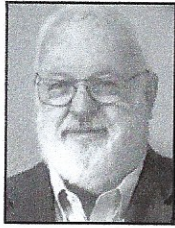


# Results of AIPG Climate Change Questionnaire



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## Introduction

During October 2019 AIPG asked its members to select one of ten statements that summarized a view about climate change. The range of statements varied from climate alarmist through those denying that humans have any effect on climate change to those with no opinion at all. Those summarizing statements were:

**A.** If drastic worldwide measures are not begun immediately to combat climate change, civilization as we know it will end in 10 to 12 years.

**B.** Climate change caused by human activity is a serious threat requiring significant corrective action in the near term.

**C.** Corrective actions to combat climate change caused by human activity should be intensified above the present.

**D.** Human activity is causing measurable changes in climate; corrective action may be needed.

**E.** I agree that human activity can have some effects on climate; quantification of such effects requires further study.

**F.** The science of climate change is not settled; I cannot judge whether it's occurring.

**G.** I am not convinced that human activity can cause planet-wide climate change.

**H.** If climate change is occurring, it is due to naturally occurring fluctuations.

**I.** I have not conducted enough personal research into the topic to have an opinion.

**J.** I am too busy to learn about this entirely theoretical subject.

In addition, respondents were asked to supply AIPG membership category, age range, area of main geoscience specialty, and main employer type. This article presents the results from the questionnaire.

In addition to the summarizing statements and demographic data, 49 comments were received. One comment was, "I appreciate AIPG for polling its members on this important topic." Another opined, "Well worded questions covering gamut of stances/opinions." Yet another commented on the character of the summarizing statements observing that, "essentially your survey is one question and multiple answers are possible." Agreed. When Peter Dohms, CPG-7141, John Berry, CPG-4032, and I were drafting the summarizing statements,

we wanted a series of statements ranging from the fervent alarmist to the ardent denier positions. Other comments addressed aspects of specific positions on the subject that will be discussed later.

## Questionnaire results

Table 1 presents the number of respondents by membership category along with the total AIPG membership data as of October 1, 2019.

Membership Category	Questionnaire		AIPG Total	
CPG Active	456	57%	2,702	43%
CPG Retired	126	16%	526	8%
Member Active	118	15%	798	13%
Member Retired	21	3%	37	1%
Student, All	66	8%	2,028	32%
Young Professional	20	2%	252	4%
Student BS	34	4%		
Student MS	19	2%		
Student PhD	13	2%		
Total Complete Responses	807	13%	6,343	

A total of 807 complete responses were received representing a 13% overall return. CPGs, both active and retired, responded in greater numbers than their overall percentage of membership while Students constituted 8% of the responses compared with 32% of overall membership.

Figure 1 on page 30 presents the number of responses to each of the 10 summarizing statements. Statement J, "I am too busy to learn about this entirely theoretical subject," received no responses and will receive no further consideration.

There are clearly two or three groups of summarizing statements. The 3-statement grouping would be ABC, DEF, and GHI. The 2-statement grouping has an ABCDE group and a FGHI group. The problem is the middle summarizing statement E, with 165 responses, the second highest total and 20% of the total responses. Statement E agrees that "human activity can have some effects on climate; quantification of such effects requires further study" thus supporting its inclusion into the ABCDE group. Statement F, "The science of climate change

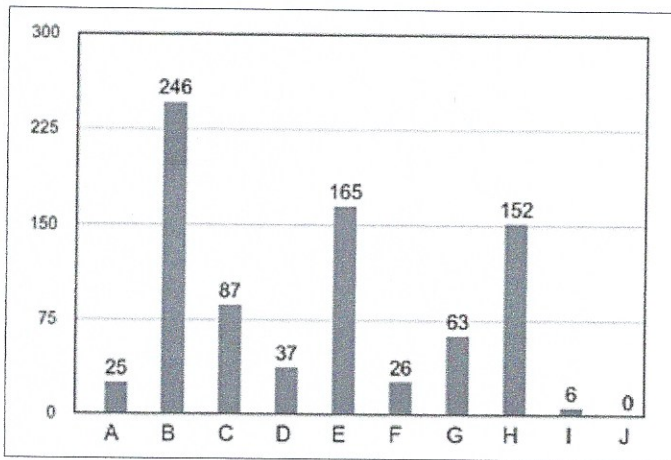


Figure 1 - Number of responses to the summarizing statements.

is not settled; I cannot judge whether it's occurring" is more closely aligned with the FGHI group than it is with statement E. These two groupings, ABCDE and FGHI will be used in this analysis. Summarizing statements for these two groupings are:

**ABCDE:** Some of the observed climate change is caused by human activity, the burning of fossil fuels to increase the CO<sub>2</sub> content of the atmosphere in particular. The precise quantification and prediction of these impacts is still being resolved.

