

# Applying the gender lens to geoscience research, the role of scientific publishers

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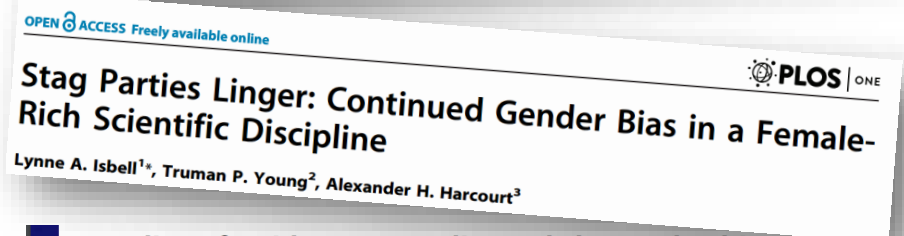
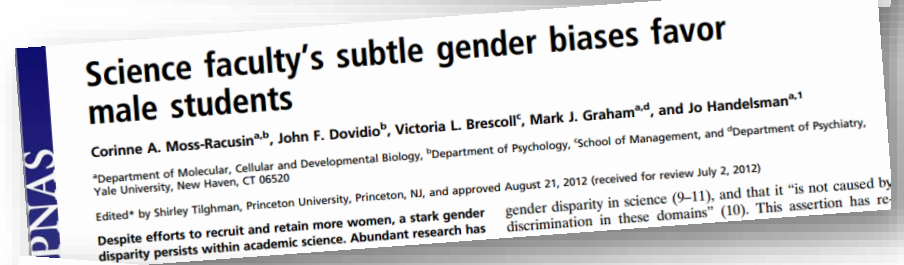
## Overview

- Challenges faced by women in science
- The role of scientific publishers in driving gender equality in research

# Challenges faced by women in science (1/2)

## Unconscious Bias

- **Lower # of publications** – “Globally (...) for every article with a female first author, there are nearly two (1.93) articles first-authored by men”
- **Lower citations received** - articles with women in dominant author positions receive fewer citations than those with men in the same positions.
- **Career progression** –Female researchers (with similar qualifications as their male counterparts) are also perceived as less hireable and less competent than men.
- **Lower salaries** - Female candidates were also offered less money for the same positions.
- **Bias awareness** – studies suggest a relative reluctance among men, especially within STEM, to accept evidence of gender biases.’

