

IAS Data: Opportunities, problems and solutions



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Botanic Garden Meise, Belgium



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Recent projects

PRO-iBIOSPHERE
WWW.PRO-iBIOSPHERE.EU

“Coordination and policy development in preparation for a European Open Biodiversity Knowledge Management System, addressing Acquisition, Curation, Synthesis, Interoperability and Dissemination”



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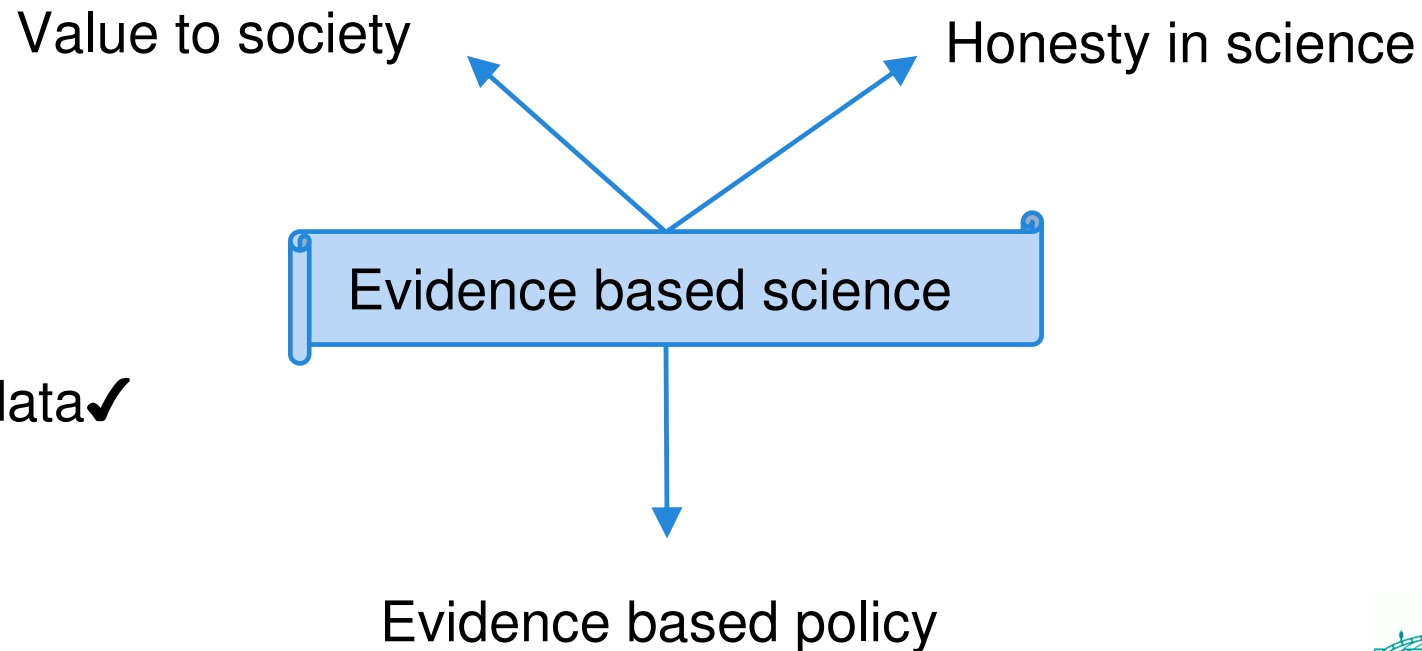
Why do we need data?

