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Earth Science Week 2002 Evaluation Report

American Geological Institute



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INTRODUCTION

Earth Science Week began in 1998 as the American Geological Institute's (AGI) first national outreach program. For this outreach effort AGI provided ideas and activities for schools (K - 12), universities, as well as state and private organizations involved in doing something in the earth sciences during one week in October. For Earth Science Week (ESW) materials are disseminated in print as well as via the web. In particular AGI developed a free "ESW Kit" of materials such as posters with activities on the back, activity booklets, planning guides as well as actual lessons. Initially these kits were distributed for free to any one who requested them. After 15,000 kits were distributed, they are now mailed out for \$4.95 to cover postage and handling. Since the start of ESW in 1998, AGI has served as the distribution center while outside organizations (e.g., schools, museums, state geological surveys) have actually implemented the distributed materials.

The purpose of this report is to gather data on national activity for Earth Science Week 2002 participants. This data forms a baseline for making and examining changes for ESW 2003 and thereby developing and implementing new strategies and ideas for future programs based on present data. Earth science affects all members of society in some manner. As such, an understanding of the relevance of earth sciences is extremely important. In this regard, the overall mission of ESW is to focus on different facets of earth science to help all people gain a better understanding and appreciation of the natural world. In 2002, the theme was "*Water is All Around You*", emphasizing the importance of the earth's greatest natural resource.

METHODOLOGY

Data for this evaluation was generated from three sources. First, data was available from the online survey at AGI's Earth Science Week page on their website. Second, AGI received written feedback on a form distributed with their ESW Kits distributed this year. Third, PS International designed and implemented a related survey that was posted on their website. Approximately 240 past ESW participants in the AGI database were contacted via email by PS International and asked to respond to this posted website.

All surveys dealt with use of materials, media coverage, suggestions for specific activities and improving ESW in general, and a question about future participation. The PS International survey also included an overall rating question on a four point scale about the usefulness of ESW.

RESULTS

The quantitative findings of the PS International web survey are examined first. There were 81 valid responses to the survey yielding a satisfactory response rate of 34% against the original mailing list of 240 names. Twenty seven percent of the respondents were teachers, eleven percent were administrators. The remaining 62% of the respondents were from the geological related professions (i.e., 70%; e.g., state geologists, corporate geologists, museum curators, librarians), school specialists (i.e., 20%) and a few (i.e., 7%) in the “other” category were from universities.

Figure 1 below shows the *yes/no* distribution for participation rates in 2001; 2002 and next year in 2003. This is further broken down in Figure 2 for Teachers, Administrators and Other.

