



DAVID SIMONDS JOHNSON (1924-2004)

Impact and Legacy

Introduction

David Simonds Johnson was a leader in the development of the U.S. environmental satellite program. From the beginning of his federal employment in 1946 in the U.S. Weather Bureau until his retirement in 1982 as the NOAA Assistant Administrator for Satellites and Data, David Johnson created the framework for research, operations, and collaboration that NESDIS undertakes today. During his tenure, 33 satellites were launched, co-operative international satellite programs were developed, and NESDIS became the foremost operational satellite service in the world.

Early Years

David S. Johnson was born on June 29, 1924, in Porterville, California, the second child of Frank D. and Wanda Simonds Johnson. On his [birth certificate](#), his father's occupation is listed as a farmer and his mother as a housewife. They resided in Delano, CA. From this humble beginning, he went on to excel in physics and math, [graduating](#) from Santa Ana Senior High School on June 11, 1942 --- six months following the attack on Pearl Harbor.

Military Service

He quickly enlisted in the U.S. Army Air Force on November 20, 1942, and entered into active service on February 20, 1943. All of his military service was stateside where he attended Air Force schools for radio mechanics, meteorological weather equipment, and classes at Reed College and Harvard University. His Military Occupational Specialty (MOS) was Weather Observer 784, largely in a classified capacity. After three years of service, he was [honorably discharged](#) with the rank of corporal on February 20, 1946 from the 68th AAF Base Unit, part of the 1st Weather Region in Los Angeles, CA. By this time, he was married to Betty Jeanne Reed.

Early Employment and Higher Education

In 1946, Mr. Johnson joined the U.S. Weather Bureau in Boise, Idaho. In 1947, he relocated to Los Angeles where he earned his A.B. with honors in 1948 and M.A. in meteorology in 1949 from the University of California, Los Angeles (UCLA). While completing his undergraduate and graduate degrees, David Johnson served as a Research Assistant to the Assistant Meteorologist, Department of Meteorology, University of California, Los Angeles, from 1947 to 1952. David Johnson's thesis was [*Methods of Determination of Drop Size and Distribution in Natural Fogs*](#). One of his thesis advisors was noted meteorologist Jacob Bjerknis, the son of Vilhelm Bjerknis of the Bergen School of Meteorology, and founder of the Department of Meteorology at UCLA.

From 1952 until 1956, Mr. Johnson worked for the Pineapple Research Institute in Honolulu, Hawaii, where the importance of accurate weather forecasts is essential to the planting and harvesting for the islands.

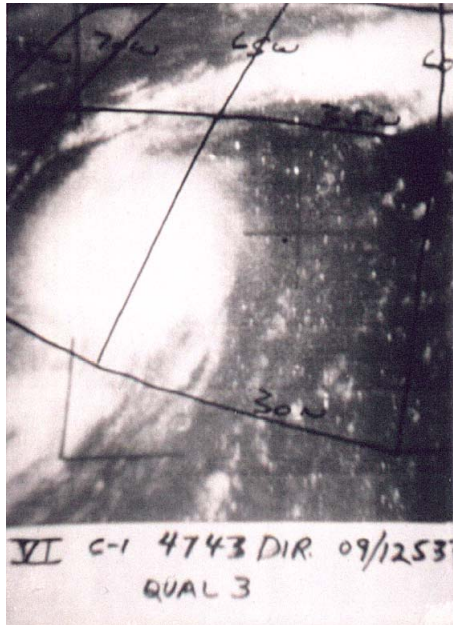
Scientist and Federal Administrator

In 1956, he returned to the U.S. Weather Bureau as a meteorologist and was soon assigned as a charter member of its new Meteorological Satellite Section. Other members of the original group were: Dr. Sigmund Fritz (Head), Jay S. Winston, Lester F. Hubert, David Q. Wark and Donald T. Hillary. This was the beginning and nucleus of today's National Environmental Satellite, Data, and Information Service (NESDIS). During the period while TIROS-1, the first meteorological satellite, was in development, several additional people were recruited. Working with NASA and Allied Research scientists, functions were expanded and plans for assessing the new data sets developed. The unit's name changed to Meteorological Satellite Laboratory (MSL) and he was named its Chief in 1960.