- Challenges of global changes and prediction of the future
- Managing change
- Prioritization
- Saving money
- Public support for conservation and environmental protection



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Doing good science



Guardians of data ✓

Data cliques ✗

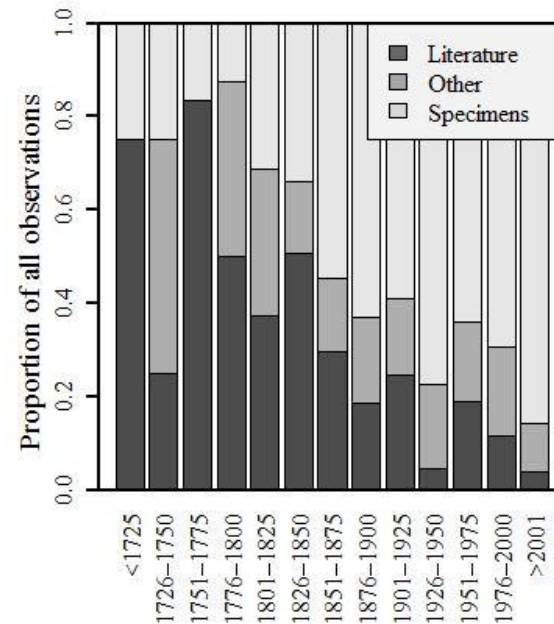
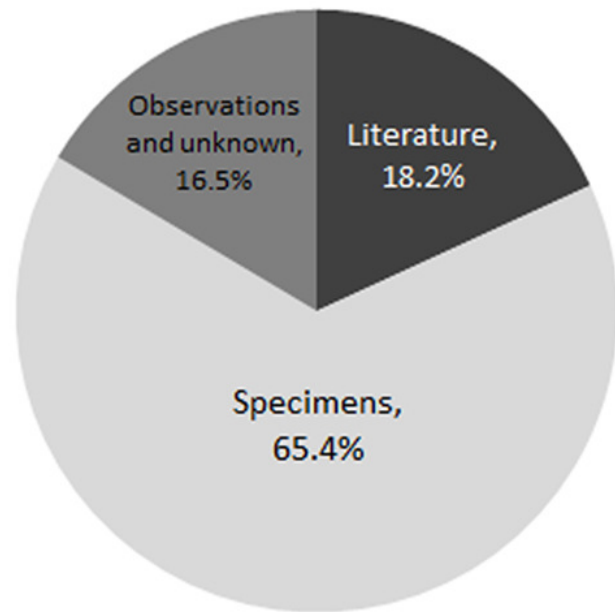
IT cliques ✗

Chenopodium vulvaria



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Where did the data come from?



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The advantages of sharing

- Efficiency of working [not repeating the work of others]
- Stimulating novel applications of data
- Combining data together in novel ways
- Feedback to data collectors
- Improving data quality [Validation]
- Encouraging more data collection
- Getting credit for you work [Visibility]



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Licensing chaos

GBIF licensing consultations



Licensing chaos

License	# of datasets	# of records	% of records	<u>GBIF practice?</u>	<u>Open data?</u>
CC0	105	2,155,108	0.5%	yes	yes
CC BY	8	2,240,674	0.5%	yes	yes
ODC-By	11	567,675	0.1%	yes	yes
CC BY-SA	16	450,421	0.1	no	yes
ODbL & DbCL	3	864	0.0%	no	yes
CC BY-NC	10	4,308,627	1.0%	expected by some	no
CC BY-NC-SA	17	569,040	0.1%	no	no
CC BY-NC-ND	1	26,132	0.0%	no	no
Non-standard license	1,069	100,062,731	24.1%	?	?
No license	10,734	305,546,382	73.5%	?	?

From
Peter Desmet
<http://peterdesmet.com/>



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Chenopodium vulvaria



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Acknowledgements 1

1. Phytochorologie des départements français, <http://data.gbif.org/datasets/resource/12442>
2. Phanerogams herbarium specimens, <http://data.gbif.org/datasets/resource/13686>
3. Phanerogamic Botanical Collections (S), <http://data.gbif.org/datasets/resource/8113>
4. Botany (UPS), <http://data.gbif.org/datasets/resource/1045>
5. Missouri Botanical Garden, <http://data.gbif.org/datasets/resource/12084>
6. Fundación Biodiversidad, Real Jardín Botánico (CSIC): Anthos. Sistema de Información de las plantas de España, <http://data.gbif.org/datasets/resource/9090>
7. Lund Botanical Museum (LD), <http://data.gbif.org/datasets/resource/1028>
8. Herbario de la Universidad de Sevilla, SEV, <http://data.gbif.org/datasets/resource/283>
9. USDA PLANTS Database, <http://data.gbif.org/datasets/resource/1066>
10. Herbario de la Universidad de Salamanca: SALA, <http://data.gbif.org/datasets/resource/239>