**FGHI:** If climate change is occurring, it is entirely due to naturally occurring fluctuations.

Figure 2 presents the responses to the summarizing statements by geoscience specialty area. The Other specialty area in Figure 2 consists of those respondents whose answer to the geoscience specialty question was something other than the given choices. The responses varied widely, for example: all of the above, cryosphere, geophysics, geomorphology, glacial, more than one of the above, paleontology, structure, sedimentation, valuation, water resources, etc. This simply reflects the variety of specialties in AIPG's membership directory. There are times, like this, when you would like a "choose the best fit" answer. But that would demand an "other" category.

Overall, the ABCDE summarizing statement grouping is greatly preferred. However, 41% of the mining (plus coal and

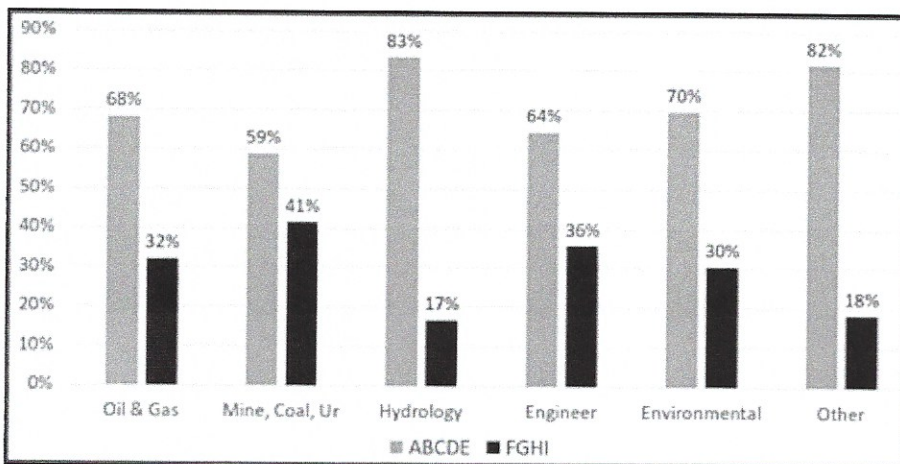


Figure 2. Number of responses to summarizing statement by geoscience specialty.

uranium) respondents are not convinced that humans have anything to do with climate change. Surprisingly, 61% of the oil and gas respondents favored the ABCDE grouping.

Table 2 presents the percentages of mining (plus coal and uranium) and oil and gas specialists who responded to the 9 summarizing statements. Statements E and H received the most responses and highest percentage from both groups.

Option	A	B	C	D	E	F	G	H	I
Mining	1%	17%	5%	6%	30%	5%	11%	25%	1%
Oil & Gas	0%	22%	18%	3%	25%	1%	6%	24%	1%

Figure 3 on page 31 shows the responses to the summarizing statements by employment type. The total number of responses for employment type was 807.

Consulting was the most common employer type for respondents accounting for 54% of the total number of respondents. Within the consulting employer type, 47% were environmental specialists, 21% were miners (including coal and uranium), 12% were hydrologists, and 6% were oil and gas. The industry employer type had the largest percentage of respondents favoring the FGHI summary statement grouping. Within the industry employer type, 52% were miners (including coal and uranium), 22% were oil and gas, 13% were environmental professionals. This result is consistent with the preferences shown in Figure 2.

On page 31, Figure 4 presents the responses to the summarizing statements by age. Note: because six respondents did not provide their age range, the number of respondents for Figure 4 is 801.

Age is the greatest differentiator on the responding AIPG members' views of the summary statement groupings ABCDE and FGHI on climate change. Only 7% of younger members (<31), which includes most of the Students and Young Professionals, responded. As recorded in Table 1 Students and Young Professionals comprise 36% of AIPG's membership. While not all Students and Young Professionals are <31 years in age, most are. However, the major peak in AIPG's age distribution is for those 60+ with a secondary

peak for those <31.<sup>1</sup> Members 61+ years in age were 56% of the respondents to the climate change questionnaire. There is a difference in responses by age; 94% of those <31 selected the ABCDE summary statement grouping and only 6% of those <31 selected the FGHI summary statement grouping. For those 61+, 65% selected the ABCDE summary statement grouping and 35% selected the FGHI summary statement grouping. If Student members had responded in numbers reflecting their percentage of AIPG's total membership, the percentage of those supporting the ABCDE summary statement grouping would be significantly higher.

1. Abbott, D.M., and Bartlett, R.D, 2018, Reflections on geoscience age distributions 2001–2018: *The Professional Geologist*, Jul/Aug/Sep 2018, p. 10–11.

