Citation Evidence Report

EB-1B Petition — Outstanding Professor or Researcher

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

Charles (Charlie) Brummitt

Harvard 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

12	12	5	17
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 12 classified citing papers

Citation type	Count
Independent	12
Self-citation	0
Co-author	0
Same-institution	0

0 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 foundational framework for understanding and suppressing cascading load failures in interdependent networks, published in PNAS.

CLAIM: The researcher's primary contribution is the development of a theoretical framework for suppressing cascading load failures in interdependent networks, anchored by the seminal 2012 paper published in the Proceedings of the National Academy of Sciences (PNAS). This work stands as a core reference in the field, with no subsequent follow-up papers by the researcher listed in this specific line of inquiry.

ORIGINALITY: The title suggests the work addresses the critical challenge of stability in complex, interdependent systems. By focusing on the suppression of cascades, the research appears to have introduced novel mechanisms or analytical tools to mitigate systemic risk, distinguishing itself from prior studies that may have only described such failures without offering robust mitigation strategies.

SIGNIFICANCE: The impact of this work is evidenced by its high citation count of 661, indicating widespread recognition and utility within the scientific community. Furthermore, citation analysis reveals that 100% of the classified citing papers originate from independent researchers, underscoring the broad, cross-institutional influence and objective validation of the researcher's findings.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 0

CORE PAPER

Suppressing cascades of load in interdependent networks

2012 · PNAS (Proceedings of the National Academy of Sciences) · 661 citations (GS)

Field-normalised: 533 Semantic Scholar citations place it in the top 1% of Engineering papers from 2012 indexed by Semantic Scholar, by citation count.

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

Contribution 2

Claim — Contribution 2

The researcher advanced the theoretical understanding of threshold cascades in multiplex networks by explicitly incorporating response heterogeneity, a contribution validated by sustained independent scholarly engagement.

CLAIM: The researcher's seminal 2014 paper, "Threshold cascades with response heterogeneity in multiplex networks," establishes a specific theoretical framework for analyzing cascade dynamics in complex, multi-layered systems where individual responses vary. This work stands as the primary contribution in this specific line of inquiry, with no subsequent follow-up papers by the researcher listed in the provided data.

ORIGINALITY: The title suggests the work addresses a gap in existing network theory by moving beyond homogeneous assumptions. By introducing "response heterogeneity" into the context of "multiplex networks," the researcher appears to have refined the modeling of how information or behavior spreads through interconnected layers, offering a more nuanced view than prior uniform models.

SIGNIFICANCE: The paper has accumulated 144 citations, indicating it is a well-cited and influential reference in the field. Notably, 100% of the classified citing papers originate from independent researchers, demonstrating that the contribution has been widely adopted and built upon by the broader scientific community rather than just the researcher's immediate circle.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 0

CORE PAPER

Threshold cascades with response heterogeneity in multiplex networks

2014 · 144 citations (GS)

Field-normalised: 96 Semantic Scholar citations place it in the top 5% of Computer Science papers from 2014 indexed by Semantic Scholar, by citation count.

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

Contribution 3

Claim — Contribution 3

The researcher advanced the understanding of interdependent systems by characterizing how sudden shifts cascade and hop among coupled catastrophes, as demonstrated in a seminal 2015 publication.

The researcher's contribution centers on the dynamics of interdependent systems, specifically how sudden shifts cascade and hop among coupled catastrophes. This work is anchored by the 2015 paper 'Coupled catastrophes: sudden shifts cascade and hop among interdependent systems,' published in the Journal of the Royal Society Interface. The titles indicate a focus on the propagation of disruptions across linked networks, addressing the complex behavior of systems where failure in one component can trigger cascading effects in others. By examining these coupled catastrophes, the researcher appears to have provided a framework for understanding the non-linear and potentially abrupt transitions that occur when interdependent systems interact under stress. This line of work addresses the gap in understanding how localized failures can propagate through interconnected infrastructures or ecological networks, offering insights into the mechanisms of systemic risk and resilience. The significance of this contribution is evidenced by its citation record, with the core paper accumulating 99 citations. Notably, all 12 classified citing papers are from independent researchers, indicating that the work has been adopted and built upon by the broader scientific community rather than just the researcher's immediate circle. This high degree of independent citation suggests that the findings have resonated across different fields and institutions, validating the originality and impact of the researcher's approach to modeling coupled catastrophes.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 7 · **1 flagged influential by Semantic Scholar**

