Can Bibliometric Indicators Predict Institutional Citation Patterns?

Christopher W Belter (chris.belter@noaa.gov), LAC Group on assignment at the NOAA Central Library

Introduction

Bibliometric indicators are often recommended as tools to assist collection development decisions at research libraries. Since citations are known to favor recent articles published in a relatively small list of 'core' journals, it has been suggested that collection development librarians use indicators like the cited article half-life and the Journal Impact Factor to determine the temporal scope of their collections and the core titles to which they should subscribe. However, empirical investigation of these suggestions is relatively scarce and the results of these investigations are mixed.

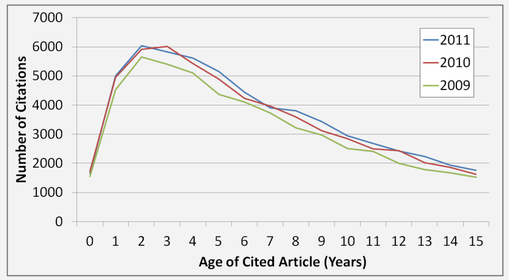
Methodology

I test the validity of these suggestions for a single institution using data derived from Web of Science and Journal Citation Reports. I analyze over 200,000 citations made by journal articles published by NOAA authors from 2009-2011 to identify the distribution of these citations over time and over journals. I also examine the correlation between NOAA citations and three popular journal metrics. Finally, I construct a journal co-citation network based on NOAA citations to identify the central journals used at NOAA.

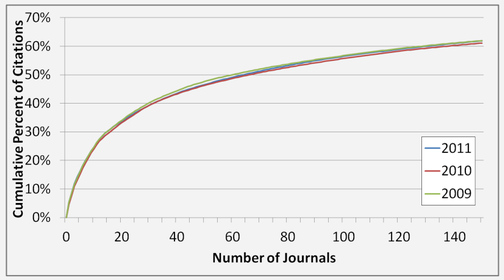
Results (1)

Distribution of NOAA Citations (2009-2011)

Citations over Time

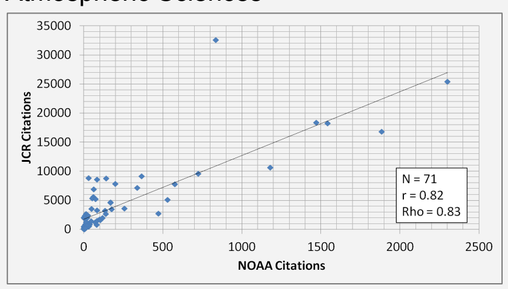


Citations over Journals

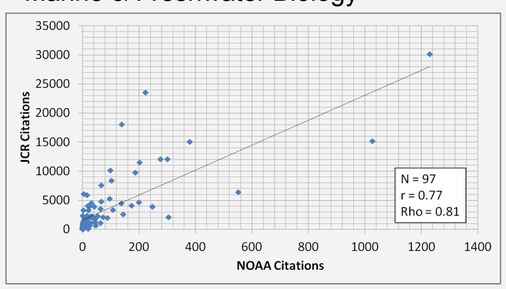


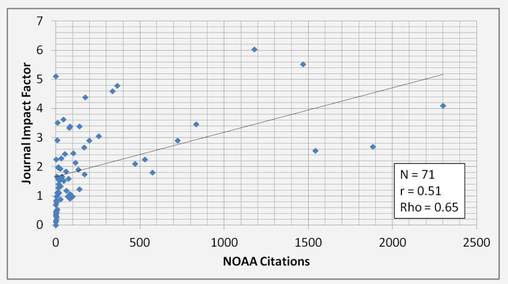
Correlations between NOAA Citations and Journal Metrics (2011)

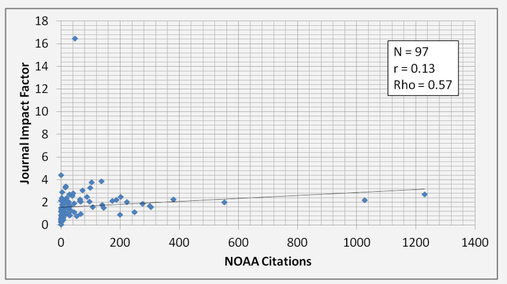
Atmospheric Sciences

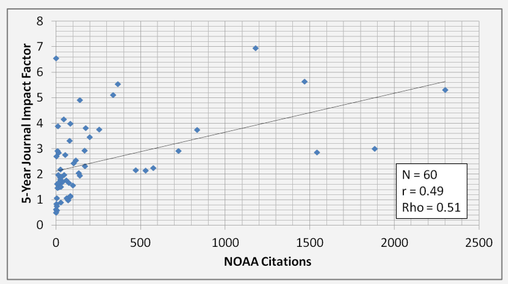


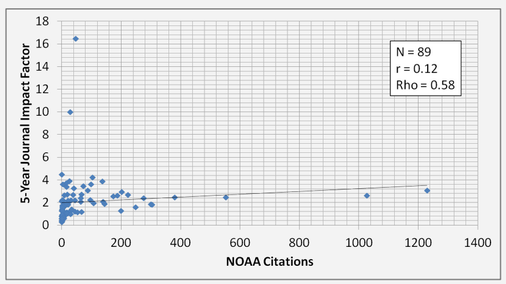
Marine & Freshwater Biology







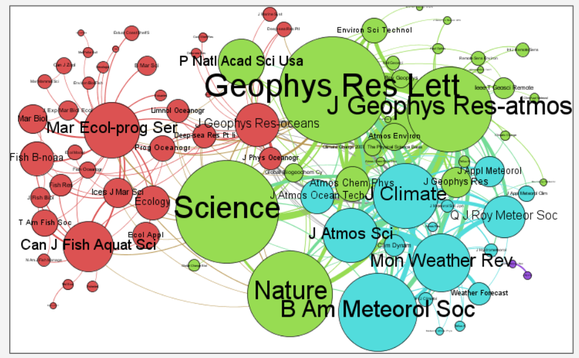




Results (2)

Journal Network (2011)

This figure shows the cited journal co-occurrence network for NOAA articles published in 2011. Node size indicates the number of articles that cite each journal and edge size indicates the number of articles co-citing the connected journals. Colors represent clusters identified by a community detection algorithm.



Conclusions

The distribution of NOAA citations over time and over journals seem to agree with those predicted by bibliometric indicators. However, NOAA citations to journals moderately to weakly correlate with bibliometric indicators for the two main subject categories in which NOAA authors publish. In addition, journals with high indicator values in each subject category are not necessarily identified as central hubs in the network. These preliminary results suggest that while category-level indicators are predictive of NOAA citation distributions, journal-level indicators are not sufficiently predictive of NOAA usage to be used for collection development decisions at NOAA.