

**Fiscal Year 2008
IMPLEMENTATION PLAN FOR
NATIONAL WEATHER SERVICE
TRAINING AND EDUCATION**

**In Support of the
NOAA and National Weather Service Human Capital Strategic Plans and Goals**

August 2007

Table of Contents

Section	Title	Page
I.	Executive Summary.....	3
II.	Challenges	4
III.	NSTEP Process	6
IV.	Recommended Training for Fiscal Year 2008.....	7
V.	Mission Impact.....	11
VI.	Summary	12
VII.	Acknowledgments.....	12
	Appendix 1: NOAA Strategic Goals and NWS GPRA Categories	13
	Appendix 2: Description of Recommended Training and Other Expenditures	14
	Appendix 3: Proposed Training Needs for FY09 – FY14	29
	Appendix 4: Table 1 - Residence Courses by Program Areas	42
	Appendix 5: Table 2 – Non Residence Courses	43
	Appendix 6: Table 2a – Unfunded Non Residence Courses.....	44
	Appendix 7: Table 3 – Non Discretionary Funding.....	45
	Appendix 8: Approximate Human Resources Distribution.....	46
	Appendix 9: Acronyms	47

I. Executive Summary

“An investment in knowledge always pays the best interest.”
-Benjamin Franklin

This Implementation Plan is the guiding document for the national training and education activities within the National Oceanic and Atmospheric Administration’s (NOAA’s) National Weather Service (NWS) for Fiscal Year 2008 (FY2008). The purpose of this plan is to specify the expected training to be executed for the upcoming fiscal year with detailed allocations for full time employee’s (FTE) time and course costs. The plan also identifies the funding gap of unfunded training needs in a perennially constrained budget environment. This funding gap is critical information which is necessary to analyze and plan how to provide the workforce with the necessary skills to successfully perform critical missions of the agency.

The Office of Climate, Water, and Weather Services (OCWWS) Training Division supports the increased use of distance and blended learning techniques when and where appropriate. Opportunities continue to be made available by these techniques to effectively develop and deliver training in a cost effective manner. However, there continues to be a need for residence training in certain circumstances. The increased use of distance learning (DL) technologies provides at least two significant and related impacts. First, the net cost per student decreases, but there is a substantial increase in the dollar and manpower costs to develop and maintain quality distance learning courses. This cost is especially high during the initial development of a distance learning course. Secondly, there is remarkable flexibility and convenience with distance learning techniques, but the Training Division recognizes that distance learning training time may have an impact on the workload to NWS operations across a wide range of offices. Acknowledging and working with these offices to minimize these impacts, the Training Division remains committed to delivering effective training directly to operational decision makers at all staff levels with the overarching goal of improving service and performance while remaining fiscally responsible.

The pace of science and technology change continues to increase and therefore the ability to maintain a highly trained workforce will continue to be compromised as a result of constrained budget levels. Additionally, as the NWS explores new initiatives to fundamentally improve services, the necessary training to move toward these services will increase. Of 159 training requirements submitted, 110 are recommended to be funded either by dollars, FTE, or a combination. There will be 32 residence courses with 79 classes taught in FY08. Additionally, numerous distance learning (DL) modules will be developed and delivered on the World Wide Web (WEB) and by teletraining. Level funding from FY08 was assumed for all funding areas in the decision process, while the prioritization of training requirements was done without regard to budgets. Open RDA (ORDA) and Rawinsonde Replacement System (RRS) dollars are funded commensurate with program and contract needs. This year’s budget of \$9 million falls approximately \$2 million short of funding all known training requirements. However, the Warning and Decision Training Branch (WDTB) cannot meet all the tasks assigned to them unless the National Weather Service Training Center (NWSTC) and Forecast and Decision Training Branch (FDTB) staff resources assist WDTB. Therefore, the human resource

utilization is near 100% with this plan and only COMET and WDTB may have the opportunity to add more staff if a commitment was made for multiyear funding. This situation, which has continued for the past few years, allows for only the highest priority of operational training to be delivered. As a result, some of the FY08 new initiatives and existing training were either funded at significantly reduced levels or not funded. This included operational, leadership, mandatory, and scientific training courses.