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Acknowledgements 2

11. Nationaal Herbarium Nederland, <http://data.gbif.org/datasets/resource/11520>
12. Inventaire National du Patrimoine Naturel (I084) : Flore Franco-Belge, <http://data.gbif.org/datasets/resource/14299>
13. Jardín Botánico Atlántico, Gijón: JBAG-Laínz, <http://data.gbif.org/datasets/resource/8082>
14. Database Schema for UC Davis [Herbarium Labels], <http://data.gbif.org/datasets/resource/734>
15. Herbario de la Universidad de Sevilla, SEV-Historico, <http://data.gbif.org/datasets/resource/284>
16. Herbarium Senckenbergianum Görlitz (GLM), <http://data.gbif.org/datasets/resource/1105>
17. Natural History Museum, Vienna - Herbarium W, <http://data.gbif.org/datasets/resource/13042>
18. SysTax - Botanical Gardens, <http://data.gbif.org/datasets/resource/14438>
19. EURISCO, The European Genetic Resources Search Catalogue, <http://data.gbif.org/datasets/resource/1905>
20. NMNH Botany Collections, <http://data.gbif.org/datasets/resource/1874>



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Acknowledgements 3

21. inatura - Erlebnis Naturschau Dornbirn, <http://data.gbif.org/datasets/resource/1866>
22. Herbarium Senckenbergianum (FR), <http://data.gbif.org/datasets/resource/8311>
23. Universidad de Granada, Herbario: GDAC, <http://data.gbif.org/datasets/resource/1742>
24. Aranzadi Zientzi Elkarte, <http://data.gbif.org/datasets/resource/248>
25. Vascular Plant Collection - University of Washington Herbarium (WTU),
<http://data.gbif.org/datasets/resource/126>
26. Herbier de Strasbourg, <http://data.gbif.org/datasets/resource/12756>
27. California State University, Chico, <http://data.gbif.org/datasets/resource/737>
28. Plantae, TAIF (Taiwan e-Learning and Digital Archives Program, TELDAP),
<http://data.gbif.org/datasets/resource/8053>
29. Dpto de Botánica, Ecología y Fisiología Vegetal (herbario_cofc).Facultad de Ciencias.Universidad de Córdoba, <http://data.gbif.org/datasets/resource/292>
30. Universidad de Granada, Herbario: GDA, <http://data.gbif.org/datasets/resource/1741>



Acknowledgements 4

31. Observations du Conservatoire botanique national du Bassin parisien., <http://data.gbif.org/datasets/resource/1103>
32. Seed collection – Dead seeds for evaluation and observation purposes, <http://data.gbif.org/datasets/resource/8334>
33. Carnet en Ligne, <http://data.gbif.org/datasets/resource/11503>
34. NSW herbarium collection, <http://data.gbif.org/datasets/resource/968>
35. RBGE Herbarium (E), <http://data.gbif.org/datasets/resource/8402>
36. Herbarium specimens - Harmas de J. H. Fabre, <http://data.gbif.org/datasets/resource/13679>
37. WAHerb, <http://data.gbif.org/datasets/resource/13675>
38. University Museums of Norway (MUSIT), <http://data.gbif.org/datasets/resource/1996>
39. Institut Botanic de Barcelona, BC, <http://data.gbif.org/datasets/resource/299>
40. Tiroler Landesmuseum Ferdinandeum, <http://data.gbif.org/datasets/resource/11971>



