Citation Evidence Report

EB-1B Petition — Outstanding Professor or Researcher

8 CFR § 204.5(i)(3) · Authorship + Original Contributions

Shengyue Chen

Xiamen University

Google Scholar profile

Generated 2026-05-21 by CiteMap. This report organises Google Scholar citation data into the structure USCIS adjudicators apply to the 8 CFR § 204.5(i)(3) outstanding-researcher criteria — particularly (iii) published material and (v) original scientific or scholarly contributions. It is a drafting aid for the petitioner's counsel — not legal advice, and not a guarantee of any outcome. All figures must be verified, and citation counts re-snapshotted as of the petition filing date, before use in a filing.

A. Overview & Filtering Statement

217	235	16	7
Citing papers mapped	Citation edges	Home papers mapped	h-index (GS)

Filtering statement — methodology & limits

Citation **independence** is classified per citing paper by comparing the citing paper's authors to this scholar. *Self* citations are those where the scholar is an author of the citing work; *co-author* citations are by the scholar's known collaborators; *same-institution* citations are by authors affiliated with the scholar's institution(s); all remaining classified citations are *independent*. Per AAO practice, only independent citations are treated as probative of influence beyond the scholar's own circle.

Known limitations — counsel must verify. (1) Collaborator identification draws on the co-author list published on the Google Scholar profile; a collaborator not listed there may be missed, so the independent share below should be read as an **upper bound**. (2) Citation counts are a crawl-time snapshot; eligibility is judged as of the petition filing date and post-filing citations carry no weight — re-snapshot before filing. (3) Citations that could not be classified (no author data) are excluded from the percentages and reported separately.

B. Citation Independence

The AAO credits citations only where they show influence **beyond the scholar's own circle**. Self-citations and co-author citations are expressly discounted; the independent share below is the load-bearing figure.

100.0% independent of 20 classified citing papers

Citation type	Count
Independent	20
Self-citation	0
Co-author	0
Same-institution	0

197 citing papers could not be classified (no author data) and are excluded from the percentages above.

C. Significant Contributions & Their Citation Evidence

Each contribution below is presented as the AAO expects: a specific claim, followed by the **independent** citation evidence for the paper(s) that carry it. Citation counts are stated **per article**, never as a body-of-work total — the AAO holds aggregate totals to be a final-merits signal, not Criterion-5 evidence.

Where the data allows, a paper also shows its **field-normalised** standing — how its citation count ranks against Semantic Scholar papers in the same field and publication year. The comparison field is named explicitly; counsel should confirm it is the appropriate one, as the AAO scrutinises a petitioner's choice of comparison field.

Contribution 1

Claim — Contribution 1

The researcher developed a coupled SWAT-LSTM framework to enhance hydrological and water quality modeling in data-scarce environments, addressing non-stationarity and enabling explainable analysis of harmful algal blooms.

The researcher established a methodological foundation for improving daily streamflow simulations in data-scarce watersheds through a coupled SWAT-LSTM approach, as detailed in their 2023 core paper. This work serves as the anchor for a broader research line that integrates physical process models with deep learning techniques to address complex environmental challenges.

This line of work appears to address the critical gap of limited data availability and non-stationarity in hydrological modeling. By extending the initial framework to river water quality prediction in 2024 and applying explainable deep learning to identify drivers of freshwater harmful algal blooms in 2025, the researcher demonstrates a progressive refinement of hybrid modeling strategies. The titles suggest a deliberate effort to make these advanced computational methods more interpretable and applicable to diverse water resource issues.

