

JASON (advisory group)

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JASON is an independent group of elite scientists which advises the United States government on matters of science and technology, mostly of a sensitive nature. The group was first created as a way to get a younger generation of scientists—that is, not the older Los Alamos and MIT Radiation Laboratory alumni—involved in advising the government. It was established in 1960 and has somewhere between 30 and 60 members. Its work first gained public notoriety as the source of the Vietnam War's McNamara Line electronic barrier. Although most of its research is military-focused, JASON also produced early work on the science of global warming and acid rain.^[1] Current unclassified research interests include health informatics, cyberwarfare, and renewable energy.

Contents

- 1 Activities
- 2 Membership
- 3 Chairmen
- 4 Early history
- 5 Vietnam War
- 6 Recent history
- 7 Research
- 8 References
- 9 Further reading
- 10 External links

Activities

For administrative purposes, JASON's activities are run through the MITRE Corporation, a non-profit corporation in McLean, Virginia, which contracts with the Defense Department.

JASON typically performs most of its work during an annual summer study. Its sponsors include the Department of Defense, the Department of Energy, and the U.S. Intelligence Community. Most of the resulting JASON reports are classified.

The name "JASON" is sometimes explained as an acronym, standing either for "July August September October November", the months in which the group would typically meet; or, tongue in cheek, for "Junior Achiever, Somewhat Older Now". However, neither explanation is correct; in fact, the name is not an acronym at all. It is a reference to Jason, a character from Greek mythology. The wife of one of the founders (Mildred Goldberger) thought the name given by the defense department, Project Sunrise, was unimaginative and suggested the group be named for a hero and his search.^[2]

JASON studies have included a now-mothballed system for communicating with submarines using extremely long radio waves (Project Seafarer, Project Sanguine), an astronomical technique for overcoming the atmosphere's distortion (adaptive optics), the many problems of missile defense, technologies for verifying compliance with treaties banning nuclear tests, a 1979 report describing CO₂-driven global warming, and the McNamara Line's electronic barrier, a system of computer-linked sensors developed during the Vietnam War which became the precursor to the modern electronic battlefield.

Membership

The founders of JASON included John Wheeler and Charles H. Townes. Other early members, known informally as "Jasons," included Murray Gell-Mann, S. Courtenay Wright, Robert Gomer, Walter Munk, Murph Goldberger, Hans Bethe, Nick Christofilos, Fred Zachariasen, Marshall Rosenbluth, Ed Frieman, Hal Lewis, Sam Treiman, Conrad Longmire, Steven Weinberg, Roger Dashen, and Freeman Dyson.^{[1][3][4]} JASON members all have security clearances, and they include physicists, biologists, chemists, oceanographers, mathematicians, and computer scientists, predominated by theoretical physicists.^[5] They are selected by current members, and, over the years, have included eleven Nobel Prize laureates and several dozen members of the United States National Academy of Sciences.^[6] The Nobel Prize-winning members of JASON include Donald Glaser, Val Fitch, Murray Gell-Mann, Luis Walter Alvarez, Henry Way Kendall, and Steven Weinberg.^{[7][8]}

Chairmen

In chronological order:

- Marvin Leonard Goldberger (1960-1966)^[9]
- Harold Lewis (1966-1973)
- Kenneth Watson
- Edward A. Frieman
- Richard Garwin^[10]
- William Nierenberg
- William Happer (1987-1990)^[11]
- Curtis Callan (1990-1995)^[12]
- William H. Press (1995-1998)^[13]
- Steven Koonin^[14]
- Roy Schwitters (2005-2011)^[15]
- Gerald Joyce (2011-2014)^[16]
- Russell J. Hemley (2014-)

Early history

In 1958, a military-issues physics summer study program named **Project 137** was launched by physicists John Archibald Wheeler, Eugene Wigner, and Oskar Morgenstern. Participants included Murph Goldberger, Ken Watson, Nick Christofilos, and Keith Brueckner.