The successful acquisitions and assessment of data obtained from TIROS-I, launched on April 1, 1960 is a testament to his leadership and the expertise of his MSL team. The first of a long sequence of operational cloud pattern analyses/interpretations was completed by the team (Jones and Conover) at the Fort Monmouth data acquisition site, using data obtained from orbit #43 on April 4, 1960. In his Progress Report dated August 30, 1960, Dave Johnson wrote, "during its lifetime of about two and one half months, TIROS-I provided over 20,000 pictures of the earth and its cloud cover with its wide and narrow angle television cameras." ¹ From its

¹ Johnson, David Simmons (1924-2004) Progress Report January 1-June 30, 1960, Annex 4 p. 27, in Rao, P. Krishna. [Evolution of the Weather Satellite Program in the U.S. Department of Commerce](#) – A Brief Annex -Outline. (Series: NOAA Technical Report NESDIS 101). Washington, DC: U.S. Dept. of Commerce, National Oceanic and Atmospheric Administration, National Environmental Satellite, Data, and Information Service, 2001. 37 pp.

orbit approximately 450 miles above the Earth and inclined at 50° to the equator, forecasters could, for the first time, view the development and movement of clouds and similar weather activity.



Seven additional TIROS satellites quickly followed through December 1963 and carried more sophisticated instrumentation. Later versions measured radiation output, an indicator of climate change. TIROS-8 carried a wide-angle camera and a new Automatic Picture Transmission (APT) allowing, for the first time, receipt of cloud images broadcast from space that could be acquired by relatively inexpensive, universally available ground equipment. TIROS-9 was launched into a sun-synchronous orbit on July 1, 1965 enabling the first daily coverage of the sun-illuminated portion of the earth. TIROS 10, the first NOAA funded meteorological satellite, completed the initial series and led to initiation of the operational follow-on programs. The NASA experiment with the Nimbus-1, also in 1965, carried an infrared sensor permitting the first nighttime images from space. In summary, ten TIROS weather/environmental satellites were launched from 1960 to 1965 during this developmental phase of orbital rocketry. With each successive launch, their operating life increased and the instrumentation refined.

David Johnson next led the development of meteorological satellites into the next new series of satellites when a new agency, the Environmental Sciences Services Administration (ESSA) was given the responsibility for civilian operational satellites in 1965. This was the ESSA – named satellites. Dave Johnson was appointed by ESSA Administrator Dr. Robert M. White and given

the title, Director, National Environmental Satellite Center, Environmental Sciences Services Administration, --- a title he kept until the creation of NOAA in 1970. During the ESSA years, nine satellites were successfully launched.

Beginnings of Geostationary Satellites

On December 6, 1966 the first Applications Technology Satellite (ATS-1) was launched carrying the first spin-scan cloud camera, an invention of Drs. Soumi and Parent at the University of Wisconsin. The instrumentation allowed for image sequencing to track clouds and winds in motion and permanently changed the forecasting methods for meteorologists. This achievement was due to the extraordinary collaboration of Verner Suomi, David Johnson and Homer Newell of NASA who successfully added the instrument onto the satellite payload late in the production cycle. Today's real-time images of changing weather as broadcast in the current media are a direct successor to ATS-1 and the spin-scan camera.

National Environmental Satellite Service, 1970 – 1980, and Assistant Administrator for Satellites, 1980-1982 (SES)

With the creation of NOAA in 1970, Dr. White again appointed Dave Johnson to Director, National Environmental Satellite Service (NESS), one of the former names of today's NESDIS. Dave led the NOAA satellite program during this period of tremendous growth in staffing, international cooperation and fiscal responsibility. Upon his retirement, the staffing level had grown from approximately 30 in 1960 to nearly 900 in 1982 and the budget increased to \$39M.

