



Australian Government
Australian Research Council

ERA

RESEARCH in the national interest - enabling the future

ERA 2010
Citation Benchmark Methodology

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INTRODUCTION

This document details the methodology that the Australian Research Council (ARC) used for citation analysis for the Excellence in Research for Australia (ERA) 2010 initiative. The methodology covers both the development and application of benchmarks, for eligible Australian higher education providers (HEPs). See **Appendix 1** for the list of FoR codes which used citation analysis.

The benchmarks covered in this document include a range of Australian HEP and world benchmarks for the following citation analysis profiles:

1. Relative citation impact (RCI), calculated against Australian HEP and world benchmarks
2. Distribution of articles against RCI classes
3. Distribution of articles based on world centile thresholds and Australian HEP average

More information regarding ERA 2010 is available from www.arc.gov.au/era.

Benchmark development

The development of benchmarks for ERA 2010 was informed by extensive analytical testing of data, literature review and advice from a range of external experts, including experts in bibliometrics and research administration. Quantitative testing was undertaken using relevant Australian higher education and world datasets.

The ARC has returned all publication data with benchmarks and citation counts (where applicable) to submitting HEPs.

ERA reference period and citation window

Benchmarks used in ERA 2010 were aligned to the reference period outlined in the *ERA 2010 Submission Guidelines* (1 January 2003 to 31 December 2008).

For citation analysis, the 'citation window' was 1 January 2003 – 1 March 2010 inclusive. All citations attributed to eligible articles up to and including 1 March 2010 were included in the ERA 2010 benchmarks.

Unit of Evaluation (UoE) and Field of Research (FoR) code

This document refers to both the Unit of Evaluation (UoE) and the Australian and New Zealand Standard Research Classification (ANZSRC) Field of Research (FoR) code. The UoE is defined as the FoR code for a particular HEP, whereas the FoR code relates to the particular field of research code, at either the two- or four-digit level.

Low volume threshold

Low volume thresholds for evaluation were outlined in the *ERA 2010 Submission Guidelines* document.

Research outputs within UoEs that did not reach the 'low volume threshold' still contributed to the calculation of both world and Australian HEP benchmarks.

BIBLIOMETRICS

Citation analysis is one of the most widely used bibliometric tools for assessing the impact of scholarly research. It involves the scrutiny of the references contained in journal articles, including analysis of reference frequency and patterns, using abstract and citation databases.

Self citations

There is some debate regarding the inclusion of self-citations in citation analysis. However, there is insufficient evidence available to warrant excluding self-citations and 'citation clubs' from discipline level citation analyses.

The ERA 2010 citation methodology did not exclude self citations.

Applicability of citation analysis in ERA

When considering the applicability of citation analysis for an FoR code, the ARC examined the proportion of total outputs which were indexed by the citation supplier. Where the proportion of indexed journal articles was less than 50 per cent of total outputs for the FoR, citation analysis was considered unreliable. Through workshops and public consultations for each of the eight ERA Discipline Clusters, the ARC has identified the FoR codes that are suitable for citation analysis. These are listed in **Appendix 1**.

Changes to the ERA 2010 submission process

Following the review of the 2009 ERA trial, the ERA 2010 methodology was changed to require HEPs to apportion research outputs across relevant FoR codes during the submission process. This change prevented the double counting of journals articles, which for the 2009 trial, were wholly assigned to all FoR code(s) of the particular journal.

The ERA 2010 methodology was less restrictive on the FoR coding for journal articles and allowed more journals to be given the two-digit or multidisciplinary FoR coding where this was justified.

CITATION ANALYSIS BENCHMARKS

Citation Data Provider

The citation data provider for ERA 2010 was Scopus.

Field specific benchmarks

The ARC citation methodology recognises that each discipline has distinctive citing behaviours and publication timelines. For this reason ERA 2010 used FoR code specific benchmarks. This meant that a discipline was only compared against its relative performance, which significantly reduced the impact of any field specific citing behaviours and publication timelines that may exist.

FoR code-specific benchmarks were constructed from data relating to the journals assigned to each FoR code. Journals were assigned to particular FoR code(s) during the ERA 2010 ranked journal development process. This process was designed to ensure that only journals that publish articles that are relevant to a particular FoR code were assigned to that FoR code.

For ERA 2010, submitting institutions were required to assign outputs published in two-digit and multidisciplinary journals to four-digit FoR code(s). Journal articles published in two-digit and multidisciplinary journals were compared against the benchmark of the four-digit FoR code assigned by the submitting institution.