The current National Strategic Training and Education Plan (NSTEP) process began in August 2006, with a strategic meeting held in Boulder, Colorado. This meeting laid the foundation of the process used for the development of the Implementation Plan (IP) for FY08. This meeting also allowed for some initial long term and strategic prioritization, which was used at the NSTEP meeting for prioritizing training requirements and solutions for this year's plan. The Boulder meeting also laid the foundation for aligning the NSTEP process to the Planning, Programming, Budgeting, and Execution System (PPBES) and Operations and Services Improvement Process (OSIP) for developing a continuity plan for dealing with the upcoming changes in management of the OCWWS Training Division. Training requirements were submitted from approximately 20 program area leaders, which produced input from NWS field and regional offices, NWS headquarters, and OCWWS Training Division.

This year's process was assisted by the use of WEB site provided by Southern Region Headquarters. This web page allowed the program area leaders a place to compile, assess, and share ideas on training requirements. A WEB based tool developed by WDTB, which was in place for the production of IP07, was not available for this year, due to workload constraints. The WEB based tool is expected to be available for IP09, which will include all recommendations and requirements for IP08.

Each submitted training requirement identified the NOAA strategic goal and the PPBES program area goal and sub goal the requirement would fill. When appropriate, the linkage to directive mandate and/or the NWS Government Performance and Results Act (GPRA) goal was noted. Linkage to strategic goals, the NOAA and GPRA goals was one of the main prioritization criteria used to make the recommendations for the training contained in this plan.

II. Challenges

The ability of the NWS to maintain and enhance the workforce knowledge and skills necessary to execute the agency's critical missions faces major challenges. These challenges include rapidly changing advances in science and technology and structure, while dealing with insufficient resources for training to adequately and fully meet such challenges. The pace of change is important because it both generates new training requirements and shortens the lifespan of existing training material. This necessitates a continuous revision of current training materials and the development of new training courses. This impacts the training developers and customers who are faced with the increasing challenge of finding operational time to devote to training.

The training and education provided to NWS staff and partners enhances the knowledge, skills, and abilities needed to support the NWS operational mission, and to meet NOAA's Strategic Goals and the NWS' GPRA Goals. NWS training activities support these goals and are directly related to improving warning and forecast programs. Additional training is provided to meet various mandates in the areas of security, health, diversity, and safety.

The FY08 training budget was the same as FY07 funding levels, and falls approximately \$2 million short of funding needed to meet all FY08 training requirements. Additionally, the human resources to deliver the training are at or near capacity within the training division. WDTB will begin the year with shortfall of one FTE. The NWSTC and WDTB will work collaboratively to resolve this shortfall during the year to ensure training delivery. If not successful, the FRG will work with the Training Division Branches to determine training deliverables. As a result of resource shortfalls, many identified training needs and requirements can neither be funded nor met. Further budget constraints in future years, including continued level funding, will likely compromise the NWS mission.

The agency's training and education are delivered by a variety of methods: residence, online, computer based, teletraining, local training, and blended variations of the above. Although not all training needs can be met through distance learning methodologies, the Training Division supports the national strategy to increase the use of distance and blended learning techniques when and where appropriate. This support includes matching training needs to curriculum delivery methodology and utilizing Training Division resources from the three training centers, field offices, cooperative institutes, and programs.

The Training Division will continue to assess current and new training requirements to ensure that training and education are developed in the most economical manner relative to the objectives. While the net cost per student trained decreases by using distance and blended learning, there are significant increases time to deliver, the cost to develop, and to and maintain courses. To reach a large audience in a timely manner, distance learning and training is the only option.

The Training Division faces serious challenges absorbing increased labor and operating costs. Prominent examples are inflationary costs at NWS, cooperative institute, and training centers, and significant vacancies and turnover in the OCWWS Training Division.