Figure 1

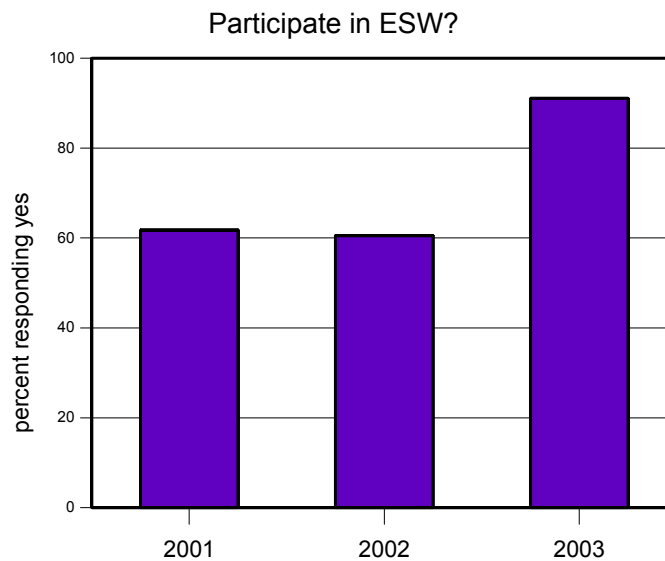


Figure 2

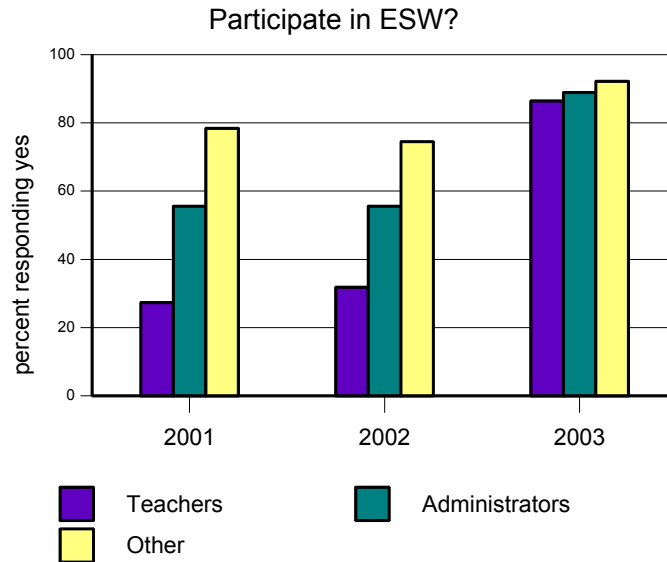


Figure 2 shows that the largest discrepancy relative to participation is for teachers. That is, for 2001 only 27% of the teachers indicated that they participated in ESW. This percentage for teachers increased slightly to 32% for 2002. However, a full 86% of the teachers indicate that they would participate in ESW in 2003. In contrast the pattern for “Other” (which is largely professional geologists) is consistently high. That is, this data indicate that professional geologists have been consistent participants in ESW over the years. Figure 3 below groups the data by responding category (i.e., teacher; administrator; other) in order to highlight the pattern differences over the three years from one group to the next.

Figure 3

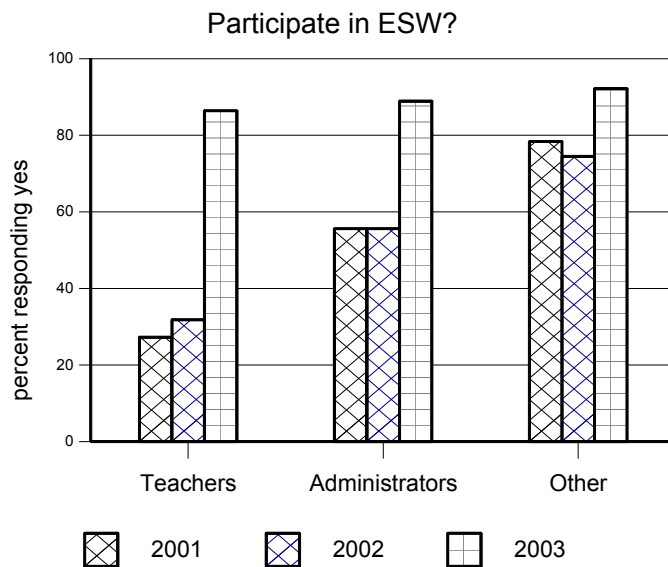
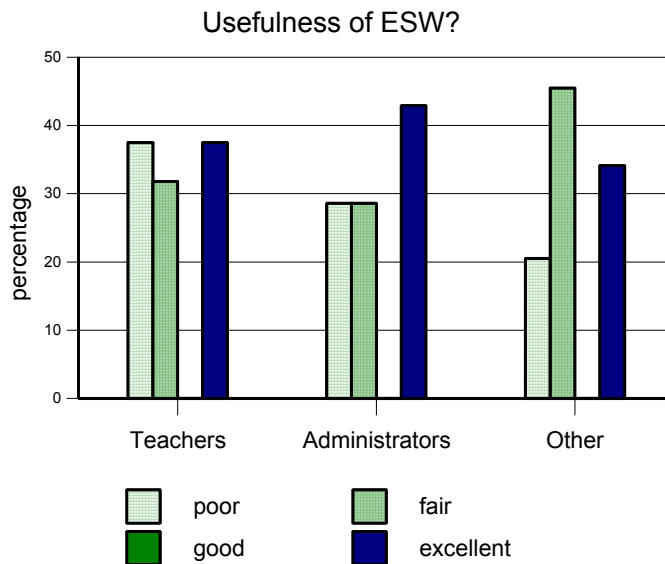


