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## AMS MEMBERSHIP SURVEY RESULTS

# Profile of AMS Membership Residing Outside the United States of America

BY ERNESTO MUÑOZ AND ROMAN CZUJKO

**A**s declared in the constitution and bylaws of the AMS, the Society's "membership and activities shall be international in scope." A way to evaluate the international character of the AMS is to monitor the number and geographical distribution of members residing outside the United States. This helps the AMS effectively serve this important component of the Society and facilitate interaction in Society activities.

This assessment of the AMS membership residing outside the United States in 2005 draws on two sources of data: the AMS membership rolls, which provide numbers of members by country of residence, and the membership survey administered in the spring of 2005. Defining what is meant by "an international member" is challenging, as citizens of other countries reside in the United States and, likewise, American citizens reside abroad. Furthermore, the 2005 AMS Survey of Membership did not ask about the citizenship status of members living outside the

United States. For our analyses, AMS members and their responses were divided based on country of residence rather than by citizenship. Consequently, foreign-born members working or studying in the United States were counted as U.S. residents.

**GEOGRAPHICAL DISTRIBUTION.** In 2005, the AMS had 11,162 members, of which 1,204 resided outside the United States. The largest proportion of members residing abroad was from Europe (37%), followed by Asia (27%), Canada (20%), and Australia/Oceania (9%) (Table 1). AMS membership from other parts of the world was small, with only 4% from South America, 2% from Middle America (comprising Mexico, Central America, and the Caribbean archipelago), and 2% from the Middle East. Only four AMS members resided in Africa.

In most regions, the majority of AMS members were from only a few countries. Forty-three percent of the AMS members in Europe were from Germany and the United Kingdom, whereas over 60% of the members in Asia were from Japan. Most AMS members in South America and Middle America were located in Brazil, Puerto Rico, Argentina, or Mexico. The majority of members in the Middle East were from Israel, and three of the four AMS members in Africa were from South Africa.

When individual countries are ranked in terms of AMS members, about 60% of the members from outside the United States resided in only five countries—Canada (20%), Japan (17%), Germany (8%), Australia (8%), and the United Kingdom (7%).

**AFFILIATIONS:** MUÑOZ—Earth System Science Interdisciplinary Center, University of Maryland, College Park, Maryland; CZUJKO—American Institute of Physics, College Park, Maryland

**CORRESPONDING AUTHOR:** Ernesto Muñoz, Cooperative Institute for Marine and Atmospheric Studies, University of Miami, 4600 Rickenbacker Causeway, Miami, FL, 33149  
E-mail: emunoz@miami.edu

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**TABLE 1. AMS members residing abroad (MRA) by region and country of residence, spring 2005. These data are based on contact information for all 11,162 people in the AMS membership database.**

