Tao Wen

Postdoctoral Scholar, Earth and Environmental Systems Institute (EESI)
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RESEARCH INTERESTS

Studying the water cycle within coupled human (e.g., energy extraction and urbanization) and natural systems at varying temporal and spatial scales using both data mining (big data) and case study (small data) approaches

EDUCATION

University of Michigan (UM)   Ann Arbor, Michigan
Ph.D., Earth and Environmental Sciences Department   *April 2017*
M.S., Earth and Environmental Sciences Department   *April 2014*

University of Science and Technology of China (USTC)   Hefei, China
B.S., School of Earth and Space Science   *July 2011*

POSITIONS HELD

- Postdoctoral Scholar, EESI at Penn State University (February 2017 – Present)
- Graduate Student Researcher, Noble Gas Laboratory at University of Michigan (2011 – 2017)
- Undergraduate Researcher, Institute of Polar Environment at USTC (2009 – 2011)
- Undergraduate Researcher, Advanced Laboratory for Environmental Research and Technology at Suzhou, China (2009 Summer)

GRANTS AND AWARDS

Penn State EMS Dean's Fund for Postdoc-Facilitated Innovation, 2019 $75,000
   Title: Data-Driven Models to Assess Spatio-temporal Variability of Surface Water Quality in Coupled Human and Natural Systems at the Continental
USGS Pennsylvania Water Resources Research Grant 104b, 2018 $66,000
   Title: Data-Driven Models to Assess Water Quality in the Region of Marcellus Shale (*senior personnel – co-written*)
Office of Postdoctoral Affairs Travel Award $300
   Penn State University, 2019
Rackham Conference Travel Grant   Each $800-$1,300
   University of Michigan, Fall 2012, 2013, 2014, 2015, 2016
Best Student Poster Presentation
   American Institute of Professional Geologists Michigan Section, December 2016
Scott Turner Research Awards

University of Michigan, Department of Earth and Environmental Sciences, Fall 2015, 2016
Stewart R. Wallace Fellowship
　University of Michigan, Department of Earth and Environmental Sciences, Fall 2012
Excellent Undergraduate Researcher Award
　University of Science and Technology of China, 2011
Guanghua Education Scholarship
　University of Science and Technology of China, 2010
Outstanding Student Scholarship
　University of Science and Technology of China, 2008, 2009

TEACHING

Co-teaching GEOSC 560 – Kinetics, Penn State University　　　　　　*Spring 2019*
- *Using data-driven models to assess the impact of natural and anthropogenic features on weathering rate on a watershed scale*

Workshop Instructor in Shale Network Workshop, Penn State University　　*May 2018*
- *Computer module demonstration and hands-on exercise:* Created and prepared learning material; taught water chemistry about Marcellus-related spills for over 40 participants.
- *Field trip to mock spill event:* Assisted in organizing the field trip to mock spill.

Interim Instructor, Penn State University　　　　　　　　　　　　　*April 2017*
- *GEOSC 560 – Kinetics of Geological Processes*: Taught basics of isotope geochemistry.

Teaching Assistant, University of Michigan　　　*September 2013 – December 2016*
- *EARTH 100s – Multiple introduction classes of earth sciences*.
- *EARTH 477 – Hydrogeology*: Guided 50+ students to understand the fate and transport of contaminants from Underground Storage Tanks via hands-on hydrogeological lab work and the interpretation of stratigraphic information.
- *EARTH 408 – Introduction to GIS in the Earth Sciences*: Taught 24 students to implement 2D & 3D spatial analysis in ArcGIS; received positive teaching evaluation (**rated at 4.5-5.0 out of 5.0**) from students and teachers.

STUDENT MENTORSHIP

Penn State University
- Graduate student mentorship: Josh Woda (for isotope geochemistry); Callum Wayman (for GIS); Mengqi Li (for geoscience)
- Undergraduate thesis supervision: Marcus Guarnieri (2018; groundwater geochemistry in Pennsylvania)

University of Michigan
- Undergraduate student mentorship: Guolei Han (noble gas geochemistry)

SELECTED MEDIA COVERAGE

5. AP News, *Studies show groundwater holding own against drilling boom*, https://apnews.com/b3cecd15c46d4feb88974b17a033f892

