

# VENA W. CHU

## CURRICULUM VITAE

University of California President's Postdoctoral Fellow  
University of California Berkeley  
Department of Geography  
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Berkeley, CA 94720

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### EDUCATION

- Ph.D., Geography, University of California, Los Angeles** 2015  
*Committee:* Laurence Smith (chair), Greg Okin, Yongwei Sheng, Steve Margulis  
*Dissertation title:* Hydrologic dynamics of the Greenland Ice Sheet from remote sensing and field measurements
- M.A., Geography, University of California, Los Angeles** 2009  
*Committee:* Laurence Smith (chair), Greg Okin, Yongwei Sheng  
*Thesis title:* Estuary sediment plume response to surface melting and supraglacial lake drainages on the Greenland Ice Sheet
- B.A., University of California, Los Angeles** 2006  
*Majors:* Geography and Economics, with college honors  
*Minor:* Accounting
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### EMPLOYMENT HISTORY

- University of California President's Postdoctoral Fellow**, UC Berkeley 2015-present  
*Adviser:* Kurt Cuffey, Department of Geography
- Graduate Student Researcher**, Department of Geography, UCLA 2009, 2011, 2013, 2014
- Teaching Assistant**, Department of Geography, UCLA 2008, 2009, 2010, 2011, 2012, 2013
- Staff Accountant**, RBZ LLP, Los Angeles, CA 2006-2007
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### AWARDS AND HONORS

- 2014 American Geophysical Union Outstanding Student Paper Award
- 2014-2015 UCLA Dissertation Year Fellowship (1-year tuition and stipend)
- 2013-2014 Society of Women Geographers Fellowship (\$12,000)
- 2012 UCLA Department of Geography Graduate Research Publication Award
- 2010 UCLA Graduate Summer Research Mentorship Award (\$5,000)
- 2010 UCLA Department of Geography Graduate Research Publication Award
- 2009-2012 NASA Graduate Student Researchers Program (3-year fellowship, \$90,000)
- 2009 UCLA Graduate Summer Research Mentorship Award (\$5,000)
- 2009 Association of American Geographers R.S. Tarr Student Illustrated Paper Award
- 2008 UCLA Graduate Summer Research Mentorship Award (\$5,000)
- 2007-2010 UCLA Chancellor's Prize (3-year tuition and stipend)
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## **REFEREED JOURNAL PUBLICATIONS**