The compilation of two-digit UoEs involved an aggregation of the four-digit outputs in the four-digit codes beneath. It was therefore possible for an article which was apportioned to more than one four-digit FoR code to have different RCI and centile results at the article level due to the different FoR code benchmarks.

World benchmarks

All journal articles in ERA 2010 used four-digit FoR code benchmarks. Two-digit benchmarks were not used in ERA 2010 except in instances where the volume of outputs in the world dataset was too small for the four-digit FoR code to provide a robust benchmark. FoR codes with fewer than 800 indexed articles across the six-year period were found to be likely to produce unstable benchmarks that may skew citation analyses. To overcome this instability, where fewer than 800 indexed articles in the Scopus world dataset for an FoR code at the four-digit level, the two-digit level benchmark was used.

Two-digit level benchmarks were derived by aggregating all of the articles published in the particular two-digit coded journals as well as a de-duplicated set of all of the articles published in the four-digit coded journals beneath. Where two-digit level benchmarks were applied to four-digit UoEs, Research Evaluation Committee (REC) members were provided warnings¹ which assisted them with the interpretation of the indicator profile.

The *ERA 2010 Citation Benchmark* document (released in confidence to submitting institutions) clearly identifies the FoR codes where a two-digit benchmark was used.

¹ 'Warnings' were messages that appeared in the indicator profiles during evaluation to alert REC members of potentially skewed data.

Australian HEP benchmarks

The Australian HEP benchmarks were compiled using all indexed journal articles submitted to ERA 2010. Where a four-digit FoR code had less than 250 articles submitted to ERA 2010 across all HEPs, REC members were provided warning messages to alert them to the possibility of fluctuating annual Australian benchmarks.

Year specific benchmarks

ERA 2010 used year-specific benchmarks for each FoR code. This approach overcame issues such as the likelihood that articles published early in the reference period have more time to accrue citations than articles published towards the end of the reference period. This method also ensured that any heterogeneity in publication patterns across the reference period was taken into account.

For each year of the reference period, for each FoR code, a world and Australian HEP benchmark was derived. Articles published in a specific year were assessed against the discipline-specific benchmark for that year.

Journal article eligibility criteria

Citation analysis benchmarks were derived using research outputs that met ALL of the following criteria:

- Published by a journal listed in the ERA 2010 Ranked Journal List.
- Indexed by the citation information provider at the time the article is published².
- Published during the reference period (2003-2008).
- Have a unique article identifier (an EID from Scopus).
- Assigned by Scopus with an article type of journal article, conference publication or review article.
- A valid research output for ERA 2010. Please refer to the *ERA 2010 Submission Guidelines* to determine the eligibility of a research output.

Inclusion of outputs published in multidisciplinary and two-digit coded journals in benchmarking

Analysis of the ERA 2010 submission data showed that while the majority of two-digit and multidisciplinary journals published articles relevant to the broad range of FoR codes, a small number published a significant proportion of articles in particular four-digit FoR codes i.e., they behaved like discipline specific journals.

For example, out of the 432 journal articles submitted to ERA 2010 published in the *Journal of the Acoustical Society of America* (FoR coded to '02 Physical Sciences' and '09 Engineering' in the ERA 2010 Ranked Journal List), 29% was assigned by HEPs to '0203 Classical Physics', 38% to '0913 Mechanical Engineering' and 33% spread across other 02 and 09 related four-digit FoR codes.

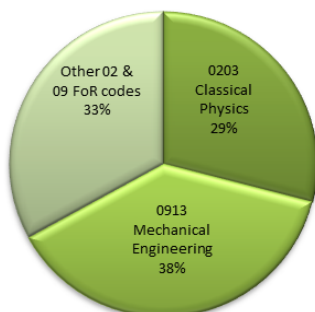
Conversely, the *Journal of the American Chemical Society* (FoR coded to '06 Biological Sciences', '03 Chemical Sciences' and '09 Engineering') is a general journal, publishing across a range of FoR codes. **Figure 1** illustrates these two examples.

These findings suggest that while some two-digit FoR and multidisciplinary coded journals publish across a broad range of FoR codes, a large majority of their output was focused on particular four-digit FoR code(s). For this reason, these journals were included in the benchmark journal set for the relevant four-digit FoR code.