Figure 3 clearly shows the consistency of the “Other” category (i.e., professional geologists) in contrast to the clear desire on the part of teachers to get more involved in ESW in 2003, relative to the previous years 2002 and 2001.

Overall 30.5% of the respondents regardless of category rated the usefulness of ESW as *excellent*. However another 27% rated the usefulness of ESW only as *fair*. If those that did not participate are not included in the percentage calculation then *excellent* gets 45% of the respondents, and *fair* or *poor* gets 55% of the respondents. On a four-point scale the overall average usefulness rating is: 2.47 (halfway between *fair* and *good*). The means for each of the three categories are fairly similar with “Teachers” at 2.38, “Administrators” at 2.57 and “Other” at 2.48. Figure 4 below provides a percentage breakdown for each of these three categories of respondents.

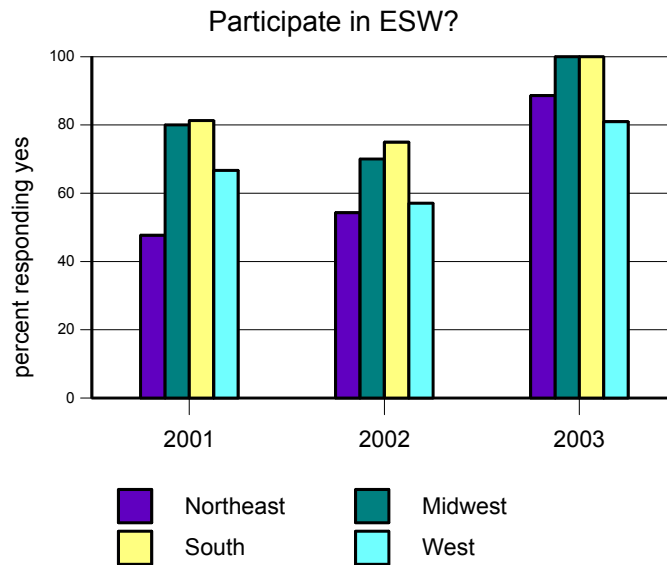
Figure 4



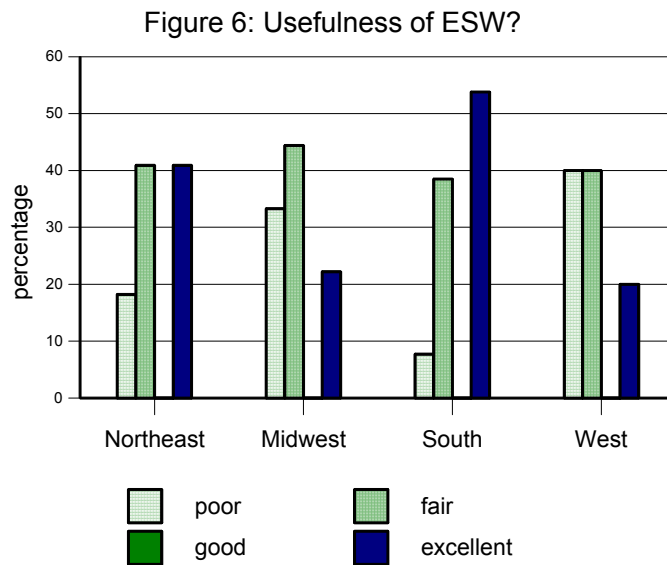
As can be seen in Figure 4 above, “Administrators” rated the usefulness of ESW the most often as *excellent*, whereas “Teachers” definitely equally divided their opinion between “*excellent*” and “*poor*”. The largest category of respondents “Other” (mostly professional geologists) tended to rate ESW as “*fair*”, with a substantial number (i.e., 34%) rating ESW as “*excellent*”. Generally and within each respondent category, this data shows a divided opinion about the usefulness of ESW.