- In review Gleason, C.J., Smith, L.C., **Chu, V.W.**, Pitcher, L.H., Overstreet, B.O., Rennermalm, A.K., Legleiter, C.J., Forster, R.R., and K. Yang. Characterizing supraglacial meltwater channel hydraulics on the Greenland Ice Sheet from in situ observations. *Earth and Planetary Science Letters*.
- In revision **Chu, V.W.**, Smith, L.C., Yang, K., Leglieter, C.J., Gleason, C.J., and A.K. Rennermalm. Adaptation of Manning's equation for remote estimation of supraglacial river discharge using GIS modeling and WorldView-2 satellite imagery. *GIScience & Remote Sensing*.
- In revision Yang, K., Smith, L.C.; **Chu, V.W.**, Pitcher, L.H., Gleason, C.J., Rennermalm, A.K., and M. Li. Fluvial morphometry of supraglacial river networks on the southwest greenland ice sheet. *GIScience & Remote Sensing*.
- 2015 Yang, K., Smith, L.C., **Chu, V.W.**, Gleason, C.J., and M. Li. A caution on the use of digital elevation models to simulate supraglacial hydrology of the Greenland Ice Sheet. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, PP(99):1-13.
- 2015 Gleason, C.J., Smith, L.C., Finnegan, D.C., LeWinter, A.L., Pitcher, L. H, and **V.W. Chu**. Technical note: Semi-automated classification of time-lapse RGB imagery for a remote Greenlandic river. *Hydrology and Earth Systems Sciences*, 19: 1-8
- 2015 Smith, L.C., **Chu, V.W.**, Yang, K., Gleason, C.J., Pitcher, L.H., Rennermalm, A.K., Legleiter, C.J., Behar, A.E., Overstreet, B.T., Moustafa, S.E., Tedesco, M., Forster, R.R., LeWinter, A.L., Finnegan, D.C., Sheng, Y., and J. Balog. Efficient meltwater drainage through supraglacial streams and rivers on the southwest Greenland ice sheet. *Proceedings of the National Academy of Sciences*, 112(4):1001-1006.
- 2014 **Chu, V.W.** Greenland ice sheet hydrology: a review. *Progress in Physical Geography*, 38(1): 19-54.
- 2013 Rennermalm, A.K., Moustafa, S.E., Mioduszewski J., **Chu, V.W.**, Forster, R.R., Hagedorn, B., Harper, J.T., Mote, T.L., Robinson, D.A., Shuman, C.A., Smith, L.C., and M. Tedesco. Understanding Greenland ice sheet hydrology using an integrated multi-scale approach. *Environmental Research Letters*, 8(1): 1–14.
- 2013 Rennermalm, A.K., Smith, L.C., **Chu, V.W.**, Box, J.E., Forster, R.R., van den Broeke, M., van As, D., and S. E. Moustafa. Evidence of meltwater retention within the Greenland ice sheet. *The Cryosphere*, 7(5): 1433–1445.
- 2012 **Chu, V.W.**, Smith, L.C., Rennermalm, A.K., Forster, R.R., and J.E. Box. Hydrologic controls on coastal suspended sediment plumes around the Greenland Ice Sheet. *The Cryosphere*, 6(1): 1-19.
- 2012 Rennermalm, A.K., Smith, L.C., **Chu, V.W.**, Forster, R.R., Box, J.E., and B. Hagedorn. Proglacial river stage, discharge, and temperature datasets from the Akuliarusiarsuup Kuua River northern tributary, Southwest Greenland, 2008–2011. *Earth System Science Data*, 4: 1-12.
- 2009 **Chu, V.W.**, Smith, L.C., Rennermalm, A.K., Forster, R.R., Box, J.E., and N. Reeh. Sediment plume response to surface melting and supraglacial lake drainages on the Greenland ice sheet. *Journal of Glaciology*, 55(104): 1072-1082.
- 2009 Rennermalm, A.K., Smith, L.C., Stroeve, J.C., and **V.W. Chu**. Does sea ice influence Greenland ice sheet surface-melt? *Environmental Research Letters*, 4:024011.

### ***Manuscripts in preparation***

In preparation **Chu, V.W.**, Smith, L.C., Gleason, C.J., Yang, K., Pitcher, L.H., Poinar, K., I.R. Joughin, and K. Cuffey. Assessing southwestern Greenland ice sheet moulin distribution and formation from high-resolution WorldView-1/2 remote sensing. *To be submitted to Geophysical Research Letters.*

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### **CONFERENCE PRESENTATIONS AND SEMINARS**