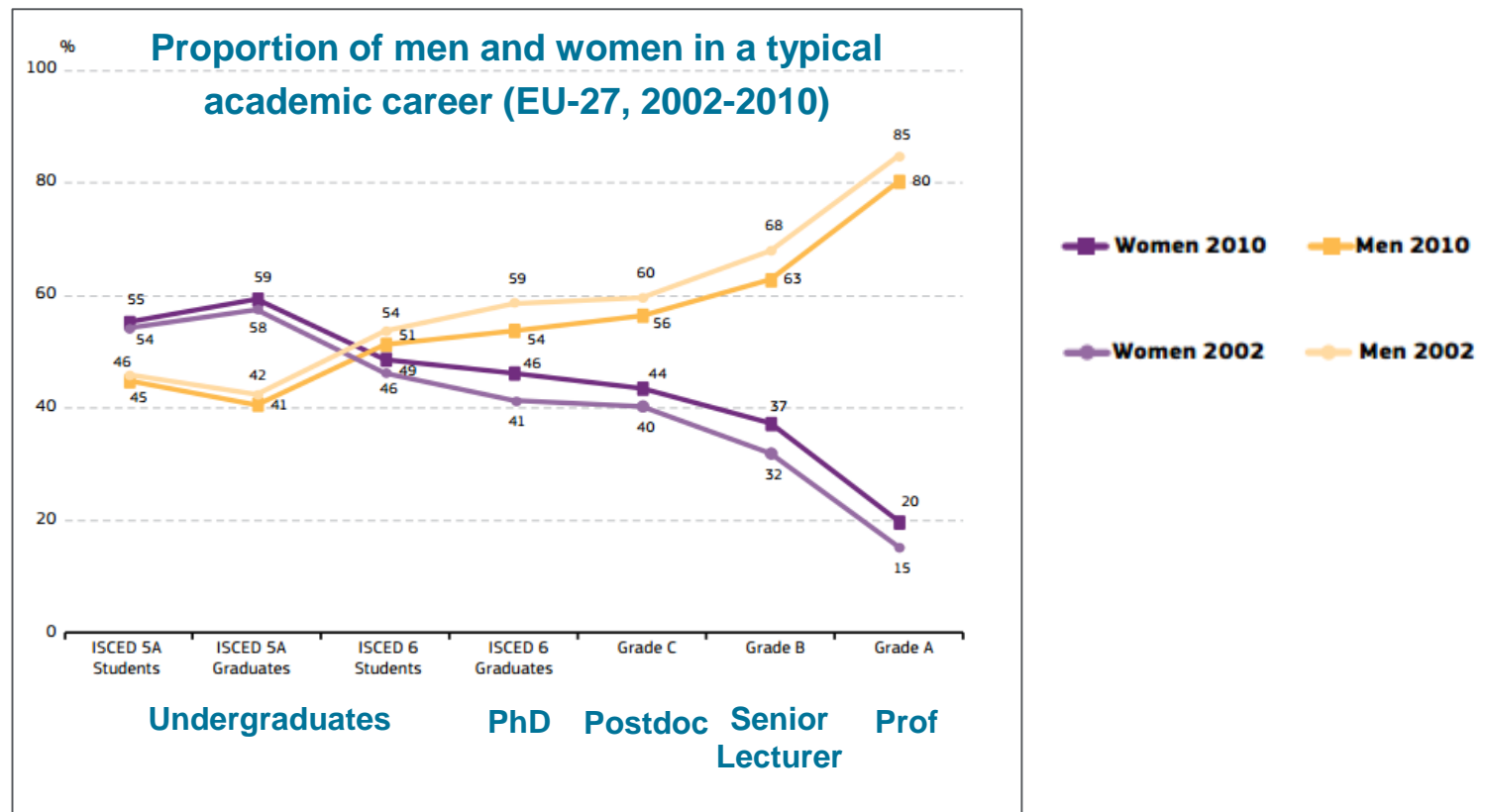


# Challenges faced by women in sciences (2/2)

## Leaky Pipeline

**Europe** - at entry level, female students account for ~55% of total. At the highest level (Grade A – equivalent to full professor), however, they represent only 20% of the total.

**USA** - whilst women entering undergraduate geoscience programs is high (40% of bachelors students), women are still significantly underrepresented in senior positions (16%)



# Proportion of female researchers for Canada & the USA in Earth & Planetary Sciences

## Methodology\*



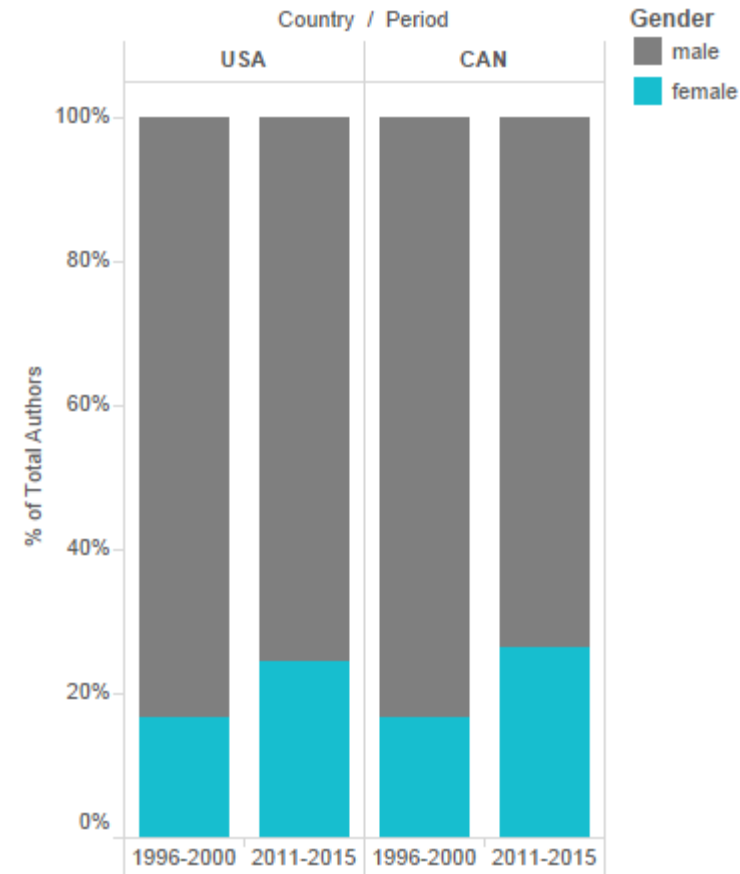
- All Scopus author profiles were matched to these datasets according to their country of origin and first name.