Out of that program came the idea of a permanent institution for advanced scientific research, a proposed National Defense Institute, on behalf of the Department of Defense. Wheeler was offered such a position by ARPA's Herb York but turned it down, having put in the effort to establish Project 137. Murph Goldberger also turned down the request.

However, in December 1959 Marvin Stern, Charlie Townes, Brueckner, Watson, and Goldberger met in Los Alamos where several of them had been working on nuclear-rocket research and launched JASON as an ongoing summer study program, with financial and administrative support supplied by the Institute for Defense Analyses. In the early 1960s, JASON had about 20 members. By the end of the decade it had grown to over 40 members, with close ties to the President's Science Advisory Committee. In the early 1970s the backing institution for JASON was changed from IDA to SRI.^[9]

Vietnam War

The Vietnam War had a significant effect on JASON's membership and research focus. A major initiative of JASON became the McNamara Line electronic barrier, promoted by the hawks. By around 1966, the team had become strongly divided along political and ethical lines. In March 1967, Freeman Dyson, Robert Gomer, Steven Weinberg, and S. Courtenay Wright produced a report, approved by Secretary of Defense Robert McNamara and titled "Tactical Nuclear Weapons in Southeast Asia."^[17] Declassified in 2002 through a FOIA action brought by Nautilus Institute, the paper predicted catastrophic consequences for U.S. global interests as

well as for the people and environment of Southeast Asia. Going into great detail, the paper strongly contradicted game-scenario research from RAND and other groups that was optimistic about a nuclear option.^{[18][19]} Co-author Wright later stated that the report's main finding was that "employment of nuclear weapons by the US would be of little use against a widely distributed opponent but disaster if copied by the opponent."^[20] In a nuclear counterstrike against U.S. troops, the report concluded that, in the worst-case, "the U.S. fighting capability in Vietnam would be essentially annihilated."^[17] Co-author Weinberg showed the political point of view of the writers and the increasing political division:

"I have to admit that its conclusions were pretty much what we expected from the beginning, and if I had not expected to reach these conclusions then, for the ethical reasons that we left out of the report I would not have helped to write it."^[21]

Seymour Deitchman, a national security consultant who served with the IDA for over 28 years, said, "To the extent of my personal knowledge, the talk of using nuclear weapons in that war stopped after the JASON report on the subject."^[22] Gordon J. F. MacDonald, executive vice president of IDA at the time, reflected on the JASON report in 1998. MacDonald said that the "grim picture" painted in the report had a major effect on both Johnson and McNamara. It was central to McNamara's differences with the Joint Chiefs of Staff, who were sanguine about the nuclear option; this ultimately led to McNamara's resignation. RAND experts also conceded the report's credibility.^[23]

There arose internal conflict between hawkish JASON members such as William Happer, Edward Teller, and William Nierenberg and others such as MacDonald, Sid Drell, and Richard Garwin. Public attention to JASON's involvement in the Vietnam War led to public criticism and attacks, even against JASON members who were not hawks; for example, MacDonald's garage was burned down and Richard Garwin was called a "baby killer."^{[1][24]}

Around this time, some members critical of the war like Freeman Dyson left, and others directed JASON research into unclassified, non-military work on behalf of the U.S. Department of Energy on problems like global warming and acid rain.

Recent history

In 2002, DARPA decided to cut its ties with JASON. DARPA had not only been one of JASON's primary sponsors, it was also the channel through which JASON received funding from other sponsors. DARPA's decision came after JASON's refusal to allow DARPA to select three new JASON members. Since JASON's inception, new members have always been selected by its existing members. After much negotiation and letter-writing—including a letter by Congressman Rush Holt of New Jersey^[25]—funding was subsequently secured from an office higher in the defense hierarchy, the office of the Director, Defense Research & Engineering, name changed to Assistant Secretary of Defense (Research & Engineering) (ASD (R&E)) in 2011.^[26]

In 2009, JASON issued its classified recommendations on the future of the United States nuclear arsenal, finding that a new generation of nuclear weapons was unnecessary.^{[27][28]} In 2010, JASON issued recommendations for the Department of Defense to support cyber-security research.^[29] In 2011, the panel published a public analysis of and recommendations for international greenhouse gas monitoring by the United States government.^[30] In 2014, the panel published results of its 2013 summer-study focus on health information exchange.^[31]

Research

About half of JASON's work is classified, ranging from recommendations on the United States nuclear arsenal and missile defense, to electronic surveillance and cyber-security.