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Acknowledgements 5

41. SANT herbarium vascular plants collection, <http://data.gbif.org/datasets/resource/222>
42. Australian National Herbarium (CANB), <http://data.gbif.org/datasets/resource/47>
43. UCJEPS TAPIR Provider, <http://data.gbif.org/datasets/resource/1413>
44. Dataflos, <http://data.gbif.org/datasets/resource/13502>
45. Biological and palaeontological collection and observation data MNHNL, <http://data.gbif.org/datasets/resource/8107>
46. Leiner-Herbar Konstanx, <http://data.gbif.org/datasets/resource/13545>
47. Royal Museum of Central Africa - Metafro-Infosys - Prelude, <http://data.gbif.org/datasets/resource/96>
48. Herbarium specimens, <http://data.gbif.org/datasets/resource/13685>
49. Flora exsiccata Bavarica, <http://data.gbif.org/datasets/resource/1092>
50. Real Jardin Botanico (Madrid), Vascular Plant Herbarium (MA), <http://data.gbif.org/datasets/resource/240>



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Acknowledgements 6

51. Botánica, Universidad de León: LEB-Cormo, <http://data.gbif.org/datasets/resource/8003>
52. Collection d'animaux marins et plantes du Museum d'Histoire Naturelle de Nice, <http://data.gbif.org/datasets/resource/13733>
53. Herbarium specimens, <http://data.gbif.org/datasets/resource/13677>
54. Fundación Carl Faust: Herbario del Jardí Botànic Marimurtra: HMIM, <http://data.gbif.org/datasets/resource/12966>
55. Herbarium Berolinense, <http://data.gbif.org/datasets/resource/1095>
56. Institut Botanic de Barcelona, BC-Histórico, <http://data.gbif.org/datasets/resource/1523>
57. Herbarium specimens, <http://data.gbif.org/datasets/resource/13688>
58. Herbarium WU, <http://data.gbif.org/datasets/resource/1496>
59. Herbarium (ALA), Alaska, <http://data.gbif.org/datasets/resource/975>
60. IPK Genebank, <http://data.gbif.org/datasets/resource/1851>



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Acknowledgements 7

61. Botánica, Universidad de León: LEB, <http://data.gbif.org/datasets/resource/11686>
62. Herbarium specimens data, <http://data.gbif.org/datasets/resource/13668>
63. Escuela Técnica Superior de Ingenieros de Montes, UPM: EMMA, <http://data.gbif.org/datasets/resource/278>
64. Staatliches Museum für Naturkunde Stuttgart, Herbarium, <http://data.gbif.org/datasets/resource/1100>
65. New Zealand National Plant Herbarium (CHR), <http://data.gbif.org/datasets/resource/474>
66. Instituto de Botánica Darwinion, <http://data.gbif.org/datasets/resource/13398>
67. South Australia Flora Observations, <http://data.gbif.org/datasets/resource/12710>
68. Colección científica del Museo de Historia Natural Alfredo Dugés, <http://data.gbif.org/datasets/resource/13368>
69. Vascular Plant Herbarium, Trondheim (TRH), <http://data.gbif.org/datasets/resource/7978>
70. Consortium of California Herbaria, <http://data.gbif.org/datasets/resource/9153>



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Acknowledgements 8

71. Sistema de Información de la vegetación Ibérica y Macaronésica, <http://data.gbif.org/datasets/resource/14072>
72. Universidad de Extremadura, UNEX, <http://data.gbif.org/datasets/resource/255>
73. CIBIO, Alicante:ABH-GBIF, <http://data.gbif.org/datasets/resource/251>
74. Generalitat Valenciana. Banco de Datos de la Biodiversidad de la Comunitat Valenciana, <http://data.gbif.org/datasets/resource/8004>
75. Herbarium Willing, <http://data.gbif.org/datasets/resource/1096>
76. United States National Plant Germplasm System Collection, <http://data.gbif.org/datasets/resource/1429>
77. Hortus Botanicus Sollerensis Herbarium (FBonafè), <http://data.gbif.org/datasets/resource/300>
78. Vascular Plant Collection, <http://data.gbif.org/datasets/resource/622>
79. Catálogo Florístico Histórico de Navarra. Gobierno de Navarra, <http://data.gbif.org/datasets/resource/12958>
80. Herbario de la Universidad Pública de Navarra, Pamplona: UPNA-H, <http://data.gbif.org/datasets/resource/8007>