4. StateImpact NPR, *Study: Bradford County water quality improving despite shale gas drilling*, https://stateimpact.npr.org/pennsylvania/2018/06/18/study-bradford-county-water-quality-improving-despite-shale-gas-drilling/

3. Energywire, *Marcellus Shale: Researchers bring new tools to identify methane sources*, https://www.eenews.net/energywire/2018/06/14/stories/1060084453

2. Penn State University News, *Bradford County water quality improves; impacts rare near shale gas wells*, https://news.psu.edu/story/524986/2018/06/12/research/bradford-co-water-quality-improves-impacts-rare-near-shale-gas

1. Penn State University News, *Data driven dialogue: Scientists bring groups together on water quality concerns*, https://news.psu.edu/story/503237/2018/01/31/impact/data-driven-dialogue-scientists-bring-groups-together-water-quality

PROFESSIONAL AND FIELD EXPERIENCE

Field work

2017-2019	Groundwater, surface water, stray gas, and sediment sampling within the Marcellus Shale footprint (monthly)
2013-2014	Natural gas sampling in the Antrim Shale area (Gas & Oil Wells), MI (1 week)
2012	Groundwater sampling in the Glacial Drift aquifer in Michigan Basin (3 days)
2010	Mountain Huangshan in Anhui, China (4 days)
2008-2009	Tai Lake, Chao Lake, Yancheng National Natural Reserve, China (1 month)

Public Service

- Reviewer for Geochimica et Cosmochimica Acta, Environmental Science & Technology, Science of the Total Environment, Journal of Environmental Informatics, Water, Geological Society of America Today, Applied Geochemistry, Environmental Science: Processes & Impacts, Current Opinion in Environmental Science & Health, Advances in Polar Science
- Session convener and chair at Goldschmidt 2018: Using Geochemistry and Big Data to Understand the Biological-Geological Co-evolution of the Critical Zone - Including Human Impacts
- Session convener and chair at AGU 2018: (V017) Data Science and Geochemistry: Applying a Data-driven Approach in Geochemistry-centric Studies
- Judge for PSU Geosciences Graduate Student Colloquium (2018), 11th Annual Postdoctoral Research Exhibition (2018), and AGU student poster and presentation (2018)
- Committee and Instructor for Shale Network Workshop at Penn State (2018)
- President of USTC Alumni Association in Greater Detroit area (2013-2015)
- Co-founder and Vice-president of AAPG student chapter at Uni. of Michigan (2015-2016)

Professional Development
- 83rd Annual Field Conference of Pennsylvania Geologists: the Triassic-Jurassic rift system of eastern North America
- GeoDeepDive workshop 2018, UW-Madison, Madison, WI (2018)
- Data Science in Geochemistry workshop attendee, Goldschmidt, Boston, MA (2018)
- Sequence Stratigraphy short course attendee, AAPG, Denver, CO (2015)

Professional Affiliations
- American Geophysical Union (AGU)	2012 – Present
- Geological Society of America (GSA)	2014 – Present
- American Association of Petroleum Geologists (AAPG)	2014 – Present
- International Association of Hydrogeologists (IAH)	2014 – Present
- National Ground Water Association (NGWA)	2018 – Present

SKILLS

Able to learn and understand tasks quickly while performing under pressure, both independently and as part of a team; excellent work ethic and strong ability towards detailing.
- **Expertise:** Strong hands-on experience in water chemistry, stable isotopes and noble gas labs; Proficient in ArcGIS and Microsoft Office suite; Groundwater modeling (MODFLOW); Geochemical modeling (MINEQL+ and PHREEQC); Field work planning and implementation; Collection of groundwater, surface water and shale gas samples; Geological mapping; Data synthesis and analysis; Document preparation including development of text, tables and figures for sampling and analysis plans, conference presentations and scientific papers writing
- **Programming:** R, Python, MATLAB, LabVIEW
- **Other softwares:** Adobe Illustrator and Photoshop
- **Language:** Fluent in English and Chinese

PUBLICATIONS

Peer Reviewed Publications
18. **Wen, T.**, Liu, M., Zheng, G., Li, Z. and Brantley, S.L., Applying Machine Learning to Predict Missing Methane Data and Detect Anomalous Methane in Groundwater. *In preparation*.
17. Agarwal, A., **Wen, T.**, Xue, L., Chen, A., Herman, A., and Brantley, S.L., Geonet: An Automated Geochemical Network Analysis with Application to Detecting Stream Water Contamination. *In preparation*.
16. **Wen, T.**, Woda, J., Marcon, V., Niu, X., Li, Z. and Brantley, S.L., Using groundwater chemistry to identify potential migration of methane near shale gas wells in the Appalachian Basin. *To be submitted*.
15. Zheng, G., Liu, M., **Wen, T.**, Wang, H., Yao, H., Brantley, S.L. and Li, Z., Targeted Source Detection for Environmental Data. *Under review*.