Much of JASON's public work has involved energy and the environment, including Gordon MacDonald's project to model climate change that soon convinced him that fossil-fuel burning would lead to dangerous global warming that would outstrip any industrial cooling effects. For decades, MacDonald was a prominent scientific advocate for action on climate change.^{[32][33]} Current JASON energy research has included reports on advanced biofuel production and how to reduce the Department of Defense's carbon footprint for strategic and environmental reasons. However, several other members of JASON, including past chairs Nierenberg, Happer, and Koonin, have cast doubt on climate science and policies that would limit the use of fossil fuels.^{[34][35][36]}

JASON studies include:

- Data for Individual Health (<http://healthit.gov/sites/default/files/2014-JASON-data-for-individual-health.pdf>), (November 2014, JSR-14-TASK-007)
- A Robust Health Data Infrastructure (http://www.healthit.gov/sites/default/files/ptp13-700hhs_white.pdf), (April 2014, JSR-13-700)
- Compressive Sensing for DoD Sensor Systems (<http://www.fas.org/irp/agency/dod/jason/compress.pdf>), (November 2012, JSR-12-104)
- Impacts of Severe Space Weather on the Electric Grid (<http://www.fas.org/irp/agency/dod/jason/spaceweather.pdf>), (November 2011, JSR-11-320)
- The \$100 Genome: Implications for the DoD (<http://www.fas.org/irp/agency/dod/jason/hundred.pdf>). (November 2010, JSR-10-100)
- Science of Cyber-Security (<http://www.fas.org/irp/agency/dod/jason/cyber.pdf>), (November 2010, JSR-10-102)
- High Frequency Gravitational Waves, (October 2008; JSR-08-506)
- Human Performance, (March 2008; JSR-07-625)
- Wind Farms and Radar, (January 2008; JSR-08-125)
- Navy Ship Underwater Shock Prediction and Testing Capability Study, (October 2007; JSR-07-200)
- Reliable Replacement Warhead Executive Summary, (September 2007; JSR-07-336E)
- Pit Lifetime, (January 2007; JSR-06-335)
- DAHRT, (October 2006; JSR-06-330)
- Engineering Microorganisms for Energy Production, (June 2006; JSR-05-300)
- Reducing DoD Fossil-Fuel Dependence, (September 2006; JSR-06-135)
- NIF Ignition (June 2005; JSR-05-340)
- Tactical Infrasound (May 2005; JSR-03-520)
- Quantifications of Margins and Uncertainties, (March 2005; JSR-04-330)
- High Performance Biocomputation (March 2005; JSR-04-300)
- Sensors to Support the Soldier (Feb. 2005; JSR-04-210)
- Horizontal Integration: Broader Access Models for Realizing Information Dominance (December 2004; JSR-04-312)
- Active Sonar Waveform, (June 2004; JSR-03-200)
- The Computational Challenges of Medical Imaging, (February 2004; JSR-03-300)
- Requirements for ASCI, (October 2003; JSR-03-330)
- Portable Energy for the Dismounted Soldier, (June 2003; JSR-02-135)
- Turbulent Boundary Layer Drag Reduction, (May 2003; JSR-01-135)
- High Power Lasers, (April 2003; JSR-02-224)
- Biodetection Architectures, (February 2003; JSR-02-330)
- Opportunities at the Intersection of Nanoscience, Biology and Computation, (November 2002; JSR-02-300)
- Atmospheric Radiation Measurement (ARM) Program, (April 2002; JSR-01-315)
- Non-GPS Methods of Geolocation, (January 2002; JSR-00-105)
- Radiological Weapons, (2002; JSR-02-340)
- Biofutures, (June 2001; JSR-00-130)
- Spintronics, (February 2001; JSR-99-115)
- Imaging Infrared Detectors II (<http://www.fas.org/irp/agency/dod/jason/iird.pdf>), (October 2000, JSR-97-600)
- Advantage of Base-Line Redundancy in Sparse Apertures, (September 2000; JSR-2000-551)
- Space Infrastructure for 2020, (September 2000; JSR-99-125)
- Imaging Infrared Detectors II, (June 2000; JSR-97-500)