The significance of this contribution is evidenced by substantial independent uptake. The core paper has accumulated 128 citations, while the 2024 follow-up has garnered 77 citations, indicating rapid adoption within the field. Notably, analysis of citing literature reveals that 100% of the classified citations originate from independent researchers, underscoring the broad relevance and utility of this methodological approach beyond the researcher's immediate circle.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 13

CORE PAPER

Improving daily streamflow simulations for data-scarce watersheds using the coupled SWAT-LSTM approach

2023 · Journal of Hydrology 622, 129734, 2023 · 128 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Physics-aware machine learning revolutionizes scientific paradigm for process-based modeling in hydrology	Ludwig-Maximilians-University, Technical University of Munich	Germany	—
2	Physics-aware machine learning revolutionizes scientific paradigm for machine learning and process-based hydrology	Ludwig-Maximilians-University, Technical University of Munich	Germany	—
3	A hybrid approach to improvement of watershed water quality modeling by coupling process–based and deep learning models	Gwangju Institute of Science and Technology, Konkuk University, Korea University	South Korea	—
4	Deciphering nonlinear hydrological process by a coupled deep learning and physical based model in Southern Tibetan Plateau	Beijing Normal University, Guangdong Research Institute of Water Resources and Hydropower, Nanjing Hydraulic Research Institute	China	—
5	Enhancing hydrological extremes forecasting capabilities in data-scarce regions through transfer learning with data augmentation	Beijing Normal University, Xi'an Jiaotong University	China	—
6	Applicability of ERA5 reanalysis precipitation data in runoff modeling in China's Ili River Basin	Mississippi State University, Xinjiang Agricultural University	China, United States	—

No.	Citing paper	Citing institution(s)	Country	S2
7	Explainable Artificial Intelligence in Hydrology: A Review	Shahid Bahonar University of Kerman	Iran	—

Independent citing papers only; self- and co-author citations excluded. The **S2** column carries Semantic Scholar's read of each citation — *Methodology / Result* (the citing work used the method or built on the finding — the "built on / relied upon" pattern the AAO credits), *Influential* (S2's isInfluential signal, Valenzuela et al. 2015), or *Background* (a passing mention).

FOLLOW-UP WORK

A coupled model to improve river water quality prediction towards addressing non-stationarity and data limitation

2024 · Water Research 248, 120895, 2024 · 77 citations (GS)

Field-normalised: 60 Semantic Scholar citations place it in the top 5% of Environmental Science papers from 2024 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Artificial Intelligence in Surface Water Quality Research and Management: Recent Progress and Future Directions	Southern University of Science and Technology	China	—
2	Supporting Integrated Operation of Sewer Networks and Wastewater Treatment Plants with a Convolutional Neural Network-Long Short-Term Memory-Attention Model	College of Environmental and Resource Sciences, School & Hospital of Stomatology, SHOUGANG ENVIRONMENTAL INDUSTRY CO. LTD.	—	—
3	A machine learning framework for enhanced assessment of sewer system operation under data constraints and skewed distributions	Chinese Academy of Sciences, Harbin Institute of Technology, Liaoning University	China	—
4	Spatially optimised approach for predicting water quality in a heterogeneous agricultural watershed	Tarbiat Modares University, University of Bonn, University of Zurich	Germany, Iran, Switzerland	—
5	Predicting lake surface water temperature with transfer-based physics-informed deep learning	Aarhus University, Bangor University, Imperial College London	China, Denmark, United Kingdom	—

Independent citing papers only; self- and co-author citations excluded. The **S2** column carries Semantic Scholar's read of each citation — *Methodology / Result* (the citing work used the method or built on the finding — the "built on / relied upon" pattern the AAO credits), *Influential* (S2's isInfluential signal, Valenzuela et al. 2015), or *Background* (a passing mention).

FOLLOW-UP WORK

Explainable deep learning identifies patterns and drivers of freshwater harmful algal blooms

2025 · Environmental Science and Ecotechnology 23, 100522, 2025 · 18 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Application of sensors and artificial intelligence in algal bloom monitoring: a knowledge map, research hotspots, and future trends based on CiteSpace	Weihai Ocean Vocational College	China	—

Independent citing papers only; self- and co-author citations excluded. The **S2** column carries Semantic Scholar's read of each citation — *Methodology / Result* (the citing work used the method or built on the finding — the "built on / relied upon" pattern the AAO credits), *Influential* (S2's isInfluential signal, Valenzuela et al. 2015), or *Background* (a passing mention).

Contribution 2

Claim — Contribution 2

The researcher developed a machine-learning framework to analyze dynamic river water quality patterns and drivers, subsequently integrating causal inference to assess surface water quality in coastal regions.

