

Interview with Dr. Elbert W. "Joe" Friday, Professor Emeritus at University of Oklahoma, Oklahoma City, and former NOAA Assistant Administrator for Weather Services.

Transcriber: Doria B. Grimes, Senior Analyst, Riverside Technology, Inc.

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**Friday:** My name is Elbert W. "Joe" Friday. I am a retired Assistant Administrator of NOAA for Weather Services and for Research, and a retired Professor Emeritus at the University of Oklahoma.

I was to go on a trip with Dave in the 1995-96 timeframe to China. The Chinese, of course, worked with Dave quite a bit over the years in their own satellite program, and our technology exchange program with them. And Dave was always very supportive, and they appreciated that help very much. We were supposed to go over together, because I was involved at that time in technology bilateral programs. Dave was beginning to have problems with his memory at that time. Unfortunately, I got sick and could not make it, but Dave did go and did enjoy it. I think that was probably the last trip that he made, at least, overseas in which he thoroughly enjoyed himself, and really had all of his faculties at one time. But he went down fairly fast toward the end.

**Grimes:** He passed in 2004. So it was a nine year decline?

**Friday:** It was about a nine year decline. He was starting to have a few problems – nothing significant. He was still able to function quite well at that time. He also recognized that there were problems.

Then, in 2000, we had the 40<sup>th</sup> anniversary of the first launch of the TIROS satellite. That was a big affair that was held over in the Smithsonian Air and Space Museum. At that time, he was honored, of course, for his participation in that activity. And at that time he was beginning to be very impaired. He still recognized people, but he was having more and more difficulties.

**Grimes:** Then the AA's from NESDIS came in 2002. He was kept seated then and really did not speak. Apparently, the other AA's went through the history of NESDIS and the satellite program. It was almost in honor of Dave. It was really quite touching.<sup>1</sup>

**Grimes:** So, when did you first meet Dave?

**Friday:** I met Dave when I was actually in the Pentagon. My last assignment in my Air Force career was in the Pentagon. I came there in 1978 - basically, as the Secretary of Defense's representative in the science and technology community and in the environmental sciences. I was the Director of Environmental and Life Sciences at the Pentagon. As part of that my responsibility was overlooking all of the DoD activities in meteorology, oceanography and environmental sciences. So I was reviewing and monitoring those, and as a result of that I was on various interagency working committees. And I had an opportunity to meet Dave at that time. I had met him earlier when I was in the Air Force at various times. We were at the same meetings and introduced ourselves and I never really had a chance to know him. I got a chance to know him in the 1978 timeframe, when we were got working fairly closely in

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<sup>1</sup> Link to transcript of 2002 Reunion of former NESDIS Assistant Administrators.

interagency programs. I was the DoD representative at those types of meetings which Dave and others attended.

**Grimes:** So this was after NOAA was created and it was NESDIS at the time.

**Friday:** It was NESS<sup>2</sup> at the time. It became NESDIS in 1982 when NOAA was re-organized under Tony Calio<sup>3</sup> and John Byrne<sup>4</sup>. But it was NESS at the time. EDIS<sup>5</sup> was still a separate organization when I first came on board.

I came to Washington, D.C., in 1978, and I came to NOAA as Deputy Director of the National Weather Service in 1981. Then I worked very, very closely with Dave.

But I knew about Dave even earlier than that. I knew the impact that he had had in NOAA in the Weather Service. And I think it is very important, if it hasn't been covered already, the importance that Dave had including bringing meteorological satellites and their operational uses in the National Weather Service.

Because at the time that the satellites were first launched in 1960, there was not a big interest in the Weather Bureau in actually using the satellite data. It was considered somewhat of a toy — something that might not be of very much practical importance. In that timeframe, shortly after the satellites were launched, the National Weather Service (the Weather Bureau at the time) began a push to introduce numerical weather prediction, computer modeling of the forecast process, in their operations. And it was spending a great deal of its energy and effort in the use of computer models in the forecasting process, and in the development of better computer models. As a result of that, they didn't want to be bothered by this new toy that was coming along called TIROS.

**Grimes:** They?

**Friday:** The Weather Bureau itself -- the hierarchy of the Weather Bureau -- the Chief of the Weather Bureau at that time, George Cressman<sup>6</sup>. George was a computer modeler. That was his life. That was what he wanted.

