IRIS CITATION PROJECT
January 2019 – December 2019

Summary

Between January 1, 2019 and the December 31, 2019 there were 953 references to IRIS related data or products in published scientific literature. This includes 559 references in top journals (Top 11 and 29 others), 145 references in additional journals or books (17), 196 references in conference proceedings or abstracts, and 53 references in theses.

Introduction

The aim of this year's project was to continue the 20-year compilation of IRIS related citations into one database. In order to maintain continuity while searching journals and procuring citations the processes and procedures used in previous years were followed as closely as possible and improved upon where applicable. These procedures and data findings are outlined below.

Searching for IRIS citations from 2019

The eleven most prominent earth science journals were given priority while searching. These journals are:

- *Bulletin of Seismological Society of America (BSSA)*
- *Journal of Geophysical Research (JGR)*
- *Geophysical Journal International (GJI)*
- *Seismological Research Letters (SRL)*
- *Geophysical Research Letters (GRL)*
- *Earth and Planetary Science Letters (EPSL)*
- *Physics of the Earth and Planetary Interior (PEPI)*
- *Tectonophysics (TP)*
- *Nature and related journals*
- *Science and related journals*
- *Geology*

The journals were searched for the following key words:

- *IRIS*
- *Incorporated Research Institution for Seismology*
- *PASSCAL*
- *DMC*
- *DMS*

- *Data Management Center*
- *GSN*
- *Global Seismographic Network (and Global Seismic Network)*
- *GDSN*
- *USArray*
- *EarthScope*
- *Transportable Array (TA)*
- *Magnetotellurics*
- *Flexible Array*
- *Greenland Ice Sheet Monitoring Network (GLISN)*
- *www.iris.edu*
- *SCARDEC*

The terms *OBSIP* and *Ocean Bottom Seismograph Instrument Pool* were removed as search terms in 2017, and this year the search term SCARDEC was added. The searches were carried out electronically with different search engines for journals as follows:

- *Journal of Geophysical Research*, and *Geophysical Research Letters* are searched using the Wiley search engine.
- *Geophysical Journal International* is searched through the search engine for the journal.
- For SSA publications (*Bulletin of Seismological Society of America, Seismological Research Letters*) the GeoScience World (GSW) search engine was used.
- For Elsevier publications, *Earth and Planetary Science Letters*, *Physics of the Earth and Planetary Interiors*, and *Tectonophysics*, the ScienceDirect engine was used.
- The other journals, *Nature* and *Science* have their own search engines on their respective web pages and *Geology* has the search engine of GeoScience World (GSW).

Most of these search engines are capable of an all-text search, which often brings up unrelated documents as well as the intended IRIS research results. In order to cull unrelated references the initial search results are individually examined and the unrelated entries are deleted. For the remaining documents a manual "find" function is performed for the appropriate key word on the abstract, primary text, figures, funding sources and/or acknowledgements. If the document is relevant it is marked and exported into the database as a .ris file.

The distribution of findings are given in the following table:

Table 1: Total number of citations in the Top 11 journals

Journal	Jan 2019-Dec 2019
Bulletin of the Seismological Society of America	49
Journal of Geophysical Research	104
Geophysical Journal International	88
Geophysical Research Letters	55
Earth and Planetary Science Letters	33
Seismological Research Letters	52
Physics of the Earth and Planetary Interiors	18
Tectonophysics	23
Science	7
Nature	20
Geology	5
TOTAL	454

This year we included citations in the journals *"Nature GeoScience"*, *"Nature Communications"* and *"Scientific Reports"* under the Journal *"Nature"*. We also included *"Science Advances"* under *"Science"*. Previously these citations were included in the "29 other journals" category.