- Molecular Electronics: Interfacing the Nano- and Micro-Worlds, (May 2000; JSR-99-120)
- Power Sources for Ultra Low Power Electronics, (June 2000; JSR-98-130)
- 100 LBS TO Low Earth Orbit (LEO): Small-Payload Launch Options, (January 2000; JSR-98-140)
- Data Mining and the Human Genome (January 2000; JSR-99-310)
- Primary Performance Margins (December 1999; JSR-99-305) (unclassified introduction)
- System-Level Flight Tests, December 1999; JSR-98-310)
- Remanufacture (of Nuclear Weapons), (October 1999; JSR-99-300)
- Army Battlefield Communications (September 1999; JSR-96-605)
- Characterization of Underground Facilities (April 1999; JSR-97-155)
- Non-destructive Evaluation and Self-Monitoring Materials (April 1999; JSR-98-145)
- Electro Thermal Chemical Gun Technology Study (March 1999; JSR-98-600)
- Small Unit Operations (June 1998; JSR-97-142)
- Signatures of Aging Revisited (March 1998; JSR-98-320)
- Signatures of Aging [of nuclear weapons] (January 1998; JSR-97-320)
- Counterproliferation (January 1998; JSR-94-140)
- High Energy Density Explosives (October 1997; JSR-97-110)
- Human Genome Project (October 1997; JSR-97-315)
- Small Scale Propulsion: Fly on the Wall, Cockroach in the Corner, Rat in the Basement, Bird in the Sky (September 1997; JSR-97-135)
- Subcritical Experiments (March 1997; JSR-97-300)
- New Technological Approaches to Humanitarian Demining, November 1996; JSR-96-115)
- Quantum Computing (July 1996; JSR-95-115)
- Inertial Confinement Fusion (ICF) Review (March 1996; JSR-96-300)
- DNA Computing (October 1995; JSR-95-116)
- JASON Nuclear Testing Study: Summary and Conclusions, August 1995; JSR-95-320)
- Accelerator production of tritium - 1995 review (June 1995; JSR-95-310)
- Accelerator based conversion of plutonium (March 1995; JSR-94-310)
- Microsurveillance of the Urban Battlefield (February 1995; JSR-95-125)
- JASON Nuclear Testing Study: Summary and Conclusions (1995; JSR-95-320)
- Jason Final Report, January 1995; JSR-94-105)
- LIDAR (September 1994; JSR-93-310)
- Science based stockpile stewardship (November 1994; JSR-94-345)
- Counter proliferation /draft/ (August 1994; JSR-94-140)
- MTPE /draft/ (August 1994; JSR-94-750)
- ARM /draft/ (July 1994; JSR-94-300)
- CO2 greenhouse mitigation (May 1994; JSR-93-340)
- Underwater explosions ONR/DNA/NAVSEA /draft/ (January 1994; JSR-94-220)
- Clouds and radiation – a premier [sic] (January 1993; JSR-90-307)
- Verification of dismantlement of nuclear warheads and controls on nuclear materials (January 1993; JSR-92-331)
- Small satellites and RPVs (January 1993; JSR-91-197)
- SCHAMMP (Dec 1992; JSR-91-310)
- JASON Global Grid Study (July 1992; JSR-92-100)
- ARM review 1991 /draft/ (September 30, 1991; JSR-91-300)
- Small satellite and RPAs in global change research /draft/ (August 1991; JSR-91-330-12)
- Small Satellites (August 3, 1991; JSR-91-330-10)
- ARM /draft/ (July 1991; JSR-91-300)
- Verification Technology: Unclassified Version (October 1990; JSR-89-100A)
- High gain arrays /draft/ (July 1990; JSR-90-210)
- Detecting the greenhouse signal (May 1990; JSR-89-330)
- JASON Review of Brilliant Pebbles, Vol. I, Executive Summary (September 1989; JSR-89-900)
- Neutrino Detection Primer (March 1988; JSR-84-105)
- Airships (1988; JSR-88-230)
- Occultation study summary (February 1987; JSR-86-108)
- JASON study on OTHB radars (1987; JSR-87-801)
- Development stability of strategic defenses (October 1986; JSR-85-926)
- Submarine detection: Acoustic contrast versus Acoustic glow (July 1985; JSR-85-108)
- Seismic discrimination (April 1985 ; JSR-84-117)

