

Honoring the Heritage of the National Environmental Satellite, Data, and Information Service

Tape 2: Presentations by John McElroy, Tom Pyke, Robert Winokur, Ken Hadeen, Tom Potter

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[Tape 2]

John McElroy: [On telephone]. Let me take you back just a little bit, the NESDIS time before the NESS time, and point out that I think NOAA has one of the most distinguished heritages of any agency. I was privileged to serve in 3 different agencies, the Army, NASA, and NOAA. And there is no doubt in my mind that NOAA, and the organization I inherited from Dave, was far and way the most important and the best of those organizations. Certainly the time I spent with NOAA was brief but, nevertheless, it was immensely satisfying. And I was very pleased as I was given the list of participants from Emily to see so many familiar names there.

The heritage, that I am alluding to, is the one that Fred knows very well and better than I do. It goes back to the International Geophysical Year and Fred's own project MOUSE. (If anyone has not heard of that project, perhaps he could tell you at some point. It is worth going over.) Within the International Geophysical Year, we had not only the seeds of the satellite activities, that came out of a dinner which Fred actually attended in Silver Spring, but also the World Data Centers came out of that activity. Both the satellite and World Data Centers efforts have continued under the aegis of NOAA, and I think that is immensely important.

In my own case, I came up through the Army system, and my path crossed many contributors to NOAA as I worked my way up through Ft. Bliss and White Sands Missile Range, which was then the White Sands Proving Grounds. [And some day when you want something new to talk about over drinks, I can tell you about Launch Complex 33,...Red Canyon Range, and other war stories.]

The heritage of NOAA is deep. It is very important and I think it leads directly into the future. Fred mentioned the climate observations. It is very clear to me that climate observations are going to be a vital and permanent part of the NOAA's responsibility, perhaps in concert with other agencies or other countries. Nevertheless, NOAA will play a vital role in that process. Respectable sound scientific observations are the "sine quo non" of climate understanding, and we simply have to have that. I don't know how you are going to get the funding to do all the things that will be required of you, but Greg will figure out something I am sure.

The second ingredient for the future and again, possibly a multi-agency or multi-country effort, is the issue of oceanography. I saw Stan Wilson's name on the list here. I hope he is there. But systematic bathetic observations on an operational footing simply have to be another near term step. Along in that area we have done some extremely exciting work. But it has to be done routinely, day in and day out, in a way it has not been feasible up until now. So I think, beyond climate, the next step I

would see is operational oceanography in a much broader scale and operational scale than we have seen so far.

The third area that I would see in the future is space weather. [Greg, you will be getting a copy of a report that Lou Lanzerotti just completed. That's the new space physics decadal survey, a part of which is space weather.] It is clear that the steps you have taken already, to do x-ray imaging of the sun are important ones, but operational space weather sensing is going to be something which is going to be another card in the NOAA deck. Certainly it is going to take you out into new places in the universe from NOAA's perspective. And I can see operational satellites at the libration points, for example, as being the extension of NOAA out beyond the geostationary orbit, but in an operational use and not simply in an exploratory sense that NASA does.

So for my perspective at least, I for a brief period of time inherited a superb crew of people. The best people I ever worked with and built upon a heritage which I am very proud to have shared a small part of. And I see a future that is absolutely magnificent. The political environment will always be difficult. Certainly when I look back at the things I don't like to recall, politics was never fun. With things on the science side and now on the operations side, perhaps we can tolerate the politics.

That's what I would say.

G. Withee: John, thank you very much for your remarks. You couldn't see the head nods with some of the points you made. When you got to oceans, the group next to Stan and Marie Colton were certainly nodding their heads about the operational oceanographic portion of our lives and that future. Please stay on the phone. We have a room set up here. We'll go around the table.

Next is one of the three bosses of my own. Diana, you can say you were my boss in charge as the Deputy Under-Secretary of NOAA. And then as my life as Deputy AA, she played a major role in that. Tom Pyke was my boss for a number of years, and then Bob Winokur. So for me we are getting into territory I remember.

