



**WESTERN REGION TECHNICAL ATTACHMENT
NO. 98-31
AUGUST 11, 1998**

**THE RAPID PACE OF SCIENCE AND TECHNOLOGY IN THE NWS
AND THE CONTINUED NEED FOR PROFESSIONAL
DEVELOPMENT AND TRAINING**

Andy Edman - WRH/SSD - Salt Lake City, UT

Author's note: Based on a few requests, this paper provides a short summary of a presentation given by the author during the WR MIC/HIC meeting. Most WR-TAs address in detail specific science and service issues of interest to WR forecasters. This is an unusual TA in that it raises issues in a general, abbreviated manner and is meant to stimulate discussion within the office.

Scientific and Technical Progress

The time line (Fig. 1) highlights some of the major meteorological and technological breakthroughs during the last 400 years. The time line is not inclusive or meant to be precisely accurate. There are also other major events that one could argue should be included in this time line. The major points the time line illustrates are:

1. From the year 1600 until approximately 1960, meteorology was really more art than science.
2. The improvements to meteorological services are driven primarily by both technological and scientific improvements. Major improvements to communications, computing and observational technology have allowed the meteorological community to advance the science even more quickly.
3. Since 1960, the pace of major improvements for each decade has increased more quickly than the decade preceding it. The pace of change during the last ten years is impressive.
4. The changes have created an environment where the field of meteorology now employs more science than art.

A forecast time line for the next 30 years was not included. Since crystal ball prognostications are notoriously poor, (e.g., very few people forecast the impact of web

pages even 10 years ago), it is not prudent to try to forecast break throughs. However, even with a foggy crystal ball, a few trends can be confidently forecast.

1. There is no reason to believe that the pace of change will slow down. In fact, with the changes coming to the communications and computing industry, technology will allow the field of meteorology to advance even more quickly.
2. A visit to any major university or research facility will reveal a large number of incremental improvements to the science currently under development. While one can argue which are the best ideas, there is no shortage of ideas being considered.

Some issues to consider

What does all this mean to the field of meteorology and the NWS in specific? Briefly, some points to consider are:

1. The rapid pace of new science and technology improvements will continue and will probably continue to increase every decade.
2. Meteorology is becoming more science than art. Improvements to the forecast and warnings programs are primarily driven by improvements in the science and technology. For direct evidence, witness what happened to the severe convective warning program over the last decade with the introduction of the WSR-88D and improved approach to issuing warnings.
3. The quality of services are driven by our forecasters ability to effectively use new science and technology. This is an important point. The rapid pace of change means that to provide the best service to the public, new improvements must be integrated quickly.
4. Professional development and training is the primary method for forecasters to learn how to use new science and technology. An aggressive organizational and personal training program is essential in this environment of rapid change.
5. Can we afford NOT to do professional development and training? The rapid pace of change and current staffing structure place constraints on everyone in an organization, but to provide the best meteorological service, the organization, forecast offices and each individual must make the effort to set aside some time and resources for professional development and training.

Summary

The rapid pace of improvements in science and technology have made the last four

decades exciting and challenging for most meteorologists. But as the pace continues to increase, it means that both the organization and individuals must deliberately set aside time and resources for professional development and training. Otherwise, services will not be the best they can be.

Author's note: From my personal viewpoint, this is an exciting time to be working in the field of meteorology.

PROGRESS

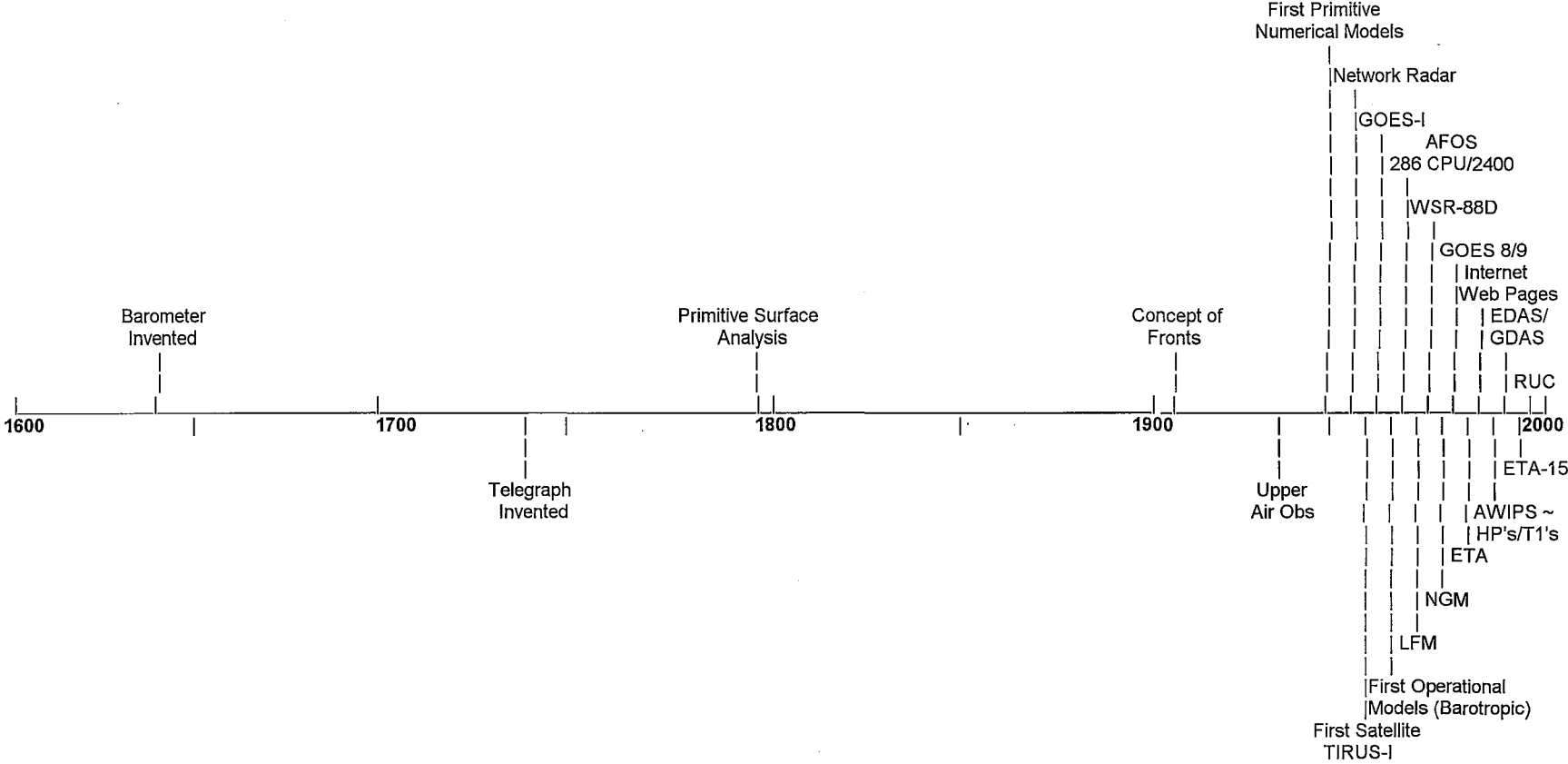


Figure 1