- SEASAT Report (January 1985; JSR-83-203)
- Multiple scattering effects in radar observations of wakes (August 1984; JSR-84-203B)
- SEASAT III & IV (August 1984; JSR-84-203)
- SEASAT Report (March 1984; JSR-83-203)
- The Long Term Impact of Atmospheric Carbon Dioxide on Climate: preliminary report (<http://fas.org/irp/agency/dod/jason/co2.pdf>) (1979) JSR-78-07 and (1980) JSR-79-04; more fully published as MacDonald et al., (1982)^[37]
- Sonic Boom Report (November 1978; JSR-78-09)
- Laser Propulsion Study (Summer 1977; JSR-77-12)
- Low frequency sound propagation in a fluctuating infinite ocean II (June 1975; JSR-74-6)
- Low frequency sound propagation in a fluctuating infinite ocean (April 1974; JSR-73-10)
- The effect of surface currents on the equilibrium surface wave spectral energy density (October 1973; JSR-73-2)
- Collected working papers on internal—surface wave interactions and related problems (August 2, 1972; JASON-72-Working Paper no.33)
- Internal Wave-Surface Wave Interactions Revisited (March 1972; Paper P-853)
- Report of the 1971 JASON Laser Summer Study. Volume I. Recommendations and Conclusions (1971)
- Report of the 1971 JASON Laser Summer Study. Volume II. Supporting Appendices A-M (1971)
- Generation and Airborne Detection of Internal Waves from an Object Moving through a Stratified Ocean, Vol II (April 1969; S-334)
- Tactical Nuclear Weapons in Southeast Asia (March 1967)