T. Pyke: First, I want to honor all of the folks who preceded me, creating and leading personnel at NESDIS. Everyone, especially Dave, for the guts that he gave to the entire program, and the way he managed to get the public's attention and get the attention, even of the Weather Service which, I think, is well-intentioned now and a true partner on the weather side of the equation. And also honor my successors, Bob and Greg. The tradition has been carried on well. One of the things I am most pleased to see now and going into the future is that the entire satellite part of NOAA has truly been declared to be a "Weather and Climate" observations program. The instruments are being designed to support both weather and climate observations. So we don't have to go back to try to retrofit and explain differences in instruments on different spacecraft, work with un-calibrated instruments and so on. It is an integral part of the NOAA mission and the NESDIS mission, and it is now being recognized that way. I think that is absolutely wonderful and is important long term to our society to do that.

When I came to NOAA and into NESDIS in 1986, Anthony Calio was the NOAA Administrator. He recognized that these satellites produce data and information and he also, of course, had the very important Data Centers side of NESDIS. He also recognized the growing importance of information technology in NOAA's future. So I was the IT person, although I am a double "E" as well as a computer scientist. I came from NIST. One of the first things I had to do coming into NESDIS was learn

how to spell "satellite". Although I had some experience in the past as the founder of the Radio Amateur Satellite Corporation. This was a whole new world and a very important one. I had some experience in data management which needs a lot of attention even today.

It is interesting in terms of connections with people around this room. I mentioned one time in the past to Fred Singer. When I was a junior in high school I led a project to measure high energy cosmic rays which he had created with the University of Maryland Physics Department to engage students in high schools across the country in making measurements in such a way that when we put the data together you get coincidences of measurements that indicate truly high energy cosmic rays. So it is interesting how things come around over the years, and how the connections work over a long period of time. Some of the ideas from that have been carried forth with me and were a key part in the creation of the Globe Program which I will mention later.

In terms of satellites, everything we're doing with them is for an operational purpose. I frequently use the term "fragile technology". These are very hard things to design, the instruments, the spacecraft, and the probability associated with launch. It is hard to repair the darn thing once you get them up there. They do start degrading in various ways from the beginning. It is not an easy job to maintain a continuing operational mission using fragile technology. I since learned that the fragile technology thought applies to other things including the internet --- which gets me to the data center part and to the data distribution part. NESDIS, in addition to the satellite meteorology feather in its cap, should be very proud of what it has done using the Internet and other distribution mechanisms, like the CD-ROM's that were mentioned earlier, to become one of the world's most prominent distributors of data and information in the world. We only need to put the environmental qualifier on it, because NOAA and NESDIS are really, in a very practical sense, one of the very largest in terms of volume and in terms of the real time aspects of the data summation. We must continually take advantage of new technology, and to get the data out to the folks who need it and to research community and to operations.

The data side of NOAA, NESDIS in particular, has suffered because of the glory of satellites and the fascination that we all have with the technology and what these things can do for us. Believe you me, it is just as exciting and we need to work ever so harder in the future so we have adequate resources to manage the data from our satellites, and from NEXRAD radars, and from the multitude of in situ sources, that continue to be our authoritative in situ source of data . As much as I have kiddingly said to some folks, we were talking about ground truth and the satellites being the space truth from the ground truth. The ground truth is truly something that is very special, and can give a better understanding of everything from using and utilizing that ground truth information.

The trials and tribulations that we all went through have been difficult in each of our watches. From a technological standpoint, setting up a NESDIS, both the satellite and the data side, are hard enough. When you combine that with "budgeteers" and politicians, it makes the mission almost impossible. Of course, there is always the nickel and "dime-ing" that goes with this. It is always going to be with us. No matter what the budgetary environment, it is the nature of the beast. Everyone has to fight really hard of what they believe in. I think what happened here is to be opportunistic, taking advantage of the opportunities to partner with DoD, taking advantage to put together a more robust program with an extended cadre of observations. Weather and climate needs are an example of doing

just that. Of course, partnering internationally continues to be important and is always on the satellite side management of the data.

I like to thank everyone here and everyone not here who has been during my time. I still consider myself part of the NESDIS family. It is something very special. And special family within another special family is NOAA. I had fifteen years overall in NOAA, and six years in NESDIS before I joined the great Department of Commerce in the sky. I felt a very special sense of accomplishment and pride in what everyone is doing and feeling that it is very important to the world.