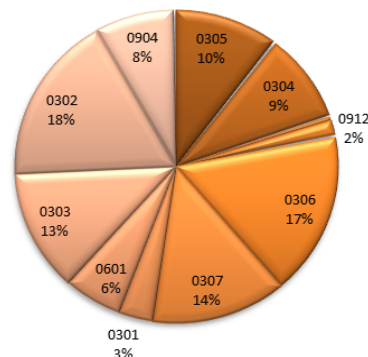
² Some journal titles may become first 'indexed' during the reference period. This means some journals may only be partly indexed. For example, if Scopus begins indexing *Journal A* in 2005, papers published in the reference period prior to 2005 will not be included in citation analysis, while papers published in *Journal A* from 2005 will be included in citation analysis.

Figure 1: Example two-digit FoR coded journals where Australian HEPs have apportioned research outputs to certain four-digit FoR codes.

ERA 2010 HEP Outputs from the *Journal of the Acoustical Society of America* (432 outputs)



ERA 2010 HEP Outputs from the *Journal of the American Chemical Society* (1,245 outputs)



The thresholds for including two-digit FoR and multidisciplinary coded journals in the benchmark journal set were:

- 25% or more of all articles submitted to ERA 2010 published in a two-digit FoR or multidisciplinary coded journal was assigned to specific four-digit FoR code(s); **AND**
- The '25% or more' threshold constituted 50 or more apportioned indexed articles.

In the example shown in **Figure 1**, outputs from the *Journal of the Acoustical Society of America* were included in the calculation of '0203 Classical Physics' and '0913 Mechanical Engineering' benchmarks as it behaved in a disciplinary manner. On the other hand, the *Journal of the American Chemical Society* was not included in the calculation of four-digit benchmarks because it did not behave in a disciplinary manner.

The number of two-digit FoR and multidisciplinary coded journals that behaved in a disciplinary manner was small with less than 4% remapped (157 out of 4,108 two-digit FoR and multidisciplinary coded journals). The list of remapped journals is shown in **Appendix 2** of this document.

CALCULATING THE BENCHMARKS

World citations per paper (cpp) benchmarks

Scopus derived the ERA 2010 static citation dataset on 1 March 2010 for all publications in the world published during the period 1 January 2003 – 31 December 2008.

The world benchmarks were derived using bibliometric data of all eligible articles published in the world (including those authored by eligible staff of Australian HEPs). Only Scopus article types of journal article, conference publication and review article were included in the world benchmark calculations.

Scopus derived the benchmarks using the following calculation:

$$\text{World benchmark}_{\text{year}(n) \text{ FoR}(n)} = \frac{\text{Sum of cites for all eligible articles in the world dataset}_{\text{year}(n) \text{ FoR}(n)}}{\text{Total number of eligible articles in the world dataset}_{\text{year}(n) \text{ FoR}(n)}}$$

Australian HEP citations per paper (cpp) benchmarks

The Australian HEP benchmarks were derived using eligible outputs submitted by the HEPs to ERA 2010.

Journal articles submitted to ERA 2010 could be assigned and apportioned to up to three four-digit FoR codes with the maximum FoR code apportionment being 100% or one article count. This meant that a particular journal article could legitimately be submitted to ERA 2010 by two institutions with different variations of apportionment to FoR codes. An example of this would be the following: Journal article X, published in the journal *Australian Epidemiologist* (FoR coded to '1117 Public Health and Health Services' and '1103 Clinical Sciences' on the ERA 2010 Ranked Journal List) had contributing authors from University A and University B. University A apportioned 40% of the article to '1117 Public Health and Health Services' and 60% to '1103 Clinical Sciences', while University B assigned 80% of the article to '1117 Public Health and Health Services' and 20% to '1103 Clinical Sciences'.

During the creation of the Australian HEP benchmarks, these unique institution FoR apportionments were carried through in the de-duplication process undertaken by the ARC. That is, Journal article X was counted as 0.6 articles for '1117 Public Health and Health Services' and 0.4 articles for '1103 Clinical Sciences' in the de-duplicated ERA 2010 Australian HEP benchmark dataset.

A de-duplicated set of indexed journal articles, that had been assigned and apportioned by the institutions, were used in the calculation of the ERA 2010 Australian HEP benchmarks.

The Australian HEP benchmarks were derived by year using the following calculation:

$$\text{Aust HEP benchmark}_{\text{year}(n) \text{ FoR}(n)} = \frac{\text{Sum of cites for all eligible articles submitted to ERA}_{\text{year}(n) \text{ FoR}(n)}}{\text{Total number of eligible articles submitted to ERA}_{\text{year}(n) \text{ FoR}(n)}}$$

World centile thresholds

The world centile thresholds were derived using bibliometric data of all eligible articles published in the world (including those authored by eligible staff of Australian HEPs).

