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Relevant experience

Mike Wong is a planetary scientist focusing on planetary atmospheres and origins, with appointments at UC Berkeley, the SETI Institute, and University of Michigan. His dissertation on data from the Galileo probe mass spectrometer launched his interest in cloud-forming gases in Jupiter's atmosphere. He discovered the signature of ammonia ice in Jupiter's thermal spectrum with Gordon Bjoraker and the Cassini/CIRS team. Asteroid (27400) Mikewong was named for his contributions to studies of Jupiter Trojans Hektor and Patroclus, and impacts on Jupiter. Mike Wong is a Juno Participating Scientist (studying Jupiter's lightning, convection, and volatiles); a Mars Science Laboratory Collaborator (studying dynamic atmospheric composition with *in-situ* data from SAM and REMS); and a founding member of the multi-cycle OPAL program that conducts annual observations of the giant planets with Hubble. He is a member of the Space Telescope Users' Committee, and he served as a 2023–2032 Decadal Survey panelist.

Professional experience and education

Advisory service: NASEM Planetary/Astrobiology Decadal Survey (Giant Planet Systems panelist, 2020–2022). HST (Space Telescope Users Committee, 2021+). NASA PDS (Planetary Atmospheres Node AG member, 2021+). Thirty Meter Telescope (Solar System ISDT Convener; IRIS Science Team member, 2014+). Keck/UC Observatories (Adaptive Optics Task Force; Liger Science Team). Review panelist: NASA planetary & exoplanet programs, NSF graduate fellowships, telescope time allocation at Hubble, Keck, Gemini, JWST, and IRTF.

Associate Researcher (July 2016–present), **Assistant Researcher** and other research titles (Sept. 2003–June 2016), **Lecturer** (2004–2005, 2007–2008). UCB Astronomy Department and Center for Integrative Planetary Science.

Research Scientist (2010–present) SETI Institute, Carl Sagan Center for Research. **Juno Participating Scientist** (2019–present) Microwave Radiometer (MWR) science team, Atmospheric Working Group.

Visiting Research Scientist (Mar 2012–Aug 2014) University of Michigan, Department of Atmospheric, Oceanic, and Space Sciences. **MSL Collaborator** (Mar 2012–present) Sample Analysis at Mars instrument suite.

Visiting Scientist (Feb 2009– Feb 2010) Space Telescope Science Institute.

National Research Council Research Associate (May 2001–July 2003) NASA Goddard Space Flight Center.

Ph.D. and M.S. in Atmospheric and Space Sciences (April 2001, June 1998) University of Michigan, Ann Arbor.
A.B. in Astrophysics (May 1994) University of California, Berkeley (with honors).

Scientific, technical, and management performance

Research program leadership. Produced publications and performance reports as PI (and institutional PI) of several NASA grants (NASA JunoPS, SSW, OPR, CDAPS, SSO, PSDS3; STScI HST-GO, HST-AR). Current PI of Juno-supporting observing/research programs (HST, Gemini) and Neptune observing programs (HST).

Student research mentor. Coached three papers first-authored by student mentees (2010, 2017, 2019), and managed student contributions to many other publications (2004–present).

Book editor. Managed contributions from 48 scientists and engineers to produce the first on-orbit edition of the *WFC3 Instrument Handbook* (2010). Also produced technical reports (ISRs and a TIR) at STScI on WFC3/UVIS instrument calibration (2009–2010).

Instrument/mission/observatory/proposal/study teams. Performed science advising, research, operations, and calibration tasks: Thirty-Meter Telescope (ISDT, 2014+), TMT IRIS instrument (Science Team, 2015+). SNAP mini Uranus probe (NASA-PSDS3 2016). NASA Juno (Participating Scientist, MWR and JunoCam teams, 2019+). NASA Mars Science Laboratory (SAM and REMS Collaborator, ENV Science Theme Lead, 2012+). NASA-ESA HST (WFC3 Instrument Team, 2009–2010). Solar system space telescope concepts (NASA DSCME 2007, Discovery 2014, PMCS 2018). Cassini CIRS (NRC Postdoc, 2001–2003). Galileo Probe Mass Spectrometer (NASA-GSRP, 1995–2001). Science team member for NASA New Frontiers proposals (2022+).