The regional results are equally interesting. Figure 5 below shows the *yes/no* distribution for participation rates in 2001; 2002 and next year in for the Northeast (42.7%), Midwest (12.2%), South (19.5%) and West (25.6%).

Figure 5



Except for the Northeast, the regions appear to take a “dip” in interest for 2002. The Midwest and South show the strongest overall participation interest, whereas the West shows the weakest participation interest for next year, 2003. Figure 6 below plots the “usefulness” rating categories for each of the four regions.



Clearly Figure 6 shows the South as giving the strongest usefulness ratings to the 2002 ESW.

Figure 7

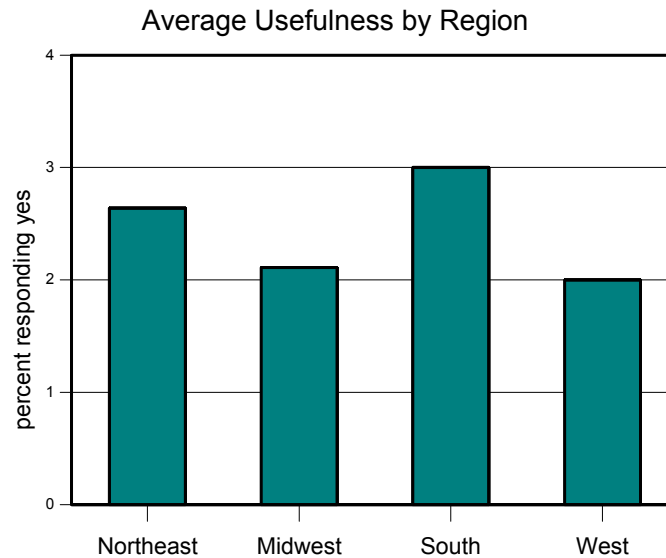


Figure 7 above plots the average usefulness rating on a 4-point scale for each region.

Next the qualitative narrative data associated with web questions four, five and six are examined. These questions are:

4. *How did you and/or your colleagues participate in 2002 ESW? That is:*
 - a. *List activities (e.g., posters lesson plans, etc) that were used.*
 - b. *List locations of activities (e.g., school, local club, etc)*
 - c. *About how many participants per activity?*
 - d. *Were you more or less active this year (2002) than last year?*
5. *In your opinion was the adequacy of media coverage of ESW. Please be as specific as you can (e.g., newspaper, TV, radio).*
6. *How can AGI improve upon or increase the impact of ESW? (Please include in your response suggestions for additional ESW activities)*

There were a variety of ways that respondents indicated that they participated in ESW 2002. Participation ranged from less active events such as state proclamations by local or state officials (e.g., a state governor), poster displays, sticker distributions, emails and websites to very active events such as field trips, workshops and tours. Table 1 below summarizes these findings.

Table 1

<u>Least Active</u> Proclamations; poster displays; stickers; websites	Talks	Demos; Open House; Expos	Quiz Shows; Contests; Essays	<u>Most Active</u> Field trips; tours; workshops
44%	14%	14%	7%	21%

Although field trips were often mentioned (i.e., 21%), it was the least active ways that was the most common way of participating in ESW (i.e., 44%). Based on the responses of 72 of the 81 survey respondents it is possible to get an approximate number of participants. According to the reported numbers, there were approximately 700 teachers, 11,260 students, and 3,250 members of the public participating in ESW 2002. This total of 15,210 would be a conservative estimate as it was not possible to easily count visitors to a display or open house, nor were there any reported counts of “hits” to ESW related websites. These numbers give an average of about 210 ESW participants for each of the 72 reporting participants. Naturally there was wide variation, with a range of 10 to 2,245. Finally, it must be noted that while 40% of the participants indicated that they were “more active” in ESW 2002, the remaining 60% were equally divided between “no change” from previous years or “less active” than previous years.

