CHUNLIN SONG

scl@imde.ac.cn ◇ geocsong@gmail.com ◇ +86 15328091024
Institute of Mountain Hazards and Environment, Chinese Academy of Sciences
No.9, Block 4, Renminnanlu Road, Chengdu 610041, Sichuan, China

RESEARCH INTERESTS

Riverine carbon cycle; inland water biogeochemistry; permafrost hydrology and hydro-environment; permafrost carbon feedbacks; ecohydrology

EMPLOYMENT

Special Research Associate *Jul. 2019 - Present*
Institute of Mountain Hazards and Environment, Chinese Academy of Sciences

EDUCATION

Institute of Mountain Hazards and Environment, Chinese Academy of Sciences & University of Chinese Academy of Sciences *Sept. 2015 - Jun. 2019*
Ph.D. in Physical Geography, advisor: Professor Genxu Wang
Dissertation: Riverine Carbon Export Processes of the Yangtze River Source Region

Yale School of Forestry and Environmental Studies *Nov. 2017 - Jan. 2019*
Visiting Ph.D. student, work on river biogeochemistry, advisor: Professor Peter A. Raymond

Institute of Mountain Hazards and Environment, Chinese Academy of Sciences & University of Chinese Academy of Sciences *Sept. 2013 - Aug. 2015*
Master student in Physical Geography, advisor: Professor Genxu Wang

College of Water Resources and Hydropower, Sichuan University *Sept. 2009 - Jun. 2013*
Bachelor of Engineering in Hydrology and Water Resources Engineering

PUBLICATIONS

Papers awaiting publication

- **Song, C.**, Wang, G., Liu, J., Huang, K., Li, Y. Suspended sediment and particulate C and N transport in Yangtze River source region of the Qinghai-Tibet Plateau. (in preparation)
- **Song, C.**, Wang, G., Hu, Z., Huang, K., Zhang, T., Chen, X., Li, Y. Net ecosystem carbon budget of a grassland ecosystem in central Qinghai-Tibet Plateau: integrating terrestrial and aquatic carbon fluxes at catchment scale. *Agricultural and Forest Meteorology* (in revision)
- **Song, C.**, Wang, G., Haghipour, N., Raymond, P.A. Warming and monsoonal climate lead to a large export of millennial-aged carbon from permafrost catchments of the Qinghai-Tibet Plateau. *Environmental Research Letters* (in revision)
- Rosentreter, J.A., Borges, A.V., Raymond, P.A., Deemer, B.R., Holgerson, M.A., Duarte, C.M., Liu, S., **Song, C.**, Allen, G.H., Melack, J., Olefeldt, D., Battin, T.I., Eyre, B.D. Aquatic ecosystems are the most uncertain but potentially the largest source of methane on Earth. (in preparation)

Peer-reviewed Papers (First Author)

Updated on March 9, 2020. More info: **ResearchGate; Google Scholar**

7. **Song, C.**, Wang, G., Mao, T., Huang, K., Sun, X., Hu, Z., Chang, R., Chen, X., Raymond, P.A. (2020). Spatiotemporal variability and sources of DIC in permafrost catchments of the Yangtze River source region: insights from stable carbon isotope and water chemistry. *Water Resources Research*, 56(1): e2019WR025343. https://doi.org/10.1029/2019WR025343

6. **Song, C.**, Wang, G., Mao, T., Dai, J., Yang, D. (2020). Linkage between permafrost distribution and river runoff changes across the Arctic and the Tibetan Plateau. *Science China-Earth Sciences*, 63(2): 292-302. https://doi.org/10.1007/s11430-018-9383-6

5. **Song, C.**, Wang, G., Mao, T., Chen, X., Huang, K., Sun, X., Hu, Z. (2019). Importance of active layer freeze-thaw cycles on the riverine dissolved carbon export on the Qinghai-Tibet Plateau permafrost region. *PeerJ*, 7:e7146. https://doi.org/10.7717/peerj.7146