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Acknowledgements 9

81. Botanical Information System of Geneva, <http://data.gbif.org/datasets/resource/14176>
82. Inventaire National du Patrimoine Naturel (ONF) : Données ONF faune-flore-fonge,
83. Inventaire National du Patrimoine Naturel (I062) : Flore de l'Ain,
<http://data.gbif.org/datasets/resource/14265>
84. FlorKart - FlorenKartierung Gefaesspflanzen, <http://data.gbif.org/datasets/resource/14519>
85. Inventaire National du Patrimoine Naturel (I093) : Flore du Massif Armoricain,
<http://data.gbif.org/datasets/resource/14298>
86. Inventaire National du Patrimoine Naturel (I067) : Flore d'Ille-et-Vilaine,
<http://data.gbif.org/datasets/resource/14293>
87. Biologiezentrum Linz, <http://data.gbif.org/datasets/resource/1104>
88. Herbarium GJO, <http://data.gbif.org/datasets/resource/1484>
89. Perchtoldsdorfer Heide, <http://data.gbif.org/datasets/resource/7863>
90. Naturhistorisches Museum Mainz, Botanical Collection,
<http://data.gbif.org/datasets/resource/12677>



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Acknowledgements 10

91. Botanical Society of the British Isles - Vascular Plants Database, <http://data.gbif.org/datasets/resource/839>
92. Botanical Society of the British Isles - Vascular Plants Database additions since 2000, <http://data.gbif.org/datasets/resource/11925>
93. SINGER Coordinator, <http://data.gbif.org/datasets/resource/8349>
94. The System-wide Information Network for Genetic Resources (SINGER), <http://data.gbif.org/datasets/resource/1430>
95. Florabank1 - A grid-based database on vascular plant distribution in the northern part of Belgium (Flanders and the Brussels Capital region), <http://data.gbif.org/datasets/resource/14149>
96. Belgian IFBL Flora Checklists (1939-1971), <http://data.gbif.org/datasets/resource/10969>
97. Natural History Museum Maastricht (NL) - Herbarium, <http://data.gbif.org/datasets/resource/14173>
98. Dutch Vegetation Database (LVD), <http://data.gbif.org/datasets/resource/12695>
99. South East Wales Biodiversity Records Centre - CCW Regional Data : South East Wales Non-sensitive Species Records, <http://data.gbif.org/datasets/resource/12702>



Acknowledgements 11

100. Hertfordshire Natural History Society Flora Group - Hertfordshire Flora Survey Records 1987-2005, <http://data.gbif.org/datasets/resource/11892>
101. Suffolk Biological Records Centre - Suffolk Biological Records Centre (SBRC) dataset, <http://data.gbif.org/datasets/resource/11927>
102. Dr Francis Rose Field Notebook Project - Field Notebook Records of Dr Francis Rose 1950's to 1990's, <http://data.gbif.org/datasets/resource/11887>
103. Nijmegen National History Museum (NL) - Herbarium, <http://data.gbif.org/datasets/resource/9185>
104. The Flora of County Waterford, <http://data.gbif.org/datasets/resource/10797>
105. MfN - Fossil plants (Cenophytic), <http://data.gbif.org/datasets/resource/9179>
106. Vascular Plants, Field notes, Oslo (O), <http://data.gbif.org/datasets/resource/1079>
107. Herbarium, Botany Unit, Finnish Museum of Natural History (H), <http://data.gbif.org/datasets/resource/14356>
108. Herbarium, Centre for Biodiversity, University of Turku, Finland (TUR), <http://data.gbif.org/datasets/resource/14064>
109. Records provided by State Herbarium of South Australia, accessed through ALA website. <http://collections.ala.org.au/public/show/co48>