AWIPS 2 training will become paramount, not only in FY08, but especially in FY09 and FY10 as the new system is deployed and becomes operational. For FY08, the training will be developmental in nature, with only a limited number of students being trained in AWIPS 2 local applications development. Additionally, an overview of AWIPS 2 will be made available for NWS employees on the changes coming in AWIPS 2, developed by Ronla Henry and Jason Tuell of OS&T, with development facilitated by the NWSTC. This deliverable, which will be a recorded presentation, will be made available in early FY08. The NSTEP and FRG teams agree that as the AWIPS 2 deployment schedule becomes finalized, changes may be needed in the training deliverables and time line concerning AWIPS 2.

With an eye toward any uncertainty of the training deliverable timeline for AWIPS 2 training, a sum of \$61,000 has been set aside within the BASE budget for AWIPS 2 funding. In early February, the Training Division and the FRG will meet. At this time, it is expected for the training requirements for FY08 to be better understood. The NSTEP team will decide at this time how to allocate this amount of \$61,000.

III. NSTEP Process

Recommended training and education activities for NOAA's NWS staff in FY08 are specified by this document. The FY08 Implementation Plan for NWS Training and Education (IP08) is the end result of the National Strategic Training and Education Plan (NSTEP) process.

The FY08 NSTEP process prioritized and recommended training requests and requirements within available discretionary dollar and FTE budgets and was coordinated by the Field Requirements Group (FRG) and Heads of Training Group (HOTG). For the IP08 process, the FRG representatives included Regional Scientific Services Division Chiefs or Regional Scientists, and the Operations Officer for the National Centers for Environmental Prediction (NCEP). The HOTG representatives were the heads of the National Weather Service Training Center (NWSTC), the Forecast Decision Training Branch (FDTB), WDTB, the Director of the Cooperative Program for Operational Meteorology, Education, and Training (COMET), and the Director and support staff of OCWWS Training Division. FRG, HOTG members and select NWSH training and hydrology representatives participated in conference calls and came together for a three and one half day meeting at the National Weather Center (NWC) in Norman, Oklahoma in the spring of 2007 to determine the NWS training priorities for 2008.

This document provides the HOTG, COMET, VISIT (Virtual Institute for Satellite Integration Training) and CIMMS (Cooperative Institute for Mesoscale Meteorological Studies) requirements for the training and education to be offered and the instructional modules to be developed for FY08. Coordination of the entire NSTEP process, including development of this plan, was facilitated by OCWWS Training Division and Southern Region Headquarters Science and Technology Services Division.

Additional information on NSTEP may be accessed at:

<http://www.nws.noaa.gov/om/os/org/training/nstep.pdf>

This year's process used the same philosophy as IP07, in that the one pager requirements and solutions were presented on the WEB. This database provided all interested parties an efficient view of all training submissions along with a means to collaborate. The HOTG then analyzed each the 1-page description of proposed training and a common place for all to view the analysis.

This WEB page database was a springboard for a meeting at the NWC in early April 2007 where the FRG, HOTG, OCWWS training division, and other NWSH representatives came together to prioritize training for FY2008. The opportunity for these groups to exclusively focus on IP08 for three and a half days proved extremely effective and efficient, and will likely be continued in

subsequent years. Thanks to the extraordinary efforts of the FRG, HOTG, and OCWWS training division, the WEB database and face to face meeting, the IP08 was on time and under budget.

However, the NSTEP process was a bit different this year. Along with the effort to align with PPBES and OSIP in addition to the GPRA goals, the face to face meeting focused on prioritizing the requirements. The PPBES Integrated Priority List for FY2008

https://ppbs.noaa.gov/Excel/NWS.IPLs_10.06.06-2.xls

was used primarily as guidance in the process to determine priorities. Complicating the process however, was the announcement one week before the Norman meeting that the Service Evolution and CONOPS initiatives were placed on hold. Despite this, using the integrated priority list as guidance brought the PPBES, OSIP, and NSTEP processes into a common strategic prioritization at the NOAA / NWSHQ / and FRG levels. This also ensures that the funded training for FY2008 will be aligned with agency goals.

The priority guidance used for the development of this IP is:

1. Mandated or Agency Required training
2. Training that will have immediate benefits for FY 2008
3. Training that will reap rewards in future years.