Nobody has mentioned LANDSAT by the way. Everyone who was involved with LANDSAT during the time when NOAA and NESDIS had the responsibility should be very proud of the fact that in spite of major obstacles, NESDIS managed to keep the LANDSAT system alive. It kept the data flowing, not the least of which was using of the present LANDSAT data by students in the Globe Program which I headed for several years. Global learning and the observations to benefit the environment using AVHRR has been strongly supported by Jim Purdon and CIRA has been a key player, as has NCDC and NGDC and FSL within NOAA. It has been a wonderful experience.

From an IT standpoint, having done High Performance Computing and communications, I know that NESDIS is really in the forefront in using information technology to process data, to produce products and to distribute the products in innovative ways. I look forward to continuing to support from my new position in Commerce as CIO and through all my friends in NOAA – including NESDIS.

[Clapping]

R. Winokur: Thank you, Greg. I guess one of the advantages or disadvantages of going last is that there is not much left to be said that hasn't been said. I note with a little irony that this is being videotaped. And I know those people who know me when I was here at NESDIS, I used to go out of my way and tell Pat Viets¹, for whom I had the utmost respect, is to keep the press away from me. Keep the video away from me. So now it has caught up with me. So I'll live with it.

Listening to all the comments as we went around the room, I actually am picking up on Tom's point, it is amazing how much my life is intertwined going back many, many years with many people in this room, and your perceptions of the past.

Most recently, Tom just mentioned LANDSAT. I work for a private company² whose a large part of its business is very, very dependent on LANDSAT. So we appreciate NESDIS keeping LANDSAT alive and well. Because I can attest from a private sector perspective that it has been a very good thing, at least, for us and my company.

Listening to Sig Fritz's comments about the Navy, those who know me when I came to NOAA, I had worked for 32 years as a civilian for the Navy. So I totally associate with your story.

Stan Wilson and I go back lots of years actually to our Navy days. Stan was in Office of Naval Research and I was in the Naval Oceanographic Office. We worked together in the same building call the Maury Center doing Navy kinds of things. We worked together in a program that didn't work

¹ Patrica Viets was the Public Information Officer for NESDIS.

² Earth Satellite Corporation

out, I guess, the way we hoped. Something called “NROSS³”. I guess in the late 1980’s. But NROSS is going to happen now. I think it’s called NPOESS and it is called POESS. In the end, some 15 years later, we’ll get NROS in. It will happen.

I must tell one anecdotal story. When I first came to NESDIS in 1993, a few people on the staff came up to me and asked, “Whatever possessed you to come here?” I spent 32 years working for the Navy. I’m not sure I had a good answer other than the pat one of challenge, opportunity and the like. Certainly I can look back at my 6 years at NESDIS and I can say it is easy to answer why I came here. It was the challenge. It was the people. It was the opportunity. It was the fact that this is very, very important organization. I look back at those six years and not for a minute do I have any regrets. It was great. Except every so often I had to hold the phone a couple of feet away from my ear when I got a call from OMB. I wasn’t totally prepared to deal with some of the yelling that went on. But none the less, I look back with clearly not a moment of regret of having come to NESDIS. It was the right thing for me to do. It was the right place to be, certainly for me at that point of my career but for everybody I worked with. As has been said by a number of people before me, NESDIS is about people. It is not only about technology. It’s about the professionalism and the dedication of the people in this organization. I know about that having spent 32 years in and around the Pentagon, worked with the military and flag officers and people who certainly are willing to give their lives in what they do in defending the U.S.

I think people here at NOAA NESDIS have given their professional careers and lives operating these satellites. Creating something that is seen every day on TV, and every day the American public takes it for granted. It is there and you take it for granted. This is a tough thing for the people in the organization when you have a Congressman (I won’t mention his name, but he didn’t get re-elected) told Jim Baker⁴, “Why do we need the satellites in NOAA? We have the Weather Channel.” Clearly we do have the Weather Channel. The Weather Channel exists because of NOAA and NESDIS. It would not exist without this organization. So maybe that was the answer to the Congressman’s question. There is no Weather Channel without NESDIS, and there is no NESDIS without the people and the dedication and the motivation on part of the people.