Established the First Cooperative Institute



In 1977 David Johnson initiated the [Cooperative Institute Program](#). On a handshake² with his friend and collaborator, Dr. Verner Suomi, at the University of Wisconsin, Mr. Johnson relocated 6 of his best people from Washington to Madison, WI, to bridge the gap between research and operations. The original NOAA staff members included William Smith (team lead), Christopher Hayden, Hugh Howell, Frederick Nagle, David Small, and Harold Woolf. This was unprecedented. Rather than a drain of federal staff, it was viewed as increased transfer of technology and a future recruitment vehicle for outstanding scientists into the federal sector. The Cooperative Institute for Meteorological Satellite Studies, CIMSS as it is now known, continues to thrive.

The second cooperative institute, CIRA, the Cooperative Institute for Research in the Atmosphere was formed at Colorado State University in 1980. This team was led by James F. W. Purdom and joined by Robert N. Green, Roger Phillips, Raymond M. Zehr, and John F. Weaver.

NOAA now supports 18 cooperative institutes in 42 universities and research institutions in 23 states and the District of Columbia.

International Cooperation and Not Competition – Towards a Global Network

Throughout his federal career, David Johnson advocated for the free exchange of scientific information and personnel. This is particularly noteworthy considering the political environment from the 1950's until the collapse of the Soviet Union in 1991.

In 1972 when David Johnson helped organize the [Coordination Group for Meteorological Satellites](#) (CGMS), the first international body for global satellite cooperation. This group, although informal at the beginning, is now administered by the World Meteorological Organization. It began with representatives from the U.S., the European Space Research Organization (now the European Space Agency), and the Japan Meteorological Agency. Representatives from the Soviet Union (now the Russian Federation), India, and the People's Republic of China joined in 1973, 1978, and 1986. The membership now is 15 national and governmental space agencies. CGMS continues to meet to exchange scientific and technical development on geostationary and polar-orbiting satellites. CGMS continues to serve as a model for international cooperation. Currently, the intergovernmental Group on Earth Observations (GEO) is modeled after CGMS and is developing a global network of observing

² The paperwork for the Memorandum of Understanding followed years afterwards. See American Meteorological Society and University Corporation for Atmospheric Research (UCAR) Tape Recorded Interview Project. [Oral History interview with Verner Suomi](#) - Conducted by Gisela Kutzbach, March 20, April 20, and May 14, 1994. Tape 3 side 1 p. 22.

systems. It has 85 member countries, the European Commission, and 61 international organizations.

In 1974, in his capacity as President of the American Meteorological Society, David Johnson led the first delegation of meteorologists to the People's Republic of China. This event shortly followed President Richard Nixon's visit in 1972, an event that began the normalization of relations between the two countries. Reciprocal visits by Chinese meteorologists to the U.S. soon followed, and exchange agreements of scientific data and personnel continue.



Chinese Delegation visitors with Dave Johnson and Abe Schnapf (TIROS Satellite Project Manager) at the RCA facility in Hightstown, New Jersey in 1975.

For example, on May 8, 1979, a protocol between China and the United States established cooperation in atmospheric science and technology. David Johnson was an integral member of the U.S. delegation during the working group meetings that formulated collaboration in the areas of climate monitoring, modeling, numerical prediction, remote sensing, tropical cyclones, and personnel exchanges³. During 1981, nine Chinese meteorologists visited various parts of NOAA and participated in scientific research projects utilizing meteorological satellite data.

David Johnson actively participated in many other global cooperative programs including, World Weather Watch, the Global Weather Experiment – Global Atmospheric Research Program (GARP) and GATE⁴ with Dr. Richard Hallgren. Today's Initial Joint Polar-Orbiting

³ [NOAA News Vol. 5, no. 21, p. 1 and 4.](#)

⁴ GARP Atlantic Tropical Experiment

Operational Satellite System (IJPS) with NOAA and EUMETSAT⁵, COSPAS-SARSAT⁶, the Global Earth Observation System of Systems (GEOSS), the World Climate Programme and many others alliances are the direct result of previous cooperative initiatives.