This was when ESSA was formed, the predecessor of NOAA. And in the formation of ESSA, Bob White, who had been the Chief of the Weather Bureau before George Cressman, realized that the future of weather satellites had great potential, but that George and people in senior management of the Weather Bureau at that time weren't very interested in it.

Now the Satellite Applications Branch started out in the Weather Bureau.

When ESSA was formed, Bob White actually pulled it out, and created NESS (National Earth Satellite Service), and put Dave Johnson in charge of it.

Dave Johnson came on board in the Weather Bureau<sup>7</sup>. It was ESSA at the time.

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<sup>2</sup> NESS – NOAA National Earth Satellite Service

<sup>3</sup> Anthony (Tony) J. Calio, Administrator of NOAA, October 1985 – September 1987

<sup>4</sup> John V. Byrne, Administrator of NOAA, July 1981 – October 1984

<sup>5</sup> EDIS – Environmental Data and Information Service

<sup>6</sup> George P. Cressman, Director of the Weather Service from 1965 to 1979

<sup>7</sup> In 1956, David Johnson began his employment in the USWB Meteorological Satellite Activities (MSA) Branch in Suitland, MD.

**Grimes:** So it was through Bob White, and that spun it off.

**Friday:** Under Bob White's leadership as Administrator of ESSA.

And David quickly realized that if he was going to get satellite information being used by the operational forecaster, he had to put together a system that includes people. So he generated satellite field service stations, (I think the final number was in the order of 5 or 6 locations) around the country which would be staffed with very highly trained people in the use of the satellite data and the extraction of meteorological information from the satellite data. Those early satellite images were not very good. They were not very clear, not as clear high resolution like we have now by any means. They were shot at odd angles. The satellite was spinning. It would look at part of the earth. The next picture would be taken at another part of the earth at a different angle. So it took quite a bit of effort to extract real weather information from those early images. But with this trained cadre of people in the field service stations, they would take every day and look at the satellite data that came overhead, and extract from that information that the weather forecaster out at his or her job could actually use in preparation of their forecasts. They would graphically interpret what was going on, and they would send out messages each day from these service stations, identifying what the satellites received meteorologically, the locations of the fronts, the location of the major storm centers, any unique patterns that they received from the satellite. And the forecasters really didn't pay a whole lot of attention at first, but they began to see some use of this. So Dave Johnson really... You could really say, and I said this on stage a couple of times when I talked about Dave. **He drug the Weather Service kicking and screaming into the satellite age**, because they didn't really want to go. He made sure that they understood what the satellites saw, and literally force-fed them initially.

**Grimes:** These field services stations were different from the cooperative institutes?

**Friday:** They were operational units inside NESS and then later NESDIS. There was one in Washington, DC, San Francisco, and a couple of three others around the country. This was before the cooperative institutes.

The cooperatives institutes were designed to link the research community of satellites with operators. The Wisconsin connection has been proactive as its champion, but not only Wisconsin, there was Colorado State that relied heavily on satellites and other places across the country. Between Wisconsin and Colorado State, a tremendous amount of progress was made on the use of satellite data in weather forecasting.

Back to the field service stations ---

The field service stations, then as I indicated, contained the original expertise in interpreting satellite data for operational use. Those information sets that the analysts formed were used then by the NWS forecasters in preparation for their forecasts, and it got to where they really depended on them. When we modernized the Weather Service in the early 90's, we actually, at that time, trained literally every one of our forecasters in proper interpretation of satellite data, and those field services stations then were dissolved because they were no longer needed as a tool for interpreting satellite data. By that time, every forecaster in the Weather Service was qualified to interpret satellite data in

each of their forecast offices. So we cut out the middle man at that time and started using operational staff without having to have the field service stations.

**Grimes:** Dave was instrumental in the Weather Bureau Modernization. Can you address that?

**Friday:** Yes. When we started the process of modernizing the National Weather Service, we recognized that, at the time, that it was no longer possible to have an expert in the satellites all by themselves, and an expert in radar interpretation all by themselves. That in the new structure of the National Weather Service, all of the forecasters had to be qualified to use all of the tools available to them, from radar data to satellite data and the like. So the techniques that had been developed for the field service stations under Dave Johnson were then made available to every forecaster through a training program out at Boulder called C-O-M-E-T<sup>8</sup> at UCAR. Then these were used by every forecaster that was in the Weather Service under modernization was trained in interpretation of the main satellite data.