My roots also in the Navy go back to some of the Data Center activity. Lee Dantzler⁵ was Head of NODC and we worked together many, many years ago. I was in the Naval Oceanographic Office when NODC was created back in the early 1960’s. So I met Tommy Austin at that point. Obviously, I learned all about the necessity for creating Data Centers. I saw NODC transferred at that time from the Navy Yard to NOAA and ultimately to NESDIS. Likewise in my private sector world, we have a product that we built on a set of data that came from NCDC. It’s a very, very successful product and, again, it shows the outreach and importance of not only satellites, but the Data Centers also, to the private sector. We have a very successful product line that came out of a set of data that was preserved and maintained at NCDC.

I guess I didn’t realize until I sat in this room and listened to all the stories, how much of my career, going back to the early 1960’s, intermingle not only with the people here in this room but

³ NROSS – Navy Remote Ocean Sensing System

⁴ Dr. D. James Baker was the NOAA Administrator from May 1993 – January 2001.

⁵ Dr. H. Lee Dantzler was the Director of NODC from 2001 - 2004.

with NESDIS and NOAA. As many you know, I spent about 9 or 10 months as Acting Director of the National Weather Service. So I guess I am unique in the sense that, at least, I have my picture hanging in both places, in both organizations. I used to do this daily trek from building 2 up to building 3, up the hill at lunch time and back down after lunch, so I can maintain what was going on in my vision, what was going on in NESDIS as well as the National Weather Service. It was a very interesting experience for me, one that I'll look back at, I'm sure sometime fondly. But it was great actually. The folks at the Weather Service are as professional as anybody else can be. For me it was a unique opportunity.

I actually did learn how to spell meteorology when I work for the Navy. Stan taught me how to spell "satellites" with NROS, and I spent a lot of time doing ship work.

Guess I'll wind up with another anecdotal story. When I worked for the Office of Naval Research and the Oceanographer for the Navy, we were involved in an oceanographic ship construction program. One thing I learned is I would get an invitation, basically, to come down to Moss Point which is outside Pascagoula, MS. We were going to launch a ship at nine o'clock on Thursday morning, and I would go down on Thursday morning, crack a bottle of champagne, and we launched a ship .

Then, of course, the NESDIS people would come by and say, "We are going to launch a satellite, and maybe we are going to do it at 2 o'clock in the morning at Cape Canaveral. So be there. I'd go down. Ten minutes to 2, they'd say, "We are not going to launch today. So come back in three days."

I did learn that you can definitely launch a ship on schedule. Satellites are a little different. With NOAA-14, it took us 2 weeks out at Vandenberg before we launched that one. So it is much easier to launch a ship. And I have a unique career in my office. I have a picture of a ship launch and a picture of a satellite launch. I am honored and fortunate that I have been involved in both of those.

Again, I have one other story that shows the motivation and dedication of the people in this organization. With GOES-9, if I remember right, we had problems. Gary and his folks and the people at Space Systems and NASA worked really hard and came back and said, "Boy, do we have a solution for you. We are going to fly the satellite upside down and backwards." I said, "Well, maybe we can do it." They did and they saved an asset to this country that saved hundreds of millions of dollars. It was a creative solution.

Another creative solution, I guess that lives on today, is our ability to store on orbit. So now we have two satellites stored on orbit, and it is nice to know that they are there when the American people will need them for their use.

Finally, I guess for me, it was one thing I have to will look back fondly since I did come out of the Pentagon. It was working on NPOESS. NPOESS was unique for NOAA and unique for NESDIS. It was an opportunity for this organization to do something that had failed over a 22 year time period and 7 previous attempts. Guess I am told that they may award a contract at the end of the month?

G. Withee: This week.

R. Winokur: So I can look back to those days in 1993 and for the polar orbiting community. NPOESS is it for the climate community, the meteorological community, and the operational oceanographic community. It is the future to the year 2018 or 2022, depending on when they launch and how long the satellites last. I think that is one thing I will certainly look back at, other than 5 very successful launches on my watch, and to all the people in this room and elsewhere in this organization that enabled me to

do my job and to become one of the family. This is an organization that is not only about technology, it is about people. People who make that technology work. You all have a lot to be proud of.

If you go forward and think twenty years from now, some of you will be sitting up here and reminiscence about this organization as well. Thank you.