## Key Insights

- Overall, Female researchers represent less than 27% of the total researchers in Earth and Planetary Sciences for both Canada & the USA.
- The proportion of female researchers in Earth and Planetary Sciences has increased in the last 15 years from ~17% (1996-2000) to ~25% (2011-2015)

| Proportion female researcher |           |           |           |
|------------------------------|-----------|-----------|-----------|
| USA                          |           | CAN       |           |
| 1996-2000                    | 2011-2015 | 1996-2000 | 2011-2015 |
| 16.8%                        | 24.5%     | 16.7%     | 26.4%     |

% male females



% of Total Authors for each Period broken down by Country. Color shows details about Gender. The data is filtered on Named and Name. The Named filter keeps 1. The Name filter keeps Earth and Planetary Sciences. The view is filtered on Country and Gender. The Country filter keeps CAN and USA. The Gender filter keeps female and male.

# The role of scientific publishers in driving gender equality in research

**Gender initiative at Elsevier - we are committed to ensuring that publishing is fair and equitable for all**

## **Two overarching approaches to breaking down gender barrier**

- Advancing Women in Science
- Including Gender in Research

# 1. Advancing Women in Science

**Creating more opportunities to recognize and support women in Science\***



**New Scholars - 10 years, 50 grants, ca \$2.5 million**

Advancing women scientists: grants for family friendly policies, career skills, dual career issues, recognition awards, benchmarking studies, and boosting professional visibility through childcare grants.



**Engaging with Gender Summits**

The partnership between Elsevier and Gender Summit has increased over time, encompassing a wider range of initiatives, such as sponsorships, reports, and the bilateral learning and 'growing' process.



**The Elsevier Family Support Award**

In 2015, Cell Press launched \$500 awards for early career researchers to mitigate childcare expense and promote professional visibility.

\* Examples of Elsevier & Elsevier Foundation's initiatives supporting diversity and inclusion in STM

## 2. Including Gender in Research (1/4)

### 2.1. Improving our publishing processes and policies so that authors feel confident our journals publish research without bias or prejudice

#### Guiding authors and editors on sex and gender in research

Publishers can play a critical role by engaging with their editors to establish formal guidance on sex/gender reporting of scientific research

- ☑ Best practice recommendations for peer-reviewed journals from Gendered Innovations
- ☑ Working with Council of Science Editors (CSE) and International Committee of Medical Journal Editors (ICMJE) to enhance editorial recommendations
- ☑ Partner with the Earth Science Women's Network.
- ☑ Enhancing recommendations in our Guide for Authors and preparing publishers to roll this out with the editors of relevant journals



## 2. Including Gender in Research (2/4)

### 2.2 Increase the gender diversity for panelists at Elsevier conferences

- ✓ **Step 1** - Elsevier's conference department identified the gap of gender balance
  - Since 2010 a fairly balanced split 61% to 39% attendees male to female. Speakers, however, are predominantly male (83%)
- ✓ **Step 2:** Discuss potential targets and engagement with publishers and chairs on speaker line ups and unconscious bias.
- ✓ **Step 3:** Roll out interventions.