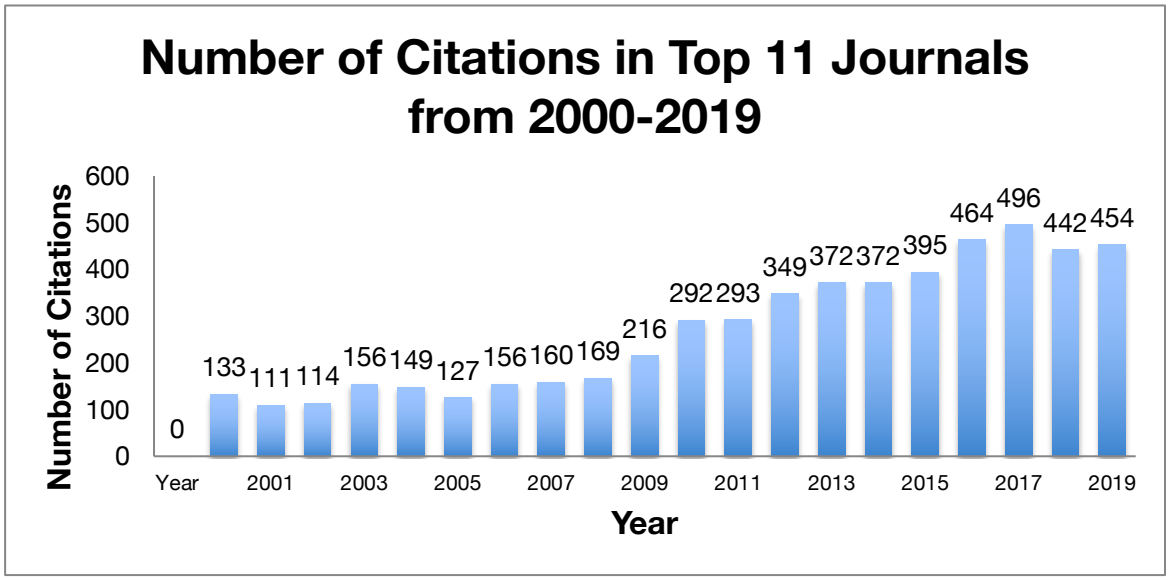

Figure 1. Total number of IRIS related citations in the eleven most prominent earth science journals since the inception of the database in 2000. The number above each bar is the total number of citations in the Top 11 journals for that year.

There was an increase in the total number of citations found in these journals in 2019 compared to calendar year 2018; there were 442 citations in 2018 and 454 citations in 2019. Since the inception of the IRIS citations database in 2000 the number of IRIS related citations in these journals has normally increased (Figure 1).

This year there were more IRIS related publications in BSSA, JGR,, GJI, Science and Nature (8, 20, 8, 2 and 20 more references, respectively), but there were fewer IRIS related publications in GRL, SRL, and Geology (1, 44 and 2 less, respectively). The number of publications in PEPI and Tectonophysics remained the same. Refer to Figure 2 to see a direct comparison of the number of citations in each journal for the last 2 calendar years.

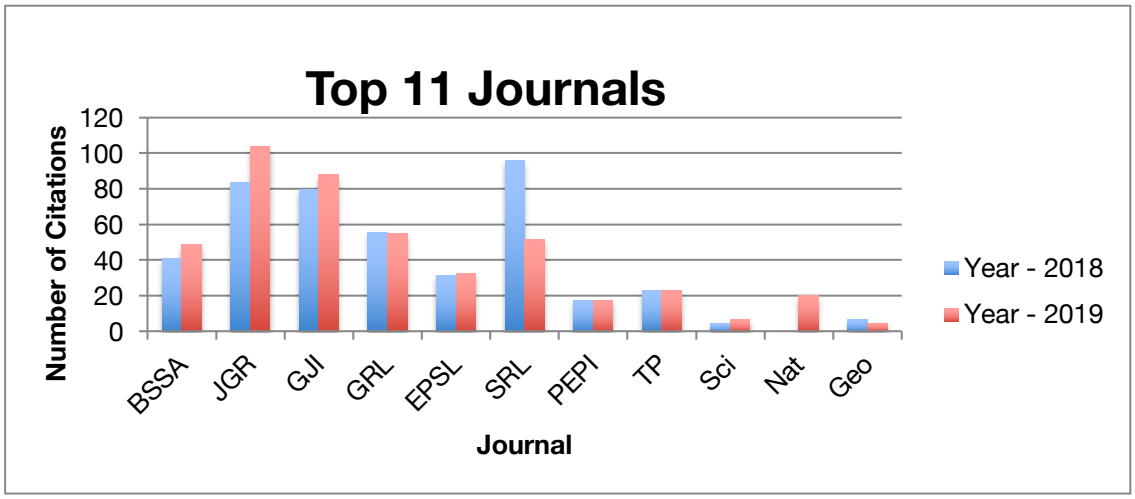

Figure 2. Number of publications in the top eleven journals during calendar years 2018 and 2019.

The number of search terms found in each of the Top 11 journals is presented in Table 2 (below). It is broken down by search term and individual journal. Some terms (like "Global Seismographic Network" and "Global Seismic Network") are searched by the proper term as well as by a commonly used but incorrect variation.