The locations for ESW 2002 activities were most often schools. Middle schools were mentioned as often as high schools. Elementary schools were not mentioned. Local state parks and geological sites was the next most frequently mentioned location. For example:

“Dinosaur Ridge, Morrison CO; Colorado School of Mines; Rocky Mountain Foothills.”

“Raymond Iowa Quarry.”

“State parks in Vermont: Mt Philo, Elmore State Park, Button Bay, Mt Ascutney.”

Respondents also mentioned museums as locations for ESW. For example:

“Cleveland Museum of Natural History.”

“Vermont Perkins Geology Museum.”

Some respondents made announcements of ESW at professional meetings. Finally, the most unusual locations for ESW activities were sporting goods stores. Several respondents mentioned displays and demos that were setup in stores like REI.

Question five on the PS International survey dealt with media coverage. Overall media coverage for ESW was very low. That is, about 41% of the respondents rated it as nonexistent, and another 38% rated it as marginal.

“I think the media coverage was inadequate here in the Bay area ... The earth science community needs an ‘office of entertainment’ to try to drag in better media coverage.”

“There was a small amount of publicity, but not much.”

“Heard nothing about it [ESW] on TV, radio, or in local newspaper. Nothing about it in campus newspaper. The only place I read about it was in geological journals, especially those published by AGI.”

About 16% described the media coverage as fair to good, with about 5% of the respondents describing the media coverage as excellent.

“Press releases were done by MoDNR and USGS and Governor.”

“We promoted heavily in our Museum publications and an associated group sent out brochures; we also had something in the papers; last year we bought display ads but this was rather costly.”

The final written question asked for suggestions to improve the impact of ESW, including ideas for additional ESW activities. While there were a few suggestions for new activities most of the suggestions dealt with increasing the publicity about ESW. Table 2 below provides a summary of the three most frequent responses.

Table 2

Increase Publicity	Start Earlier	Funding and Assessment
40%	18%	9%

There were no “content” issues with ESW. Instead the main suggestion about improving its impact was getting the word out about a good program. Suggestions for getting the word out ranged from emailing teachers across the country directly, to hosting major national media events which might involve State Geological Surveys, the Association of State Geologists and the American Library Association. A couple of individuals suggested that universities be encouraged to participate more, that AGI compile lists of earth science books and provide loaner

videos, that teachers receive overheads for use in lesson development instead of posters, and that AGI also examine what others are doing (e.g., “Geography Awareness Week”). However, the comments about existing materials were very positive.

“The materials that were distributed were excellent - do the same next year.”

“The teacher packets were wonderful! Keep it up!”

The usual suggestion was simply “more TV, radio and newspaper coverage”. However, examination of the detail of these comments reveals useful suggestions. One respondent suggested adding “draft press releases” to the ESW Kit. That idea, coupled with an earlier start date would help insure earlier and better coverage. A couple of respondents suggested getting school information (e.g., location, size) to state and local level geological groups, so that the geologists could then target their outreach to specific schools. Another respondent suggested focusing on national coverage which would be more consistent than “haphazard” local coverage. There was a suggestion to widen the appeal by being “less techy” and setting up promotions with national booksellers.

“Could try to get major sponsorship thru Borders Books or Barnes and Noble chains; they have special displays and promotions and activities in the store (run by local earth scientists and clubs); also, have some radio interviews of prominent, famous, interesting Earth Scientists such as on NPR to try to make all these small local events have some greater, overarching sense of national earth science community.”

This respondent said that they had a great idea (not described) for a “national event” which they would love to develop a proposal to AGI for the purpose of funding and implementation. Finally, two respondents suggested linking ESW to active research projects.

