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Irwin Abrams Oral History
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Laura Cochrane: This is an interview with Irwin Abrams. It is April 23rd, 1999. We are interviewing at his home in Acton, Massachusetts. I'm Laura Cochrane. We will be discussing his career as a meteorologist. This tape will be deposited at the (Simmons?) College Oral History Archives. We start by having you describe the circumstances that brought you to the field of meteorology.

Irwin Abrams: Well, it was a choice. I was approaching graduation at Washington Square College of New York University. I was in the Air Force Reserve Officers' Training Corps. That would mean that upon graduation, I'd be commissioned as a second lieutenant in the Air Force. The Air Force had given us the opportunity if you had the qualifications, to apply for the Air Force Basic Meteorology Program, which was taught at a number of universities throughout the country. I applied, and I was successful. You needed physics and calculus, a few other things like that. I was selected, and I was assigned to another division of the very same school. I was going to Washington Square College of New York University. I was then assigned to the School of Engineering in the Bronx of New York. I went there for a year. It was a very good program, very effective. There were about a dozen of us single lieutenants in the program. We met very briefly in – I believe it was early August of that year, in Plattsburgh, New York. We were welcomed by the deputy commander of air weather service, and he gave us an idea of what our careers would be like. At NYU, they gave us an advanced program that was taught by their meteorology faculty, that was a combination of undergraduate and graduate courses that would equip us to be what are known as weather officers. In general, as forecasters, that would be your main job. The faculty was led by (Bernard Horowitz?), who was even at that time, internationally known. There were a number of young professors on the faculty, Julius London and (Jerry Blackadar?), both of whom have gone on to very successful careers. They're now pretty much retired. But Dr. Blackadar still works as an editor of Weatherwise, which is a publication for the general public. My favorite, most valuable instructor I had, however, was Jerome Spar, who taught Practical Meteorology. He taught us how to operate a weather station. He gave me the one piece of advice that really shaped the early part of my career, which was "If you ever really want to know about the weather in a locality, speak to a farmer or a seaman." My first assignment was in the Azores, which is a group of islands 800 miles due west of Lisbon, Portugal in the Atlantic Ocean. I discovered that one of our observers, a Portuguese native, his family had farmed the island for four hundred years. I connected up these facts. What I chose to do was – before I put out a forecast – I'd ask this individual what he thought was going to happen. Then I'd go to my weather maps and try and figure out why that would happen. I made some very successful forecasts based on that, and I learned an awful lot of meteorology from that. The Azores at that time, which was 1955, the location was critical to the transports were flying between the United States and Europe. The end of the assignment there, that was the Berlin Blockade. So, it was very heavily transited. The forecasts were very important, because the aircraft fuel loading would be based on the forecasts. Of course, the flights were over water and you couldn't stop in for refueling. There were no refueling capabilities at that time. An example of how serious that could be was one flight that came out of Bermuda, what was then the largest freight aircraft, a C-124 which was a four-engine transport. A very large – that time – four-engine transport loaded with jet engines and computers at that time. There was a problem with the forecast. There wasn't going to be enough fuel when they recognized it for them to make it to the Azores. They dropped their cargo in the Atlantic Ocean. The 124 was one of the few planes that you could do that with. It had a crane inside the aircraft and a door in the floor.