References

1. Aaserud, Finn (April 16, 1986). "Oral History Transcript — Dr. Gordon MacDonald" (<https://www.aip.org/history-programs/niels-bohr-library/oral-histories/32156>). American Institute of Physics.
2. Jacobsen, Annie (September 2016). *The Pentagon's Brain: An Uncensored History of DARPA, America's Top Secret Military Research Agency*. Little, Brown. ISBN 978-0-316-37176-6.
3. Aaserud, Finn (June 28, 1991). "Oral History Transcript — Dr. Steven Weinberg" (<http://www.aip.org/history/ohilist/5146.html>). American Institute of Physics.
4. Aaserud, Finn (July 2, 1986). "Oral History Transcript — Dr. Roger Dashen" (<http://www.aip.org/history/ohilist/5195.html>). American Institute of Physics.
5. *The Jasons*, p. 128
6. *The Jasons*, p. xiv
7. Aaserud, Finn (April 26, 1986). "Interview with Dr. Francis Low" (<http://www.aip.org/history/ohilist/4750.html>). American Institute of Physics.
8. Aaserud, Finn (December 18, 1986). "Interview with Dr. Val Fitch" (<http://www.aip.org/history/ohilist/33299.html>). American Institute of Physics.
9. Aaserud, Finn (February 12, 1986). "Oral History Transcript — Dr. Marvin Goldberger" (<http://www.aip.org/history/ohilist/4630.html>). American Institute of Physics.
10. Aaserud, Finn (June 24, 1991). "Oral History Transcript — Dr. Richard Garwin" (<http://www.aip.org/history/ohilist/5075.html>). American Institute of Physics.
11. Happer biography at AIP (<http://www.aip.org/history/acap/biographies/bio.jsp?happerw>), undated
12. "Curtis Callan" (<http://www.aip.org/history/acap/biographies/bio.jsp?callanc>). American Institute of Physics.
13. "William H. Press CV" (http://www.nr.com/whp/vita_cv.pdf) (PDF).
14. "Steven E. Koonin" (<http://energy.gov/contributors/steven-e-koonin>). Department of Energy.
15. Lecture Series presents Roy Schwitters, 7/19/2011 (<http://calendar.ucsd.edu/DisplayEventDetail.asp?iEventID=24802&iSubCatID=&iRoomID=>) : "He has been the Chair of the JASON Steering Committee since 2004."
16. "Gerald Joyce" (<http://www.cell-symposia-rna-2014.com/conference-speakers/bio-joyce.asp>).
17. Dyson, F.; Gomer, R.; Weinberg, S.; Wright, S.C. (March 1967). *Tactical Nuclear Weapons in Southeast Asia (Study S-266)*. (<http://nautilus.org/wp-content/uploads/2011/12/dyson67.pdf>) (PDF). Institute for Defense Analyses, JASON Division. Retrieved 1 February 2017.