Only Scopus article types of journal article, conference publication and review article were included in the world benchmark calculations.

Centile thresholds were derived by determining the number of raw citation counts required to be in the top 1, 5, 10, 25, and 50 per cent of the world for all eligible articles in the Scopus dataset (by year and FoR code).

CALCULATING THE CITATION PROFILES

Relative Citation Impact (RCI)

An example of HEP's 'relative citation impact (RCI)' evaluation as used in ERA is shown in **Table 1**.

Table 1: Relative citation impact (RCI) against world and Australian HEP cpp

Total Indexed Publications	UoE RCI against:	
	World Benchmark	Aust. HEP Benchmark
73.5	1.88	1.58

Two benchmarks were used in the calculation of this profile: world and Australian HEP cpp benchmarks.

An RCI is calculated for each article against the relevant FoR and year-specific benchmark. Once RCIs have been calculated for all articles, an average of the institution's RCIs was then derived. A UoE's RCI against world and Australian HEP benchmarks were constructed individually for each UoE, based on the distribution of publications across the reference period.

Steps for Deriving 'UoE RCI against World and Aust. HEP Benchmarks'

Table 2 shows an example for deriving the Institution RCI. The two benchmarks were applied to each article submitted to each FoR code. The methodology for deriving the citations profile was:

1. Calculate both 'RCI (world)' and 'RCI (Aust. HEP.)' for each article in a UoE, where:

$$a. \quad RCI (World) = \frac{\text{number of citations}_{\text{article } x}}{\text{World cpp}}$$

$$b. \quad RCI (Aust. HEP.) = \frac{\text{number of citations}_{\text{article } x}}{\text{Aust. HEP. cpp}}$$

2. Apply the apportionment to individual article's RCI from Step 1, where:

$$a. \quad \text{Apportioned RCI (World)} = RCI (World) * \text{apportionment}$$

$$b. \quad \text{Apportioned RCI (Aust. HEP.)} = RCI (Aust. HEP.) * \text{apportionment}$$

3. Average the RCIs derived in 2a. and 2b. respectively, where:

$$a. \quad \text{Average RCI (world)} = \text{average of all 'Apportioned RCI (world)'} \text{ for a UoE}$$

$$b. \quad \text{Average RCI (Aust. HEP.)} = \text{average of all 'Apportioned RCI (Aust. HEP.)'} \text{ for a UoE}$$

Note that the denominator for 3a. and 3b. was the total apportioned count of indexed articles for the UoE. For example, in **Table 2**, the total apportioned count of indexed articles was 73.5.

Table 2: Example Average RCI calculation against world and Australian HEP cpp

Institution Y							
FoR code: FoR X							
	FoR X Apportionment	Year of Publication	Citations	World cpp benchmark	Aust HEP cpp benchmark	Apportioned RCI against world benchmark	Apportioned RCI against Aust. benchmark
Pub 1	0.8	2003	3	5.2	2.3	0.46	1.04
Pub 2	1.0	2003	2	5.2	2.3	0.38	0.87
Pub 3	0.8	2004	5	3.5	2.1	1.14	1.90
Pub 4	0.5	2007	2	2.5	0.9	0.4	1.11
Pub 5	0.6	2006	0	3.1	1.2	0.00	0.00
<i>...Pub 6 – Pub 87...</i>							
Pub 88	1.0	2008	3	2.1	0.3	1.43	1.5
Total	73.5				Average RCI	1.83	1.58

RCI classes

To provide further granularity, ERA undertook an analysis of the number of articles belonging to particular RCI bands (termed RCI Classes). The ARC used seven classes of RCIs for ERA:

Class 0	Output with no impact (RCI=0)
Class I	Output with RCI ranging from >0 to 0.79
Class II	Output with RCI ranging from 0.8 to 1.19
Class III	Output with RCI ranging from 1.2 to 1.99
Class IV	Output with RCI ranging from 2.0 to 3.99
Class V	Output with RCI ranging from 4.0 to 7.99
Class VI	Output with RCI above >8.0

Table 3: Number of articles across Relative Citation Impact Classes (assessed against the world cpp benchmark)

Class	RCI Range	No. of indexed articles	% of indexed articles	Aust HEP Average
0	0	2.5	4%	18%
I	0.01-0.79	15.8	24%	26%
II	0.80-1.19	19.1	29%	32%
III	1.20-1.99	23.5	36%	12%
IV	2.00-3.99	5.5	3%	7%
V	4.0-7.99	5.6	4%	3%
VI	>=8	1.5	0%	2%
Total indexed articles		73.5	100%	100%

Table 3 shows that 2.5 articles were uncited, 15.8 articles were cited below the world average, 19.1 articles were cited around the world average (defined as being cited around one times the world benchmark), 23.5 articles were cited between 1.2 and 1.99 time the world average, 5.5 articles in this analysis had a RCI of between two and four times the field average, 5.6 articles were cited 4.0 to 7.99 times the world average and 1.5 article was cited at least eight times the world average.