Table 2: Number of search terms in the Top 11 journals

Search Term	JGI	JGR	Geology	GRL	SRL	BSSA	PEPI	TP	EPSL	Science	Nature
IRIS	59	87	3	46	45	45	15	21	29	7	15
Incorporated Research Institutions for Seismology	31	44	2	29	44	44	3	11	12	3	7

PASSCAL	11	9	1	7	4	4	1	5	6	0	2
DMC	21	32	1	18	20	20	3	7	10	1	8
DMS	1	55	0	0	2	2	0	0	0	0	1
Data Management Center	40	57	3	30	39	39	6	10	14	3	5
GSN	13	6	0	0	8	8	3	4	2	0	1
Global Seismographic Network	10	8	0	1	8	8	1	4	2	0	2
Global Seismic Network	11	4	1	1	4	4	1	2	3	0	0
GDSN	0	1	0	0	1	1	1	0	0	0	0
USArray	28	30	1	4	9	9	4	4	11	0	3
EarthScope	18	30	3	14	7	7	5	4	6	0	5
Transportable Array	12	17	1	8	7	7	3	1	6	0	2
Magnetotellurics	3	1	0	0	0	0	2	2	3	0	1
Flexible Array	1	4	1	0	0	0	0	0	2	0	0
GLISN	0	1	0	0	0	0	1	0	0	0	0
Greenland Ice Sheet Monitoring Network	0	1	0	1	0	0	0	0	0	0	0
www.iris.edu	9	22	0	10	13	13	2	4	5	0	4
SCARDEC	0	1	0	3	0	0	0	0	0	0	1
Total	268	410	17	172	211	211	51	79	111	14	57

Searching for IRIS citations in other important earth science journals

IRIS promotes continuous conducting of geophysical investigations of seismic sources and earth properties through its facilities and allows free and unrestricted access to its seismic database, which is one of the largest in the world. Researchers around the world use the IRIS database to explore the lithosphere, cryosphere, atmosphere, hydrosphere and deep earth in unprecedented ways. The types of scientific findings aided by IRIS facilities are extremely varied, and this is reflected in the number and type of journals that cite IRIS data, instruments and facilities. Given the importance of some of these journals, their impact factor and effectiveness citation index, 29 other journals from earth science publications were selected for expanding our searching for IRIS-related citations. These journals are:

- *Canadian Journal of Earth Sciences*
- *Geophysics*
- *The Leading Edge*
- *Reviews of Geophysics*
- *Tectonics*
- *Polar Science*
- *Earth Surface*
- *Journal of Glaciology*
- *Marine Geophysical Research*

- *Nature Geoscience*
- *Lithosphere*
- *Journal of Geodynamics*
- *Geosphere*
- *Earthquake Science*
- *Journal of Volcanology and Seismology*
- *Seismic Instruments*
- *Natural Hazards and Earth System Sciences*
- *Journal of Structural Geology*
- *Natural Hazards*
- *Geochemistry, Geophysics, Geosystems*
- *Soil Dynamics and Earthquake Engineering*
- *Russian Journal of Pacific Geology*
- *Journal of Volcanology and Geothermal Research*
- *Marine Geology*
- *Geomorphology*
- *Pure and Applied Geophysics*
- *Chinese Journal of Geophysics*
- *Journal of Seismology*
- *EOS*

The number of citations for each of these journals for the calendar years 2015 - 2017 are presented in Table 3 below.

Table 3: Number of citations found in additional 29 journals

Journals	2015	2016	2017	2018	2019
Canadian Journal of Earth Sciences	1	3	1	3	0
Geophysics	1	10	1	1	1
The Leading Edge	0	1	1	2	0
Reviews of Geophysics	4	2	2	0	1
Tectonics	4	3	7	5	7
Polar Science	0	0	0	2	0

Earth Surface	0	0	0	0	part of JGR
Journal of Glaciology	0	0	1	2	0
Marine Geophysical Research	1	0	4	0	0
Nature Geoscience/Nature Communication	2	5	4	13	Moving to top 11
Lithosphere	2	0	8	3	2
Journal of Geodynamics	4	3	1	3	3
Geosphere	3	7	7	8	9
Earthquake Science*	2	3	0	0	No longer in print
Journal of Volcanology and Seismology	0	0	1	1	2
Seismic Instruments	0	0	2	4	4
Natural Hazards and Earth System Sciences	0	1	0	1	0
Journal of Structural Geology	5	2	0	0	0
Natural Hazards	4	1	1	1	3
Geochemistry, Geophysics, Geosystems	28	22	12	21	33
Soil Dynamics and Earthquake Engineering	0	2	1	5	0
Russian Journal of Pacific Geology	0	0	0	3	0
Journal of Volcanology and Geothermal Research	8	3	2	7	4
Marine Geology	2	0	0	1	0
Geomorphology	1	0	0	0	1
Pure and Applied Geophysics	12	9	4	13	16
Chinese Journal of Geophysics	0	6	5	2	0
Journal of Seismology	0	2	3	13	11
EOS	4	0	0	5	8
All 29 Journals	**88**	**85**	**68**	**119**	**105**