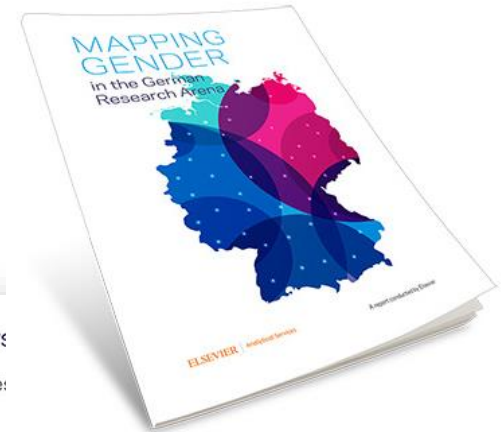
For the [6th International Colloids Conference](#), which took place in June 2016, the Chair Prof. [Julian Eastoe](#), has ensured that 50% of the invited and keynote speakers are women.

## 2. Including Gender in Research (3/4)

### 2.3 Analytics report on gender in research and publishing

Using our high quality data sources and expertise to look at the outputs, quality, and impact of research through a gender lens, and contribute to a better understanding of where women fit in the structure of science and research

- ***Mapping Gender in Research – Global report, Launch in Q1 2017***
- ***Mapping Gender in the German Research Arena***: Elsevier analytics report that pilots gender methodology by matching Facebook to Scopus data over past 5 years



#### Distribution of Female Researchers

The number and proportion of female researchers are increasing.

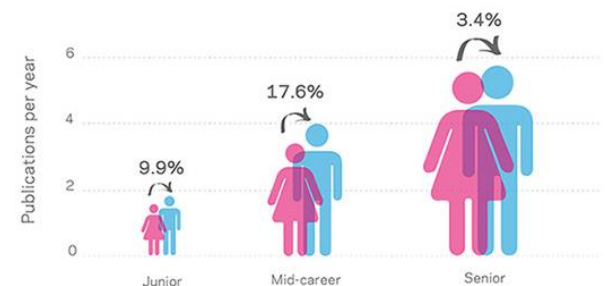


In general, Agriculture, Medicine, and Health related subject areas have the highest share of female researchers.

Subject areas in the Natural Sciences and Engineering have the lowest shares.

#### Research Productivity

The differences between publication productivity and citation impact between female and male researchers in Germany are smaller for more senior researchers.



## 2. Including Gender in Research (4/4)

### 2.4. Achieving Gender Diversity in our editorial boards

Women are underrepresented on our editorial boards

**30%** Contributions from Earth & Planetary Science Journals come from women\*

**13%** of editors of Elsevier's Earth & Planetary Science Journals are women

\* Based on the analysis of female researchers for the USA in Earth & Planetary Sciences (2011-2015).

#### THE PILOT

##### Gender-balanced recruitment in editorial boards



Analysis: Determining the number of female and male editors



Strategic implementation: Set a realistic but aspirational short and mid-term target for gender balance



Communication



Evaluation



# We welcome women to join our +180 Earth & Planetary editorial boards

If you are interested or know someone who is, please connect with us!



## Connect With Me

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## References

- Budden, E., Tregenza, T., Aarssen, L. W., Koricheva, J., Leimu, R. & Lortie, C. J., 2008. Double-blind review favours increased representation of female authors. *Trends in Ecology and Evolution* 23, 4-6.
- Handley, I., Brown, E., Moss-Racusin, C. & Smith, J., 2015. Quality of evidence revealing subtle gender biases in science is in the eye of the beholder. *Proceedings of the National Academy of Sciences* 112 (43), 13201-13206.
- Isbell, L., Young, T., Harcourt, A., Genoways, H., Freeman, P., et al., 2012. Stag Parties Linger: Continued Gender Bias in a Female-Rich Scientific Discipline. *PLoS ONE* 7 (11), e49682.
- Lariviere, V., Ni, C., Gingras, Y., Cronin, B., & Sugimoto, C. R., 2013. Bibliometrics: Global gender disparities in science. *Nature* 504, 211–213.
- Moss-Racusin, C., Dovidio, J., Brescoll, V., Graham, M., & Handelsman, J., 2012. Science faculty's subtle gender biases favor male students. *Proceedings of the National Academy of Sciences* 109 (41), 16474-16479.