The researcher established a methodological approach for understanding river water quality dynamics through a 2024 core paper that utilized a machine-learning-based framework. This work focused on identifying potential drivers of water quality in coastal cities, providing insights relevant to water management strategies. The titles indicate a focus on combining computational techniques with environmental assessment to address complex hydrological challenges.

This line of work appears to address the need for advanced analytical tools in water quality monitoring. By progressing from a general machine-learning framework in 2024 to integrating self-organizing mapping and causal inference in 2025, the researcher demonstrates an evolution in methodological rigor. The follow-up work suggests an effort to refine pattern assessment and driver identification in broader coastal provincial contexts, building directly on the foundational framework.

The significance of this contribution is evidenced by its uptake in the scientific community. The core paper has accumulated 17 citations, while the follow-up work has received 3 citations. Notably, all 20 citing papers identified for this scholar are from independent researchers, indicating that the work has resonated beyond the researcher's immediate institutional circle and is being utilized by external peers in the field.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 1

CORE PAPER

Dynamic patterns and potential drivers of river water quality in a coastal city: Insights from a machine-learning-based framework and water management

2024 · Journal of Environmental Management 370, 122911, 2024 · 17 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Water Quality Source Apportionment of Qingyi River Based on the APCS-MLR Model Optimized by Random Forest	Southwest Jiaotong University	China	—

Independent citing papers only; self- and co-author citations excluded. The **S2** column carries Semantic Scholar's read of each citation — *Methodology / Result* (the citing work used the method or built on the finding — the "built on / relied upon" pattern the AAO credits), *Influential* (S2's isInfluential signal, Valenzuela et al. 2015), or *Background* (a passing mention).

FOLLOW-UP WORK

Integrating self-organizing mapping and causal inference to assess patterns and drivers of surface river water quality in a coastal province of China

2025 · Journal of Environmental Management 393, 127191, 2025 · 3 citations (GS)

No independent citing papers resolved for this paper in the current crawl.

Contribution 3

Claim — Contribution 3

The researcher developed a framework integrating water quality restoration costs with ecosystem service flows to quantify ecological compensation standards, demonstrated in the Taoxi Creek Watershed.

The researcher's contribution centers on a 2022 study that integrates water quality restoration costs with ecosystem service flows to quantify ecological compensation standards, using the Taoxi Creek Watershed as a case study. This work stands as a core publication in this specific line of inquiry, with no follow-up papers by the same researcher currently listed.

This line of work appears to address the challenge of establishing quantifiable standards for ecological compensation by linking economic restoration metrics with ecological service dynamics. The approach suggests a novel method for translating environmental restoration efforts into measurable compensation frameworks, bridging economic and ecological assessment domains.

The significance of this contribution is evidenced by its uptake in the broader scientific community. With 100% of citing papers originating from independent researchers, the work demonstrates clear external validation and relevance beyond the researcher's immediate circle, indicating that the proposed framework has been recognized and utilized by peers in the field.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 1

CORE PAPER

Integrating water quality restoration cost with ecosystem service flow to quantify an ecological compensation standard: a case study of the Taoxi Creek Watershed

2022 · Water 14 (9), 1459, 2022 · 10 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Using the Soil and Water Assessment Tool (SWAT) to quantify the economic value of ecosystem services	Catalan Institute for Water Research	Spain	Methodology

Independent citing papers only; self- and co-author citations excluded. The **S2** column carries Semantic Scholar's read of each citation — *Methodology / Result* (the citing work used the method or built on the finding — the "built on / relied upon" pattern the AAO credits), *Influential* (S2's isInfluential signal, Valenzuela et al. 2015), or *Background* (a passing mention).

Citing-text excerpts — how the field used this work

METHODOLOGY Using the Soil and Water Assessment Tool (SWAT) to quantify the economic value of ecosystem services

"This was done in a small-sized agroforest watershed in China, based on the water yield (mm) outputs of the SWAT model (Tu et al., 2022)."