[Clapping]

D. Josephson: I'll just add one thing. It struck me that LANDSAT and NPOESS were mentioned. It was a real compliment to NESDIS because it recognized the operational skills of the organization that people here know how to do an operational satellite system every day, do some data, etc. Because it was not a foregone conclusion that NESDIS would end up actually operating NPOESS. That was a big battle at the time, but it became so clear that NESDIS could operate the satellites so much more efficiently and better than the military. It was a national decision to do it here. It is truly a compliment.

G. Withee: Tom Potter who comes from EDIS, the Environmental, Data, and Information Service portion of NESDIS. He was here before the creation of NESDIS and will be with us and will speak to us at noon. I'd like to invite Ken Hadeen to speak for 5 minutes or so before Dr. Potter.

K. Hadeen: First of all, Greg, I want to thank you for putting this together. One of the things that came to me, when I was at the National Climatic Data Center, was the continuity between the past, the present, and the future. That was one of the things that I always tried to push: what happened in the past, what we are doing now, and where we should be heading in the future.

When you talk about satellite data, the first half of my federal career was in receiving input of satellite data because I was in the operational arena. My first satellite photos were in 1962 in Germany. They had a little spiral antenna and the data came in. They were in black and white and you could almost tell where the continents were. But then over the years it had improved so much. Then I was in numerical modeling the first part of my career, and we tried to use satellite data in our modeling activity. We used some of the first soundings. [Dave Johnson was head of NESS at the time.] Some of it worked and some of it didn't. So I had sort of a long career. Then when I came to NESDIS, I then inherited the Satellite Services Division which was the archive of the satellite data. Again, when you talk about archive, if you are going to preserve that data, it is a lot of very mundane hard work to get it in the right format, to get data off big terabytes of memory, off the big reels of tape that were 2 inches wide. And if you were trying to save that kind of data, it was really difficult.

The other thing, I was glad to hear was so much emphasis on satellite data for climate studies. And for a long time, we kept saying the secondary uses of satellite data and other data are as important, and, maybe more important, than the operational, which is very hard to sell to somebody who is only interested in the operational and the research side. But down at NCDC, I found we found that many, many uses of satellite data, and not only for research but for many uses, like the legal community. My favorite saying was, "We provide data and information to every sector of the economy from the health part to the political. Who is going to pick up people who are going to vote? It is used over and over again.

One thing that Fred and Tom have all talked about is the use of satellite as a mechanism to monitor climate. I was in the operational field of meteorology for some 20 years and I always thought that you just took that data, put it together and averaged it, look at the variabilities and so forth. When I got to NCDC, I found that where the data is taken, the time of the day. All of this became important. Did the satellite actually retrograde a little, when it was taking pictures in the morning for the first half of the orbit and in the afternoon in the second half? The diurnal variation can make quite a bit of difference. As you may recall, some of the earlier studies showed a tremendous warming in the oceans. Probably it was one of the NESDIS scientists that put that report out. But then when we look back and re-analyzed it and found asked, “Was the satellite looking at the same location at the same time of day?” Then you can make comparisons about there is a chance of warming or cooling or whatever. [I have been retired for five years, so I shouldn’t be in such a big stump.] But it is still so important that the final, the last part of the total data management activity, from the beginning study, to developing a new instrument, to the running of it, to the saving of the data. I think that it’s all one continuum. Every part is important, and without one you are losing out.

That’s all I have to say.

G. Withee: Tom, let me just introduce so you know who you are speaking to, not the 50, just the head table. We have Fred Singer, Diana Josephson, David Johnson, Sig Fritz, Bob Winokur and Tom Pyke. I am Greg Withee if you can’t get my voice. We’ve know each other for a long time. We have all spoken. So you are the last one.

T. Potter: I met Dave Johnson when I was in the Air Force. I retired as a flight commander of the Air Weather Service in 1974. That was at the time when it was starting to decrease significantly. It had been at a peak of some 12,000 people, nearly the size of all of NOAA. At the time I retired, it was down to 10,000, consolidating and so forth. We had a lot of interactions with Dave as the Head of NESS at the time with the joint satellite programs and so forth. I was then on the faculty of St. Louis University. They were in the process of cutting out their Graduate School. They had already reduced significantly their Engineering School and were about to do the same with the College of Arts and Science where the Meteorology Department was located. So I left after a couple of years and went to Asheville as the Director of NCDC in Asheville, NC. Unfortunately the Deputy up there, Arnold Hull⁶, had an aneurism. So they asked me to come up temporarily. More unfortunately, he passed away after 3 or 4 months being in the hospital. There I met Tommy Austin who was the Director of EDIS who asked me to come up to fill in for him temporarily. The temporary assignment lasted for several years. We had interactions, of course, with Dave Johnson. Our satellite organization at EDIS was co-located with NESS at the time. So we had significant interactions. So I have known Dave for quite a number of years and, as everyone else there does, have great respect for his capabilities and the way he was running NESS.