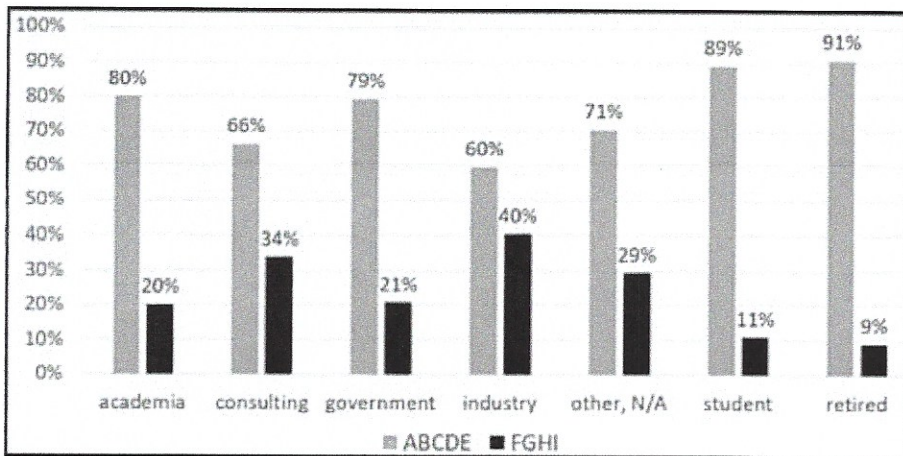


Figure 3. Number of responses to summarizing statement by employer type.

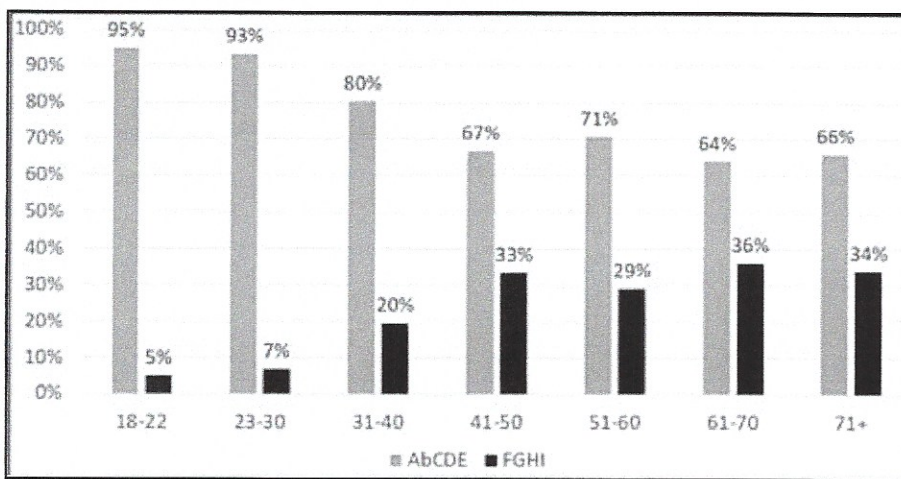


Figure 4. Number of responses to summarizing statement by age.

## Comments on the Questionnaire

As noted in the Introduction, 49 comments were received as part of the responses to the questionnaire. Most of the comments expressed opinions either in favor of human-caused climate change impacts or totally dismissed the concept. For example:

*"I am frankly distressed that a significant portion of the AIPG membership still refuses to accept the reality of the acceleration of climate change by human activity. How much more data do they need??"* This comment came with a preference of summary statement B, climate change caused by human activity is a serious threat requiring significant corrective action in the near term.

*"I believe world-wide changes are required immediately or less aggressively within the next 10 years on the outside relative to carbon emissions control and the climate. Even significant scale changes will not invoke immediate response. We will likely well require decades to attempt to slow or reverse the current climatic trends that have been scientifically demonstrated."* This comment came with a preference of summary statement B, climate change caused by human activity is a serious threat requiring significant corrective action in the near term.

*"Climate change is occurring, the likely causes are many (natural and with some human contribution); however, there*

*are many different opinions among individuals that have the qualifications to render an opinion."* This comment came with a preference of summary statement E, I agree that human activity can have some effects on climate; quantification of such effects requires further study.

*"This should not be 'an opinion' by AIPG. The vast amount of research on this subject clearly indicates global warming and climate change caused by the overuse of fossil fuels is a serious threat to our planet. As scientists we should responsibly meet this crisis and support the changes necessary to adequately address this issue."* This comment came with a preference of summary statement B, climate change caused by human activity is a serious threat requiring significant corrective action in the near term.

*Versus:*

*"Geologic Science is clear, the Earth's fluctuations are over 1000s of years, not just a few. Man has very little impact and we could do more, but it will not change the fate of the Earth, or Humans."* This comment came with a preference of summary statement H, if climate change is occurring, it is due to naturally occurring fluctuations.