IV. Recommended Training for Fiscal Year 2008

Recommended training activities for FY08 are given below for the program areas defined in the NSTEP process. Regional Training Funds, which are associated with many program areas, are described at the end of this section. Refer to Tables 1 and 2 for training activities associated with discretionary funds and prioritized by the FRG. Refer to Table 3 for training activities associated with non-discretionary funds as noted.

Note: The recommended training for FY08 is outlined in the bulleted lists below. Existing training is identified by a • symbol, and new training initiatives are displayed with a * symbol.

Advanced Weather Interactive Processing System (AWIPS)

- AWIPS Local Applications Development
- AWIPS Operations Support
- AWIPS System Manager
- LINUX for Weather Forecast Offices & River Forecast Centers (WFOs/RFCs)
- AWIPS Build Delta and Warning Related Training
- * AWIPS 2 Local Applications Development
- * AWIPS 2 System Administration Development
- * AWIPS 2 and Weather Event Simulator Development
- * AWIPS 2 System Manager

- * Overview of AWIPS 2 for Field Offices

Engineering/Electronics

- Automated Surface Observing System (ASOS) Maintenance
- Automated Radio Theodolite (ART) Rawinsonde System Maintenance
- Console Replacement System (CRS) Maintenance
- NOAA Weather Radio (NWR) Armstrong Transmitter Maintenance
- NWR Crown Transmitter Maintenance
- NWR Scientific Radio Services (SRS) Transmitter Maintenance
- WSR-88D Maintenance
- WSR-88D Open Systems Radar Data Acquisition (ORDA) Maintenance
- Radiosonde Replacement System (RRS) Maintenance

Digital Services

- IFPS Focal Point and Delta Training – Continue conversion to WEB modules
- * Development of a Geographic Information Systems (GIS) Overview Training
- * Real Time Mesoscale Analysis (RTMA)
- * The Use of GFE in the River Forecast Centers (RFCs)

Fire Weather

- NOAA's Incident Meteorologist (IMET) Workshop
- Advanced Fire Weather Forecasters Course (S-591) – Converted to Distance Learning

Forecaster Development Program

In the NSTEP process, the Forecaster Development Program (FDP) also includes training for meteorologists at all levels, as opposed to just interns.

- CRS Network Operations
- COMET Mesoscale Analysis and Prediction (COMAP) Course

Integrated Warning Process

- Advanced Warning Operations Course (AWOC) – Core and Severe Tracks
- WES Development and Support
- Effective Use of Warning by Polygon

Winter Weather

- Canada Winter Weather Workshop (mostly outside funding)
- Canada Mountain Weather – Preparation for Vancouver 2010 Winter Olympics (mostly outside funding)
- Advanced Warning Operations Course (AWOC) – Winter Weather Track

Information Technology

- Information Technology (IT) System Administration Networking and Security (SANS) course

Safety/Environment

- Safety
- Environmental Compliance
- Fall Protection and Rescue (attrition)
- Fall Protection and Rescue (re-certification)
- Safety Refresher
- Environmental Compliance Refresher

Hydrology

- Advanced Hydrologic Applications
- Flash Flood Hydrology and Quantitative Precipitation Estimation (QPE) Workshop
- Advanced Hydrologic Science
- Hydrologic Model Calibration – RFC workshops
- Enhancements to AWIPS Hydrologic Applications
- * Deterministic and Probabilistic Verification
- * Distributed Hydrologic Modeling
- * the Use of GFE in the RFC
- * Short and Long Term Ensembles
- * Precipitation Processing

Numerical Weather Prediction

Two project scientists, dedicated to Numerical Weather Prediction (NWP) training development, are part of the COMET non-discretionary funding outlined in Table 3. FDTB provides one dedicated FTE in support of Weather Research and Forecasting (WRF) Environmental Modeling Systems (EMS) (workstation version) development, training and support (both domestic and international) and for the SOO Science & Training Resource Center (STRC – strc.comet.ucar.edu).

