Can Bibliometric Indicators Predict Institutional Citation Patterns?

Christopher W Belter (chris.belter@noaa.gov), LAC Group, 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 NOAA using data derived from Web of Science and Journal Citation Reports (JCR). 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 construct a journal co-citation network based on these citations to identify the central journals used by NOAA authors. Finally, I examine the correlation between NOAA citations to particular journals and the five journal metrics available from JCR for these journals to determine if these metrics could be used to predict NOAA citation patterns.

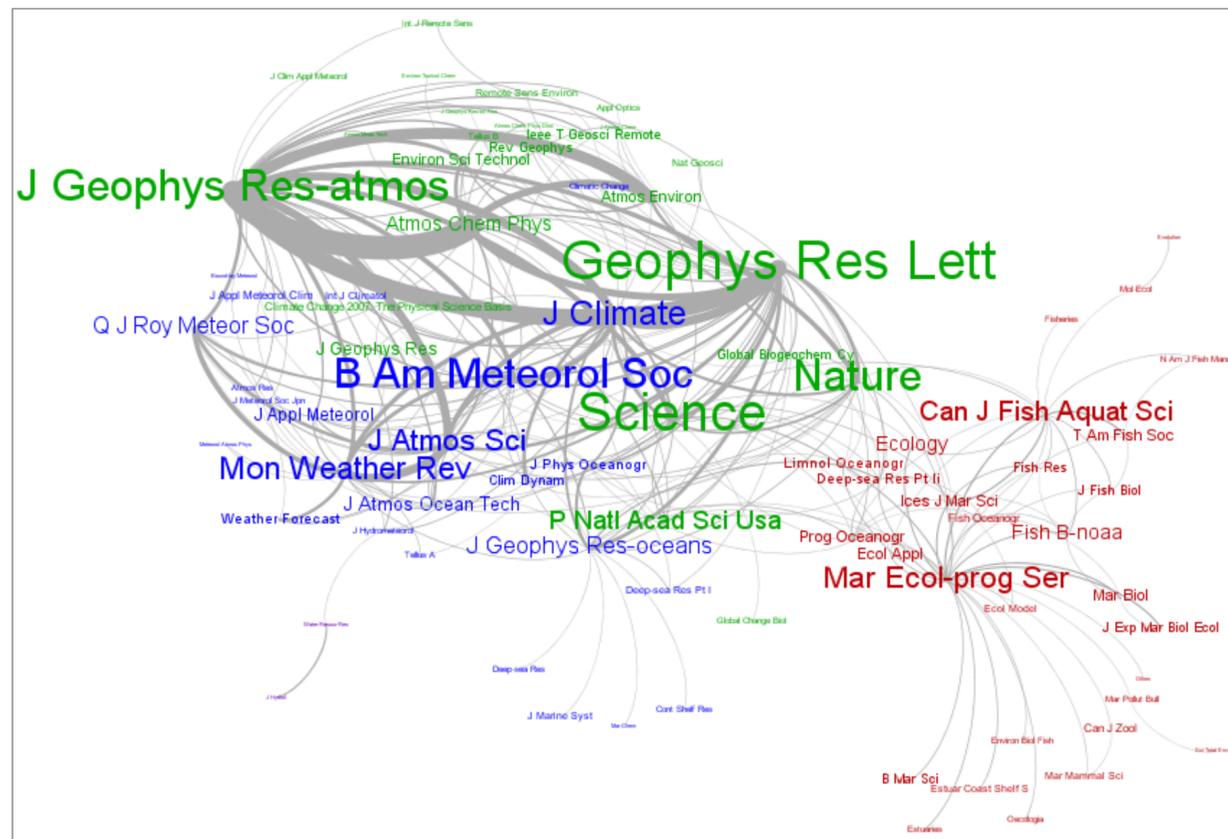## CITATION DISTRIBUTIONS

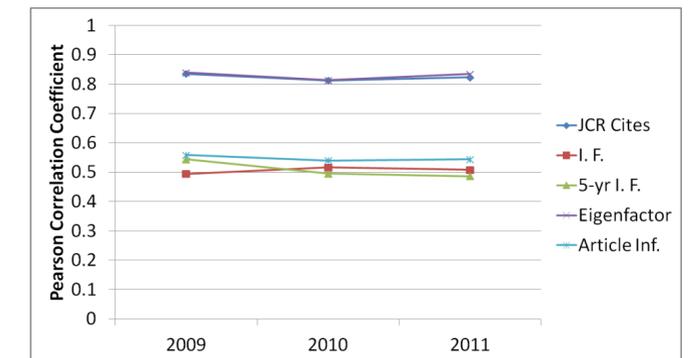### Citations over Time
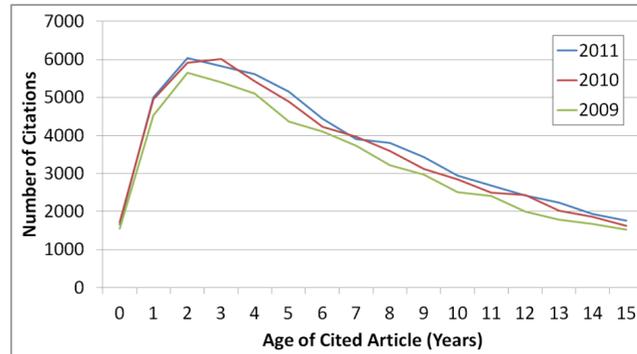
Citations over Journals
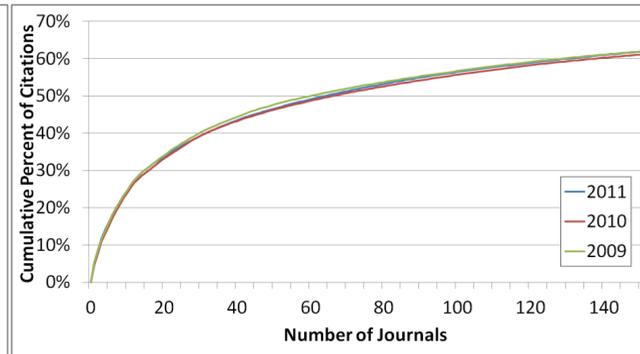
JOURNAL CO-CITATION NETWORK

This figure shows the journal co-citation network for NOAA articles published in 2011. Journal name size indicates the number of NOAA articles citing each journal. Name color indicates clusters of co-cited journals. Line width indicates the number of times two journals were co-cited.