\*\* *Invited seminars*

\* *Oral presentations*

- 2016 \*\* **Chu, V.W.** Hydrologic dynamics of the Greenland Ice Sheet. *UC Merced Sustainability Symposium*, Merced, CA, 25 February 2016.
- 2016 \*\* **Chu, V.W.** Hydrologic dynamics of the Greenland Ice Sheet. *San Francisco State University Department of Geography & Environment*, San Francisco, CA, 10 February 2016.
- 2016 \*\* **Chu, V.W.** Hydrologic dynamics of the Greenland Ice Sheet. *UC Berkeley Department of Geography*, Berkeley, CA, 27 January 2016.
- 2016 **Chu, V.W.**, Smith, L.C., Gleason, C.J., Yang, K., Pitcher, L.H., Poinar, K., I.R. Joughin, and K. Cuffey. Moulin distribution and formation on the Southwest Greenland Ice Sheet. *Program for Arctic Regional Climate Assessment*, Greenbelt, MD, 20 January, 2016.
- 2016 \*\* **Chu, V.W.** Hydrologic dynamics of the Greenland Ice Sheet. *University of Oregon Department of Geological Sciences*, Eugene, OR, 13 January 2016.
- 2016 \*\* **Chu, V.W.** Hydrologic dynamics of the Greenland Ice Sheet. *UC Santa Barbara Department of Geography*, Santa Barbara, CA, 7 January 2016.
- 2015 **Chu, V.W.**, Smith, L.C., Gleason, C.J., Yang, K., Pitcher, L.H., Poinar, K., I.R. Joughin, and K. Cuffey. Moulin distribution and formation on the Southwest Greenland Ice Sheet. *American Geophysical Union Fall Meeting*, San Francisco, CA, 14-18 December 2015.
- 2015 **Chu, V.W.**, Smith, L.C., Yang, K., Legleiter, C.J., Gleason, C.J., and A.K. Rennermalm. Remote estimation of Greenland Ice Sheet supraglacial river discharge. *Ilulissat Climate Days*, Ilulissat, Greenland, 2-5 June 2015.
- 2015 \* **Chu, V.W.**, Smith, L.C., Yang, K., Legleiter, C.J., Gleason, C.J., and A.K. Rennermalm. Supraglacial streamflow into moulins on the Greenland ice sheet. *Association of American Geographers Annual Meeting*, Chicago, IL, 21-25 April 2015.
- 2014 **Chu, V.W.**, Smith, L.C., Yang, K., Legleiter, C.J., Gleason, C.J., Rennermalm, A.K., Pitcher, L.H., and R.R. Forster. Remote estimation of Greenland Ice Sheet supraglacial river discharge using GIS modeling and WorldView-2 satellite imagery. *American Geophysical Union Fall Meeting*, San Francisco, CA, 15-19 December 2014.
- 2014 \*\* **Chu, V.W.** Greenland Ice Sheet supraglacial rivers. *Lamont-Doherty Earth Observatory Division of Marine Geology and Geophysics*, Palisades, NY, 8 September 2014.
- 2014 \*\* **Chu, V.W.** Greenland Ice Sheet hydrology. *Joint Science Education Project (JSEP)*, Kangerlussuaq, Greenland, 8 July 2014.
- 2014 \* **Chu, V.W.** Greenland Ice Sheet supraglacial rivers. *Society of Women Geographers Triennial Meeting*, Pittsburgh, PA, 23-26 May 2014.
- 2014 \* **Chu, V.W.**, Smith, L.C., Yang, K., Legleiter, C.J., Behar, A.E., Tedesco, M., Overstreet, B.T., Rennermalm, A.K., Forster, R.R., and C.J. Gleason. Remote sensing of supraglacial river

- discharge on the Greenland Ice Sheet. *Association of American Geographers Annual Meeting*, Tampa, FL, 8-12 April 2014.
- 2014 **Chu, V.W.**, Smith, L.C., Yang, K., Rennermalm, A.K., Forster, R.R., Gleason, C.J., Legleiter, C.J., Behar, A.E., Tedesco, M., Overstreet, B.T., Pitcher, L.H., and S.E. Moustafa. Remote sensing of supraglacial river discharge on the Greenland Ice Sheet. *Program for Arctic Regional Climate Assessment*, Greenbelt, MD, 28-29 January 2014.
- 2013 **Chu, V.W.**, Smith, L.C., Yang, K., Rennermalm, A.K., Forster, R.R., Gleason, C.J., Legleiter, C.J., Behar, A.E., Tedesco, M., Overstreet, B.T., Pitcher, L.H., and S.E. Moustafa. Greenland Ice Sheet supraglacial stream morphology and remotely sensed discharge retrieval. *American Geophysical Union Fall Meeting*, San Francisco, CA, 9-13 December 2013.
- 2013 \* **Chu, V.W.**, Smith, L.C., Rennermalm, A.K., Forster, R.R., Gleason, C.J., Pitcher, L.H., Moustafa, S.E., and K. Yang. Hydraulic geometry of Greenland Ice Sheet supraglacial streams. *Association of American Geographers Annual Meeting*, Los Angeles, CA, 9-13 April 2013.
- 2012 **Chu, V.W.**, Smith, L.C., Rennermalm, A.K., Forster, R.R., Gleason, C.J., Pitcher, L.H., Moustafa, S.E., Overstreet, B.T., Legleiter, C.J., Behar, A.E., Tedesco, M., and K. Yang. Hydraulic geometry of Greenland Ice Sheet supraglacial streams: Field measurements from 2012. *American Geophysical Union Fall Meeting*, San Francisco, CA, 3-7 December 2012.
- 2012 **Chu, V.W.**, Smith, L.C., Rennermalm, A.K., Forster, R.R., and J.E. Box. Hydrologic controls on coastal suspended sediment plumes around the Greenland Ice Sheet. *Magrann Symposium*, New Brunswick, NJ, 12-14 April 2012.
- 2012 \* **Chu, V.W.**, Smith, L.C., Rennermalm, A.K., Forster, R.R., and J.E. Box. Hydrologic controls on coastal suspended sediment plumes around the Greenland Ice Sheet. *Association of American Geographers Annual Meeting*, New York, NY, 24-28 February, 2012.
- 2011 **Chu, V.W.**, Smith, L.C., Rennermalm, A.K., Forster, R.R., and J.E. Box. Hydrologic controls on coastal suspended sediment plumes around the Greenland Ice Sheet. *American Geophysical Union Fall Meeting*, San Francisco, CA, 5-9 December 2011.
- 2011 \*\* **Chu, V.W.** Hydrologic controls of sediment plume behavior around the Greenland Ice Sheet. *UCLA Department of Atmospheric & Oceanic Sciences Coastal Seminar*, Los Angeles, CA, 11 May 2011.
- 2011 **Chu, V.W.**, Smith, L.C., and S.J. Hook. Water quality & the relation to fish kills and wind-driven upwelling in the Salton Sea. *Los Angeles Geographical Society Meeting*, Los Angeles, CA, 6 May 2011.
- 2011 \* **Chu, V.W.**, Smith, L.C., and S.J. Hook. Investigating water quality response to wind-driven upwelling events at the Salton Sea using MODIS satellite imagery. *Association of American Geographers Annual Meeting*, Seattle, WA, 12-16 April 2011.
- 2010 **Chu, V.W.**, Smith, L.C., and S.J. Hook. Investigating water quality response to wind-driven upwelling events in the Salton Sea, CA using multi-temporal MODIS satellite imagery. *American Geophysical Union Fall Meeting*, San Francisco, CA, 13-17 December 2010.
- 2010 \* **Chu, V.W.**, Smith, L.C., Rennermalm, A.K., Forster, R.R., Box, J.E., and N. Reeh. Estuary sediment plume response to surface melting and supraglacial lake drainages on the Greenland Ice Sheet. *Association of American Geographers Annual Meeting*, Washington D.C., MD, 14-18 April 2010.