Awards

IAU designation of main belt asteroid 2000 EE106 as (27400) Mikewong. "Mike Wong (b. 1971) is a planetary scientist at the University of California at Berkeley who studies giant planets in the Solar System. He is part of the team that discovered a moon around asteroid (624) Hektor, and he studied a 2009 impact on Jupiter while monitoring of the atmosphere with adaptive optics." *WGSBN Bulletin* 1, 2.

RHG Exceptional Achievement for Science Team Award (2017 May 4) Presented by NASA to the Hubble Outer Planet Atmospheres Legacy (OPAL) team, "For designing a dedicated outer-planet observing program that allows long-term study, enables new discoveries, and enhances the lasting legacy of the Hubble Space Telescope." (Group award)

Group Achievement Award (2017 June 15) Presented by NASA to the MSL Extended Mission 1 Science and Operations Team, "For exceptional technical innovations and execution of rover surface operations leading to numerous, profound new discoveries about the ancient climate and habitability of Mars." (Group award)

Group Achievement Award (2013 Oct 10) Presented by NASA to the MSL SAM Instrument Development and Science Team, "For exceptional achievement defining SAM's scientific goals and requirements, developing the instrument suite and investigation, and operating SAM successfully on Mars." (Group award)

Group Achievement Award (2010) Presented by NASA, for Hubble Servicing Mission 4. (Group award)

Peer-reviewed publications

Color coding: Color highlights are used below to indicate research themes and special authorship conditions:

- Cloud physics and chemistry
- Composition and origins
- Small bodies and rings
- Led by Wong-mentored student/postdoc
- Climate and dynamics
- Instrumentation and missions
- MSL Team papers

Wong, M.H., G.L. Bjoraker, C. Goullaud, A.W. Stephens, S.H. Luszcz-Cook, S.K. Atreya, I. de Pater, and S.T. Brown (2023) Deep Clouds on Jupiter. *Remote Sensing* 15, 702 (47 pp).

Wong, M.H., L.A. Sromovsky, P.M. Fry, A. Sánchez-Lavega, R. Hueso, J. Legarreta, A.A. Simon, R. Morales-Juberîas, J.W. Tollefson, I. de Pater, and P.G.J. Irwin (2022) Evolution of a Dark Vortex on Neptune with Transient Secondary Features. *Icarus* 387, 115123 (16 pp.).

NASEM (National Academies of Sciences, Engineering, and Medicine) (2022) *Origins, Worlds, and Life: A Decadal Strategy for Planetary Science and Astrobiology 2023-2032*. Washington, DC: The National Academies Press.

Simon, A.A., M.H. Wong, L.A. Sromovsky, L.N. Fletcher, P.M. Fry (2022) Giant Planet Atmospheres: Dynamics and Variability from UV to Near-IR Hubble and Adaptive Optics Imaging. *Remote Sensing* 14, 1518 (28 pp.).

Bjoraker, G.L., M.H. Wong, I. de Pater, T. Hewagama, and M. Ádámkovics (2022) The Spatial Variation of Water Clouds, NH_3, and H_2O on Jupiter Using Keck Data at 5 Microns. *Remote Sensing* 14, 4567 (35 pp.).

Irwin, P.G.J., N.A. Teanby, L.N. Fletcher, D. Toledo, G.S. Orton, M.H. Wong, M.T. Roman, S. Perez-Hoyos, A. James, and J. Dobinson (2022) Hazy blue worlds: A holistic aerosol model for Uranus and Neptune, including Dark Spots. *Journal of Geophysical Research: Planets* 127, e2022JE007189 (44 pp.).

Atreya, S.K., A. Crida, T. Guillot, C. Li, J.I. Lunine, N. Madhusudhan, O. Mousis, M.H. Wong (2022) The Origin and Evolution of Saturn: A Post-Cassini Perspective. In: *Saturn: The Grand Finale*, K.H. Baines et al. (eds), Cambridge University Press: Cambridge UK, in press (32 pp.).

