

WOMEN IN ASTRONOMY STATISTICS

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Country	1997	2000	2003	2006	2009
Argentina	33.3	35.6	36.2	36.4	35.8
Ukraine	16.8	17.9	19.4	24.3	27.1
Italy	17.8	19.9	20.9	22.5	24.7
Bulgaria	30.0	32.6	28.6	21.3	24.6
France	26.8	26.3	25.9	24.1	24.3
Portugal	11.8	12.5	22.9	20.5	23.3
Brazil	16.5	17.6	20.3	21.5	22.3
Hungary	14.6	17.8	20.5	21.3	20.8
Ireland	12.1	17.6	14.3	14.6	20.5
Austria	6.5	9.4	11.4	11.4	18.4
Spain	16.2	17.0	18.5	18.3	17.8
Mexico	20.5	17.8	16.7	17.5	17.1
Russian Fed	18.6	18.3	18.1	16.8	17.1
Finland	8.1	14.0	13.2	14.5	16.4
Greece	12.4	12.1	12.5	13.7	15.7
Chile	8.7	8.7	8.8	13.4	15.6
Belgium	12.5	11.9	12.4	13.3	15.4
China (Nanjing)	10.6	9.2	12.0	12.5	15.4
Australia	7.9	8.2	10.0	13.1	15.3
South Africa	4.3	7.3	10.7	11.5	14.1
Sweden	4.2	12.0	13.2	13.2	13.5
Poland	12.8	10.7	10.3	11.4	13.4
Canada	6.0	6.5	9.7	10.4	12.2
USA	8.9	9.7	10.5	11.2	12.1
Czech Rep	7.0	8.0	8.0	11.5	12.0
UK	9.2	10.0	10.0	11.3	11.6
Netherlands	6.0	9.9	9.0	9.1	11.5
Egypt	7.7	7.7	10.5	10.7	10.7
Korea	5.9	6.1	6.0	10.2	10.1
Denmark	7.7	7.7	12.3	9.8	9.5
Germany	5.7	5.7	6.8	8.3	9.4
Switzerland	0.0	2.5	6.7	6.9	9.2
Israel	2.2	2.1	4.8	4.6	8.0
China (Taipei)	4.3	4.2	10.0	5.3	7.8
India	4.0	5.1	5.9	7.0	7.7
Japan	2.5	3.2	4.0	5.1	5.5

Percentage of women in IAU, from 1997 to 2009

One of the aims of the IYA2009 Cornerstone Project 'She is an Astronomer' was to gather statistics. This has proved very difficult because very few statistics are gathered in a consistent fashion!

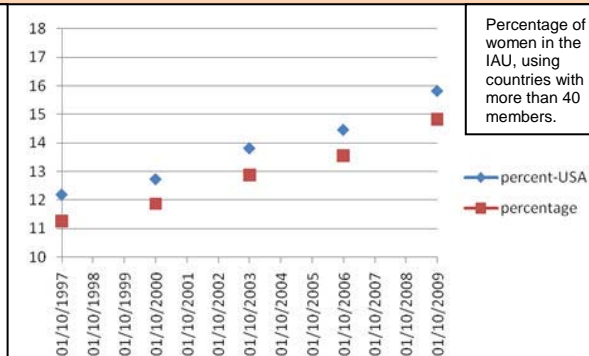
One problem is that in some countries the number of women in astronomy is changing very rapidly, so comparing one place with another can be difficult if the data are taken a few years apart.

Another problem is 'what is an Astronomer?' – Let's use a definition that a person becomes an Astronomer once they have completed their PhD, and joins the 'population' of astronomers at that point.

The International Astronomical Union (IAU) is an international organisation with participation from 68 countries. No country has an equal percentage of female astronomers in the IAU as it does in the population, so the gender advantage is always in favour of men. However, this GA is technically:

$$\text{Gender Advantage} = \frac{\% \text{ men at top level relative to men at all levels}}{\% \text{ of women at top level relative to women at all levels}}$$