14. Liu, R., Heinemann, N., Liu, J., Zhu, W., Wilkinson, M., Xie, Y., Wang, Z., **Wen, T.**, Hao, F., Haszeldine, S.R., 2019. CO_2 Sequestration by Mineral Trapping in Natural Analogues in the Yinggehai Basin, South China Sea. *Marine and Petroleum Geology*. https://doi.org/10.1016/j.marpetgeo.2019.03.018.

13. **Wen, T.**, Agarwal, A., Xue, L., Chen, A., Herman, A., Li, Z. and Brantley, S.L., 2019. Assessing Changes in Groundwater Chemistry in Landscapes with More than 100 Years of Oil and Gas Development. *Environmental Science: Processes & Impacts*. http://doi.org/10.1039/C8EM00385H.

12. Woda, J., **Wen, T.**, Oakley, D., Yoxtheimer, D., Engelder, T., Castro, M.C. and Brantley, S.L., 2018. Detecting and Explaining Why Aquifers Occasionally Become Degraded Near Hydraulically Fractured Shale Gas Wells. *Proceedings of the National Academy of Sciences*, 115(49), pp.12349-12358. http://doi.org/10.1073/pnas.1809013115.

11. Larson, T.E., Nicot, J.P., Mickler, P., Castro, M.C., Darvari, R., **Wen, T.** and Hall, C.M., 2018. Monitoring Stray Natural Gas in Groundwater with Dissolved Nitrogen. An Example from Parker County, Texas. *Water Resources Research*, 54(9), pp.6024-6041. http://doi.org/10.1029/2018WR022612.

10. **Wen, T.**, Niu, X., Gonzales, M., Zheng, G., Li, Z. and Brantley, S.L., 2018. Big Groundwater Data Sets Reveal Possible Rare Contamination Amid Otherwise Improved Water Quality for Some Analytes in a Region of Marcellus Shale Development. *Environmental Science & Technology*, 52(12), pp.7149-7159. http://doi.org/10.1021/acs.est.8b01123.

9. Niu, X., **Wen, T.**, Li, Z. and Brantley, S.L., 2018. One Step toward Developing Knowledge from Numbers in Regional Analysis of Water Quality. *Environmental Science & Technology*, 52(6), pp.3342-3343. http://doi.org/10.1021/acs.est.8b01035.

8. **Wen, T.**, Pinti, D.L., Castro, M.C., López-Hernández, A., Hall, C.M., Shouakar-Stash, O. and Sandoval-Medina, F., 2018. A Noble Gas and $^{87}Sr/^{86}Sr$ Study in Fluids of the Los Azufres Geothermal Field, Mexico – Assessing Impact of Exploitation and Constraining Heat Sources. *Chemical Geology*, 483, pp.426-441. http://doi.org/10.1016/j.chemgeo.2018.03.010.

7. Brantley, S.L., Vidic, R.D., Brasier, K., Yoxtheimer, D., Pollak, J., Wilderman, C. and **Wen, T.**, 2018. Engaging over data on fracking and water quality. *Science*, *359*(6374), pp.395-397. http://doi.org/10.1126/science.aan6520.

6. **Wen, T.**, Castro, M.C., Nicot, J.P., Hall, C.M., Pinti, D.L., Mickler, P., Darvari, R. and Larson, T., 2017. Characterizing the noble gas isotopic composition of the Barnett Shale and Strawn group and constraining the source of stray gas in the Trinity Aquifer, north-central Texas. *Environmental Science & Technology*, *51*(11), pp.6533-6541. http://doi.org/10.1021/acs.est.6b06447.

5. **Wen, T.**, Castro, M.C., Nicot, J.P., Hall, C.M., Larson, T., Mickler, P. and Darvari, R., 2016. Methane Sources and Migration Mechanisms in Shallow Groundwaters in Parker and Hood Counties, Texas - A Heavy Noble Gas Analysis. *Environmental Science & Technology*, *50*(21), pp.12012-12021. http://doi.org/10.1021/acs.est.6b01494.