Hueso, R., P. Iñurrigarro, A. Sánchez-Lavega, C.R. Foster, J.H. Rogers, G.S. Orton, C. Hansen, G. Eichstädt, I. Ordonez-Etxeberria, J.F. Rojas, S.R. Brueshaber, J.F. Sanz-Requena, S. Pérez-hoyos, M.H. Wong, T.W. Momary, B. Jónsson, A. Antuñano, K.H. Baines, E.K. Dahl, S. Mizumoto, C. Go, A. Anguiano-Arteaga (2022) Convective storms in closed cyclones in Jupiter's South Temperate Belt: (I) observations. *Icarus* 380, 114994 (23 pp.).

Cohen, I. J., C. Beddingfield, R. Chancia, G. DiBraccio, M. Hedman, S. MacKenzie, B. Mauk, K. M. Sayanagi, K. M. Soderlund, E. Turtle, C. Ahrens, C. S. Arridge, S. M. Brooks, E. Bunce, S. Charnoz, A. Coustenis, R. A. Dillman, S. Dutta, L. N. Fletcher, R. Harbison, R. Helled, R. Holme, L. Jozwiak, Y. Kasaba, P. Kollmann, S. Luszcz-Cook, K. Mandt, O. Mousis, A. Mura, G. Murakami, M. Parisi, A. Rymer, S. Stanley, K. Stephan, R. J. Vervack, M. H. Wong, and P. Wurz (2022) The Case for a New Frontiers-Class Uranus Orbiter: System Science at an Underexplored and Unique World with a Mid-scale Mission. *The Planetary Science Journal* 3, 58 (14 pp.).

Wong, M.H., P.S. Marcus, A.A. Simon, I. de Pater, J.W. Tollefson, X. Asay-Davis (2021) Evolution of the Horizontal Winds in Jupiter's Great Red Spot from One Jovian Year of HST/WFC3 Maps. *Geophysical Research Letters* 48, e2021GL093982 (10 pp.).

Bolton, S.J., S. Levin, T. Guillot, C. Li, Y. Kaspi, G. Orton, M.H. Wong, F. Oyafuso, M. Allison, J. Arballo, S. Atreya, H.N. Becker, J. Bloxham, S. Brown, L.N. Fletcher, E. Galanti, S. Gulkis, M. Janssen, A. Ingersoll, J.L. Lunine, S. Misra, P. Steffes, D. Stevenson, J.H. Waite, R.K. Yadav, Z. Zhang (2021) Microwave observations reveal the deep extent and structure of Jupiter's atmospheric vortices. *Science* 374, 968-972.

Parisi, M., Y. Kaspi, E. Galanti, D. Durante, S.J. Bolton, S.M. Levin, D.R. Buccino, L.N. Fletcher, W.M. Folkner, T. Guillot, R. Helled, L. Iess, C. Li, K. Oudrhiri, M.H. Wong (2021) The depth of Jupiter's Great Red Spot constrained by Juno gravity overflights. *Science* 374, 964-968.

Fletcher, L.N., F.A. Oyafuso, M. Allison, A. Ingersoll, L. Li, Y. Kaspi, E. Galanti, M.H. Wong, G.S. Orton, K. Duer, Z. Zhang, C. Li, T. Guillot, S.M. Levin, and S. Bolton (2021) Jupiter's temperate belt/zone contrasts revealed at depth by Juno microwave observations. *Journal of Geophysical Research: Planets* 126, e2021JE006858 (28 pp.).

de Pater, I., L.N. Fletcher, W.T. Reach, C. Goullaud, G.S. Orton, M.H. Wong, and R.D. Gehrz (2021) SOFIA Observations of Variability in Jupiter's Para-H_2 Distribution and Sub-Surface Emission Characteristics of the Galilean Satellites. *Planetary Science Journal* 2, 226 (13 pp.).

Simon, A. A., R. Hueso, A. Sánchez-Lavega, and M. H. Wong (2021) Midsummer Atmospheric Changes in Saturn's Northern Hemisphere from the Hubble OPAL Program. *The Planetary Science Journal* 2, 47 (9 pp.).

Sánchez-Lavega, A., E. García-Melendo, T. del Río-Gaztelurrutia, R. Hueso, A. Simon, M.H. Wong, K. Ahrens-Velásquez, M. Soria, T. Barry, C. Go, C. Foster (2021) Interaction of Saturn's Hexagon with convective storms. *Geophysical Research Letters* 48, e2021GL092461 (9 pp.).

