

WEFAX LRIT Presentation WEFAX Private Individual User Community

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Introduction

I must thank NOAA for inviting me to speak. In the past I worked with Bob Popham in the educational field. I would like to give a brief outline of the users of weather satellites who would normally not have a say in their operation. Some of these users have registered with NOAA, some of them belong to the Remote Imaging Group, but the vast majority are not registered or directly represented. It is these users whom I would like to bring to your attention. This could be a relatively short talk, I need to make sure that satellite operators of the world are aware of their presence.

The early days; April 1960 the United States only 18th satellite, Tiros 1 was launched, and remarkably NOAA used a 60 foot antenna. Images and a story were published in August 1960 National Geographic (a few copies are available from me for those interested). Now, a small briefcase portable system can easily recover images from Geostationary GOES satellites.

User communities

Probably the largest user community of weather satellites is often referred to as the "private individual user", this group has risen from a few dozens in the early days to over 50,000 today. EUMETSAT who operate the Geostationary Meteosat satellite, now believe they have over 10,000 private individual users. The WMO have estimated 20,000 users world wide. But these figure do not take into account the casual users who have no need to register. I estimate around 50,000 world wide.

Over the years many NOAA publications have encouraged ordinary people in the street to build their own direct reception system. Some are :

The Teachers Guide 1981 quotes:

"This publication has been prepared in keeping with NASA's commitment to serve the public, and educators in particular, by providing for the widest possible dissemination of information based on its research and development activities.

"The environmental/weather satellite program has its origins in the early days of the U.S. space program and is based on the cooperative efforts of the National Aeronautics and Space Administration (NASA) and the National Oceanic and Atmospheric Administration (NOAA) and their predecessor agencies.

"The information assembled here describes actual classroom experiences at the

Chambersburg, PA, Area Senior High School. It represents a unique combination of aero-space research, technology and applications, providing actual experiences which will afford an insight into some of the most exciting activities of science and technology to come out of the space program. Hopefully, for many of the students, these activities may also provide a sampling of future careers."

The Educators Guide 1989 quotes:

"This publication has been prepared in keeping with National Oceanic and Atmospheric Administration's commitment to serve the public, and educators in particular, by providing for the widest possible dissemination of information based on its research and development activities.

"The environmental/weather satellite program has its origins in the early days of the U.S. space program and is based on the cooperative efforts of the National Oceanic and Atmospheric Administration (NOAA) and the National Aeronautics and Space Administration (NASA) and their predecessor agencies. "The information assembled here describes actual classroom experiences at the Chambersburg Area Senior High School in Pennsylvania. It represents a unique combination of aerospace research, technology and applications, providing actual experiences which will afford an insight into some of the most exciting activities of science and technology to come out of the space program. Hopefully, for many of the students, these activities may also provide a sampling of future careers."

These were the early days. Technology was simple, a big antenna often steered by hand could feed a poor receiver. Old Fax recorders and oscilloscopes with long exposure cameras could produce images. More recently though, things have changed dramatically.

NOAA14 will put a 4uV signal into an omni directional antenna. But it is possible to receive images from NOAA14 when it is overhead using just a 6 inch electrician's screwdriver.

GOES, that once required a big dish, can now be received noise free on a 9 inch flat panel antenna costing less than \$200 !

Why is this ? Amateurs have driven technology forward and applied it to the reception of weather satellites. In the old days a real noise figure of 10dB was difficult to obtain, these days sub 0.5dB can be made on the kitchen table. Receiver bandwidths can be tightly controlled and FM demodulation easily achieved with IC technology.

What does this mean ? Well, NOAA can be received on a coat hanger, a \$90 scanner can be modified and the output fed directly into the sound port of a computer. GOES can now be received using one of the 1,000's of surplus and usually free Primestar dishes.

The user profile for these unrepresented people is quite large and falls into some of the following groups :-

- Schools - Used to teach science, satellite orbits, weather, team activities, radio, computing, data logging and much more
- Radio Amateurs - For the weather, self training, and disaster relief
- Yachtsmen - Who have small 18inch dishes on their boats to get the weather whilst out of the reach of conventional methods, around 200 USA based yachts have simple WEFAX systems. Over 1,000 have APT systems
- Private pilots - Wanting up to date weather
- Private individuals - Just interested in weather and the technology

Remote Imaging Group

I represent the Remote Imaging Group, a band of happy experimenters who build weather satellite reception systems for recreation. Starting from a photocopied handout, they now produce a full colour quarterly journal, copies of which are available at the end of this meeting.

So what is the point of this talk ?

The real point is, that there are probably 10,000 underrepresented users of GOES WEFAX who are going to have a hard, or simply impossible time changing to the new digital services.

The existing system of FM transmission is simple and efficient. There are FM receivers available everywhere. There is not a single digital receiver in the consumer marketplace right now. The existing WEFAX service is very easy to set up, to trouble shoot and to optimise. A digital signal is not. The expense will put a lot of people off too.

In a nutshell, we should consider the needs of this, the largest community. We should make considerable allowance for a smooth and lengthy transition. And the most radical, we should consider if it is not too late to piggyback a WEFAX transmission onto the digital satellites.

However, on behalf of this user community, I would like to thank NOAA for all the fun and education we have derived from them so far.

Thank you.....

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