4. **Wen, T.**, Castro, M.C., Ellis, B.R., Hall, C.M. and Lohmann, K.C., 2015. Assessing

compositional variability and migration of natural gas in the Antrim Shale in the Michigan Basin using noble gas geochemistry. *Chemical Geology*, *417*, pp.356-370. http://doi.org/10.1016/j.chemgeo.2015.10.029.

3. **Wen, T.**, Castro, M.C., Hall, C.M., Pinti, D.L. and Lohmann, K.C., 2016. Constraining groundwater flow in the Glacial Drift and Saginaw aquifers in the Michigan Basin through helium concentrations and isotopic ratios. *Geofluids*, *16*(1), pp.3-25. http://doi.org/10.1111/gfl.12133.

2. Boucher, C., Pinti, D.L., Roy, M., Castro, M.C., Cloutier, V., Blanchette, D., Larocque, M., Hall, C.M., **Wen, T.** and Sano, Y., 2015. Groundwater age investigation of eskers in the Amos region, Quebec, Canada. *Journal of Hydrology*, *524*, pp.1-14. http://doi.org/10.1016/j.jhydrol.2015.01.072.

1. Nie, Y., Liu, X., **Wen, T.**, Sun, L. and Emslie, S.D., 2014. Environmental implication of nitrogen isotopic composition in ornithogenic sediments from the Ross Sea region, East Antarctica: $\Delta^{15}N$ as a new proxy for avian influence. *Chemical Geology*, *363*, pp.91-100. http://doi.org/10.1016/j.chemgeo.2013.10.031.

Non-Peer Reviewed Publications

4. **Wen, T.**, 2017. *Development of Noble Gas Techniques to Fingerprint Shale Gas and to Trace Sources of Hydrocarbons in Groundwater* (Doctoral dissertation, University of Michigan).

3. Nicot, JP., et al., 2015. *Understanding and Managing Environmental Roadblocks to Shale Gas Development: An Analysis of Shallow Gas, NORM, and Trace Metals* (Technical Report, http://www.rpsea.org/projects/11122-56/).

2. **Wen, T.**, 2014. *Constraining groundwater flow in the Glacial Drift and Saginaw Aquifers in the Michigan Basin through helium concentrations and isotopic ratios* (Master thesis, University of Michigan).

1. **Wen, T.**, 2011. *Analysis on nitrogen species and isotopic composition of the ornithogenic sediments from Cape Bird, Ross Island, East Antarctica* (Bachelor thesis, University of Science and Technology of China).

CONFERENCE PRESENTATIONS AND SEMINAR

32. **Wen, T.**, Using Small Data and Big Data to Assess the Impact of Shale Gas Drilling on Water Quality. Saint Francis University, Loretto, PA, 03/2019. [**Invited Talk**]

31. **Wen, T.**, Liu, M., Woda, J., Zheng, G., Niu, X., Gonzales, M., Hall, C., Nicot, J.-P., Castro., M.C., Li, Z., and Brantley, S.L., Using Big Data and Small Data (Noble Gases) to Assess the Impact of Shale Gas Drilling on Water Quality. National Groundwater Association Workshop: Groundwater and Oil and Gas Development, San Antonio, TX, 03/2019. [Oral]

30. **Wen, T.**, Liu, M., Woda, J., Zheng, G., Li, Z., and Brantley, S.L., Detecting anomalous methane in groundwater in shale gas production areas using big data. AGU Fall Meeting, Washington, D.C., 12/2018. [Poster]

29. Brantley, S.L., **Wen, T.**, Li, Z., Liu, M., Zheng, G., Herman, A., Gonzales, M., Woda, J., and

Niu, X., Using Big Data (and Little Data) to Understand the Effects of Shale Gas Development on Water Quality. AGU Fall Meeting, Washington, D.C., 12/2018. [**Invited Talk**]

28. Woda, J., **Wen, T.**, Lemon, J., Keeports, C., Zelt, F.B., and Brantley, S.L., Using citizen science and stream methane to locate and understand hydrocarbon-related contaminant sources in Pennsylvania. AGU Fall Meeting, Washington, D.C., 12/2018. [Oral]