Aglyamov, Y. S., J. Lunine, H. N. Becker, T. Guillot, S. G. Gibbard, S. Atreya, S. J. Bolton, S. Levin, S. T. Brown, and M. H. Wong (2021) Lightning Generation in Moist Convective Clouds and Constraints on the Water Abundance in Jupiter. *Journal of Geophysical Research: Planets* 126, e2020JE006504 (19 pp.).

Wong, M.H., A.A. Simon, J.W. Tollefson, I. de Pater, M.N. Barnett, A.I. Hsu, A.W. Stephens, G.S. Orton, S.W. Fleming, C. Goullaud, W. Januszewski, A. Roman, G.L. Bjoraker, S.K. Atreya, A. Adriani, L.N. Fletcher (2020) High-resolution UV/optical/IR imaging of Jupiter in 2016-2019. *The Astrophysical Journal Supplement Series*, 247, 58 (25 pp.).

Trainer, M.G., M.H. Wong, T.H. McConnochie, H.B. Franz, S.K. Atreya, P.G. Conrad, F. Lefèvre, P.R. Mahaffy, C.A. Malespin, H.L.K. Manning, J. Martín-Torres, G.M. Martínez, C.P. McKay, R. Navarro-González, Á. Vicente-Retortillo, C.R. Webster, M.-P. Zorzano (2020) Seasonal variations in atmospheric composition as measured in Gale Crater, Mars. *Journal of Geophysical Research: Planets* 124, 3000-3024.

Imai, M., M.H. Wong, I. Kolmasova, S.T. Brown, O. Santolik, W.S. Kurth, G.B. Hospodarksy, S.J. Bolton, S.M. Levin (2020) High-Spatiotemporal Resolution Observations of Jupiter Lightning-Induced Radio Pulses Associated With Sferics and Thunderstorms. *Geophysical Research Letters* 47, e2020GL088397 (9 pp.).

Sayanagi, K.M., R.A. Dillman, D.H. Atkinson, J. Li, S. Saikia, A.A. Simon, T.R. Spilker, M.H. Wong, W.C. Edwards, D. Hope, A. Arora, S.C. Bowen, A. Bowes, J.S. Brady, T.O. Clark, R.E. Fairbairn, D.G. Goggin, T.A. Grondin, S.J. Horan, S.I. Infeld, J.P. Leckey, J.M. Longuski, T.E. Marvel, R.M. McCabe, A.M. Parikh, D.J. Peterson, S.J. Primeaux, A.D. Scammell, K.M. Somervill, L.W. Taylor III, C. Thames, H.P. Tosoc, and L.D. Tran (2020) Small Next-Generation Atmospheric Probe (SNAP) Concept to Enable Future Multi-Probe Missions: A Case Study for Uranus. *Space Science Reviews* 216, 72 (47 pp.).

Giles, R.S., T.K. Greathouse, B. Bonfond, G.R. Gladstone, J.A. Kammer, V. Hue, D.C. Grodent, J.-C. Gérard, M.H. Versteeg, M.H. Wong, S.J. Bolton, J.E.P. Connerney, and S.M. Levin (2020) Possible Transient Luminous Events observed in Jupiter's upper atmosphere. *Journal of Geophysical Research: Planets* 125, e2020JE006659 (15 pp.).

Oyafuso, F., S. Levin, G. Orton, S.T. Brown, V. Adumitroaie, M. Janssen, M.H. Wong, L.N. Fletcher, P. Steffes, C. Li, S. Gulkis, S. Atreya, S. Misra, and S. Bolton (2020). Angular Dependence and Spatial Distribution of Jupiter's Centimeter-Wave Thermal Emission From Juno's Microwave Radiometer. *Earth and Space Science 7*, e2020EA001254 (26 pp.).

Zhang, Z., V. Adumitroaie, M. Allison, J. Arballo, S. Atreya, G. Bjoraker, S. Bolton, S. Brown, L.N. Fletcher, T. Guillot, S. Gulkis, A. Hodges, A. Ingersoll, M. Janssen, S. Levin, C. Li, L. Li, J. Lunine, S. Misra, G. Orton, F. Oyafuso, P. Steffes, and M.H. Wong (2020). Residual study: Testing Jupiter atmosphere models against Juno MWR observations. *Earth and Space Science 7*, e2020EA001229 (17 pp.).