When the National Earth Satellite Services (NESS), the predecessor to NESDIS, assumed responsibility for LANDSAT in December 1980, today's NESDIS Office of International and Interagency Affairs (OIIA) became a line office. Prior to this time, all agreements were managed from Dave's office. Today, OIIA has thirty five employees that manage over a hundred international agreements.

The "Go To Guy"

During his last years with NOAA, Dave Johnson accepted a number of temporary assignments to resolve immediate problems in staffing and management. For example, he was detailed to the Department of Commerce to manage the LANDSAT program and also served as Acting Director for the National Weather Service. These duties were in addition to his administrative position as Assistant Administrator for Satellites.

Unique Management Style

Mr. Johnson's management style was open and respectful of the individual. Former staff members recall that, if he had a question, he would come directly to that person and not summon him or her to his office.

"The cool thing about Dave was he got up and walked around. When he wanted to talk to you, it was just as likely as he would show up in your office totally unannounced, as it would be that he would call you down to his office. He never used that "rank has its privilege" type of thing. When he wanted to talk to you, he would always do it in what he thought was your comfort zone."

--- Gary Davis, Director, Office of Systems Development

"In 1968 I came to work at Federal Office Building 4 as a young 1st Lieutenant in the Air Force liaison office to the National Environmental Satellite Services (NESS, now called NESDIS)...It was definitely interesting to see the dynamics of the various people Dave put together --- their intelligence, their integrity, and so forth. This was all in Building

⁵ The European Organization for the Exploitation of Meteorological Satellites was founded in 1986.

⁶ COSPAS-SARSAT is an international satellite-based search and rescue (SAR) alert detection system established by Canada, France, the U.S., and Russia.

FB4 in Suitland, MD. It was like a big family. It was interesting to see how Dave and his staff worked. They knew they were part of something bigger than themselves. You could see this at the staff meetings.

I can remember that Dave Johnson always had an “open door” and I could drop in anytime. Alda Payne, his secretary, would pop her head in and announce me, and I would come in and sit down. I was looking at satellite imagery trying to identify severe storms, and I enjoyed our conversations. I remember him telling me once that while Bill Smith was an optimist, I was an optimist's optimist.”

--- *Dr. James F. W. Purdom, former Senior Research Scientist at the Cooperative Institute for Research in the Atmosphere*

Dave's method of hiring was also unique. He asked you why you wanted to come to work and why you thought this job would be enticing, and then he just let you talk.

David Johnson wrote⁷ about his management style as:

A. My guiding principle is that organization structure should facilitate people in their working relationships. The structure should reflect the working needs, strengths and weakness of the people employed. If there are personnel or personality problems, it may be desirable to change the organization structure. If people are forced to work within a rigid structure that doesn't reflect their talents and limitations, the results can be less than satisfactory to the work of the organization.

B. The rule of avoid a “double barrier” at one place should be followed: the organizational barrier and the geographic barrier. Communication among people, especially across organizational and geographic barriers, is very important and very difficult.