They moved the jet engines. I guess there weren't computers, it was jet engines. It was a whole load of jet engines and mail. They saved the mail, but they dropped – I don't know how many jet engines into the Atlantic Ocean in order to make it to lodges. So, it was a very exciting time. One of my first forecasts there was one that actually changed my attitude towards my work. I was working a midnight shift, and an officer from the rescue group came. He was actually a flight officer. He was from the Royal Canadian Air Force. He was an exchange officer, but brand new to the work. He explained to me in very careful detail that there was a seaman on board a freighter within helicopter range. He had suffered a hemorrhage ulcer. What rescue wanted to do was fly out in the helicopters and drop blood for a transfusion to this man. The wind conditions at the time – the winds were too strong and too gusty for a helicopter to take off. These were old – at that time, our latest helicopters. They carried a crew of six men. They were big helicopters at the time, and that's what they wanted to do. He should not have told me it was a matter of life and death. That doesn't help the science. But they wouldn't do it unless I forecast that the winds would drop when they return. Because to take off, they could take off in the wind shadow of a hangar, which was what they were going to do. Very risky, but they were going to do it, but they had to be able to land in the open. I looked at the maps, and I couldn't make that forecast. I had to tell him the winds would not drop. He said, "Well, this guy's going to die." I said, "Well, what about the crew?" They didn't go and I came off shift and had to go to sleep. When I woke up, I could hear the clattering sounds of our ventilators telling me that the winds were still up. The guy did die. But at least the forecast worked, and that made quite an impression on the young lieutenant.

LC: What kind of forecasting techniques were you using at that time at the Azores?

IA: What was very important was a technique developed by the Navy called single station forecasting, which used the local observations. We did release weather balloons, radiosonde, actually, which we tracked, which would give us the winds and temperatures aloft. There was one other station with that capability, San Miguel – not San Miguel. That may come to be one of the other islands which had a commercial airport on it. Those were the two reports we had out in the middle of the ocean. We did have weather ships. But our communications were kind of shaky. They were radio communications. At times, we would not get any other information but ourselves. Based on what we could detect above the island, we had to make forecasts. The weather satellites, of course, had not been invented or not been built. Computers were very primitive at the time. It was only at the end of my tour that we finally started receiving facsimile. Maps forecasts are computer generated up until that time we were generating our own forecast for the winds from lodges to about six different destinations that the crews would have to fly. It was generally done by something called graphic edition, where you draw the current weather map. Then project what is going to happen to the temperature, and that would affect the density. Through a series of lines of equal density, you would forecast how things would move. It was primitive, but it worked to a large extent,

LC: Going back a little bit to your training at NYU. You told me about some of your professors. I was wondering if you could describe some of the teaching methods that went on there, the labs you took if they had a model weather station or something.

IA: We did. Jerome spar, an instructor, had a fairly simple weather station. It was complete.

The students operate at the weather station once we learned a little about how to do it. We made simple forecasts. We analyzed weather maps. It was very practical experience, very fortunate. Because walking into a weather station and being told to make a forecast without having done this would have been very, very difficult. (Dr. Jerome Blackadar?) – well most of the professors went on to very distinguished careers. Dr. Blackadar went on to become a lead professor at Penn State. Under him, we studied instrumentation and the various eras that could enter into the instruments. For instance, we spent an entire week on the mercury in glass thermometer and all the things that could cause the reading to be incorrect to give us an idea of how you compute that and understand the accuracy of the instruments. Dr. Julius London, who believe moved on to Colorado State and had a distinguished career there, taught us things about the thermal winds, which, again, came in very handy. How the temperature in a layer affected the winds, and that, of course, was very useful in making up rare forecasts. Dr. Horowitz, who headed the department, emphasized the physics of the atmosphere. We had another professor that – Pearson who taught us oceanography and statistics, which also came in handy in the Azores.

LC: Did you specialize in one particular field, or were you becoming a generalist at this point?

IA: The career field might be termed aviation meteorology. In time, I work with both the satellites and radar. But these were not career fields in their own. Throughout my twenty years in the Air Force, the main topic was aviation, meteorology, and operational forecasting.

LC: You said you went on to get an MA at the University of Chicago.

IA: University of Chicago, yes. That was in geophysics. Again, I was fortunate to study under an outstanding scientist who unfortunately just passed away – pardon me, Dr. Ted Fujita, who would come to the United States right after the Second World War and organized what became a severe storm project at the University of Chicago. I really studied Dr Fujita. It was, again, a very – the Air Force only had two students there. Well, I'm sorry. I only had one counterpart with me going through the program. There were other graduate students, but it was a very small group. Dr. Fujita was leading the way in satellites. We did research on the – again, (TIROS 3?) that I'd worked with prior to that. That's another story we can go back to, I guess. We studied the radiation detectors on the satellite. I did my graduate research in the satellite microwave detectors.