27. **Wen, T.**, Zheng, G., Niu, X., Liu, M., Li, Z., and Brantley, S.L., Using Geochemistry Data to Identify Groundwater Quality Issues in Shale Gas Production Area. Health Effects Institute Energy Research Program Workshop, Austin, TX, 09/2018. [**Invited Talk**]

26. **Wen, T.**, Liu, M., Zheng, G., Brantley, S.L., and Li, Z., Using Machine Learning to Detect Anomalous Methane in Groundwater within Shale Gas Production Areas. Goldschmidt, Boston, MA, 08/2018. [Poster]

25. Brantley, S.L., **Wen, T.**, Niu, X., Zheng, G., Gonzales, M., and Li, Z., Using Big Groundwater Data to Understand Regional Water Chemistry. Goldschmidt, Boston, MA, 08/2018. [Poster]

24. Woda, J., **Wen, T.**, and Brantley, S.L., Distinguishing Recent Methane Migration into Groundwater from Natural Methane Sources in the Marcellus Gas Play. Goldschmidt, Boston, MA, 08/2018. [Oral]

23. **Wen, T.**, Niu, X., Pollak, J., Brazil, L., Li, Z., and Brantley, S.L., Using Shale Network Database to Assess the Water Quality Data in Marcellus Shale Area. UCOWR-NIWR Annual Water Resources Conference, Pittsburgh, PA, 06/2018. [**Invited Talk**]

22. **Wen, T.**, A Multi-disciplinary and Multi-stakeholder Framework to Evaluate Environmental Impacts of Shale Gas Production. Energy Days Conference, University Park, PA, 05/2018. [Oral]

21. **Wen, T.**, Liu, M., Zheng, G., Niu, X., Gonzales, M., Woda, J., Li, Z., and Brantley, S.L., Applying machine learning in water quality data: implication for controlling factors and occurrence time of elevated methane in groundwater. Shale Network Workshop, University Park, PA, 05/2018. [Poster]

20. **Wen, T.**, Zheng, G., Liu, M., Niu, X., Gonzales, M., Woda, J., Li, Z., and Brantley, S.L., Applying Machine Learning to Detect Anomalous Methane in Groundwater. PA Groundwater Symposium, State College, PA, 05/2018. [Oral]

19. **Wen, T.**, Niu, X., Gonzales, M., Li, Z., and Brantley, S.L., Applying Data Mining Techniques to Chemical Analyses of Pre-drill Groundwater Samples within the Marcellus Formation Shale Play in Bradford County, Pennsylvania. AGU Fall Meeting, New Orleans, LA, 12/2017. [Poster]

18. Pinti, D.L., **Wen, T.**, Castro, M.C., López-Hernández, A., Hall, C.M., Shouakar-Stash, O. and Sandoval-Medina, Using noble gases and $^{87}Sr/^{86}Sr$ to constrain heat sources and fluid evolution at the Los Azufres Geothermal Field, Mexico. AGU Fall Meeting, New Orleans, LA, 12/2017. [Poster]

17. **Wen, T.**, Castro, M.C., Nicot, J.P., Hall, C.M., Pinti, D.L., Mickler, P., Darvari, R. and Larson, T., Barnett Shale or Strawn Group: Identifying the Source of Stray Gas through

Noble Gases in the Trinity Aquifer, North-Central Texas. AGU Fall Meeting, New Orleans, LA, 12/2017. [Oral]

16. **Wen, T.**, Niu, X., Gonzales, M., Li, Z., and Brantley, S.L., Using Data Mining Techniques to Assess Water Quality within the Marcellus Shale Play. Geochemistry Forum, State College, PA, 12/2017. [Oral]

15. Brantley, S.L., Gonzales, M., Guarnieri, M., Niu, X., **Wen, T.** and Li, Z., Investigating Chemical Analyses of Ground Waters Sampled by Shale-gas Industry Consultants Before Gas-well Drilling in Pennsylvania. Pennsylvania Groundwater Symposium, State College, PA, 05/2017. [Oral]

14. **Wen, T.**, Castro, M.C., Nicot, J.P., Hall, C.M., Larson, T., Mickler, P. and Darvari, R., Methane Sources and Migration Mechanisms in the Shallow Trinity Aquifer in Parker and Hood Counties, Texas – a Noble Gas Analysis. Shale Network Workshop, University Park, PA, 05/2017. [Poster]