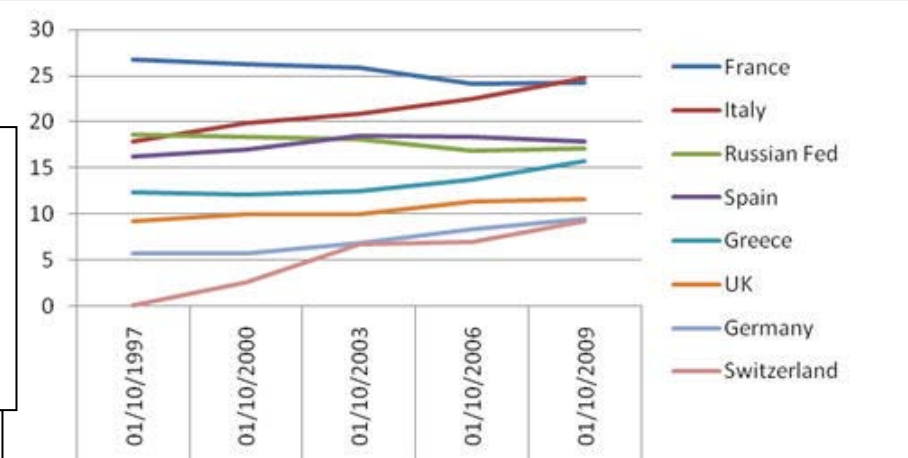
The USA has the highest number of IAU members (25%), and since it has a low percentage of female members (12%), it makes around a 1% difference if the USA is excluded from the average. Countries with less than 40 members usually have very few female IAU members.



Percentage of women in astronomy in USA

	1992 (STScI)	1999 (STScI)	1999 (CSWA)	2003 (CSWA)
Post docs	17%	20%	17%	22%
Assistant Prof	17%	17%	15%	20%
Associate Prof	10%	15%	18%	20%
Full Professor	5%	8%	5%	9%

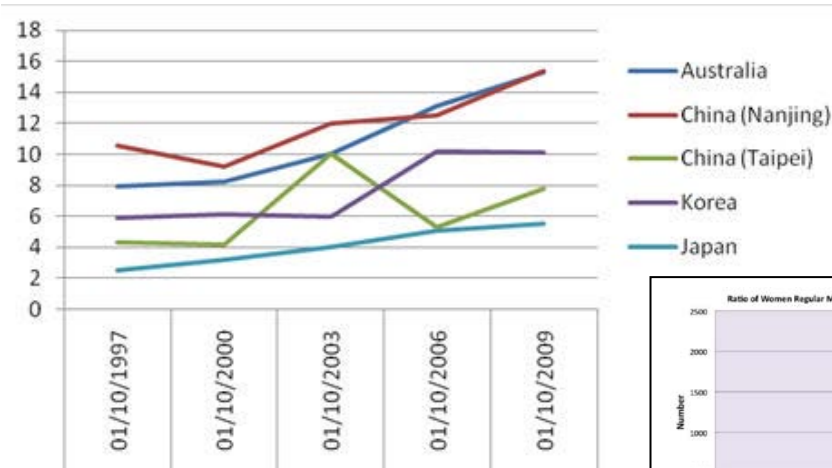
In 2003 only Full Professors and some Associates were nominated for IAU



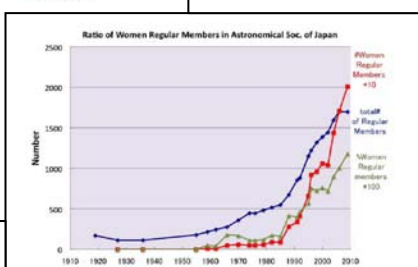
The percentage of women in the sciences has been studied by the European Commission for around 10 years, through the Helsinki conference in 1998, and the Action Plans in 1999 and 2001 (Women in Sciences and Science & Society). It appears that where there are a lot of female astronomers there are few female politicians and vice versa.

France had the highest female percentage membership of the IAU for many years, but now Italy is catching up. In Italy many women are on soft money, and astronomy is regarded a low status job, so men do not want to do it. Even in France, the recognition of women's achievements is low, with none of the six CNRS Astrophysics/Geophysics Gold medals awarded to women (in 50 years), and 14% of the Silver medals went to women. In the UK, the RAS Gold medal has been awarded to 4 women (in over 100 years). The situation in the UK is generally improving, with 6% of professors in the UK being female in 2009, compared to 3% in 2003. In Denmark the number of women in astronomy has remained static at around 10% for years (both in the IAU and in the population), but very few women have tenured posts.

CONCLUSIONS: Keeping statistics over a long period of time is essential in order to understand the long-term trends, a snapshot with a single survey does not give enough information. The IAU figures show that in general there is a very slow increase in the percentage of women, but active encouragement and monitoring is needed (Japan shows it works).



Taipei had 30 members in the IAU in 2003, so one woman more or less made a big change. The situation in Japan is changing fast.



China (Nanjing) has a large number of women on contracts, but there is an increasing number of women in the IAU, and the picture is improving rapidly. Australia also elects contract staff to the IAU.

In 2009 the IAU had 10000 members.

Women seem to be doing well in Latin America, the percentage of Argentinean women in the IAU (37%) compares well with the percentage of tenured researchers and professors (35%). Brazil has around 25% female membership of Sociedade Astronomica Brasileira.