| Region or Country | Number | % MRA | Region or Country   | Number | % MRA |
|-------------------|--------|-------|---------------------|--------|-------|
| Europe            | 447    | 37    | Canada              | 237    | 20    |
| Germany           | 101    | 8     | Australia & Oceania | 103    | 9     |
| United Kingdom    | 89     | 7     | Australia           | 93     | 8     |
| Italy             | 43     | 4     | New Zealand         | 9      | *     |
| Switzerland       | 42     | 3     | Samoa               | 1      | *     |
| France            | 38     | 3     | South America       | 48     | 4     |
| Spain             | 31     | 3     | Brazil              | 23     | 2     |
| Greece            | 13     | 1     | Argentina           | 13     | 1     |
| Sweden            | 12     | 1     | Chile               | 7      | *     |
| Netherlands       | 12     | 1     | Venezuela           | 3      | *     |
| Portugal          | 10     | *     | Colombia            | 1      | *     |
| Russia            | 9      | *     | Uruguay             | 1      | *     |
| Austria           | 7      | *     | Middle America      | 23     | 2     |
| Norway            | 6      | *     | Puerto Rico         | 14     | **    |
| Ireland           | 5      | *     | Mexico              | 10     | *     |
| Belgium           | 4      | *     | Costa Rica          | 2      | *     |
| Denmark           | 4      | *     | Antigua             | 1      | *     |
| Finland           | 4      | *     | Aruba               | 1      | *     |
| Poland            | 4      | *     | Bahamas             | 1      | *     |
| Croatia           | 3      | *     | Barbados            | 1      | *     |
| Romania           | 2      | *     | Bermuda             | 1      | *     |
| Slovenia          | 2      | *     | Cuba                | 1      | *     |
| Yugoslavia        | 2      | *     | Dominican Republic  | 1      | *     |
| Cyprus            | 1      | *     | Haiti               | 1      | *     |
| Estonia           | 1      | *     | Honduras            | 1      | *     |
| Iceland           | 1      | *     | Trinidad & Tobago   | 1      | *     |
| Scotland          | 1      | *     | West Indies         | 1      | *     |
| Asia              | 325    | 27    | Middle East         | 17     | 1     |
| Japan             | 207    | 17    | Israel              | 11     | *     |
| South Korea       | 38     | 3     | Iran                | 2      | *     |
| Taiwan            | 33     | 3     | Saudi Arabia        | 2      | *     |
| China             | 25     | 2     | Turkey              | 2      | *     |
| India             | 12     | 1     | Africa              | 4      | *     |
| Thailand          | 4      | *     | South Africa        | 3      | *     |
| Philippines       | 2      | *     | Senegal             | 1      | *     |
| Singapore         | 2      | *     | Members Abroad      | 1204   |       |
| Brunei Darussalam | 1      | *     |                     |        |       |
| Malaysia          | 1      | *     |                     |        |       |

\* Less than 1% of the membership residing abroad

\*\* The residents of Puerto Rico were included in the total of USA residents

**DEMOGRAPHIC CHARACTERISTICS.**

Of the 5,451 respondents to the 2005 AMS survey, 4,747 (87%) resided within the United States and 704 (13%) resided abroad. The geographical distribution of respondents residing abroad is similar to the distribution of the membership residing abroad (Tables 1 and 2). The percentage of respondents who were living abroad at the time of the survey is slightly (2%) larger than the percentage of members residing abroad from the 2005 membership rolls, indicating a slight overrepresentation of those residing abroad in the survey responses. In fact, 58% of the AMS members residing abroad responded to the survey, compared to only 48% of the members residing within the USA.

The response rate to the 2005 survey by members residing abroad was 74% larger than that of the previous AMS membership survey, with the greatest increases in Asia, Canada, and South America. In the 1999 AMS survey, only 405 respondents—or 9% of the total respondents—resided outside the United States. (Note that the 1999 survey counted the U.S. territories in the Caribbean and the Pacific as abroad, whereas these areas were counted as part of the United States in the 2005 survey.)

**TABLE 2. Respondents residing abroad (RRA) by region in 2005.**

| Residence                | Number | % RRA |
|--------------------------|--------|-------|
| Europe                   | 258    | 37    |
| Asia                     | 191    | 27    |
| Canada                   | 125    | 18    |
| Australia & Oceania      | 73     | 10    |
| South America            | 30     | 4     |
| Middle East              | 9      | 1     |
| Mexico & Central America | 8      | 1     |
| Caribbean Islander       | 7      | 1     |
| Puerto Rico**            | 7      | **    |
| Am. Samoa/Guam**         | 4      | **    |
| Africa                   | 3      | *     |