The total number of citations found in these journals in 2019 is lower than what was found the previous year (Figure 2) but higher than in past years. In particular, there were

more IRIS related citations in journals ***Geochemistry, Geophysics, Geosystems***. In addition, a few changes were made that impacted the total number of citations in this category, namely that ***Nature Geoscience*** and ***Nature Communications*** were combined with the journal ***Nature*** in the Top 11.

** The Journal of Earthquake Science is no longer published and will be removed from the list moving forward.*

** The journal titled "Earth Surface" is now part of the Journal of Geophysical Research, and will also be removed going forward.*

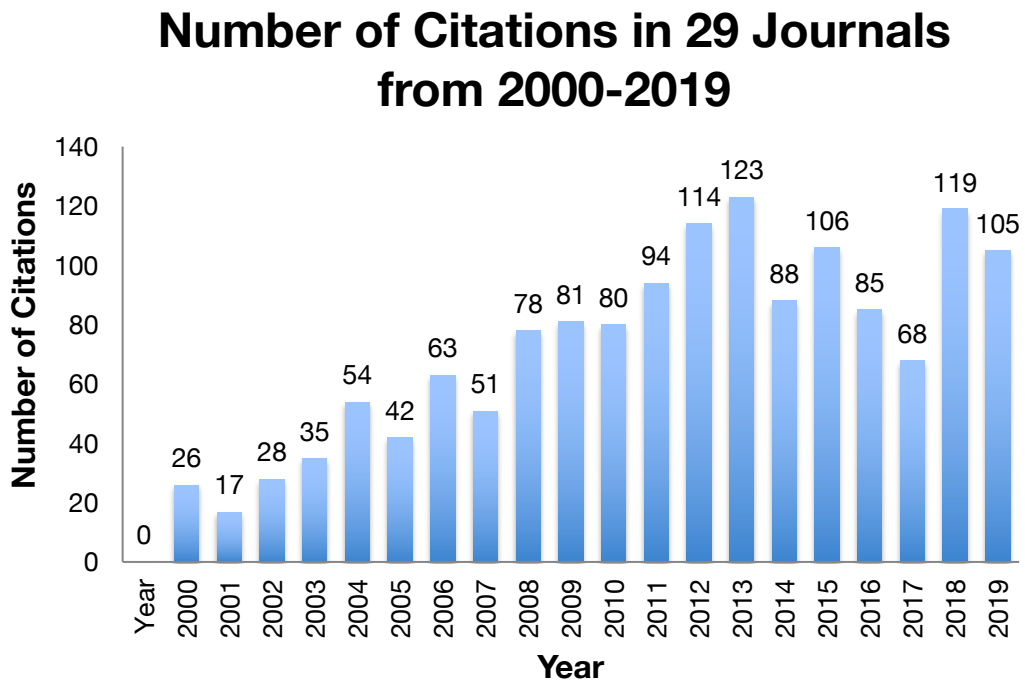

Figure 3. Graph showing the number of citations per year in the 29 additional journals. The number above each bar is the number of citations for that year.

Searching for IRIS citations in other journals

As the application of IRIS facilities expands into new realms (e.g. GLISN, USArray Alaska, and weather related applications) we can expect to see citations in journals that were previously not relevant to IRIS related research. Additionally, unexpected and creative uses of the data and facilities are creating an exciting body of work outside of the traditional earth science journals. Books were IRIS data is used are also included in this section and are marked as such.

In order to explore the use of IRIS data and products in journals and books outside of the traditional earth science sphere and to show the breadth of the data usage, a generalized search was done on the aforementioned search terms using Google Scholar and Web of Science. This functionality became possible for IRIS in 2014 and so the data for

"Other Journals" only goes back 6 years. Each year this search uncovers more journals that didn't previously feature IRIS related research, demonstrating the diverse applications of the data collected and provided by IRIS institutions. It's important to note that citations were not found in every journal every year.