- 2009 **Chu, V.W.**, L.C. Smith, A.K. Rennermalm, R.R. Forster, J.E. Box, and N. Reeh. Estuary sediment plume response to surface melting and supraglacial lake drainages on the Greenland Ice Sheet. *American Geophysical Union Fall Meeting*, San Francisco, CA, 14-18 December 2009.
- 2009 \* **Chu, V.W.**, L.C. Smith, A.K. Rennermalm, R.R. Forster, J.E. Box, and N. Reeh. Sediment plume response to surface melting and supraglacial lake drainages on the Greenland Ice Sheet. *Association of American Geographers Annual Meeting*, Las Vegas, NV, 22-26 March 2009.
- 2008 **Chu, V.W.**, L.C. Smith, A.K. Rennermalm, R.R. Forster, J.E. Box, and N. Reeh. Response of sediment plumes to Greenland ice sheet surface melt. *American Geophysical Union Fall Meeting*, San Francisco, CA, 15-19 December 2008.

## **TEACHING EXPERIENCE**

### **Teaching Assistant, Department of Geography, UCLA**

<i>Advanced Geographic Information Systems</i>	2009
<i>Cartography</i>	2010, 2011
<i>Earth's Physical Environment</i>	2013
<i>Field Methods in Physical Geography, Field Course</i>	2010
<i>Geographic Information Systems Programming and Development</i>	2009
<i>Glacier Environments of California's High Sierra, Field Course</i>	2008
<i>Introduction to Geographic Information Systems</i>	2008, 2009
<i>Satellite Remote Sensing and Imaging GIS</i>	2008, 2009, 2010, 2011, 2012, 2012

### **Undergraduate research mentorships, UCLA**

2014	Oliwia Baney: Greenland Ice Sheet supraglacial streams (Geography Dept., 4 credits)
2013	Laura McNerney: Greenland Ice Sheet supraglacial streams (Geography Dept., 4 credits)
2013	Alana Ayasse: Greenland Ice Sheet supraglacial streams (Geography Dept., 4 credits)
2010	Kaitlin Kelly-Reif: Salton Sea water quality (Geography Dept., 8 credits)
2010	Angeline Kong: Lab analysis of Salton Sea water quality (Civil & Environmental Engineering Dept., 4 credits)
2010	Eva Davies: Lab analysis of Salton Sea water quality (Civil & Environmental Engineering Dept., 4 credits)