LC: Could you describe to me the forecast you did from a satellite?

IA: Oh, yes. In 1961, I volunteered for what was called the Tyros met team. It was a team that's stationed at two readout stations for TIROS 3. One was in Point Mugu, California, and the other was in Wallops Island, Virginia on the Delmarva Peninsula. I was the senior military officer at Wallops Island. At any rate, one night I noticed a condition from the satellite photographs that indicated a line of severe weather would pass through Chicago. I called Chicago with the information. They issued a weather warning for winds over 50 knots it so happens. In their broadcast, they said that this was the first severe weather forecast ever issued on the basis of satellite information. The whole purpose of the TIROS 3 met teams was a demonstration of whether or not satellite meteorology could, at that time, be used in the making of forecasts. So, that was a very important step.

LC: After you were in graduate school in Chicago, at about that time in the late fifties, early sixties.

IA: No. I had a number of assignments before I went to Chicago. I went to Chicago in [19]63. No, [19]62.

LC: So, after the Azores then what was your next assignment?

IA: I went into weather reconnaissance in – at McClellan Air Force Base, California. We flew missions into those areas where there were data blanks so that the weather maps could be better drawn. When I started, we used to fly a couple of tracks, one south and one north, for about eighteen hours over the Pacific Ocean, what we call racetrack patterns. The weather officer on board had to make the forecast for the mission, which could be a problem if you decided the wrong way to go around the tracks. The tracks, of course, were closed. You would get to hear about how we were all late for our dates, et cetera, but it was very interesting. Eventually, the Air Force changed what it was doing, and we would fly out to Hawaiian Islands and fly a couple of missions from there. Then fly up to Fairbanks, Alaska, and fly a mission or two towards the pole, and then fly back on an operation that took about eighteen days for the circuit. As part of my assignment there, I participated in the atomic tests. We talked in bikini, and we flew reconnaissance for the tests, which, again, was very interesting. They actually detonated tests across the lagoon. One of which I found out after I was out of the Air Force was a hydrogen bomb. It was a very impressive blast. We didn't know anything about what – we just knew that we had to go out on the beach. Some of us would be issued dark glasses, and the others would have to sit with their backs to the test. Then when we were told we could turn around, we turned around, and there was the huge mushroom cloud towering over us. We had a number of tests. It was only after they decided we had a right to know how much our exposure was. I found out I'm officially an atomic veteran listed on there so they can follow what happens to us. At that time, we were told that that particular blast was a one megaton blast, and the only thing that was capable of doing that was a hydrogen bomb at the time.

LC: What kinds of forecasting did you have to do for that?

IA: I didn't forecast. I observed the winds aloft. We flew weather reconnaissance, and largely so they could tell which way the clouds were going to move and what lands would be – or islands might be contaminated. I mean, they'd call off tests if any occupied islands were going to be contaminated. It was very interesting, because the very first test that we saw, there was a rain cloud coming towards us, coming towards the beach. As it approached the shoreline, it suddenly took a right turn.

LC: You mentioned to me that you had done sampling of radioactive clouds from Russia and the U.S. Was that during the same time?

IA: Our aircraft were equipped to sample. But actually, the sampling of the Russian tests was from our missions out of the Fairbanks, Alaska. On one of those, we flew just outside what we considered the northern border of Russia, 200 miles out along the ice pack, to sample. Right as

we were turning around on one mission, our scanners saw the exhaust of jets or a jet coming towards us. That was a very scary incident. Right at the same time, the U.S. launched Scorpions, which was a jet heavy, a long range jet fighter. Fortunately, the Russians did not close on us because we were unarmed. We had been broadcasting our position as we moved. I mean, we were giving weather reports. But the sampling mission was classified. But I'm sure the Russians had figured out what we were up to. The missions were later declassified. But I didn't really know much about the details, except I had a pretty good idea what we were doing.