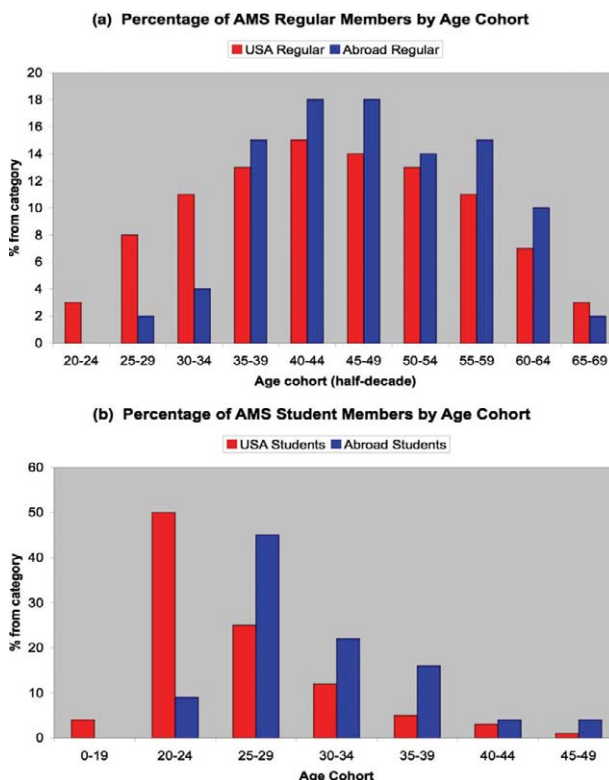
\* Less than 1%

\*\* Counted as residing in USA in the 2005 survey

**AGE AND GENDER PROFILE.**

Survey respondents abroad in 2005 were slightly older than the U.S. residents (Fig. 1). Ninety percent of the regular (i.e., nonstudent) members abroad fell within the 30-year age cohort between 35 and 64 years old. In contrast, 73% of the regular members residing in the United States were between 35 and 64 years old. Even the student population residing abroad was somewhat older than that residing in the United States, with a peak age between 25 and 34 years for students residing abroad, and between 20 and 29 years for students in the United States.

The gender disparity (discussed in a *BAMS* article by Murillo et al. in the May issue) is somewhat larger abroad than within the United States. Only 10% of the regular members residing abroad were female, compared to 18% of regular members within the United States. Similarly, only 31% of the student members residing abroad were female, compared to 39% of the student members in the United States. In the regular membership category, male and female respondents residing abroad had similar ages, whereas in the United States females tended to be younger than males.



**FIG. 1. Percentage by age cohort of (a) regular and (b) student members residing abroad (blue) and in the United States (red).**

**DEGREE AND EMPLOYMENT PROFILE.** Of the regular members abroad who indicated the field of their highest degree, 56% had a terminal degree in atmospheric science and 33% in another related physical science, and the remainder held a degree in other sciences or engineering (Table 3). More of the regular members residing in the United States (67%) had a degree in atmospheric science.

Twenty-two percent of the respondents residing abroad have spent time studying in the United States, and 18% have been a postdoctoral appointee in the United States. Members residing abroad encountered their career influences later (51% percent of the members abroad as an undergraduate or graduate student, compared with 62% of those residing in the United States encountering the influence between elementary and high school).

Respondents residing abroad were more likely to have an advanced degree and be research scientists. The proportion of Ph.D. and masters degrees for regular members residing abroad was 71% and 17%, respectively, compared to 33% and 29% for members residing within the United States. In fact, 24% of the AMS regular members whose terminal degree was a Ph.D. resided outside the United States. Also, regular members residing abroad were twice as likely to be research scientists as those in the United States (55% and 27%, respectively).

Respondents residing abroad were more likely to work at a university than U.S. respondents. Forty-four percent of the respondents abroad were employed by a university or college, compared to only 25% of U.S.

**TABLE 3. Field of highest degree for regular members.**

| Field                         | Residing Abroad | USA Residents |
|-------------------------------|-----------------|---------------|
|                               | %               | %             |
| Physical Sciences             |                 |               |
| Atmospheric Science           | 56              | 67            |
| Oceanography                  | 12              | 5             |
| Physics                       | 8               | 3             |
| Climatology                   | 8               | 2             |
| Other physical sciences       | 5               | 5             |
| Engineering and other science |                 |               |
| Engineering                   | 3               | 3             |
| Geography                     | 2               | 3             |
| Other science and engineering | 5               | 4             |
| All other fields              | 1               | 8             |
| <b>Number of respondents</b>  | <b>606</b>      | <b>3,546</b>  |

respondents. Another marked difference between the two groups of respondents is that only 2% of those abroad were broadcast meteorologists, compared to 16% of U.S. respondents. On the other hand, the government sector employed a similar percentage of respondents.