## **FIELD EXPERIENCE**

2015	Hydrometeorological and glaciological studies on the Greenland Ice Sheet
2015	Validation of AirSWOT water surface elevation data on the Sacramento River, CA
2014	Delineation of wetlands for AirSWOT validation, Mojave Desert, CA
2014	Hydrometeorological and glaciological studies in Kangerlussuaq, Greenland
2013	Hydrometeorological studies in Kangerlussuaq, Greenland
2013	Validation of AirSWOT water surface elevation data on the Sacramento River, CA
2012	Hydrometeorological and glaciological studies on the Greenland Ice Sheet
2011	Hydrometeorological studies in Kangerlussuaq, Greenland
2010	Water sampling surveys at the Salton Sea, CA
2010	Hydrometeorological studies in Kangerlussuaq, Greenland
2010	Teaching assistant for the UCLA field course <i>Field Methods in Physical Geography</i> , Sierra

	Nevada, CA	
2009	Hydrometeorological studies in Kangerlussuaq, Greenland	
2008	Hydrometeorological studies in Kangerlussuaq, Greenland	
2008	Teaching assistant for the UCLA field course <i>Glacier Environments of California's High Sierra</i> , Sierra Nevada, CA	

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## **SERVICE**

<b>Organizer/Chair:</b> Cryosphere Sessions, American Geophysical Union Meeting	2015
<b>Chair:</b> Association of American Geographers Cryosphere Specialty Group	2013-present
<b>Organizer:</b> Cryosphere Sessions, Assn. of American Geographers Meeting	2014-present
<b>Board of Directors:</b> Assn. of American Geographers Cryosphere Specialty Group	2011-present
<b>Secretary-Treasurer:</b> Assn. of American Geographers Cryosphere Specialty Group	2011-2013
<b>Co-organizer:</b> Cryosphere Sessions, Assn. of American Geographers Meeting, Los Angeles, CA	2013
<b>Secretary:</b> UCLA Graduate Student Association, Social Sciences Council	2008-2009
<b>Treasurer:</b> UCLA Geography Department, Graduate Representatives	2008-2009
<b>Manuscript reviewer:</b>	
<i>Arctic, Antarctic, and Alpine Research</i>	2013
<i>The Cryosphere</i>	2013, 2014
<i>Earth and Space Science</i>	2014
<i>International Journal of Climate</i>	2014
<i>Journal of Geophysical Research – Earth Surface</i>	2014
<i>Journal of Glaciology</i>	2009, 2010, 2011
<i>Polar Science</i>	2016
<i>Remote Sensing of the Environment</i>	2011

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## **PROFESSIONAL MEMBERSHIPS**

American Geophysical Union (AGU)	2007-present
Association of American Geographers (AAG)	2008-present
Association for Women Geoscientists (AWG)	2013-present
Society of Women Geographers (SWG)	2013-present

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## **OUTREACH**

<b>CNN Newsroom</b> (November 7, 2015)
<b>New York Times</b> , "Greenland is melting away" (October 28, 2015)
<b>Washington Post</b> , "Why NASA's so worried that Greenland's melting could speed up" (August 29, 2015)
<b>NASA TV panelist</b> , "Rising Seas: NASA Science on the Greenland Ice Sheet" (August 28, 2015)
<b>Environmental Research Web</b> , "Can sediment plumes reveal ice-sheet melt rates?" (April 3, 2015)
<b>LA Times</b> , "Ice researchers capture catastrophic Greenland melt" (January 12, 2015)
<b>UCLA promotional video</b> , "Rivers of meltwater on Greenland's ice sheet contribute to rising sea levels" (January 12, 2015)
<b>Phys.org</b> , "Study shows how meltwater on Greenland's ice sheet contribute to rising sea levels" (January 12, 2015)
<b>Discovery News</b> , "Surface melt adds to ice loss in Greenland" (December 24, 2014)
<b>LiveScience</b> , "Greenland's ice loss now comes from surface" (December 22, 2014)

**UPI**, "NASA satellite keeps eye on glacial sediment plumes" (October 1, 2014)

**NASA Earth Observatory**, "Sediment plumes around Greenland" (October 1, 2014)

**UCLA promotional video**, "UCLA tracks record Arctic melt in Greenland" (October 23, 2012)

**New York Times**, "Probing a glacier as it thaws" (August 5, 2011)

**UCLA Daily Bruin**, "Researching the impact of melting ice sheet in Greenland" (June 6, 2010)

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