4. **Song, C.**, Wang, G., Liu, G., Mao, T., Sun, X., Chen, X. (2017). Stable isotope variations of precipitation and streamflow reveal the young water fraction of a permafrost watershed. *Hydrological Processes*, 31(4), 935-947. https://doi.org/10.1002/hyp.11077

3. **Song, C.**, Wang, G., Sun, X., Chang, R., Mao, T. (2016). Control factors and scale analysis of annual river water, sediments and carbon transport in China. *Scientific Reports*, 6:25963. https://doi.org/10.1038/srep25963

2. **Song, C.**, Sun, X., Wang, G. (2015). A study on precipitation stable isotopes characteristics and vapor sources of the subalpine Gongga Mountain, China. *Resources and Environment in the Yangtze Basin*, 24(11), 1860-1869. (in Chinese with English Abstract)

1. **Song, C.**, Sun, X., Wang, G. (2015). A review on carbon and water interactions of forest ecosystem and its impact factors. *Chinese Journal of Applied Ecology*, 26(9), 2891-2902. (in Chinese with English Abstract)

Peer-reviewed Papers (Co-author)

11. Huang, K., Dai, J., Wang, G., Chang, J., Lu, Y., **Song, C.**, Hu, Z., Ahmed, N., Ye, R. (2020). The Impact of Land Surface Temperatures on Suprapermafrost Groundwater on the Central Qinghai-Tibet Plateau. *Hydrological Processes*. https://doi.org/10.1002/hyp.13677

10. Sun, X., Wang, G., Huang, M., Chang, R., Hu, Z., **Song, C.**, Sun, J. (2020). The asynchronous response of carbon gain and water loss generate spatio-temporal pattern of WUE along elevation gradient in southwest China. *Journal of Hydrology*, 124389. https://doi.org/10.1016/j.jhydrol.2019.124389

9. Song, X., Wang, G., Ran, F., Huang, K., Sun, J., **Song, C.**. (2020). Soil moisture as a key factor in carbon release from thawing permafrost in a boreal forest. *Geoderma*, 357, 113975. https://doi.org/10.1016/j.geoderma.2019.113975

8. Hu, Z., Wang, G., Sun, X., Wang, J., Chen, X., **Song, C.**, Song, X., Lin, S. (2019). Variations in belowground carbon use strategies under different climatic conditions. *Agricultural and Forest Meteorology*, 268, 32-39. https://doi.org/10.1016/j.agrformet.2019.01.005

7. Hu, Z., Wang, G., Sun, X., Zhu, M., **Song, C.**, Huang, K. and Chen, X. (2018). Spatial-Temporal Patterns of Evapotranspiration Along an Elevation Gradient on Mount Gongga, Southwest China. *Water Resources Research*, 54(6), 4180-4192. https://doi.org/10.1029/2018WR022645

6. Chen, X., Wang, G., Zhang, T., Mao, T., Wei, D., **Song, C.**, Hu, Z., Huang, K. (2017). Effects of warming and nitrogen fertilization on GHG flux in an alpine swamp meadow of a permafrost region. *Science of the Total Environment*, 601, 1389-1399. https://doi.org/10.1016/j.scitotenv.2017.06.028

5. Chen, X., Wang, G., Huang, K., Hu, Z., **Song, C.**, Liang, Y., Wang, J., Song, X., Lin, S. (2017). The effect of nitrogen deposition rather than warming on carbon flux in alpine meadows depends on precipitation variations. ***Ecological Engineering***, 107, 183-191. https://doi.org/10.1016/j.ecoleng.2017.07.018

4. Song, X., Wang, G., Ran, F., Chang, R., **Song, C.**, Xiao, Y. (2017). Effects of topography and fire on soil CO_2 and CH_4 flux in boreal forest underlain by permafrost in northeast China. *Ecological Engineering*, 106, 35-43. https://doi.org/10.1016/j.ecoleng.2017.05.033

3. Wang, G., Mao, T., Chang, J., **Song, C.**, Huang, K. (2017). Processes of runoff generation operating during the spring and autumn seasons in a permafrost catchment on semi-arid plateaus. *Journal of Hydrology*, 550:307-317. https://doi.org/10.1016/j.jhydrol.2017.05.020