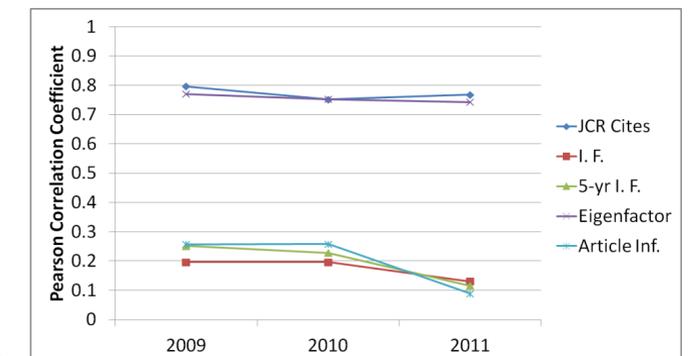

NOAA CITATION CORRELATIONS

Atmospheric Sciences (N=71)

Marine and Freshwater Biology (N=97)

CONCLUSIONS

The distributions of NOAA citations over time and over journals seem to agree with those predicted by category-level bibliometric indicators. The journal co-citation network clearly identifies both the central journals cited by NOAA authors and the clusters of journals frequently cited together. However, journal citation by NOAA authors is not strongly correlated with the journal-level bibliometric indicators available from JCR. Interestingly, indicators that do not adjust for journal size (JCR Cites and Eigenfactor) are more strongly correlated with NOAA citations than those that do (I.F., 5-yr I.F., and Article Influence). These preliminary results suggest that although category-level indicators are predictive of NOAA citation patterns, journal-level indicators should not be used as a substitute for NOAA citations in making collection development decisions at NOAA.