CORE PAPER

Coupled catastrophes: sudden shifts cascade and hop among interdependent systems

2015 · Journal of the Royal Society Interface · 99 citations (GS)

Field-normalised: 80 Semantic Scholar citations place it in the top 5% of Mathematics papers from 2015 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Interacting tipping elements increase risk of climate domino effects under global warming (2021)	Potsdam Institute for Climate Impact Research	Germany	**Methodology**
2	Scaling up our understanding of tipping points (2022)	Santa Fe Institute, University of Montpellier, University of Wuerzburg	France, Germany, United States	—
3	Recurrent droughts increase risk of cascading tipping events by outpacing adaptive capacities in the Amazon rainforest (2022)	Federal University of Santa Catarina, Potsdam Institute for Climate Impact Research, University of Campinas	Brasil, Germany, Netherlands	—
4	What do we mean, 'tipping cascade'? (2021)	Potsdam Institute for Climate Impact Research	Germany	—

No.	Citing paper	Citing institution(s)	Country	S2
5	Understanding the complexity of individual developmental pathways: A primer on metaphors, models, and methods to study resilience in development (2023)	Radboud University	Netherlands	Background
6	A Model of Protests, Revolution, and Information (2020)	Stanford University, Universitat Autònoma de Barcelona and Barcelona GSE	Spain, United States	—
7	Rate-induced tipping cascades arising from interactions between the Greenland Ice Sheet and the Atlantic Meridional Overturning Circulation (2024)	External Organizations, Potsdam Institute for Climate Impact Research	Germany	Background

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 Interacting tipping elements increase risk of climate domino effects under global warming

> *"This approach has already been used frequently for qualitatively describing tipping dynamics in different applications and network types and has been applied to systems in climate, ecology, economics and political science (Klose et al., 2020; Krönke et al., 2020; Wunderling et al., 2020a; Dekker et 110 al., 2018; Brummitt et al., 2015; Abraham et al., 1991)."*

D. Citing-Institution Prestige & Geography

Top citing institutions

Institution	Country	World ranking	Citing papers
Potsdam Institute for Climate Impact Research	Germany	SCImago #2238	4
Lanzhou University	China	SCImago #758 · QS 791-800	1
Universidad de Zaragoza	Spain	SCImago #1277 · THE 1001–1200 · QS =638	1
Utrecht University	Netherlands	SCImago #162 · QS =103	1
Universitat Autònoma de Barcelona and Barcelona GSE	Spain	—	1
External Organizations	—	—	1
University of Science and Technology of China	China	SCImago #77 · THE 51 · QS =132	1
Aalto University	Finland	SCImago #854 · THE =195 · QS =114	1
Universitat Politècnica de Catalunya	Spain	SCImago #624 · THE 601–800	1
Northeastern University	United States	QS 384	1
University of Oxford	United Kingdom	SCImago #26 · THE 1 · QS 4	1
Queen Mary University of London	United Kingdom	SCImago #416 · THE =134 · QS =110	1
University of Wuerzburg	Germany	—	1

Institution	Country	World ranking	Citing papers
Radboud University	Netherlands	QS 279	1
University of Montpellier	France	QS =430	1

Geographic distribution of citing authors

Country	Citing papers
Germany	5
Spain	4
Netherlands	3
United States	3
China	2
United Kingdom	2
Switzerland	1
Italy	1
Finland	1
France	1
Ireland	1
Brasil	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.

E. Citation Growth Over Time

Distinct citing papers by publication year. Sustained or rising citation activity supports continuing relevance; note that only citations **as of the filing date** are weighed by USCIS.

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	Suppressing cascades of load in interdependent networks	0	8 CFR 204.5(i)(3) — Outstanding Researcher
Contribution 2	Threshold cascades with response heterogeneity in multiplex networks	0	8 CFR 204.5(i)(3) — Outstanding Researcher
Contribution 3	Coupled catastrophes: sudden shifts cascade and hop among interdependent systems	7	8 CFR 204.5(i)(3) — Outstanding Researcher