I then had an opportunity to go to the WMO as the first Director of the World Climate Program just at the time that NESDIS was being formed and Tom McElroy had been appointed there. The job in Geneva seemed quite interesting to me. So I took that job. There were some interactions, a

⁶ Arnold R. Hull, Environmental Data Service, NOAA.

few with Dave, mostly on his part, when he came over to the WMO and was a consultant for satellite activities. So I maintained in contact with him during the time I was there. I was 5 years in that job and the move to be Director of the World Weather Operations which included the satellite activities, so there was even more opportunity for interactions with Dave.

Before that, though, the main job that I had working directly for Dave [This was before I went to Geneva.] was as the Deputy for an organization that no longer exists. It was called the Oceanic and Atmospheric Services. It was comprised of the Weather Service, the National Ocean Survey, NESS at the time, and EDIS. NESS and EDIS were about the same size in number of people. Of course NESS was in satellite activities and had hundreds of times the budget of EDIS. The Weather Service was about the size as it is now, around 5,000 people. I believe, although I am not certain of this, NOS was 2,000 to 2,500 people. At any rate, this organization was formed up there and comprised 2/3's of NOAA. Halgren⁷ had been the Acting Administrator for the Oceans and Atmospheric Services. He went back to the Weather Service after about 90 days and Dave was appointed as the Acting Administrator for that group of 4 organizations as well as continuing to be the Administrator for NESS. Dave, of course, knew a lot about NESS, but he didn't know as much, it's fair to say, about the Weather Service or NOS or even EDIS. The main problems were in the Weather Service because they were in the process of transitioning into getting the modernization started. Halgren had started that when he was still over at the "Acting" job in the Oceans and Atmospheric Services group.

So I had been there for about 90 days. I tried to advise Dave as much as I could about the key problems and issues that were generated at that time. Mainly the problems were in the Weather Service because they were planning and transitioning into the predecessor to the whole modernization effort. Dave, like all the administrators of the main groups, had to go downtown several times a week and usually there were some issues brought then. My job and the rest of the staff there was to keep him advised so that he didn't get blindsided by some issues that he never heard about. He seemed pleased with that. We also tried not to give him too much of the minutia that would weight him down unnecessarily, and tried to solve the small problems at our level and bring only the big problems. That seemed to work fairly well. He was there about 90 days again and then Tom Owens was named as the more permanent Administrator of Oceans and Atmospheric Services until it was disbanded several years ago.

But in working with Dave, I think you all know him very well. He was always very consistent, and properly so, in getting a clear picture in what the issues were and what the options were, and all the standard things that all of you as managers know about. So we tried to do that and I think it worked out very successfully. His reign as Acting Administrator of Oceans Services was very successful. He made all the right decisions in continuing the activities of the Weather Service. The Ocean Survey always had a number of problems with respect to their oceanographic fleet, the whaling problem with NOAA which are continuing. It will probably never go away. The problems that NESS were the continuing ones at that time and also in preparation for planning for incorporating EDIS into their organization to become NESDIS which as I recall. [Greg will remember the date better than I do.] I left for Geneva in May 1982. So it was sometime in that timeframe.

⁷ Dr. Richard A. Hallgren

G. Withee: It was formed in 1982.

T. Potter: That's about all I have. I have the greatest respect for Dave and all that he has done for the meteorological community, for NESS, NESDIS and NOAA. He served in many "Acting" positions throughout NOAA and was always successful in completing the task. I wish you the very best, Dave, in maintaining your health the best as it can be, enjoying your friends, and especially enjoying this day that was put together by Greg and staff and all of the rest of you, to celebrate your accomplishments over the years.

[Clapping]