*"Climate change has happened since the beginning of time from cyclical natural causes. Most of the rhetoric on climate change is being conducted by agenda driven politicians with very little if any formal training in geosciences. Man's effect on climate change is not proven and would be very difficult to quantify."* This

comment came with a preference of summary statement H, if climate change is occurring, it is due to naturally-occurring fluctuations.

*"Anthropogenic climate change is a political hoax to redistribute wealth and encourage socialism."* This comment came with a preference of summary statement G, I am not convinced that human activity can cause planet-wide climate change.

*"Finally, should AIPG get on board with a \$93 trillion scam to rob our citizens, I would be forced to resign for ethical reasons."* This comment came with a preference of summary statement F, the science of climate change is not settled; I cannot judge whether it's occurring.

A final comment, *"I appreciate AIPG for polling its members on this important topic. I feel that the AIPG needs to support the consensus that action needs to be taken to address the threat of climate change on our environment."*

## Conclusions

The responses to AIPG's climate change questionnaire were grouped into two summarizing statement groupings, ABCDE and FGHI (Figure 1). Summarizing statements for these two groupings are:

ABCDE: Some of the observed climate change is caused by human activity, the burning of fossil fuels to increase the CO<sub>2</sub> content of the atmosphere in particular. The precise quanti-

*Continued on p. 25*

*Questionnaire continued from p.21*

fication and prediction of these impacts is still being resolved.

FGHI: If climate change is occurring, it is entirely due to naturally occurring fluctuations.

The responses by age presented in Figure 4 are the best differentiator of the responding AIPG members view of the summary statements on climate change. AIPG's younger members are far more in agreement with human-caused climate change than the Baby Boom-age members. If Student members had responded in numbers reflecting their percentage of AIPG's total membership, the percentage of those supporting the ABC peak would be significantly higher.

Going forward; is it time for AIPG to issue a consensus statement on climate change? The majority of respondents recognize the human activity is affecting the climate, those agreeing with the ABCDE summarizing statement grouping, although by how much and how soon action must be taken require careful wording of a statement. However, significant minority of respondents (27%), those agreeing with summarizing statement grouping FGHI, will not accept a statement that humans have anything to do with climate change. It is also worth remembering that the Student members generally did not respond to the questionnaire. Had they done so, the percentage in favor of the proposed consensus statement would be far higher. Students represent the future of AIPG. AIPG will be able to attract and retain younger members. Those members that favor summarizing statement grouping FGHI can lend their voices and opinions to the debate that is now developing worldwide as to what actions, if any, make sense. In any case, opportunities abound for AIPG member geologists to address the many existing and potential future problems that the world faces.

## Reminder!

Renew your membership dues before February 15, 2020.

You may pay online at [aipg.org](http://aipg.org) or mail in your form and payment to:

AIPG Headquarters  
1333 W. 120th Ave., Suite 211  
Westminster, Colorado 80234-2710

## Success through Authentic Adaptability



**James L. Gooding, MEM-3070**

Completing your college or university education is a significant milestone — but only the first step in becoming a productive professional. Joining the work force will both open a world of opportunities and test your survival skills. The crucial ingredient for your success will be your resolve to adapt to changes in an authentic manner — where you demonstrate value through being trustworthy, dependable and willing to take on and master new things.

Having spent 38+ years across multiple careers — both in government service and in private industry — I learned valuable lessons from working for many different organizations and supervisors. Here are some of my most important takeaways:

- Most of what you will eventually know will be learned after you finish school
- Lifelong learning will keep your skills sharp and your spirit strong — take it on as an adventure
- The geosciences are most useful when studied and applied in the broad sense — geology leads the way but you can grow faster and better by including ocean and atmosphere in your thinking
- A good boss will appreciate (and reward) your willingness to take on new responsibilities even if they might be outside the comfort zone defined by your school work
- Clients (both internal and external) will value your expert ability to explain science in simplified but substantive terms — but take care to respect their intelligence as they probably are experts on things other than geoscience

My schooling goes way back to the time that plate tectonics was becoming accepted as a legitimate theory. But I quickly became interested in interdisciplinary studies involving geology, geochemistry and climatology. I also had the great opportunity to participate in the geosciences growing into an essential part of comparative planetology. It all became woven together along pathways I had not anticipated. Now I assist industry clients in using geoscience to manage risks and make their businesses resilient to natural hazards.

Congratulations on choosing the geosciences as your profession. Now, be ready and eager to take on change with authentic adaptability as you become a working geoscientist.

### About the Author

James L. Gooding is founder and Managing Director of Geoclimate, LLC, providing quality and risk management consulting. After earning his Ph.D. in geology (University of New Mexico), he successfully completed multiple careers in government and industry before becoming a consultant.

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