The steps for compiling the RCI Class profile for ERA were:

1. Calculate the 'RCI (world)' for each article submitted by an institution for a UoE, as shown in **Table 4**.
2. Assign a RCI Class to each of the articles based on the 'RCI (world)' score for each article.
3. Count the number of apportioned articles within each RCI Class.

Table 4: Deriving RCI Classes

Institution Y								
FoR code: FoR X								
	Apportionment	Yr of Pub	Citations	World cpp benchmark	Aust HEP cpp benchmark	RCI (world)	RCI (Aust. HEP.)	RCI Class
Pub 1	0.8	2003	3	5.2	2.3	0.58	1.3	Class I
Pub 2	1.0	2003	2	5.2	2.3	0.38	0.87	Class I
Pub 3	0.8	2004	5	3.5	2.1	1.43	2.38	Class III
Pub 4	0.5	2007	2	2.5	0.9	0.8	2.22	Class I
Pub 5	0.6	2006	0	3.1	1.2	0	0	Class 0
....Pub 6 – Pub 87....								
Pub 88	1.0	2008	3	2.1	0.3	1.43	1.5	Class III
Total indexed articles	73.5				Average RCI	1.83	1.58	

Centile analysis

ERA also used 'Centile Analysis' as a tool in conjunction with 'Relative Citation Impact' to evaluate research quality. Centile analysis investigates the distribution of articles based on world centile thresholds. An example of the 'Centile Analysis' used in ERA is shown in **Table 5**.

Two benchmarks were used in this analysis:

1. World centile thresholds: The citation information supplier derived the number of citations required to be in the top 1%, 5%, 10%, 25% and 50% of the world for an FoR code for each year of the reference period. For ERA 2010, these centile thresholds were derived by Scopus using the ERA 2010 world dataset.
2. Australian HEP average for each centile: The cumulative percentage of Australia HEP articles at various world centile bands for an FoR code.

The centile profile also shows the median number and percentage of articles at the 50th world centile for a UoE. This shows an institution's performance above and below the median.

Table 5: Centile analysis

World centile	Institution		Aust. HEP FoR Average % of articles (cumulative)
	No. of articles (cumulative)	% of articles (cumulative)	
1	0.0	0%	3%
5	2.5	5%	8%
10	11.5	18%	16%
25	19.8	32%	36%
50 (median)	53.5	73%	41%
Total	73.5	100%	100%
Uncited	2.5		

Appendix 1: FoR codes that used citation analysis in ERA 2010

Cluster	FoR	FoR Title
MIC	01	Mathematical Sciences
MIC	0102	Applied Mathematics
MIC	0103	Numerical and Computational Mathematics
MIC	0104	Statistics
MIC	0105	Mathematical Physics
MIC	0199	Other Mathematical Sciences
PCE	02	Physical Sciences
PCE	0201	Astronomical and Space Sciences
PCE	0202	Atomic, Molecular, Nuclear, Particle and Plasma Physics
PCE	0203	Classical Physics
PCE	0204	Condensed Matter Physics
PCE	0205	Optical Physics
PCE	0206	Quantum Physics
PCE	0299	Other Physical Sciences
PCE	03	Chemical Sciences
PCE	0301	Analytical Chemistry
PCE	0302	Inorganic Chemistry
PCE	0303	Macromolecular and Materials Chemistry
PCE	0304	Medicinal and Biomolecular Chemistry
PCE	0305	Organic Chemistry
PCE	0306	Physical Chemistry (incl. Structural)
PCE	0307	Theoretical and Computational Chemistry
PCE	0399	Other Chemical Sciences
PCE	04	Earth Sciences
PCE	0401	Atmospheric Sciences
PCE	0402	Geochemistry
PCE	0403	Geology
PCE	0404	Geophysics
PCE	0405	Oceanography
PCE	0406	Physical Geography and Environmental Geoscience
PCE	0499	Other Earth Sciences
EE	05	Environmental Sciences