These journals cover a diverse range of subjects, including Acoustics and Radio, Engineering, Computer Science, Law, Planetary Science, Meteorology, Marine Science, Petroleum Geology, and Education. These journals and the number of citations from each journal in 2014-2018 are listed in Table 4.

In 2019 there were 145 articles in these journals that cited IRIS data, facilities or research. This is an increase of 65 citations.

Table 4. Additional journals and total number of IRIS related citations in each

Other Journals	2014	2015	2016	2017	2018	2019
Journal of South American Earth Sciences	4	12	6	0	0	1
Computers & Geosciences	1	1	3	2	1	0
Encyclopedia of Earthquake Engineering (book)	2	0	0	0	0	0
Surveys in Geophysics	2	2	0	0	1	0
Geotectonics	1	0	0	0	0	0
EURASIP Journal on Applied Signal Processing	1	0	0	0	0	0
The Journal of the Acoustical Society of America	1	1	1	1	0	2
Physical Review Letters	1	0	0	0	0	0
Geomagnetism and Aeronomy	1	1	0	0	0	0
Journal of Applied Physics	1	0	0	0	0	0
Journal of African Earth Sciences	1	0	1	2	1	3
Physics Today	1	0	0	0	0	0
Meteoritics and Planetary Science	1	0	0	0	0	0

Progress in Earth and Planetary Science C7 -	1	1	0	0	1	1
Scientific Reports	3	0	3	9	2	Moved to Top 11
Journal of Asian Earth Sciences	5	3	6	10	3	3
Journal of Geodesy	1	1	0	0	0	2
International Journal of Biometeorology	1	0	0	0	0	0
Izvestiya, Physics of the Solid Earth	5	5	2	4	3	6
Ieee Journal of Selected Topics in Applied Earth Observations and Remote Sensing	1	0	0	0	0	1
Water Resources Research	1	0	0	0	0	1
Geological Society of America Special Papers	1	2	2	0	0	0
Geofísica Internacional	1	1	0	1	1	No longer published
Earth, Planets, and Space	4	2	5	4	3	8
Journal of Applied Meteorology and Climatology	1	0	0	0	0	0
Advances in Geophysics (book)	1	0	0	0	0	0
Annual Review of Earth and Planetary Sciences	1	0	0	1	1	0
Doklady Earth Sciences	2	0	0	2	2	4
Journal of Hydrology	1	0	0	0	0	0
Oceanography	1	1	7	0	0	0

The Cryosphere Discussions	1	0	0	0	0	0
Global and Planetary Change	1	0	0	0	0	0
Annual Review of Marine Science	1	0	0	0	0	0
Advances in Space Research	1	1	1	0	1	0
Geodesy and Geodynamics	1	1	1	3	0	0
Science China Earth Sciences	2	2	0	1	4	2
Radio Science	2	0	0	0	0	0
Acta Geologica Sinica	0	1	1	0	0	10
Modeling Earth Systems and Environment	0	0	1	0	0	0
Physics and Chemistry of the Earth	0	1	3	0	0	0
Arabian Journal of Geosciences	0	1	1	2	2	0
Physica A: Statistical Mechanics and its Applications	0	0	1	1	0	1
Precambrian Research	0	2	3	0	0	1
Earth and Space Science	0	0	1	1	0	0
Space Weather	0	0	2	10	3	2
The Science Teacher	0	0	1	0	0	0
Geoscience Letters	0	0	1	0	0	1
Ore Geology Reviews	0	0	1	0	0	1
Science Advances	0	0	4	7	5	Moving to top 11
Acta Geophysica	0	1	2	0	2	2
Gondwana Research	0	3	2	2	0	1

Rock Mechanics and Rock Engineering	0	0	1	0	0	0
Remote Sensing of Environment	0	0	2	1	1	0
Exploration Geophysics	0	0	1	0	0	1
International Journal of Disaster Risk Reduction	0	2	1	0	0	0
Field Guides	0	0	1	0	0	0
Journal of Natural Gas Science and Engineering	0	0	1	0	0	0
Science China Technological Sciences	0	0	1	0	0	0
Ain Shams Engineering Journal	0	0	1	0	0	0
International Journal of New Technology and Research (IJNTR)	0	0	1	0	0	0
Earthquake Spectra	0	0	3	3	1	1
Structural Control and Health Monitoring	0	0	1	0	0	0
Neural Computing and Applications	0	0	1	1	0	0
Geoscientific Instrumentation, Methods and Data Systems	0	0	1	0	0	0
South African Journal of Geology	0	0	1	0	0	0
Wiley Interdisciplinary Reviews: Water	0	0	1	0	0	0
Photogrammetric Engineering & Remote Sensing	0	0	1	0	0	0
Elements	0	0	2	0	0	0