“At the Paleontological Research Institution, we (Rob Ross and Paul Harnik in particular) are interested in getting students and the general public involved in authentic research. As an example of ‘citizen science’, the Audubon Society has for a century involved the public nationally in a ‘Christmas bird count’ to gather data on bird populations. Analogously, imagine a once-a-year event to have the public collect some kind of data associated with the geosciences.”

This respondent went on to write that they would consider administering such an endeavor.

In addition to the many comments about increasing publicity and participation, about 18% of the respondents wrote that they would like to see ESW information disseminated earlier. Specific suggestions ranged from six months to eight months in advance of ESW. One respondent suggested a direct, one-time-only, mailing to principals, with the idea that interested teachers within that school would get the ball rolling and keep it rolling in subsequent years. While a few suggested doing ESW in the Spring (i.e., April) because the Fall was so busy, this was not a strong suggestion.

Funding was neither a frequent nor a detailed issue. One respondent wrote that their own budget cuts made it necessary to find volunteer assistance to keep ESW-type activities moving forward.

“I direct the Arizona Geological Survey. We have a small agency and are now facing budget cuts. Participating in ESW is not a high priority item for us now. ESW, to be effective, should, in my opinion, be a collaborative effort between geological groups, including the state geological survey, the AIPG, and other interested groups. ... Having one committed volunteer step forward to take this on as a project would be very important.”

A couple of other respondents made general remarks that an increase in available funds would help ESW grow in their school. One or two suggested that more free materials would be helpful. Related to appropriate funding, several participants suggested needs assessments and surveys regarding interest and participation. For example, one person simply suggested surveying the needs of teachers. Another respondent wrote about the utility of a survey to determine ways to apply existing organization resources (national and local) to improving ESW.

“AGI is only one of many organizations trying to elevate awareness of earth sciences. ... There is no coordination or mutual support. I believe that AGI would be more effective if they took the time to find out what state, local, and industry groups were doing and then provided materials to support those groups. The geologic community's resources are being spread too thin by well intentioned but uncoordinated and therefore underfunded groups.”

Comments to improve the impact ESW dealt largely with the need to increase awareness of the program locally and nationally, and secondly to start the publicity cycle earlier, say six to eight months before the start of ESW.

Examination of AGI's online feedback data (N=28) and their ESW paper evaluation survey data (N=12) corroborates the main findings of PS International's data. Specifically, in general terms this additional data describes activities as talks, lectures and field trips and the need to increase publicity and getting the word out earlier. The AGI online feedback tended to

be more specific about the activities than the PS International online survey. For example:

“Earth Science Week Poster Contest sponsored by the UVM Perkins Geology Museum, Vermont Geological Society, and the Vermont Geological Survey. Our theme this year was "Awesome Forces." We publicize this in the spring preceding Earth Science Week, and so were disappointed when AGI came out with another "water" general theme later in the year. Is there any way to get AGI's yearly theme earlier?”

We had an unexpected low number of poster entries this year (25) compared to 190+ last year. We have categories for grades K-2, 3-5, 6-8, and 9-12. We've had some discussions about what may have happened, and will think about next year's publicity strategy. We also held a successful awards ceremony for students and families.”

This increase in specificity for the online AGI survey is most likely due to the fact that respondents were completing the AGI survey during ESW and were thus actively involved in particular activities. The AGI data also mentioned the need to bring in more professionals to the schools. This later point is interesting in that the PS International survey had many responses from professional geologists, who in part, sought ways to connect their educational programs more frequently with activities within school curriculum. The interpretation is that both schools and professionals are very interested in developing and implementing earth science programs, but there may not sufficient communication between these two sectors to coordinate and merge their respective resources. Finally the AGI data had a higher percentage of responses from and about university involvement. In particular, one AGI respondent wrote about the need for university involvement especially student chapters of organizations such as AAPG. As in the PS International surveys, the AGI respondents also were very complimentary of the AGI materials.