EE	0501	Ecological Applications
EE	0502	Environmental Science and Management
EE	0503	Soil Sciences
EE	0599	Other Environmental Sciences
BB	06	Biological Sciences
BB	0601	Biochemistry and Cell Biology
BB	0602	Ecology
BB	0603	Evolutionary Biology
BB	0604	Genetics
BB	0605	Microbiology
BB	0606	Physiology
BB	0607	Plant Biology
BB	0608	Zoology
BB	0699	Other Biological Sciences
BB	07	Agricultural and Veterinary Sciences
BB	0701	Agriculture, Land and Farm Management
BB	0702	Animal Production
BB	0703	Crop and Pasture Production
BB	0704	Fisheries Sciences
BB	0705	Forestry Sciences
BB	0706	Horticultural Production
BB	0707	Veterinary Sciences
BB	0799	Other Agricultural and Veterinary Sciences
MIC	08	Information and Computing Sciences
MIC	0801	Artificial Intelligence and Image Processing
MIC	0802	Computation Theory and Mathematics
MIC	0803	Computer Software
MIC	0804	Data Format
MIC	0805	Distributed Computing
MIC	0806	Information Systems
MIC	0807	Library and Information Studies
MIC	0899	Other Information and Computing Sciences
EE	09	Engineering
EE	0901	Aerospace Engineering
EE	0902	Automotive Engineering

EE	0903	Biomedical Engineering
EE	0904	Chemical Engineering
EE	0905	Civil Engineering
EE	0906	Electrical and Electronic Engineering
EE	0907	Environmental Engineering
EE	0908	Food Sciences
EE	0909	Geomatic Engineering
EE	0910	Manufacturing Engineering
EE	0911	Maritime Engineering
EE	0912	Materials Engineering
EE	0913	Mechanical Engineering
EE	0914	Resources Engineering and Extractive Metallurgy
EE	0915	Interdisciplinary Engineering
EE	0999	Other Engineering
BB	10	Technology
BB	1001	Agricultural Biotechnology
BB	1002	Environmental Biotechnology
BB	1003	Industrial Biotechnology
BB	1004	Medical Biotechnology
MIC	10	Technology
MIC	1005	Communications Technologies
MIC	1006	Computer Hardware
MIC	1007	Nanotechnology
MIC	1099	Other Technology
BCH	11	Medical and Health Sciences
BCH	1101	Medical Biochemistry and Metabolomics
BCH	1102	Cardiovascular Medicine and Haematology
BCH	1103	Clinical Sciences
BCH	1105	Dentistry
BCH	1107	Immunology
BCH	1108	Medical Microbiology
BCH	1109	Neurosciences
BCH	1112	Oncology and Carcinogenesis
BCH	1113	Ophthalmology and Optometry
BCH	1114	Paediatrics and Reproductive Medicine

BCH	1115	Pharmacology and Pharmaceutical Sciences
BCH	1116	Medical Physiology
PAH	11	Medical and Health Sciences
PAH	1104	Complementary and Alternative Medicine
PAH	1106	Human Movement and Sports Science
PAH	1110	Nursing
PAH	1111	Nutrition and Dietetics
PAH	1117	Public Health and Health Services
PAH	1199	Other Medical and Health Sciences
SBE	17	Psychology and Cognitive Sciences
SBE	1701	Psychology
SBE	1702	Cognitive Science
SBE	1799	Other Psychology and Cognitive Science

APPENDIX 2: Two-digit and multidisciplinary journals on the ERA 2010 Ranked Journal List that were assigned to four-digit FoR code(s)

