The University of Alaska Fairbanks (UAF) is the world leader in Arctic research, in terms of publications and citations to those publications. Publications are a commonly used indicator of research productivity, as well as being the primary means of communicating research findings to the scientific community. The Web of Science® is an established proprietary database (Thompson Reuters) that has been compiling information on science and social science publications, including books, journal articles, conference proceedings, and patents, for more than thirty years. The database also includes information on the number of times a publication has been cited in another published work, which is one indicator of the influence of a publication on its field.

For this analysis, the topic “Arctic” was searched (Science Citation Index and Social Science Citation Index for the years 2011-2013, all languages and publication types). A total of 7,681 publications were found, primarily articles in scientific journals. UAF led all other single institutions (universities, research institutes, and government laboratories) in the number of publications. (An article is associated with an institution if at least one of its authors lists the institution as their primary affiliation). The data discussed in this report are from the most recent three years, but UAF also leads all single institutions if the analysis is done for the past five years or for the past ten.

UAF also leads all single institutions in citations to its publications, with more than 1800 in the past three years. This shows that UAF not only publishes more Arctic research than other institutions, but that the research is used by other scientists to inform their work.

The Web of Science also reported a variety of institutional groupings, such as the University of Alaska System, the Russian Academy of Sciences, the University of California System, and the National Oceanic and Atmospheric Administration, each of which may include dozens or even hundreds of research units. The University of Alaska System (with 420 publications) and the UAF (380 publications) led all of these organizations as well; the Russian Academy of Sciences (377 publications) and the University of California System (262 publications) were the nearest competitors. The University of Alaska System (2008 citations) led all of these much larger organizations in citations; UAF (1839 citations) was beaten only by the National Oceanic and Atmospheric Administration (1865 citations). NOAA is a government agency with more than 100 research facilities across the United States.

The following graphs show the top 30 institutions worldwide in terms of the number of publications with “Arctic” as a topic. In addition to first-place UAF, other US institutions in the group are the University of Colorado Boulder, the University of Washington, the National Center for Atmospheric Research (NCAR), Goddard Space Flight Center, the California Institute of Technology, the Jet Propulsion Laboratory, and Columbia University. Arctic nations Norway and Canada (shown in bright red and in white with a red border) also have many universities and research institutes in the leading group. Citations show a very similar pattern, except that
U Colorado Boulder and NCAR have relatively more citations. This is partly due to several highly cited papers that describe widely used climate models.

Notes: The Web of Science indexes over 18,000 journals and 12,000 conference proceedings annually, including many in languages other than English. However, its coverage is not complete. In particular, foreign language publications and chapters in books that are made up of chapters by different authors are less likely to be included than journal articles in English. This primarily disadvantages authors and institutions in countries like Russia, China, and Japan, who are less likely to publish in English. The leading institutions are all from English speaking countries or from European countries whose scientists often publish in English.

Although citations are a widely used indicator, they are an imperfect one. Among other issues, certain types of papers (reviews and methods papers widely used by other researchers) tend to accrue more citations than basic research papers, other factors being equal. Also the number of citations depends on the number of other researchers in a particular field, so papers in forest ecology (for example) will be more cited than those in physical oceanography. Papers in non-English languages are less commonly cited.

The Web of Science has not incorporated all 2013 publications on the sampling date (12/31/13); there is a lag of about a month for processing, and some publications dated 2013 don’t actually appear until well after the New Year. Citations of papers increase over time, typically quite rapidly for the first 3-5 years. Hence the three years of publications studied here will accumulate many more citations in the next several years, but the information for three years is useful for comparative purposes since papers that are frequently cited initially tend to remain so.