Acta Geodaetica et Geophysica	0	0	2	2	0	0
International Journal of Geohazards and Environment	0	0	1	0	0	No longer published
Journal of the Association for Information Science and Technology	0	0	1	1	0	0
Spatial and Spatio-temporal Epidemiology	0	0	1	0	0	0
Advances in Geosciences	0	2	1	0	0	0
Physics Letters A	0	0	1	0	0	0
Interpretation	0	0	3	1	1	1
Flow Measurement and Instrumentation	0	0	1	0	0	0
Earth Surface Processes and Landforms	0	0	1	0	0	1
International Journal of Earth Sciences	0	0	2	2	0	0
Engineering Geology	0	1	1	0	0	0
International Journal of Human-Computer Studies	0	0	1	0	0	0
Geological Journal	0	0	2	0	2	1
Italian Journal of Geosciences	0	1	1	0	0	0
Geological Society, London, Special Publications	0	0	1	0	0	4
Physics of Wave Phenomena	0	0	1	0	0	0
The Nonproliferation Review	0	0	1	0	0	0
Physics Reports	0	0	1	0	0	0

Marine Technology Society Journal	0	0	2	0	0	0
Monthly Weather Review	0	1	1	1	0	0
Journal of Petroleum Science and Engineering	0	0	1	1	0	0
Bulletin of the American Meteorological Society	0	1	1	0	0	0
International Journal of Greenhouse Gas Control	0	1	2	0	1	0
Geological Society of America Bulletin	0	0	2	3	0	0
Journal of Navigation	0	0	1	0	0	0
American Meteorological Society	0	0	1	0	0	0
Elementa: Science of the Anthropocene	0	0	1	0	0	0
Journal of Environmental and Engineering Geophysics	0	1	1	1	0	0
Journal of Applied Geophysics	0	1	2	2	0	0
Journal of the Geological Society	0	0	1	0	0	0
Materials Science and Engineering: A	0	0	1	0	0	0
The International Journal of Ocean and Climate Systems	0	0	1	0	0	0
Journal of the Royal Statistical Society: Series C (Applied Statistics)	0	0	1	0	0	0
Annales Geophysicae	0	0	1	0	0	0

Geoscience Data Journal	0	0	1	0	0	0
Geofluids	0	0	1	0	0	0
Journal of Micromechanics and Microengineering	0	0	1	0	0	0
GeoResJ	0	1	0	0	0	No longer published
Journal of Atmospheric and Solar-Terrestrial Physics	0	1	0	0	0	0
Marine and Petroleum Geology	0	1	0	0	0	0
Cuadernos de Geografia (Geography notebooks)	0	1	0	0	0	0
Earth Science Informatics	0	1	0	0	1	0
Earth Science Reviews	0	2	1	2	0	1
International Journal of Law, Crime and Justice	0	1	0	0	0	0
AAPG Bulletin	0	1	0	0	0	0
Knowledge Based Systems	0	1	0	0	0	0
Geoscience Frontiers	0	2	0	0	0	1
Engineering Structures	0	1	0	0	0	0
Science of Tsunami Hazards	0	1	0	0	0	0
Icarus	0	1	0	0	1	0
Geosciences Journal	0	2	0	0	0	0
Contributions to Geophysics and Geodesy	0	1	0	0	0	0
Polish Polar Research	0	1	0	0	0	0

NRIAG Journal of Astronomy and Geophysics	0	1	0	1	0	0
Ocean Modelling	0	0	0	1	0	0
Advanced Science Letters	0	0	0	1	0	0
Computing in Science and Engineering	0	0	0	1	0	0
Space Science Reviews	0	0	0	2	2	3
Journal of Ocean Engineering and Science	0	0	0	1	0	0
Turkish Journal of Earth Sciences	0	0	0	2	0	0
Bulletin of Volcanology	0	0	0	1	0	3
CESifo Economic Studies	0	0	0	1	0	0
Solid Earth	0	0	2	1	1	6
Statistical Analysis and Data Mining: The ASA Data Science Journal	0	0	0	1	0	0
Granja-Revista de Ciencias de la vida	0	0	0	1	0	0
European Physical Journal Special Topics	0	0	0	1	0	0
Journal of Geoscience and Environment Protection	0	0	0	1	0	0
Frontiers in Earth Science	0	0	0	1	1	0
Signal Processing	0	0	0	1	0	0
Energy Procedia	0	0	0	1	0	0
European Journal of Physics	0	0	0	1	0	0
Annals of Geophysics	0	0	0	1	0	1