Orton, G.S., F. Tabataba-Vakili, G. Eichstädt, J. Rogers, C.J. Hansen, T.W. Momary, A.P. Ingersoll, S. Brueshaber, M.H. Wong, A.A. Simon, L.N. Fletcher, M. Ravine, M. Caplinger, D. Smith, S.J. Bolton, S.M. Levin, J.A. Sinclair, C. Thepenier, H. Nicholson, A. Anthony (2020) A Survey of Small-Scale Waves and Wave-Like Phenomena in Jupiter's Atmosphere Detected by JunoCam. *Journal of Geophysical Research: Planets* 125, e2019JE006369 (19 pp.).

Atreya, S.K., M.H. Hofstadter, J.H. In, O. Mousis, K. Reh, and M.H. Wong (2020) Deep Atmosphere Composition, Structure, Origin, and Exploration, with Particular Focus on Critical in situ Science at the Icy Giants. *Space Science Reviews* 216, 18 (31 pp.).

Sánchez-Lavega, A., E. García-Melendo, J. Legarreta, R. Hueso, T. del Río-Gaztelurrutia, J.F. Sanz-Requena, S. Pérez-Hoyos, A.A. Simon, M.H. Wong, M. Soria, J.M. Gómez-Forrellad, T. Barry, M. Delcroix, K.M. Sayanagi, J.J. Blalock, J.L. Gunnarson, U. Dyudina, and S. Ewald (2020) A complex storm system in Saturn's north polar atmosphere in 2018. *Nature Astronomy* 4, 180–187.

Hueso, R., A. Sánchez-Lavega, J.F. Rojas, A.A. Simon, T. Barry, T. del Río-Gaztelurrutia, A. Antuñano, K.M. Sayanagi, M. Delcroix, L.N. Fletcher, E. García-Melendo, S. Pérez-Hoyos, J. Blalock, F. Colas, J.M. Gómez-Forrellad, J.L. Gunnarson, D. Peach, and M.H. Wong (2020) Saturn atmospheric dynamics one year after Cassini: Long-lived features and time variations in the drift of the Hexagon. *Icarus* 336, 113429 (23 pp.).

Toledo, D., P.G.J. Irwin, P. Rannou, L.N. Fletcher, N.A. Teanby, M.H. Wong, and G.S. Orton (2020) Constraints on Neptune's haze structure and formation from VLT observations in the H-band. *Icarus* 350, 113808.

Simon, A.A., M.H. Wong, and A.I. Hsu (2019) Formation of a new Great Dark Spot on Neptune in 2018. *Geophysical Research Letters* 46, 3108-3113.

Hsu, A.I., M.H. Wong, and A.A. Simon (2019) Lifetimes and Occurrence Rates of Dark Vortices on Neptune from 25 Years of Hubble Space Telescope Images. *The Astronomical Journal* 157, 152 (9 pp.).

de Pater, I., R.J. Sault, C. Moeckel, A. Moullet, M.H. Wong, C. Goullaud, D. DeBoer, B. Butler, G. Bjoraker, M. Adamkovics, R. Cosentino, P.T. Donnelly, L.N. Fletcher, Y. Kasaba, G. Orton, J. Rogers, J. Sinclair, and E. Villard (2019) First ALMA Millimeter Wavelength Maps of Jupiter, with a Multi-Wavelength Study of Convection. *The Astronomical Journal* 158, 139 (17 pp.).

de Pater, I., R.J. Sault, M.H. Wong, L.N. Fletcher, D. DeBoer, and B. Butler (2019) Jupiter's Ammonia Distribution Derived from VLA Maps at 3-37 GHz. *Icarus* 322, 168-191.

Giles, R.S., G.S. Orton, A.W. Stephens, M.H. Wong, P.G.J. Irwin, J.A. Sinclair, F. Tabataba-Vakili (2019) Wave Activity in Jupiter's North Equatorial Belt From Near-Infrared Reflectivity Observations. *Geophysical Research Letters* 46, 1232-1241.