ERAID	Title	ERA 2010 List			Reassigned Journals		
		FoR 1	FoR 2	FoR 3	FoR 1	FoR 2	FoR 3
40284	Acta Crystallographica Section D: Biological Crystallography	03	06		0601		
34322	Acta Crystallographica Section E: Structure Reports Online	03			0306		
13122	Acta Neuropsychiatrica	17	11		1103		
1313	Angewandte Chemie (International Edition)	06	03	09	0302		
5178	Animal Production Science	07			0702	0703	
5445	Animal Science	06	07		0702		
2456	Applied and Environmental Microbiology	06	07	10	0605		
949	Applied Physics Letters	02	09	01	0204		
15719	Archives of Internal Medicine	11			1103		
18182	ASEAN Economic Bulletin	14			1402		
21157	Asia Pacific Viewpoint: specialises in the study of development, change and underdevelopment	MD			1604		
18183	Asian Economic Journal	14			1402		
21418	Asia-Pacific Journal: Japan Focus	MD			2103		
5805	Australasian Journal of Environmental Management	MD			0502		
18189	Australian Economic Papers	14			1402		
20008	Australian Educational Researcher	13			1301	1303	
22107	Australian Humanities Review	MD			2002		
1314	Australian Journal of Chemistry: an international journal for chemical science	03			0305		
35964	Australian Journal of Earth Sciences	04			0403		
20013	Australian Journal of Education	13			1303		
5248	Australian Journal of Soil Research	05	07	06	0502	0503	
2157	BBA - Proteins and Proteomics	06			0601		
35096	BioEssays	06			0601		
3211	Biological Conservation	05	06	07	0502	0602	
2054	Biological Journal of the Linnean Society	06			0602	0603	0608
5250	Biology and Fertility of Soils	05	06	07	0503		
2059	Biology Letters	06			0603	0608	
22121	Biology of Reproduction	11			1114		
1666	Biomacromolecules	06	03	09	0303		
3345	Biotechnology and Bioengineering	10	09	06	1002		
15297	BMC Medical Research Methodology	11			1117		
40222	BMJ: British Medical Journal	11			1117		
5810	Bulletin of Environmental Contamination and Toxicology	05	03	06	0502		
18194	Bulletin of Indonesian Economic Studies	14			1402		
924	Bulletin of Mathematical Biology	01	06		0102		
1319	Chemical Communications	03	09		0302		
1329	Chemistry: A European Journal	03			0302		
15304	Clinical Science	11			1102	1103	
15305	Cochrane Database of Systematic Reviews	11			1103	1114	
3221	Conservation Biology	05	06	07	0502	0602	
3223	Coral Reefs	05	06	04	0602		
11451	Cultural Studies Review	MD			2002		
964	Current Applied Physics	02	01		0204		
15980	Current Eye Research	MD			1113		
3874	Desalination	09	03		0904		
22154	Development (Cambridge)	06			0601	0604	
22155	Developmental Biology	06			0601	0608	
34674	Discourse (Abingdon): studies in the cultural politics of education	16	13		1303		
2529	Diseases of Aquatic Organisms	06	07		0605	0704	
9943	Double Dialogues	19			1901	1904	
1721	Earth-Science Reviews	04			0403		
3228	Ecological Applications	05	06	07	0502	0602	
3232	Ecological Management and Restoration	05	06	07	0502		

ERAID	Title	ERA 2010 List			Reassigned Journals		
		FoR 1	FoR 2	FoR 3	FoR 1	FoR 2	FoR 3
18212	Economics Letters	14			1402		
16049	Emerging Infectious Diseases	11	06	07	1108	1117	
32863	Energy Policy	MD			1402		
5817	Environment International	05	11	09	0502		
34336	Environmental Chemistry	05	03		0502		
13502	Environmental Health	11	05	06	1117		
5117	Environmental Management (New York): an international journal for decision-makers, scientists and environmental auditors	MD			0502		
5823	Environmental Pollution	MD			0502		
5831	Environmental Toxicology and Chemistry	05	03	11	0502		
13507	Epidemiology and Infection	11	06	07	1117		
18263	European Economic Review	14			1402		
148	European Journal of Operational Research	01	08	09	0102		
1176	European Physical Journal C. Particles and Fields	01	02		0202		
971	Europhysics Letters: a letters journal exploring the frontiers of physics	02	01		0204		
3254	Freshwater Biology	06	05		0602		
1726	G3: Geochemistry, Geophysics, Geosystems: an electronic journal of the earth sciences	04			0402	0403	0404
5257	Geoderma	05	07	06	0503		
1801	Geology (Boulder)	04			0403		
3258	Global Change Biology	05	06		0602		
2022	Global Ecology and Biogeography	06	04	05	0602		
34334	Green Chemistry	03			0305		
20031	International Education Journal	13			1303		
3495	International Journal for Numerical and Analytical Methods in Geomechanics	09	01		0905		
187	International Journal for Numerical Methods in Engineering	09	01		0905		
40346	International Journal of Control	09	01		0906		
13590	International Journal of Environmental Health Research	11	05	06	1117		
987	International Journal of Modern Physics B	01	02		0204		
41490	International Journal of Pure and Applied Chemistry	03			0304		
20026	Issues in Educational Research	13			1301	1302	1303
15314	JAMA: Journal of the American Medical Association	11			1117		
989	Japanese Journal of Applied Physics	02	01		0204		
3266	Journal of Animal Ecology	05	06	07	0602		
34293	Journal of Applied Crystallography	02	01		0204		
994	Journal of Applied Physics	02	09	01	0204		
3161	Journal of Applied Physiology	06	11	09	1106		
15317	Journal of Experimental Medicine	11			1107		
4682	Journal of Hazardous Materials	09			0904		
258	Journal of Mathematical Physics	01	02		0105		
22236	Journal of Medical Entomology	11			1108	1117	
1677	Journal of Membrane Science	09	04	05	0904		
270	Journal of Physics A: Mathematical and Theoretical	01	02		0105		
1000	Journal of Physics D: Applied Physics	02	09		0204		
1199	Journal of Physics G: Nuclear and Particle Physics	01	02		0202		
17766	Journal of Research and Practice in Information Technology	08			0806		
1297	Journal of the Acoustical Society of America	09	02		0203	0913	
5276	Journal of the Soil Science Society of America	05	07	06	0503		
39758	Journal of Theoretical Biology	01	06	09	0102		
2094	Journal of Thermal Biology	06			0606		
15320	Lancet	11			1117		
1687	Macromolecules	03	09		0303		
3288	Marine Ecology - Progress Series	MD			0602		
39756	Marine Pollution Bulletin	MD			0502		
15323	Medical Journal of Australia	11			1117		
15325	Medicine Today: the peer reviewed journal of clinical practice	11			1103		