- Short and Long Term Ensembles
- Keeping Current on NWP model development
- Update the Operational Models Matrix
- * Effective Use of NWP
 - Bias Correction in the NCEP ensemble suite
 - Convective Forecasting NWP refresher
 - The North American Ensemble Forecast System
 - Gleaning Useful Information from the models

- - Using NWP Models to Investigate the Forecast Problem.
- Forecast Impacts of Data Assimilation
- WRF EMS

Observing and Data Acquisition

- Data Acquisition and Operations (DATAAC)
- Cooperative Network Operations

Climate

- Climate Services Operations
- Climate Variability Symposium

Aviation

- Funds from OCWWS' Aviation Services Branch and Training Division will support a Distance Learning team at COMET that collaborates with WDTB in the development of Aviation training. The focus of this team will be the continued development of DLAC-2: Building an Effective Terminal Aerodrome Forecast (TAF) with the production of two modules and corresponding WES cases.

Integrated Sensor Training

- Funding is recommended to support NOAA's Virtual Institute for Satellite Integration Training (VISIT), and the VISIT team includes staff from NWS, NESDIS, and Cooperative Institutes (CIRA and CIMSS). The VISIT team supports satellite and related remote sensing training. The Warning Decision Training Branch supports radar training.
- VISIT teletraining and software – Satellite Data Products for Forecasts and Warnings
- WSR-88D Initial Radar Operations Course (DLOC)
- National Polar-Orbiting Operational Environmental Satellite System (NPOESS)/Userport Training
 - NESDIS/Integrated Program Office funding supports a Distance Learning team at COMET in the development of NPOESS training, education, and outreach.
 - Support development of a new Environmental Satellite Resource Center (ESRC) that is modeled after the NWP Training Matrix
- Geostationary Operational Environmental Satellite (GOES) online updates and the insertion of satellite training materials in many COMET modules (NESDIS funding)
- Satellite Hydrology and Meteorology (SHyMet) Course (NESDIS funding)
- * 88-D RADAR Build Training
- * 4-Dimensional visualization of RADAR data
- * Terminal Doppler Weather Radar (TDWR) interpretation
- * Dual Polarization RADAR upgrade training

Management/Leadership

- Field Operations Management
- Management and Supervision
- Executive Leadership Seminar

Training Infrastructure

- Implement and Manage the new Learning Management System/Commerce Learning Center

Regional Training Funds

The Regional Training Funds are often the only available resource in a constrained budget environment to meet unique training requirements in mission-critical areas. The Regional Training Funds are typically used for the following areas of training, which received insufficient funding or no funding in the FY08 NSTEP process:

- Local facilities training
- Local IT training such as system administration, networking, security, etc.
- Specialized safety training
- Replacement of WES hardware
- Additional hydrology training from local universities
- Training for administrative personnel
- Travel for NWS/university projects and workshops supporting collaborative research
- Purchase of innovative software to support and enhance distance education and training

V. Mission Impact

The total unfunded training activities projected for FY 2008 exceeds \$2 million, which is the result of another year with flat funding from most programs. This training gap of unfunded needs will continue to compromise efforts to maintain a highly trained workforce and could also impact the agency's ability to meet NWS GPRA and NOAA Strategic goals. Due to continued limited budgets, only the highest priority and mandated training activities are recommended for funding in FY08. This means other high training priorities remain unfunded. Most of the new initiatives and some existing training were either funded at significantly reduced levels or not funded at all. One major exception to the flat funding issue is the NWS International Affairs (IA) office. IA was able to provide a major increase of over \$300K in training funds to the COMET program in June 2007. The funds will be used to support increased training activities in support of several key international training activities in 2008.

Unfunded training amounts are summarized at the bottom of Tables 1 and 2a. Table 2a contains a list of all unfunded training activities associated with discretionary funds for FY08.

Unfunded dollars are estimated in Table 2a. An additional strain on the discretionary training budget is the estimated cost of \$132,000 for providing electronic access to all NWS staff for the AMS Journals. A summary of non-discretionary funding is in Table 3.

VI. Summary

Effective training remains the lifeblood of a highly effective NWS workforce. The budget environment, combined with the pace and magnitude of scientific, technological, and cultural change, continues to challenge our ability and our commitment to provide our employees with the knowledge, skills, and abilities they need to execute the mission of NOAA and NWS.