SUMMARY

Earth Science Week began in 1998 as the American Geological Institute's (AGI) first national outreach program. For this outreach effort AGI provided ideas and activities for schools (K - 12), universities, as well as state and private organizations involved in doing something in the earth sciences during one week in October. For Earth Science Week (ESW) materials are disseminated in print as well as via the web. In particular AGI developed a free “ESW Kit” of materials such as posters with activities on the back, activity booklets, planning guides as well as actual lessons. This report gathered data on national activity for Earth Science Week 2002 participants. This data provides a baseline for making and examining changes for ESW 2003 and thereby developing and implementing new strategies and ideas for future programs based on present data. Earth science affects all members of society in some manner. As such, an

understanding of the relevance of earth sciences is extremely important. In this regard, the overall mission of ESW is to focus on different facets of earth science to help all people gain a better understanding and appreciation of the natural world.

ESW scored high marks in terms of the actual disseminated materials (e.g., ESW Kits) and kit content. In fact, there were no comments about weak, inaccurate or unclear content. However, there were problems relative to getting the word out about ESW in general and ESW activities in particular. Thus, based on this data set, improving program impact would require a more aggressive “marketing campaign” which would start earlier (i.e., 6 to 8 months before ESW begins) and involve more coordination with schools and the private sector, especially state and local geologic organizations.

While only a few respondents suggested a “needs survey”, the fact that several groups offered to administer and coordinate aspects of ESW, suggests that one important outcome of a “needs survey” would be to identify individuals and organizations across the country willing to play an active organizational role in the 2003 ESW. Furthermore, such a survey could help identify local and national media sources willing to publish or transmit information in a timely advance fashion about the 2003 ESW.

The number of respondents that indicated that there were local and state level proclamations (e.g., state governors) further suggests that there are individuals and/or organizations willing and able to solicit high-level political support for ESW. Such support in turn would improve the visibility of ESW.

The participation rates (Figure 1) suggest that there is great interest in ESW (i.e., see high 2003 projected participation rate), yet low actual participation (i.e., 2001 and 2002 participation rates). This shows high potential for the future of ESW. Furthermore role differences as well as regional differences provide specific strategies for improving ESW. For example, it is clear that professional geologists are very interested in ESW and their interest and energy could be directly tapped in 2003 to increase the reach of ESW to more schools, teachers and students. Related to this is the fact that the West had a high number of responses relative to the South, yet the South was consistently higher in their ratings of the usefulness of ESW. This may indicate that the increased participation in the West may yield higher levels of frustration than in the South. There may be other factors as well, such as greater distances between geologic formations in the West and thereby less accessibility and participation. Future research would explore these addition plausible hypotheses.

Finally, the least involved group with a high potential for contributing to the success of ESW was the university community. Some respondents reported poor university cooperation. However, the narrative record is replete of references to university participation, suggesting high potential for this neglected sector. In contrast, professional geologists were highly involved in ESW, and seek new channels for involvement, particularly through alignment with schools.

RECOMMENDATIONS

- Retain and enhance ESW for 2003
- Begin advertising ESW 6 to 8 months before it starts
- Recruit university communities into the ESW program
- Conduct a “needs survey” to identify individuals and organizations interested in playing a coordinating and administrating role in ESW
- Establish a national leadership structure that can operate at the local level which would have the ability to identify and utilize existing media, sites and resources for ESW activities
- Establish a national incentive program (e.g., awards, extended field trips, equipment) for participating in ESW
- Implement a citizens research program which can involve schools in an interactive data collection, data processing and data interpretation program where data is collected locally and shared via broadband communication nationally
- Brainstorm about website changes which might include an interactive database for a citizen research program
- Add draft press releases to ESW Kit, which would be distributed earlier in the year
- Use this 2002 ESW evaluation report as a baseline for a 2003 ESW evaluation report.