Members employed by universities and colleges spend work time similarly (about 50% on research, whether in the United States or abroad) (Table 4). However, respondents employed in the government sector abroad dedicate twice the amount

**TABLE 4. Work profile.**

| Activity          | Average Percent (%) Time Spent |       |            |     |          |     |        |     |         |       |
|-------------------|--------------------------------|-------|------------|-----|----------|-----|--------|-----|---------|-------|
|                   | Government                     |       | University |     | Industry |     | TV     |     | Overall |       |
|                   | Abroad                         | USA   | Abroad     | USA | Abroad   | USA | Abroad | USA | Abroad  | USA   |
| Applied           | 20                             | 33    | 4          | 8   | 40       | 43  | *      | 53  | 14      | 32    |
| Research          | 45                             | 29    | 48         | 50  | 18       | 19  | *      | 7   | 43      | 29    |
| Service           | 18                             | 19    | 11         | 12  | 22       | 22  | *      | 21  | 15      | 18    |
| Teach             | 6                              | 4     | 32         | 25  | 4        | 2   | *      | 7   | 18      | 10    |
| Other             | 11                             | 15    | 5          | 5   | 16       | 14  | *      | 12  | 8       | 12    |
| Total respondents | 201                            | 1,102 | 249        | 822 | 57       | 692 | 8      | 501 | 515     | 3,117 |

\* Too few respondents to provide reliable statistics

of time to research as compared to applied work, while government employees in the United States spend about the same amount of time on those two activities. In general, respondents abroad devote a smaller percentage of their time to applied activities (Table 4).

The percentage of midlevel and senior-level members was about the same abroad and domestically (Table 5). However, members residing abroad were twice as likely to have reached executive levels as U.S. residents (and half as likely to be at the entry level). Indeed, 27% of all survey respondents who held executive positions resided abroad.

**USE OF AMS SERVICES.** Close to half of the respondents residing abroad (48%) indicated that the AMS was their primary professional organization. Nonetheless, close to 76% of regular members residing abroad had not attended an AMS annual meeting in the last three years, and 68% had not attended a specialized conference. However, 47% of the members residing abroad indicated that conferences are one of the most important benefits of AMS membership, and 87% of regular members residing abroad indicated that their employer or grant provides travel to conferences.

Over 74% of the respondents residing abroad indicated that AMS publications are an important membership benefit. Of the literature read, members residing abroad indicated that, on average, 45% is from AMS journals. Both regular and student members residing abroad appear to read research literature more frequently than U.S. residents. Sixty-five percent of members residing abroad reported that they read printed material on a weekly basis and 28% read printed material on a monthly basis, compared to 40% and 43%, respectively, for members in the United States. Members residing abroad are also more likely to read research literature online more frequently.

**ITS SCOPE.** Is the AMS membership international in scope? The results of this analysis indicate that, although the AMS has a substantial number of members residing outside the United States, most are from one of only several high-income countries, and very few are from developing countries. In general, the AMS membership has limited international distribution.

**TABLE 5. Position level and residence of regular members.**

| Position level               | Residing Abroad % | USA Residents % |
|------------------------------|-------------------|-----------------|
| Entry level                  | 7                 | 14              |
| Mid-level                    | 27                | 32              |
| Senior                       | 45                | 44              |
| Executive                    | 21                | 10              |
| <b>Number of respondents</b> | <b>578</b>        | <b>3,322</b>    |

The AMS members abroad also represent a rather particular sector of the weather and climate enterprise. Most of the members residing abroad are senior, research-oriented professionals in academia or the government. There is limited representation from the applied and broadcast sectors.

The percentage of members residing abroad in 2005 was close to the percentage in 1990: 11% and 10%, respectively, though the response rate by members living abroad was higher for the 2005 survey than for previous surveys.

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