In his handwriting ----

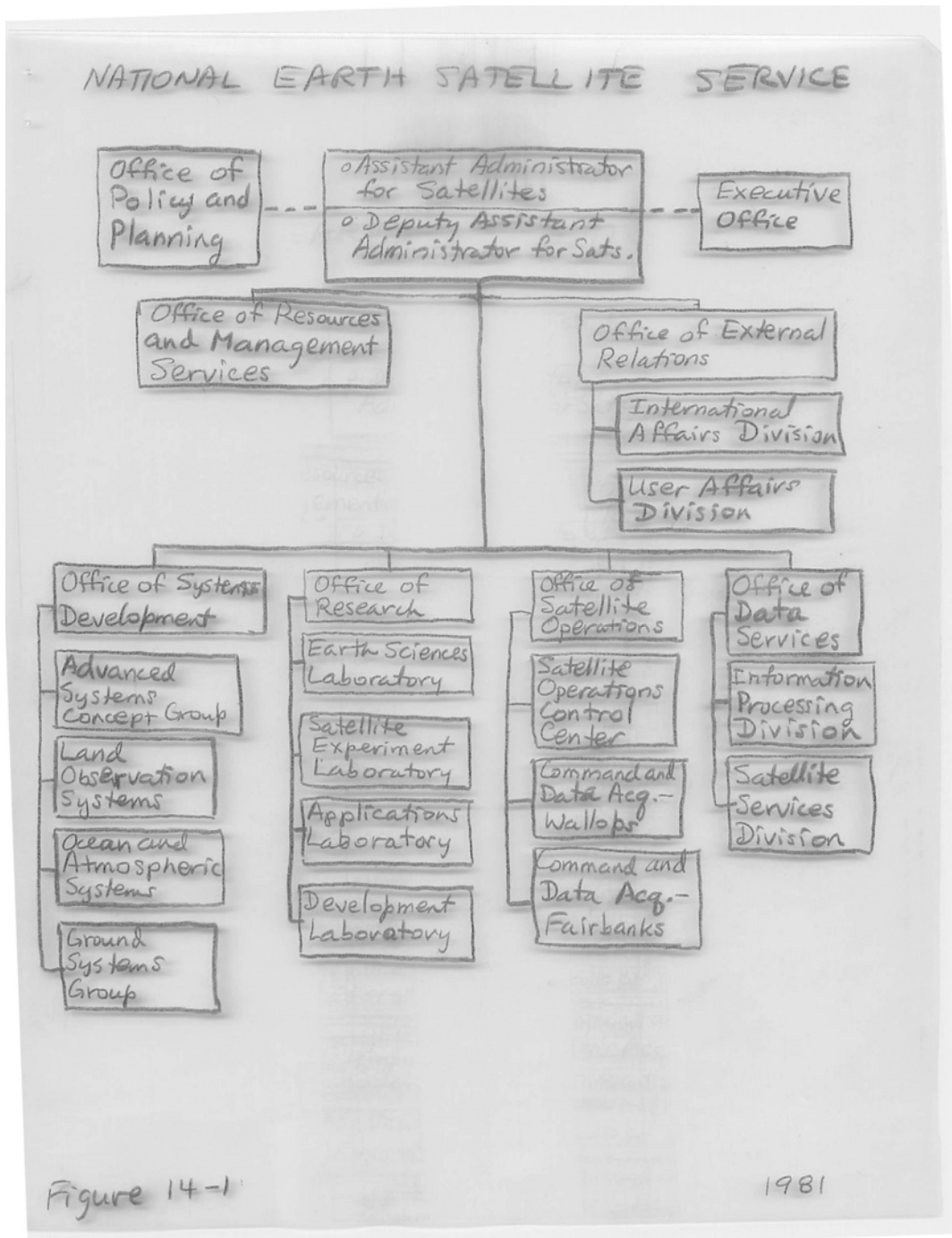
⁷ Johnson, David Simonds (1924-2004). [China Lecture 14](#), Oct. 31, 1983, p. 2

II. NES and NESDIS ORGANIZATIONS

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It is interesting to note that he continued to present his management style even after his retirement. The preceding notes were given during a series of lectures at the State Meteorological Administration, Beijing, People's Republic of China, in 1983.

David Johnson's vision for NESDIS in 1981 closely resembles today's organization.



David Johnson also listened to his staff and thought “outside the box”.

“The one thing I remember about Dave Johnson is that he was a transformative person, in other words, he was an individual who was interested in new things, and trying new

things, developing new things. And he left the government with wonderful accomplishments. He left the government with accomplishments in the space business especially. And, in fact, he was the person who really transformed the science of meteorology, and the practice of weather forecasting. And he transformed it by using the weather satellite, because it gave you a view of the world and its weather like we never had before. It was a picture, and we grew used to it over the years, and we couldn't get by without it now."