2. Chen, X., Wang, G., Zhang, T., Mao, T., Wei, D., Hu, Z., **Song, C.** (2017). Effects of warming and nitrogen fertilization on GHG flux in the permafrost region of an alpine meadow. *Atmospheric environment*, 157, 111-124. https://doi.org/10.1016/j.atmosenv.2017.03.024

1. Sun, X., Wang, G., Huang, M., Hu, Z., **Song, C.** (2017). Effect of climate change on seasonal water use efficiency in subalpine Abies fabri. *Journal of Mountain Science*, 14(1), 142-157. https://doi.org/10.1007/s11629-016-3867-9

Patents

- **SONG Chunlin**, WANG Genxu, SUN Xiangyang. A water surface greenhouse gas auto-sampler chamber. Chinese invention patent (Issued No. ZL201620140461.3), 2019-06-21.
- **SONG Chunlin**, SUN Xiangyang, HU Zhaoyong, WANG Genxu. A vacuum porous core filter device. Chinese utility new model patent (Issued No. ZL201520272366.4), 2015-09-16.

PRESENTATIONS

Oral Presentations

· **Chunlin Song**. Carbon export patterns and mechanisms in typical permafrost draining rivers in of the Qinghai-Tibet Plateau permafrost region. Mountain Science Young Scholars Development Forum, Chengdu, China. 09/20/2019.

· Peter A. Raymond, **Chunlin Song**, Shaoda Liu, George H. Allen. Stream and River Methane Emissions. AGU Fall Meeting 2018, Washington, D.C., USA. 12/14/2018.

· **Chunlin Song**, Genxu Wang, Tianxu Mao. Seasonal riverine export of dissolved carbon affected by active layer freeze-thaw cycles in headwater streams of the Qinghai-Tibet Plateau permafrost region. AGU Fall Meeting 2017, New Orleans, USA. 12/13/2017.

· Genxu Wang, **Chunlin Song** (speaker). Mechanism of the surface runoff processes of a permafrost watershed in the Qinghai-Tibet plateau. The 2nd Asian Conference on Permafrost, Sapporo, Japan. 07/03/2017.

· **Chunlin Song**, Tianxu Mao. Carbon export and its control factors of Yangtze River source region. Institute of Mountain Hazards and Environment, Chinese Academy of Sciences, Chengdu, China. 11/13/2016.

· **Chunlin Song**. Invited to give a presentation about doctoral life to undergraduates at the mountain science summer school. Institute of Mountain Hazards and Environment, Chinese Academy of Sciences, Chengdu, China. 07/21/2016.

· **Chunlin Song**. Theory and application of Meta-analysis. Institute of Mountain Hazards and Environment, Chinese Academy of Sciences, Chengdu, China. 05/03/2016.

FUNDED GRANTS

PI: China Postdoctoral Science Foundation Project 2019 - 2021
Age and Source of Riverine Dissolved Carbon in Continuous Permafrost Region of the Qinghai-Tibet Plateau

Co-PI: Sub-Project of NSFC Key Project 2016 - 2019
Riverine Biogenic Substance Transport and Transformation of the Yangtze River Source Region Under a Changing Hydrology

Co-PI: Sub-Project of NSFC Major Research Plan 2018 - 2022
Study on the Precipitation-Runoff Processes and Water Source Apportionment in Alpine Mountain Regions

PROFESSIONAL EXPERIENCE

Institute of Mountain Hazards and Environment, Chinese Academy of Sciences Jul. 2014 - Jun. 2019
Research Assistant *Professor Genxu Wang*

· Preliminary study, field work, sampling campaign, data logging, sample analysis and data analysis for project *Three-River Headwaters Region Runoff Generation, Changing Mechanisms, and Permafrost Ecohydrological Processes Modelling*
· Field work, sampling campaign, data logging, sample analysis and data analysis for project *The ecological processes of the cryosphere change and its impact on carbon cycle*

Yale School of Forestry and Environmental Studies Nov. 2017 - Jan. 2019
Visiting Assistant in Research *Professor Peter A. Raymond*