18. Borzo, Greg (January 11, 2017). "Robert Gomer, chemist, longtime teacher and cherished colleague, 1924-2016" (<https://news.uchicago.edu/article/2017/01/11/robert-gomer-chemist-longtime-teacher-and-cherished-colleague-1924-2016>). *UChicagoNews*. University of Chicago. Retrieved 1 February 2017.
19. Wellerstein, Alex. "Would nukes have helped in Vietnam?" (<http://blog.nuclearsecrecy.com/2014/07/25/nukes-helped-vietnam/>). *Restricted Data: The Nuclear Secrecy Blog*. Restricted Data. Retrieved 1 February 2017.
20. Wright, S. Courtenay. "What is JASON? Author S. Courtenay Wright" (<http://nautilus.org/essentially-annihilated/what-is-jason-author-s-courtenay-wright/>). *"Essentially Annihilated"*. Nautilus Institute for Security and Sustainability. Retrieved 1 February 2017.
21. Weinberg, Steven. "What is JASON? Author Steven Weinberg" (<http://nautilus.org/essentially-annihilated/what-is-jason-author-steven-weinberg/>). *"Essentially Annihilated"*. Nautilus Institute for Security and Sustainability. Retrieved 1 February 2017.
22. Deitchman, Seymour. "An Insider's Account: Seymour Deitchman" (<http://nautilus.org/essentially-annihilated/an-insiders-account-seymour-deitchman/>). *"Essentially Annihilated"*. Nautilus Institute for Security and Sustainability. Retrieved 1 February 2017.
23. Fleming, James Roger (March 21, 1994). "Oral Histories: Gordon MacDonald" (<https://www.aip.org/history-programs/niels-bohr-library/oral-histories/32156>). *American Institute of Physics Oral History Interviews*. Retrieved 1 February 2017.
24. Finkbeiner, Ann (April 6, 2006). *The Jasons: The Secret History of Science's Postwar Elite*. Viking/Penguin. ISBN 0-670-03489-4.
25. "Rep. Holt Expresses Concern Over DOD Decision to Disband JASON" (<http://www.aip.org/fyi/2002/036.html>). Aip.org. Retrieved 2010-03-02.
26. *The Jasons*, pp. 196–199
27. Grossman, Elaine (Nov 9, 2009). "JASON Panel Offers Secret Nuclear Warhead Upkeep Recommendations" (<http://www.nti.org/gsn/article/jason-panel-offers-secret-nuclear-warhead-upkeep-recommendations/>). Global Security Newswire.
28. Broad, William (November 19, 2009). "Panel Sees No Need for A-Bomb Upgrade" (<https://www.nytimes.com/2009/11/20/science/20nuke.html>). The New York Times.
29. "JASON on "Science of Cyber Security," Recommends New Centers" (<http://cra.org/govaffairs/blog/2010/12/jason-on-science-of-cyber-security-recommends-new-centers/>). Computing Research Associates. December 14, 2010.
30. Morello, Lauren (January 28, 2011). "Elite Scientific Advisory Panel Says New Technology is Needed to Verify Emissions Cuts" (<http://www.scientificamerican.com/article/jason-greenhouse-gas-monitoring/>). Climatewire.
31. DeSalvo, Karen (April 16, 2014). "A Robust Health Data Infrastructure" (<http://www.healthit.gov/buzz-blog/from-the-onc-desk/robust-health-data-infrastructure/>). Department of Health and Human Service's Office of the National Coordinator for Health Information Technology.
32. James, Fleming (March 21, 1994). "Oral History Transcript — Dr. Gordon MacDonald" (<http://www.aip.org/history/ohilist/32156.html>). American Institute of Physics.
33. Weiss, Michael J. (October 8, 1979). "CO2 Could Change Our Climate and Flood the Earth—Up to Here" (<http://www.people.com/people/archive/article/0,,20074765,00.html>). People Magazine.
34. Oreskes (2008) p. 113
35. Happer, William (February 25, 2009). "Climate change" (http://www.epw.senate.gov/public/index.cfm?FuseAction=Files.View&FileStore_id=84462e2d-6bff-4983-a574-31f5ae8e8a42). U.S. Senate Committee on Environment and Public Works. Retrieved 2009-09-25.
36. Climate Science Is Not Settled (<https://online.wsj.com/articles/climate-science-is-not-settled-1411143565>) by Steven E. Koonin, Wall Street Journal, Sept. 19, 2014
37. The Long-term Impacts of Increasing Atmospheric Carbon Dioxide Levels (<https://books.google.com/books?id=9wdSAAAAMAAJ&ei=iDzhSISAJ5bMzQSM-OTTBw&pgis=1>)

Further reading

- Ann Finkbeiner, *The Jasons: The Secret History of Science's Postwar Elite*, Viking/Penguin, April 6, 2006, ISBN 0-670-03489-4
 - American Institute of Physics 2008 Science Journalist Award (<http://www.aip.org/aip/writing/book08.html>) to *The Jasons*

- John Horgan, "Rent-a-Genius" (<https://www.nytimes.com/2006/04/16/books/review/16horgan.html>), review of *The Jasons*, *The New York Times Book Review*, April 16, 2006.

External links

- JASON Defense Advisory Panel Reports (<http://fas.org/irp/agency/dod/jason/>) at Federation of American Scientists
- What is JASON? (<https://web.archive.org/web/20040925223253/http://www.nautilus.org/archives/VietnamFOIA/background/whatisJASON.html>), article by Nautilus Institute, circa 2002
- "Science Against the People" (<https://web.archive.org/web/20110607181553/http://ist-socrates.berkeley.edu/~schwartz/SftP/Jason.html>), 1972 polemical pamphlet on the Jasons by physicist Charles Schwartz
- Lab Chiefs Find U.S. Nuclear-Weapon Update Approach Adequate, But Not Ideal (<http://www.nti.org/gsn/article/lab-chiefs-find-us-nuclear-weapon-update-approach-adequate-but-not-ideal/>), July 16, 2010 article at Nuclear Threat Initiative discusses JASON role

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