Base of In Situ GIADA Observations and Aspherical Dust Grain Model. In: AGU Fall Meeting Abstracts. 2015. p. P31E-2111.

72. Hansen KC, Fougere N, Bieler AM, Altwegg K, Combi MR, Gombosi TI, et al. Combining DSMC Simulations and ROSINA/COPS Data of Comet 67P/Churyumov-Gerasimenko to Develop a Realistic Empirical Coma Model and to Determine Accurate Production Rates. In: AGU Fall Meeting Abstracts. 2015. p. P31E-2104.

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2014

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