ERAID	Title	ERA 2010 List			Reassigned Journals		
		FoR 1	FoR 2	FoR 3	FoR 1	FoR 2	FoR 3
2251	Molecular and Biochemical Parasitology	06	11	07	0601		
1369	Nano Letters: a journal dedicated to nanoscience and nanotechnology	MD			1007		
6532	Neuropsychological Rehabilitation	11	17		1701		
6533	Neuropsychology	11	17		1701		
15329	New England Journal of Medicine	11			1103		
1370	New Journal of Chemistry	03			0302		
1010	New Journal of Physics	02			0206		
3297	Oecologia	05	06		0602		
3298	OIKOS	05	06	07	0602		
3301	Pacific Conservation Biology	05	06	07	0502		
18229	Pacific Economic Bulletin	14			1402	1499	
18231	Pacific Economic Review	14			1402		
5539	Parasitology (Cambridge)	11	06	07	0707		
1129	Physica Status Solidi. B: Basic Research	01	02		0204		
1219	Physical Chemistry Chemical Physics	02	03	09	0306		
1131	Physical Review B (Condensed Matter and Materials Physics)	02	01	09	0204		
1078	Physical Review D (Particles, Fields, Gravitation and Cosmology)	02	01		0202		
1019	Physical Review Letters	02	09	01	0202		
1023	Physics Letters. Section A: General, Atomic and Solid State Physics	02	01		0205		
13748	PLoS Medicine	11			1117		
3308	Polar Biology	06			0602		
1688	Polymer	09	03		0303		
1754	Precambrian Research	04			0403		
39856	Proceedings of the Royal Society of London. Mathematical, Physical and Engineering Sciences	02	01	09	0102		
2111	Proceedings of the Royal Society of London: Biological Sciences	06			0603	0608	
14855	Progress in Neuro-Psychopharmacology and Biological Psychiatry	17	11		1109		
36175	Psychotherapy in Australia	17			1701		
3313	Restoration Ecology	05	06		0502		
2093	Royal Society of Western Australia. Journal	06			0602	0608	
3551	Science of the Total Environment	MD			0502		
18234	Singapore Economic Review	14			1402		
5016	Smart Materials and Structures	09			0912		
5272	Soil Biology and Biochemistry	05	06	03	0503		
11637	Southerly: a review of Australian literature	21	20	19	2005		
3381	Stem Cells	10	06	11	0601		
1759	Terra Nova	04			0403		
3196	The American Naturalist	06			0603		
18190	The Australian Economic Review	14			1402		
18205	The Economic Journal	14			1402		
18208	The Economic Record	14			1402		
2090	The Journal of Experimental Biology	06			0606	0608	
40095	The Journal of High Energy Physics	01	02		0206		
3322	The Victorian Naturalist	06	05		0502	0602	
2411	Theoretical and Applied Genetics: international journal of plant breeding research	06	07	10	0604	0703	
19044	Third Sector Review	MD			1605		
22309	Vaccine	06	11	07	1107	1117	
4696	Water Science and Technology	09	07		0905	0907	
1992	Water, Air and Soil Pollution: an international journal of environmental pollution	MD			0502		
3020	Wildlife Research	06	05		0502	0602	
13818	Youth Studies Australia	16			1608		