--- *Dr. Robert M. White, former Director of ESSA and first NOAA Administrator*

Post-Federal Employment – Consultant

In 1982, David Johnson retired from federal service. He enjoyed sailing his 43-foot ketch *Eole* and continued his hobby as a wine connoisseur. However, his expertise in satellite meteorology and remote sensing continued to be in requested by NOAA and other organizations. In March 1983, he testified⁸ on behalf of the NOAA budget before the Senate Committee on Commerce, Science, and Transportation. He became a Consultant to the Secretary General of the World Meteorological Organization and Special Assistant to the President of UCAR, University Corporation of America during which he wrote several definitive reports on satellite systems, capabilities and data communications. He is also listed as the President, Damar International, Inc., Annapolis, MD consulting in meteorology, remote sensing, and technical management from 1984 - 1986.

For ten years from 1989 to 1999, David Johnson was associated by the National Research Council, the operating arm of the National Academy of Sciences. He began as a staff officer for the Committee on Space Shuttle Criticality Review and Hazard Analysis Audit. In 1994 at the age of 70, retired again and served as a consultant-volunteer for several panels on the Modernization of the National Weather Service Modernization Committee.

"I would have to say how skillfully Dave was able to bring his expertise to bear... to help guide the activities of this advisory group to be ultimately the most helpful to NOAA and the National Weather Service.

Dave pulled together on the committee, really, stars of the atmospheric community that were willing to give their time and attention to the challenges that we had in the

⁸ Johnson, David S. [Statements of Dr.\[sic\] David Johnson, University Corporation for Atmospheric Research, and Dr. Verner Suomi, Professor of Meteorology, University of Wisconsin. Hearings before the Committee on Commerce, Science and Transportation United States Senate.](#) 98th, 1st session. NOAA Authorization (Y4.C 73/7: S. HRG. 98-78), March 14, 1983, p. 250-256.

Weather Service... I am confident that the modernization would not have gone as well, if that Committee had not acted as effectively as it did. ”

--- *Mary M. Glacken, NOAA Deputy Under Secretary for Operations*

Alzheimer’s Disease

In 1998, his Administrative Assistant and Study Associate, Mercedes Ilagan, noticed a change. Dave said that he could not keep up with the committee members and she would try to write things down for him. The study ended in 1999.

On Dec. 17, 2004, Dave Johnson passed away from complications of Alzheimer’s disease. It was difficult for his friends and NOAA colleagues to watch his brilliant mind deteriorate. “I would try to call him either once a week or once every two weeks until, finally, we could not have a conversation. He was gone,” recalls Dr. Richard Hallgren, former Director of the National Weather Service.

“It was hard to visualize a world in which there was no Dave Johnson, because no matter where you were in meteorology, you always were turning to Dave Johnson for help and assistance in the use of space for meteorology,” states Dr. Robert M. White, former Director of ESSA and first NOAA Administrator.

Selfless Legacy – David Johnson Scholarship and David Johnson Award

David Johnson made arrangements with the American Meteorological Society and endowed a scholarship to “assist outstanding students pursuing undergraduate degree in the atmospheric, oceanic, and hydrologic sciences.” With additional memorial donations from his colleagues, the scholarship continues and is awarded annually during the AMS Annual Conference.

In addition, NESDIS also created the NOAA David Johnson Award⁹ for Outstanding Innovative Use of Earth Observation Satellite Data. It is presented annually by the National Space Club in his honor. Recipients must be a United States citizen, national, or permanent resident not more than 40 years of age.

⁹ <http://www.nesdis.noaa.gov/pdf/10DJaward-web.pdf>

The foundations of NESDIS as an innovative organization and world leader in satellite observations, data, and analysis were firmly established by David Johnson. Today's NESDIS is a testament to his vision and leadership.

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