13. **Wen, T.**, Pinti, D.L., Castro, M.C., Hall, C.M., Shouakar-Stash, O. and López-Hernández, A., Fluids in the Los Azufres Geothermal Field, Mexico traced by noble gas isotopes and $^{87}Sr/^{86}Sr$. GAC-MAC Meeting, Kingston, Canada, 05/2017. [Poster]

12. **Wen, T.**, Development of noble gas techniques to fingerprint shale gas and to trace hydrocarbons in groundwater. China University of Geosciences, Wuhan, China, 03/2017. [Invited, Oral]

11. **Wen, T.**, Castro, M.C., Nicot, J.P., Hall, C.M., Mickler, P. and Darvari, R., Methane Sources and Migration Mechanisms in the Shallow Trinity Aquifer in Parker and Hood Counties, Texas – a Noble Gas Analysis. AGU Fall Meeting, San Francisco, CA, 12/2016. [Oral]

10. **Wen, T.**, Castro, M.C., Nicot, J.P., Hall, C.M., Larson, T., Mickler, P. and Darvari, R., Methane Sources and Migration Mechanisms in the Shallow Trinity Aquifer in Parker and Hood Counties, Texas – a Noble Gas Analysis. AIPG Michigan Section, Ann Arbor, MI, 12/2016. [Poster]

9. Castro, M.C., **Wen, T.**, Nicot, J.P., Hall, C.M., Mickler, P. and Darvari, R., Methane Sources in Shallow Groundwaters in Parker and Hood Counties, Texas – A Heavy Noble Gas Analysis. Goldschmidt, Yokohama, Japan, 06/2016. [Oral]

8. **Wen, T.**, Castro, M.C., Nicot, J.P., Hall, C.M., Mickler, P. and Darvari, R., Identifying the Sources of Methane in Shallow Groundwaters in South-central Texas through Noble Gas Signatures. AAPG ACE, Calgary, Canada, 06/2016. [Oral]

7. **Wen, T.**, Castro, M.C., Ellis, B.R., Hall, C.M. and Lohmann, K.C., Assessing Compositional Variability and Migration of Natural Gas in Antrim Shale in the Michigan Basin Using Noble Gas Geochemistry. AGU Fall Meeting, San Francisco, CA, 12/2015. [Poster]

6. Castro, M.C., **Wen, T.**, Nicot, J.P., Hall, C.M., Mickler, P. and Darvari, R., Identifying the Sources of Methane in Shallow Groundwaters in Parker and Hood Counties, Texas through Noble Gas Signatures. AGU Fall Meeting, San Francisco, CA, 12/2015. [Oral]

5. **Wen, T.**, Castro, M.C., Ellis, B.R. and Hall, C.M., Using Noble Gases to Assess the Compositional Variability and Sources of Natural Gas in the Antrim Shale, Michigan Basin, USA. AAPG Eastern Section Meeting, Indianapolis, IN, 09/2015. [Poster]

4. **Wen, T.**, Castro, M.C., Ellis, B.R., Hall, C.M., Lohmann, K.C. and Bouvier, L., Assessing the Compositional Variability and Migration of Natural Gas in Antrim Shale in the Michigan Basin Using Noble Gas Geochemistry. AAPG ACE, Denver, CO, 06/2015. [Oral]

3. **Wen, T.**, Castro, M.C., Ellis, B.R., Hall, C.M., Lohmann, K.C. and Bouvier, L., Noble Gas Signatures in Antrim Shale Gas in the Michigan Basin-Assessing Compositional Variability and Transport Processes. AGU Fall Meeting, San Francisco, CA, 12/2014. [Poster]

2. **Wen, T.**, Castro, M.C. and Hall, C.M., Constraining Groundwater Flow in the Michigan Basin Through Helium Concentrations and Isotopic Ratios in the Saginaw Aquifer, Southern Michigan. AGU Fall Meeting, San Francisco, CA, 12/2012. [Poster]

1. **Wen, T.**, Liu, X. and Sun, L., Variations of $\delta^{15}N$ values in ornithogenic sediments on tropical Dongdao Island of South China Sea and their influencing factors. The 18th International Conference on Environmental Indicators, Hefei, China, 2010. [Poster]

Updated on 04/14/2019