Marcus, P.S., J. Tollefson, M.H. Wong, and I. de Pater (2019) An equatorial thermal wind equation: Applications to Jupiter. *Icarus* 324, 198-223.

Molter, E., I. de Pater, S. Luszcz-Cook, R. Hueso, J. Tollefson, C. Alvarez, A. Sánchez-Lavega, M.H. Wong, A.I. Hsu, L.A. Sromovsky, P.M. Fry, M. Delcroix, R. Campbell, K. de Kleer, E. Gates, P.D. Lynam, S.M. Ammons, B.P. Coy, G.Duchene, E.J. Gonzales, L. Hirsch, E.A. Magnier, S. Ragland, R.M. Rich, and F. Wang (2019) Analysis of Neptune's 2017 bright equatorial storm. *Icarus* 321, 324-345.

Toledo, D., P.G.J. Irwin, P. Rannou, N.A. Teanby, A.A. Simon, M.H. Wong, and G.S. Orton (2019) Constraints on Uranus's haze structure, formation and transport. *Icarus* 333, 1–11.

Wong, M.H., J. Tollefson, A.I. Hsu, I. de Pater, A.A. Simon, R. Hueso, A. Sánchez-Lavega, L. Sromovsky, P. Fry, S. Luszcz-Cook, H. Hammel, M. Delcroix, K. de Kleer, G.S. Orton, and C. Baranec (2018) A new dark vortex on Neptune. *The Astronomical Journal* 155, 117 (9 pp.).

Bjoraker, G.L., M.H. Wong, I. de Pater, T. Hewagama, M. Ádámkovics, and G.S. Orton (2018) The Gas Composition and Deep Cloud Structure of Jupiter's Great Red Spot. *The Astronomical Journal* 156, 101 (15 pp.).

Simon, A.A., R. Hueso, P. Iñurrigarro, A. Sánchez-Lavega, R. Morales-Juberías, R. Cosentino, L.N. Fletcher, M.H. Wong, A.I. Hsu, I. de Pater, G.S. Orton, F. Colas, M. Delcroix, D. Peach, and J.-M. Gómez-Forrellad (2018) A New, Long-lived, Jupiter Mesoscale Wave Observed at Visible Wavelengths. *The Astronomical Journal* 156, 79 (17 pp.).

Fletcher, L.N., H. Melin, A. Adriani, A.A. Simon, A. Sanchez-Lavega, P.T. Donnelly, A. Antuñano, G.S. Orton, R. Hueso, E. Kraaikamp, M.H. Wong, M. Barnett, M.L. Moriconi, F. Altieri, and G. Sindoni (2018) Jupiter's Mesoscale Waves Observed at 5 μm by Ground-based Observations and Juno JIRAM. *The Astronomical Journal* 156, 67 (13 pp.).

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Simon, A.A., F. Tabataba-Vakili, R. Cosentino, R.F. Beebe, M.H. Wong, G.S. Orton (2018) Historical and Contemporary Trends in the Size, Drift, and Color of Jupiter's Great Red Spot. *The Astronomical Journal* 155, 151 (13 pp.).

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Tollefson, J.W., M.H. Wong, I. de Pater, A.A. Simon, G.S. Orton, J.H. Rogers, S.K. Atreya, R.G. Cosentino, W. Januszewski, R. Morales-Juberías, P.S. Marcus (2017) Changes in Jupiter's Zonal Wind Profile preceding and during the Juno mission. *Icarus* 296, 163-178.

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‣ Invited talks

Wong, M.H. (2022) Moist Convection in Jupiter's Northern Frontier. JPL Astrophysics Colloquium, 14 April, online.

Wong, M.H. (2021) Multiwavelength views of Jupiter's giant storms. Invited presentation for the NASA Virtual Exhibit Platform (replacing live Hyperwall talks in 2021) at the AGU Fall Meeting, 13-17 December, New Orleans LA plus online.

Wong, M.H. (2021) Exploring the vortices of Jupiter. Invited presentation/discussion at the Honors College Freshmen Colloquium: "Making Discoveries," 21-22 September, Oakland University, MI.