· Lab work, data collection, data analysis, and results interpretation for great Arctic rivers aged carbon export and global inland water methane emission studies
· Lab work, data analysis, and results interpretation for riverine carbon isotopes of Yangtze River source region rivers

Institute of Mountain Hazards and Environment, Chinese Academy of Sciences Aug. 2014 - Jun. 2015
Research Assistant *Assistant Professor Xiangyang Sun*

· Field work, water sampling campaign, sample analysis and data analysis for project *Seasonal Variations and Impact Factors of Organic Carbon Export in Small Alpine Forest Watershed*

Institute of Mountain Hazards and Environment, Chinese Academy of Sciences Summer 2013 and Summer 2014
Field Work Volunteer *Assistant Professor Xiangyang Sun and Ruiying Chang*

· Soil and plant sampling along elevation gradient in Mount Gongga, field equipment installation and maintenance, and related lab work at Alpine Ecosystem Observation and Experiment Station of Mount Gongga for two projects: *Water-carbon Interactions and Spatial-temporal Mechanisms of Dark Coniferous Forest Ecosystem in Southwest China* and *Mountain Forest Water-use Efficiency along Elevation Gradient in East Slope of Mount Gongga*

PROFESSIONAL TRAINING

May 2018, The Geo-Computation and Environmental Analysis Workshop. Yale Center for Research Computing.

April 2016 Meta-analysis Workshop in Ecology and Conservation. Xishuangbanna Tropical Botanical Garden, Chinese Academy of Sciences.

May 2014 Development of Data Acquisition and Flux Observation Technology Training Conference. TRUWEL TECHNOLOGY, Beijing.

AWARDS & HONORS

China Scholarship Council Fellowship for Joint Ph.D. Training Program, 2017

Bronze Prize of ACOP 2017 Photo Contest

Pacemaker of Merit Student Award, 2017 (1%)

National Scholarship for Doctoral Students, 2016 (6%)

First Class Prize of the IMHE Academic Award, 2016 (10%)

Second Class Prize of the Director Scholarship of the Chengdu Branch of the Chinese Academy of Sciences, 2015 (1.7%)

National Scholarship for Master Students, 2014 (3%)

First Class Prize of the IMHE Academic Award, 2014 (6%)

Merit Student Award of the University of Chinese Academy of Sciences, 2014, 2015, & 2016 (15%)

Sichuan University Excellent Undergraduate Thesis Award, 2013 (5%)

SKILLS & OTHERS

Lab & Experimental: vario TOC select TOC/TNb Analyser; Los Gatos Research DLT-100 Liquid Water Isotope Analyser; Eddy Covariance Systems; Campbell Scientific CR1000 dataloggers; LI-8150 Soil CO_2 Flux System; Vario MACRO cube Elemental Analyzer; Cryogenic carbon purification from water samples; Thermo MAT 253 Stable Isotope Analyser; Potassium persulfate method and TC/EA for DOC isotope analysis

Fieldwork: Working knowledge and experience related to hydrology and ecology includes: hydrological obervation; sampling of water, soil, gas, sediments, and plant; CO_2 flux observation; water quality measurement

Computer: R, ArcGIS, EndNote, Adobe Photoshop, Adobe Illustrator, AutoCAD, HTML & CSS, GitHub, LaTeX, MS Office

Language: Chinese (native speaker), English (6.5 in IELTS)

Field Trips: Gongga Mountain, Qinghai-Tibet Plateau, Tuotuo River, Tongtian River, Jinsha River, Min River (Sichuan), Dadu River, Yalong River, Jialing River, Yangtze River, Connecticut River

Peer Review Services: Journal of Hydrology; Environmental Research Letters; Hydrology and Earth System Sciences; Water Resources Research; Quaternary International; Chinese Journal of Applied Ecology

Professional Organizations: American Geophysical Union

ORCiD: http://orcid.org/0000-0003-3627-2350

CV in Chinese: https://songchunlin.net/files/others/songchunlin_cv_cn.pdf