LC: So, this is still while you were stationed at McClellan and you were going up to Alaska, to Fairbanks to do these missions.

IA: Yes.

LC: Can you tell me more about who else – were you the only weather officer as part of this field?

IA: No. I know, we put an entire detachment up there. I mean, we set up. We normally had about three or four aircrafts. They were WB-50s. The B-50 never did see combat. It was the daughter of the B-29. It looked an awful lot like a B-29. You'd have to know quite a bit about aviation to understand the difference. But each mission carried one weather officer and a full crew. Our typical crew with thirteen people included radio operators, a couple of navigators, two pilots, and a drop sound operator. We dropped instrument out of the aircraft with a parachute, and the drop sound operator tracked the report until it hit the ground or the water. It's sort of the reverse of a radiosonde. Of course, it would be very important if you penetrated a hurricane, that's how you'd get the information down to the sea level. Incidentally, I flew three hurricane missions out of McClellan. I didn't know at that time that there were such things as Pacific hurricanes. But when you're east of the dateline, it's a hurricane. We went out after three storms, none of which was truly a hurricane at the time we penetrated it. In a way, I guess I was a lucky talisman. One of them is subsequently so intensified. It was off the coast of Baja California that had damaged the flight that went in six hours later. Popped rivets from the airplane, pretty intense storm. Another storm that I didn't find saved the evacuation of Midway Island. They were intending to evacuate the island. We spent a mission that lasted twenty-one hours at low level to conserve fuel. It was very hot on board the aircraft. I was one terribly disappointed weather officer when we came back, because how could I not find if that one would have actually been a typhoon that was on the other side of the dateline. But six months later, at the officers' club bar, I found out from some Navy officers that that report, the report of no storm, had prevented the evacuation of Midway. Which would have been a very, actually, dangerous operation that the Navy had assumed that in that intense a period of takeoffs, they might lose as many as three airplanes. Somehow they never bothered to tell me the value of that, what I thought was a failed mission.

LC: So, what types of military operations were you supporting with your work at McClellan, with your forecasting?

IA: It wasn't military. It was civilian.

LC: Oh.

IC: Well, it was everybody. I mean, yes, the military used the information. But the weather models that are in use and were in use at that time are very sensitive at the borders of the data fields. Which meant that up near the poles and to the west of the continental United States, the lack of information seriously degraded the models. Our mission was to fill in those holes to see that didn't happen. At one time, as a budget test, they decided to stand down the operations. They stood them down exactly twenty-four hours before what was then the weather bureau – no, I guess it just had become the National Weather Service – complained that they needed the information urgently and they started flying the missions again.

LC: Was that the only other place you worked before when being stationed during Vietnam?

IA: Oh, no.

LC: No.

IA: Vietnam was just about the end of my career, and I was actually stationed in Thailand. I went from McClellan to the University of Chicago, from Chicago to Germany. I was stationed in the forecast center at Kindsbach in a cave, 400 feet down, where we forecast for Germany and France. We were part of NATO. We made terminal forecasts and area weather maps for much of northern Europe from there. We were in a command center for NATO. I mean, it was an operations center. If there were a war, it would have been conducted from there, or parts of the operations would have been conducted from there. At one point I actually had the additional duty of having the combination to the safe where the war orders were kept. The reason they did that is because I had special clearances for other work that we were doing there. I mean, we were making forecasts for behind the Iron Curtain using information that was highly classified.

LC: Was that otherwise would you not have been able to get weather information from that part of the world?

IA: No. The Russians and the Chinese did broadcast weather information. It wasn't always accurate. It was at sometimes intentionally degraded, which we were able to find out.

LC: Can you describe some of the techniques you were using at that time for forecasting? Had they changed?

IA: Well, at that time, the biggest change was we became – and this is the reason I was sent there. We became a ground station for a weather satellite. First, one of the Nimbus satellites, and then the TIROS satellites, TIROS series. Again, the idea was what could we do with the information? We use the information for forecasts. It could be valuable, but we had to figure out how it would be useful. But otherwise, the techniques we used were, at that time, very conventional, using radiosondes throughout Europe and even from Russia. But the techniques were essentially those that you'd use it at any weather station where you track the fronts and the air masses and attempted to predict what they were going to do.