Wong, M.H. (2021) Evolution of the Velocity Field of Jupiter's Great Red Spot. Invited seminar at the Center for Integrative Planetary Science (CIPS), 1 September, University of California, Berkeley CA.

Wong, M.H. (2021) Jupiter's Ever-Changing Great Red Spot. Invited presentation to the Riverside Astronomical Society, 21 August.

Quarles, O. and M.H. Wong (2020) Gemini on Jupiter. GEMMA podcast, 20 May.

Quarles, O. and M.H. Wong (2020) Lightning on Jupiter with Dr. Michael Wong. Online lecture in the Live from NOIRLab @ Gemini series, 27 May.

Wong, M.H. (2020) Flashes on Jupiter: Lightning, impacts, etc. AAS-DPS Virtual Class/Community Presentation Series: 23 October, Osceola High School (Astronomy), Osceola NB; 29 October, James Mosher Elementary School (1st grade), Baltimore MD.

Wong, M.H. (2019) Interpretation of Juno measurements of Jupiter's composition. Invited presentation at Center for the Origin, Dynamics and Evolution of Planets (CODEP) Seminar, 7 June, University of California at Santa Cruz, Santa Cruz CA.

Wong, M.H. (2019) The HST OPAL program. Astronomy Department Lunch Talk, 3 October, University of California, Berkeley CA.

Wong, M.H. (2018) OPAL: HST's View of Atmospheric Evolution. Invited presentation at Space Science Institute / Lunar and Planetary Science Laboratory, 26 February, Macau University of Science and Technology, Macau China.

Wong, M.H. (2017) Giant Planet Atmospheres in the JWST Discovery Space. Invited presentation at Planning Solar System Observations with JWST Workshop, 13 November, Space Telescope Science Institute, Baltimore MD.

Wong, M.H. (2017) OPAL's View of Atmospheric Evolution. Invited presentation at Science with the Hubble and James Webb Space Telescopes V, 20 March, Venice IT.

Wong, M.H. (2017) OPAL: HST's View of Atmospheric Evolution. CIPS Seminar Series, 8 March, Berkeley CA.

Wong, M.H. (2016) Water in Jupiter: Origin and Dynamics of Jupiter's Atmosphere. Climate and Space Department Seminar, 17 November, University of Michigan, Ann Arbor MI.

Darnell, T., M.H. Wong, A.A. Simon, G.S. Orton, and S. Lewis (2015) Hubble Captures New Maps of Jupiter. Online panel discussion for Hubble Hangouts on Air, 15 October.

Darnell, T., M.H. Wong, S. Deustua, Z. Levay, S. Lewis, and C. Christian (2015) Hubble Observes Rare Jupiter Conjunction. Online panel discussion for Hubble Hangouts on Air, 5 February.

Darnell, T., M.H. Wong, A.A. Simon, G.S. Orton, S. Lewis, and C. Christian (2014) The Incredible Shrinking Great Red Spot. Online panel discussion for Hubble Hangouts on Air, 22 May.

Wong, M.H. (2013) Addicted to landing. Invited presentation and panel discussion at Creative Many Summit: Land in this Place. 19 April, The Museum of Contemporary Art Detroit, Detroit MI.

Wong, M.H. (2013) Air on Other Worlds. Presentation, Q/A, and atmospheric mining incubator for 4th grade students. 16 May, Ferry Elementary School, Grosse Pointe Woods MI.

Wong, M.H., Clarke, J., Hendrix, A., Simon-Miller, A., Noll, K., Harris, W., Sayanagi, K., Hammel, H., Choi, D., Bell, J., de Pater, I., Orton, G. (2013) Planetary Dynamics Explorer: A Space Telescope for Time-Domain Solar System Studies. SALSO Workshop. 5-6 February, Jackson Center, Huntsville AL.

Wong, M.H. (2012) Mars and MSL. Presentation and Q/A for 8th grade students. 7 November, Audubon Middle School, Los Angeles CA.

Wong, M.H. (2012) Mars and MSL. Presentation and Q/A for 8th grade students. 6 November, South Pointe Middle School, Walnut CA.