Bulletin of Earthquake Engineering	0	1	0	1	3	2
Journal of Solar Energy Engineering	0	0	0	1	0	0
Scientific Data	0	0	0	1	0	2
International Geology Review	0	0	0	1	0	0
Environmental Earth Sciences	0	0	0	0	1	0
Global Journal of Research in Engineering	0	0	0	0	1	0
Geoscience Canada	0	0	0	0	1	0
Journal of Communications Technology and Electronics	0	0	0	0	1	0
Earth and Planetary Physics	0	0	0	0	2	4
Earth Surface Dynamics	0	0	0	0	1	1
Vidyodaya Journal of Science	0	0	0	0	1	0
Geophysics and Geophysical Exploration	0	0	0	0	1	0
Journal of Science Education and Technology	0	0	0	0	1	0
Navigation	0	0	0	0	1	0
Journal of Marine Systems	0	0	0	0	1	0
Journal of Physics: Conference Series	0	0	0	0	1	6
Weather and Forecasting	0	0	0	0	1	0
Earth Science India	0	0	0	0	1	0
Journal of Mining Science	0	0	0	0	1	0
Resonance	0	0	0	0	1	0

Chiang Mai Journal of Science	0	0	0	0	1	0
Aims Geosciences	0	0	0	0	1	0
Russian Geology and Geophysics	0	0	0	0	1	0
Advances in Indian Earthquake Engineering and Seismology (book)	0	0	0	0	1	0
Geothermics	0	0	0	0	1	0
Mineralogy and Petrology	0	0	0	0	2	0
Universal Journal of Geoscience	0	0	0	0	1	0
Infrasound Monitoring for Atmospheric Studies (book)	0	0	0	0	1	7
Geophysical Prospecting	0	0	0	0	1	0
Journal of Earth Science	0	0	0	0	1	1
Advances in Civil Engineering	0	0	0	0	0	1
Classical and Quantum Gravity	0	0	0	0	0	1
Computational Geosciences	0	0	0	0	0	1
Encyclopedia of Solid Earth Geophysics (textbook)	0	0	0	0	0	2
Data in Brief	0	0	0	0	0	1
Geofizicheskiy Zhurnal-Geophysical Journal	0	0	0	0	0	1
Geomagnetically Induced Currents from the Sun to the Power Grid (book)	0	0	0	0	0	5
Journal of Earth System Science	0	0	0	0	0	2

Terra Nova	0	0	0	0	0	1
Proceedings of the National Academy of Sciences	0	0	0	0	0	1
Developments in Structural Geology and Tectonics (book)	0	0	0	0	0	1
Terrestrial, Atmospheric and Oceanic Sciences	0	0	0	0	0	1
Earthquake and Disaster Risk: Decade Retrospective of the Wenchuan Earthquake (book)	0	0	0	0	0	1
Progress in Disaster Science	0	0	0	0	0	1
Geodynamics & Tectonophysics	0	0	0	0	0	1
Environmental Modelling & Software	0	0	0	0	0	1
Geological Disaster Monitoring Based on Sensor Networks. Springer Natural Hazards (book)	0	0	0	0	0	1
Geological Setting, Palaeoenvironment and Archaeology of the Red Sea (book)	0	0	0	0	0	1
Geotechnical and Geological Engineering	0	0	0	0	0	1
GPS Solutions	0	0	0	0	0	1
GSA Today	0	0	0	0	0	2
ISA Transactions	0	0	0	0	0	1
Izvestiya, Atmospheric and Oceanic Physics	0	0	0	0	0	1
Journal of Mountain Science	0	0	0	0	0	1

La Rivista del Nuovo Cimento	0	0	0	0	0	1
Sensors	0	0	0	0	0	1
Romanian Reports in Physics	0	0	0	0	0	1
Landslides	0	0	0	0	0	1
Remote Sensing	0	0	0	0	0	2
Living Reviews in Relativity	0	0	0	0	0	1
The Art and Science of Seismic Interpretation	0	0	0	0	0	1
Moscow University Geology Bulletin	**0**	**0**	**0**	**0**	0	1
International Journal of Geophysics	**0**	**0**	**0**	**0**	0	1
Journal of Atmospheric and Oceanic Technology	**0**	**0**	**0**	**0**	0	1
PLoS One	**0**	**0**	**0**	**0**	0	1
Frontiers in Marine Science	**0**	**0**	**0**	**0**	0	1
Earth System Science Data	**0**	**0**	**0**	**0**	0	1
TOTAL	**60**	**82**	**131**	**109**	**80**	**145**

Searching for IRIS citations in AGU, GSA, EGU and SSA abstracts

The NASA ADS Service Abstracts search engine, Google Scholar and the AGU Meeting search were used to search for AGU proceedings. There were 149 AGU abstracts with citations of IRIS or IRIS facilities (Figure 4) that were mentioned in 2019. This is more than the number of citations from 2017 (n=126) and 2018 (n=110).