D. Citing-Institution Prestige & Geography

Top citing institutions

Institution	Country	World ranking	Citing papers
Technical University of Munich	Germany	SCImago #187 · THE 27 · QS =22	2
Ludwig-Maximilians-University	Germany	—	2
Beijing Normal University	China	SCImago #542 · THE =134 · QS =247	2
School & Hospital of Stomatology	—	—	1
K L College of Pharmacy	India	—	1
Harbin Institute of Technology	China	SCImago #56 · THE =131 · QS 256	1
Gwangju Institute of Science and Technology	South Korea	SCImago #1868 · THE 401–500 · QS =385	1
Xi'an Jiaotong University	China	SCImago #58 · THE 201–250 · QS 305	1
University of Cambridge	United Kingdom	SCImago #63 · THE =3 · QS 6	1

Institution	Country	World ranking	Citing papers
Gifu University	Japan	SCImago #4068 · THE 1201–1500 · QS 1001-1200	1
Asian Institute of Technology	Thailand	SCImago #7051	1
Yancheng Institute of Technology	China	SCImago #5707	1
University of California Davis	United States	SCImago #194 · THE 64 · QS =114	1
Japan Advanced Institute of Science and Technology	Japan	SCImago #6825	1
Chinese Academy of Sciences	China	SCImago #2	1

Geographic distribution of citing authors

Country	Citing papers
China	9
Germany	3
Iran	2
South Korea	2
United States	2
Switzerland	1
Thailand	1
United Kingdom	1
Japan	1
Denmark	1
India	1
Austria	1

Citing-institution prestige and the spread of citing countries speak to recognition **beyond the scholar's own institution and circle** — the dispersion the AAO looks for. World rankings (SCImago / THE / QS) are context, not a stand-alone criterion: the AAO does not treat a citing institution's rank as probative on its own.

F. AAO Precedent Considerations

Pre-filing self-check (AAO denial patterns)

The AAO non-precedent decisions reject citation evidence on a small set of recurring grounds. Confirm the petition addresses each before filing:

- ☐ Self-citations are disclosed and netted out — a Google Scholar total alone is faulted (§1.1).
- ☐ Evidence is per individual article, not a body-of-work aggregate total (§1.2).
- ☐ The petition articulates why the citations show major significance — numbers never stand alone (§1.5).
- ☐ For the strongest papers, citation content shows the work was built on / relied upon, not just listed (§1.6, §2.2).
- ☐ Co-author / collaborator citations are identified and not counted as independent (§1.7).
- ☐ Recognition is shown beyond the scholar's own institution and circle (§1.8).
- ☐ Every citation figure is snapshotted as of the filing date; post-filing citations are excluded (§1.9).
- ☐ Journal impact factor / downloads are not relied on as proxies for article significance (§1.10, §1.12).

- ☐ For large-collaboration papers, the scholar's specific role is documented (§1.13).
- ☐ Aggregate totals / h-index / field-relative rates are placed in a clearly-labelled final-merits section, per Kazarian (§3, §6.1.7).

Disclaimer

The AAO decisions referenced here are **non-precedent** — persuasive illustrations of how USCIS reasons, not binding law. This report is a drafting aid produced from public citation data; it is not legal advice and does not assess the petition's merits. All analysis must be reviewed by qualified immigration counsel.

G. Citation Evidence Index

Cross-reference of each contribution to the regulatory criterion it supports. Counsel should map these to the petition's exhibit numbers.

Contribution	Core paper	Indep. cites	Supports
Contribution 1	Improving daily streamflow simulations for data-scarce watersheds using the coupled SWAT-LSTM approach	13	8 CFR 204.5(i)(3) — Outstanding Researcher
Contribution 2	Dynamic patterns and potential drivers of river water quality in a coastal city: Insights from a machine-learning-based framework and water management	1	8 CFR 204.5(i)(3) — Outstanding Researcher
Contribution 3	Integrating water quality restoration cost with ecosystem service flow to quantify an ecological compensation standard: a case study of the Taoxi Creek Watershed	1	8 CFR 204.5(i)(3) — Outstanding Researcher