LC: Why was this done in the cave?

IA: Because that's where the headquarters was.

LC: Okay.

IA: We supported that headquarters. As far as I know, that's why. I mean the cave was one the Rosenthal China had dug prior to the war the mine. They used it for the curing of their pottery. The Germans took it over, of course, during the war. At the end of the war, they had used it as a headquarters. They used it as a storage area through much of the war, but they used it at a headquarters at the end of the war. It was designed for military defense. I mean, it was supposed to be able to survive pretty heavy blast. The other interesting thing there, of course, was a center of spy operations. The other side was always trying to find out what we were doing, and you had to be very careful.

LC: Was this an international team that you were working with?

IA: No. The cave was NATO. Our forecast operations were U.S. Air Force, the Air Force contribution to NATO. When I first got there, the cave was commanded by a French Colonel. At that time, while we were there, the French withdrew from active military jurisdiction of NATO. I think a German officer might have taken over. I don't remember who, but it was a NATO officer who headed the cave. There were other operations in the cave. There was a command center of the type you see in the movies. I mean, where there were maps that people stood behind and drew tracks and things like that. This was, again, in the 1960s. This was quite primitive command to the things you see these days for SAC. I, later, was at one of the SAC centers, Barksdale, where we had a huge command center for the 21st Air Force. Incidentally, that's where the B-52s that flew to the Balkans, this recent Kosovo incident, where they came from. They actually came out of Barksdale.

LC: Can you tell me about some of the other people you were working with at that time, or some of the names at least?

IA: Well, the commander was Colonel (Otto Jennister?). He was a lieutenant commander at that time – oh, lieutenant colonel. He eventually became a colonel and a very senior officer in the Air Weather Service then, which controlled all the Air Force operations we had. I'm trying to think of the names, but I can picture the people. I can't offhand think of the names of all of them. But I was a fairly junior officer. I was a captain. Most of the others were senior captains and majors. It was a fairly sizable team there. I think about twenty-five officers there and an equal number of airmen plotting the maps and things like that.

LC: Where were you stationed after that?

IA: Shreveport, Louisiana, or Barksdale, which is near Shreveport. There I started off working in the command post for the Second Air Force where we made the forecast for the operations of the wing, which extended all the way up to the pole. Because the B-52s, which operated out of there, were flying circular patterns to be available if needed in various parts of the world, mostly

over the pole or within striking distance of Russia. I later became the scientific services officer of the 26th Weather Squadron, which was also stationed there. There, I attempted to help the, I believe, nine detachments we had keep abreast of the developments of techniques in the forecasting sciences. I helped the unit at Columbus, Missouri to develop an objective forecasting technique for forecasting poor visibility and fog. I issued a – what amounts to a newspaper – it was a single or a few pages a news bulletin to help the people at the detachment stay abreast of what was going on in the weather and what techniques were available. Of course, we visited them and helped them. In between reconnaissance and the University of Chicago, I was also stationed at McGuire Air Force Base in New Jersey. While I was stationed there, I left to go to the Wallops Island on temporary duty. While I was there, I was trained in the use of what was then the advanced CPS-9 radar. We were also given some ideas of how they might reduce satellite data. I was the hurricane duty officer at McGuire when a hurricane passed between McGuire and Lakehurst, which are 20 miles apart. We tracked it, of course, on our radar and we had to decide whether we were going to evacuate the aircraft or what we were going to do. By that time, I believe I was a second lieutenant. I mean, a first lieutenant. I might have, I guess, at the end of the tour, I was a captain. But I think at that time, I was a first lieutenant. That was, again, a pretty weighty decision. I had a SAC wing commander, a full colonel, wandering around my radar set, wanting the forecast. He had the tankers which were stationed at McGuire. He oriented the way they were parked so that they would be facing it.

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