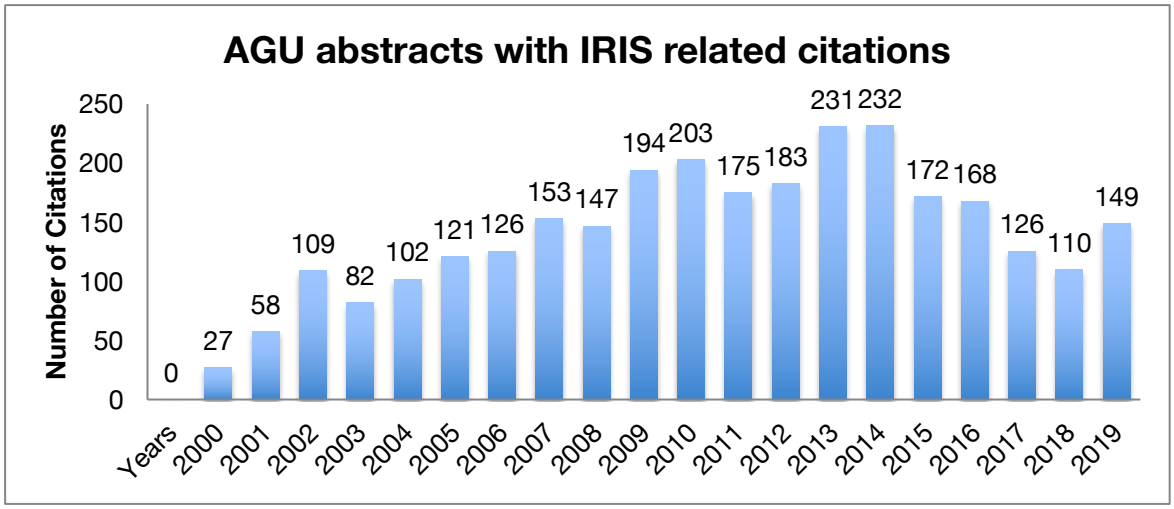

Figure 4. Number of AGU abstracts with IRIS related citations from 2000-2019.

Because the IRIS Global Seismic Network (GSN), Data Management Center (DMC) and PASSCAL data are widely used in studies throughout the world, abstracts of research presented at the Geological Society of America (GSA) meeting (and associated section meetings), the European Geophysical Union (EGU) meeting and the Seismological Society of America (SSA) meeting were also searched. Google Scholar and the society websites were used to search for GSA, SSA and EGU abstracts that cited IRIS or IRIS facilities. 8 GSA abstracts, 2 EGU abstracts and 37 SSA abstracts cite one or more relevant search terms. Thus, there were 196 abstracts that used IRIS related data or information.

Theses

In 2018 IRIS started tracking the number of dissertations that use IRIS resources and facilities. This year, there were 53 theses written that used IRIS data, resources or facilities. In 2018 there were 62 theses containing IRIS data or facilities.

Books

In 2018 IRIS started tracking the number of books and book chapters that cite IRIS data, resources or facilities. This year IRIS was cited in 17 books. Last year IRIS was cited in 6 books.

Findings from 2018

There were 687 IRIS related citations in all journals in 2019, as compared to 635 IRIS related citations found in all journals in 2018. The total number of citations found in abstracts was 196, which is an increase of 47 from the previous year. There were 53 theses and 17 books that cited IRIS. Thus, the total number of IRIS related references in 2019 is 953; 52 more than in 2018.

The increase in citations is the result of more AGU abstracts, as well as the additions of SSA abstracts. Additionally, there was an increased number of references in the Top 11 journals.

The current file of the project for this year contains:

- a list of all papers and abstracts with IRIS related citations for 2019
-libraries with all the entries in EndNote for 2019 citations **(**All citations, 11 top journals, Abstracts, all other journals)
- a report documenting the processes, procedures and findings for 2019 citation findings

Dr. Wendy Bohon and Dr. Alka Tripathy-Lang, Aug 2020.