Wong, M.H., Bell, J.F. III, Clarke, J.T., de Pater, I., Hammel, H.B., Harris, W., Mcgrath, M.A., Sayanagi, K.M., Simon-Miller, A.A. (2012) Solar System Science Objectives with the Next UV/Optical Space Observatory. NASA Future UV/Visible RFI Workshop. 18 September, Space Telescope Science Institute, Baltimore MD.

Wong, M.H. (2012) Deuterium Measurements with the Galileo Probe Mass Spectrometer. Space Show V Colloquium. 12 June, American Museum of Natural History, New York NY.

Wong, M.H. (2011) Jupiter picture of the day. SETI Institute Seminar Series. SETI Institute, 16 November, Mountain View CA. Talk to appear soon on YouTube.

Wong, M.H. (2011) Outer planet volatile abundances. Invited seminar for REU students. SRI International, 28 July, Menlo Park CA.

Wong, M.H. (2010) The "happy bunny:" Characterizing long-wavelength fringing in WFC3/UVIS. Presentation at the monthly TIPS/JIM meeting. 18 February, Space Telescope Science Institute, Baltimore MD.

Wong, M.H. (2009) Nitrogen chemistry in Jupiter's atmosphere. Outer Planets Colloquium Series presentation at the Stern College for Women's seminar series on Chemistry in Space. 16 November, New York NY.

Wong, M.H. (2009) Planetary telescope. Invited presentation to the Giant Planets Panel of the NRC/SSB Planetary Science Decadal Survey. 26 October, Irvine CA.

Wong, M.H. (2009) Outer solar system science with MCAO. Invited presentation at MAD and Beyond: Science with Multi-Conjugate Adaptive Optics Instruments. 8-10 June, ESO Garching, Germany.

Wong, M.H. (2009) Outer planet volatile abundances. STScI Star and Planet Formation Seminar Series . 1 June, Space Telescope Science Institute, Baltimore MD.

Wong, M.H. (2009) Red Spot Jr., Jupiter's global upheavals, and crucial contributions by amateur astronomers. Eastbay Astronomical Society General Meeting. 7 February, Chabot Space and Science Center, Oakland CA.

Wong, M.H. (2008) Red Spot Jr. and Jupiter's global upheavals. Outer Planets Colloquium Series presentation at the MIT Atmospheric Science Seminar Series. 17 November, Cambridge MA.

Wong, M.H. (2007) Water in the outer planets. Invited UCB Center for Integrative Planetary Science (CIPS) seminar for Astro 250: The Role of Water in Planetary Science. 18 April, Berkeley CA.

Wong, M.H. (2006) Nitrogen in Jupiter: Clouds and cosmochemistry. Invited UCB CIPS brown-bag lunch seminar. 27 September 2006, Berkeley CA.

Wong, M.H. (2006) Nitrogen in Jupiter: Clouds and cosmochemistry. Invited seminar at SRI International. 17 August 2006, Menlo Park CA.

Wong, M.H., S.K. Atreya, P.R. Mahaffy (2005) Oxygen and other volatiles in Jupiter: Insights into the early Solar System. Invited talk at the Workshop on Oxygen in the Earliest Solar System. 19–22 September 2005, Gatlinburg TN.

Further links

Links to CV items above: https://w.astro.berkeley.edu/~mikewong/bio.php
The online version of my CV contains hyperlinks to online versions of the publications listed above (as well as to some of the invited talks where available).

Conference papers: https://w.astro.berkeley.edu/~mikewong/bio.php #conference
Conference papers are listed on the online version of my CV. For papers 2008 and later, only first-author presentations are listed.

Datasets, IAU circulars, and astronomical telegrams: https://w.astro.berkeley.edu/~mikewong/bio.php #datasets
These items are listed on the online version of my CV.

Popular science articles and select online content: https://w.astro.berkeley.edu/~mikewong/bio.php #popsci
A few items of this type are listed on the online version of my CV. A comprehensive effort to index this category of output has not been attempted.

White papers and RFI responses: https://w.astro.berkeley.edu/~mikewong/bio.php #RFIs
Science and policy recommendations are listed on the online version of my CV.

ResearchGate: https://www.researchgate.net/profile/Michael-Wong-41
Profile shows researcher connections, *h*-index, etc.

LinkedIn: https://www.linkedin.com/in/michaelhwong
Profile gives more detail on employment and educational history.

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