The Training Division has pledged to leverage technology in the use of innovative distance learning and blended learning techniques. However, while these methodologies offer dramatic cost reduction per student, it is important for system deployment planning and manpower purposes to recognize they carry a significant increase in development and maintenance time and do not entirely eliminate the need for residence training.

The 2006-2010 Human Capital Strategic Plan, approved in 2005 by the NWS Corporate Board, is a guiding document to move forward. It lays out specific training strategies, outcomes, and objectives for establishing a world-class workforce. These are deliberately ambitious goals and must be incorporated into the NSTEP and PPBES processes to ensure we retain our focus on training as a priority, as stated in the Plan, to “maintain excellence in the face of change by safeguarding the most valuable asset of NOAA’s National Weather Service – the NWS workforce.”

VII. Acknowledgments

The OCWWS Training Division would like to acknowledge the efforts of those who significantly contributed to the FY08 NSTEP process. The Program Area Team Leads worked tirelessly and under severe time constraints to produce NWS training requirements for FY08. Their technical expertise and the results of their efforts were important contributions to the process. The efforts of the HOTG and their staffs are also greatly appreciated. They performed the difficult task of evaluating the training initiatives in terms of appropriate methodologies and required resources. The FRG is gratefully acknowledged for their ongoing efforts and dedication throughout the NSTEP process.

The FRG in concert with the HOTG and select NWSH representatives reviewed all the training initiatives, and then prioritized and recommended the training to be offered to NWS employees in FY08. Aimee Devaris, OCWWS OS1, is heartily thanked for her facilitator assistance at the Norman meeting. And finally, Mark Fox, SR Science and Technology Services Division, is acknowledged for coordination, leadership, and facilitation of the FY2008 NSTEP process.

Appendix 1: NOAA Strategic Goals and NWS GPRA Categories

Note: These numbers are used in Tables 1, 2, and 2a.

NOAA Strategic Goals:

NOAA Goal 1: Protect, Restore, and Manage the Use of Coastal and Ocean Resources through an Ecosystem Approach to Management

NOAA Goal 2: Understand Climate Variability and Change to Enhance Society's Ability to Plan and Respond

NOAA Goal 3: Serve Society's Needs for Weather and Water Information

NOAA Goal 4: Support the Nation's Commerce with Information for Safe, Efficient, and Environmentally Sound Transportation

NOAA Goal 5: Provide Critical Support for NOAA's Mission

NOAA Cross-Cutting Priorities:

CP1: Developing, Valuing, and Sustaining a World-Class Workforce

CP2: Integrating Global Environmental Observations and Data Management

CP3: Ensuring Sound, State-of-the-Art Research

CP4: Promoting Environmental Literacy

CP5: Leading International Activities

NWS GPRA Categories:

GPRA Category 1: Tornado

GPRA Category 2: Flash Flood

GPRA Category 3: Marine

GPRA Category 4: Aviation

GPRA Category 5: Winter Storm

GPRA Category 6: Precipitation

GPRA Category 7: Seasonal Temperature

GPRA Category 8: Hurricane

Appendix 2: Description of Recommended Training and Other Expenditures

A description of NWS training activities recommended for FY08 follows for both discretionary and nondiscretionary funds. A description of training activities sponsored and funded by the NWS Office of International Affairs is also given.

Section A. Recommended Training by Program Areas

Some background about the recommended training activities, along with WEB site references and descriptions of new training initiatives within the various program areas, is given. Refer to Tables 1 and 2 for training activities associated with discretionary funds and to Table 3 for training activities associated with non-discretionary funds. Additional information on existing courses and training modules can also be found at the following WEB sites:

<http://www.nwstc.noaa.gov/nwstrn/classes.html>

http://www.comet.ucar.edu/class/common/html/course_descrip.html

<http://www.wdtb.noaa.gov/courses>

<http://www.meted.ucar.edu>

<http://www.nwstc.noaa.gov/nwstrn/d.ntp/pds.html>

Note: The recommended training for FY08 is outlined in the bulleted lists below. Existing training is identified by a ● symbol, and new training initiatives are displayed with a * symbol.