So Dave was really the driving force behind the initial use of satellite data for operational use. So, from the very beginning of the satellite program in which there were just a few people to interpret data to the final infusion of all that into the modernization of the Weather Service, I think we owe a great deal to Dave Johnson.

I can't remember exactly when Dave retired.

**Grimes:** He retired in 1982.

**Friday:** We were really started the modernization fairly actively in the early 80's. His legacy is the biggest contributor of satellite data.

**Grimes:** Then he was a consultant to UCAR and WMO after retirement. So he still remained very active and well-respected.

**Friday:** Yes. He was very active. He went with me and was involved on several international meetings as representatives to WMO about 1988 up to 1996. And he was still involved at that time.

**Grimes:** He also was the key-note speaker for the Dr. Soumi<sup>9</sup> Lecture in 1994, a year before Dr. Suomi passed away in 1995.

Is there anything else?

**Friday:** No. That's really about it. **I want to make sure that it is clearly understood that his leadership in the satellite area literally brought the Weather Service into the satellite era.** It would have happened eventually, but it would have been much later.

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<sup>8</sup> COMET – Cooperative Program for Operational Meteorology, Education and Technology

<sup>9</sup> Johnson, David S. Evolution of the U.S. Meteorological Satellite Program: Some Reminiscences. (1994 Verner E. Suomi Lecture) Boston, MA: Bulletin of the American Meteorological Society, Vol. 75, no. 9, September 1994. Pp. 1705-1708. [link]

**Grimes:** So it was Eisenhower that took it out of DoD and made it civilian..

**Friday:** Right. But all during that time period, it's not classified now, but it was highly classified at the time, the military still had their own weather satellites. But Dave Johnson was heavily involved in assisting and working with the military to make sure that the technology was transferred back and forth between organizations. But even though it was highly classified, Dave was fully aware and fully informed of the military activities. Vern Suomi was also heavily involved with the military activities. Vern made a lot of the DoD instruments in his garage.

I remember Vern. I was a brand new second lieutenant at the time when I first met Vern Suomi. I was working with the Defense Meteorological Satellite Program data at the time. That's before NOAA operations, and I remember meeting Suomi. He was a giant in my eyes at the time. He said, "Son, I'll take you under my arm and I'll teach you everything there is to know about satellites." By golly, he did.

**Grimes:** So you went to Wisconsin for a while?

**Friday:** No. I was assigned at DoD using meteorological satellites, and he was involved with that.

**Grimes:** So you communicated that way.

This very similar to what Bill Smith said about Dave. "There I am this brand new person on the staff, and he takes me to Europe and introduces me to the giants." So Vern was the same way with you in terms of mentoring.

**Friday:** Dave also did a lot of that too. I was a brash young person, and I think Dave tried to explain to me, and helped me truly not only in from a meteorological standpoint in that process.

**Grimes:** Did you come in as Director of the Weather Service?

**Friday:** I came in as the Deputy Director of the Weather Service. I took over as Director of the Weather Service in 1989.

**Grimes:** Regarding your joint trip to China. I have Dave's China lecture notes from 1983. It is all written out and contains his version of the history of satellites. The notes have been scanned, and will be on the website soon. Thanks to Larry and Nancy Heacock who culled his papers down to one box, which I am also scanning and sorting the contents of the box. Gary was also given many of the core materials directly by Dave to archive in the library. I had my staff scan everything before I retired, and these are already on the web.

**Friday:** How is Gary doing physically?

**Grimes:** We are hoping we will see him in the office next week.

Gary was Director of Satellite Operations when I was Director of the Weather Service, and Gary used to always apologize to my first wife when calling in the middle of the night. The phone

was on her side of the bed. Gary would say, "Can you give the phone to Joe? I got to tell him the satellite broke." [laugh]

**Grimes:** Thank you very much. You will see a transcript for your approval before it goes up on the web.

[End]