Acknowledgements 11

110. Department of Environment, Water and Natural Resources, Biological Databases of SA (BDSA), Date of Extraction: May 2010. <http://collections.ala.org.au/public/show/dr366>
111. Records provided by South Australia, Department of Environment, Water and Natural Resources, accessed through ALA website. <http://collections.ala.org.au/public/show/dp32>
112. Records provided by The Royal Botanic Gardens & Domain Trust, accessed through ALA website. <http://collections.ala.org.au/public/show/in50>
113. Records provided by Tasmanian Museum and Art Gallery, accessed through ALA website. <http://collections.ala.org.au/public/show/in25>
114. Records provided by Tasmanian Herbarium, accessed through ALA website. <http://collections.ala.org.au/public/show/co60>
115. Records provided by Australia's Virtual Herbarium, accessed through ALA website. <http://collections.ala.org.au/public/show/dp36>
116. Records provided by National Herbarium of New South Wales, accessed through ALA website. <http://collections.ala.org.au/public/show/co54>
117. Records provided by Australian National Herbarium, accessed through ALA website. <http://collections.ala.org.au/public/show/co12>
118. Records provided by Department of Environment and Natural Resources, accessed through ALA website. <http://collections.ala.org.au/public/show/in41>



Acknowledgements 12

119. Australia's Virtual Herbarium, a resource of the Council of Heads of Australasian Herbaria and its member Herbaria listed at www.chah.gov.au.
120. The Council of Heads of Australasian Herbaria (1999-) Australia's Virtual Herbarium www.chah.gov.au/avh [Accessed 25 February 2013]. <http://collections.ala.org.au/public/show/dr376>
121. Records provided by Royal Botanic Gardens Melbourne, accessed through ALA website. <http://collections.ala.org.au/public/show/in21>
122. Records provided by Centre for Australian National Biodiversity Research, accessed through ALA website. <http://collections.ala.org.au/public/show/in5>
123. Records provided by Western Australia, Department of Environment and Conservation, accessed through ALA website. <http://collections.ala.org.au/public/show/in33>
124. Records provided by Western Australian Herbarium, accessed through ALA website. <http://collections.ala.org.au/public/show/co75>
125. Records provided by National Herbarium of Victoria, accessed through ALA website. <http://collections.ala.org.au/public/show/co55>



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Data Publishing



DataCite

Helping you to find,
access, and reuse data



A peer-reviewed open-access journal

Biodiversity
Data Journal

Making your data count!



DRYAD

DataONE

Data Observation Network for Earth



figshare
credit for all your research



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What is a solution?

Digital object identifier (DOI) `10.3897/BDJ.2.e1108`

- Publish your data using a DOI
- Respect other peoples' DOIs

ORCID

<http://orcid.org/0000-0002-0596-5376>



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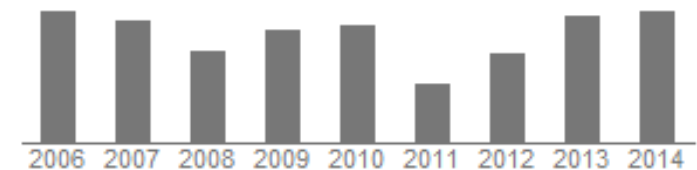
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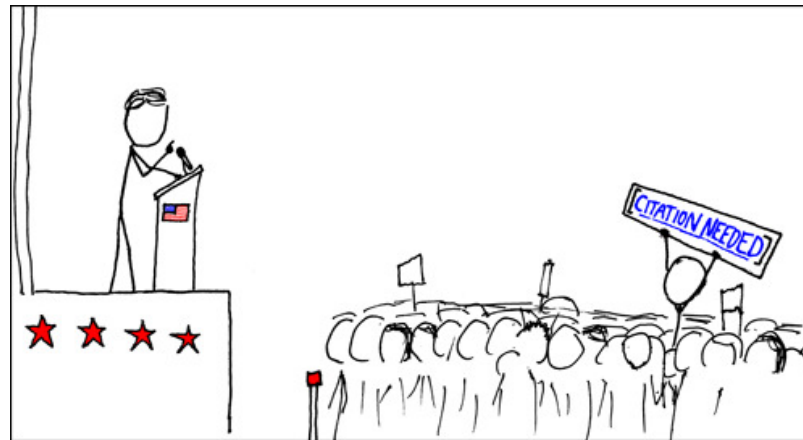
Citation indices	All	Since 2009
Citations	613	157
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