Advanced Weather Interactive Processing System (AWIPS)

- AWIPS Local Applications Development
- AWIPS Operations Support
- AWIPS System Manager
- LINUX for Weather Forecast Offices & River Forecast Centers (WFOs/RFCs)
- AWIPS Build Delta and Warning Related Training
- * AWIPS 2 Local Applications Development
- * AWIPS 2 System Administration Development
- * AWIPS 2 and Weather Event Simulator Development
- * AWIPS 2 System Manager Development
- * Overview of AWIPS 2 for Field Offices

The AWIPS national policy of shifting to multiple Build releases per year puts added pressure on the development of AWIPS Delta training. This falls into three areas and a lot depends on the responsiveness of Raytheon, the AWIPS contractor. The primary considerations are:

- The national policy to allow Training Divisions adequate time to develop and deliver the training on new releases *prior* to release of the software and hardware to the field.
(Supported by Human Capital Strategic Plan, ED3)
- The need for increased quality control of the builds
- The need for improved documentation with the builds

Some movement has been made to mitigate these issues via the AWIPS SREC process, OS&T SEC, and different rules and initiatives in the AWIPS contract. Constant monitoring of this process is needed to ensure training and AWIPS Build releases remain aligned.

The AWIPS2 training and development work is highly dependent on the time table of the field delivery of AWIPS2, currently set for late FY09 and FY10. If the AWIPS2 schedule begins to slide, the FRG recommends that time spent on AWIPS2 development be delayed accordingly, in order to focus training division resources on the existing AWIPS program.

Engineering/Electronics

- Automated Surface Observing System (ASOS) Maintenance
- Automated Radio Theodolite (ART) Rawinsonde System Maintenance
- Console Replacement System (CRS) Maintenance
- NOAA Weather Radio (NWR) Armstrong Transmitter Maintenance
- NWR Crown Transmitter Maintenance
- NWR Scientific Radio Services (SRS) Transmitter Maintenance
- WSR-88D Maintenance
- WSR-88D Open Systems Radar Data Acquisition (ORDA) Maintenance
- Radiosonde Replacement System (RRS) Maintenance

All these courses were offered in FY07 and will likely be repeated in FY09. Due to funding limitations and as with most residence courses, not enough of these will be offered to fulfill the identified need. Additional training was requested for local facilities to ensure field staff know how to repair vital mechanical and electrical systems; are aware of good maintenance practices; and possess a clear knowledge of how to comply with building and safety codes and regulations. Specific funds were not available for these training requirements in FY08; however, small portions of this training may be funded from the Regional Training Funds described at the end of this section

Digital Services

- IFPS Focal Point and Delta Training – Continue conversion to WEB modules
- * Development of Geographic Information Systems (GIS) Overview Training
- * Real Time Mesoscale Analysis (RTMA)
- * The Use of GFE in the River Forecast Centers (RFCs)

The IFPS Focal Point Course is a blended DL/teletraining course and will continue to be offered in FY08. The blended nature of the course is done in order to save dollars and provide a more efficient means to address IFPS focal point attrition and IFPS Build updates. The IFPS Focal Point Course provides the knowledge and skills needed to become an IFPS site expert and system administrator. Additionally, this course is updated as necessary for each AWIPS build.

Additional digital services training initiatives are funded for development in FY08, and all will be in the form of DL modules. They are: development of Geographic Information System (GIS)

overview, introduction and use of the Real Time Mesoscale Analysis (RTMA). The GIS training dollars are to be used to purchase existing training materials from contractors.

As the River Forecast Centers will be implementing the use of GFE in operations in late FY2008, a training course called the Use of GFE in the RFCs will be developed before GFE implementation. These DL modules and course will be a joint effort of the FDTB and the NWSTC.

Fire Weather

NOAA's Incident Meteorologist (IMET) program now includes weather support for all-hazards incidents such as hazardous material spills and support for major security events (e.g., national political conventions). This is a significant expansion beyond the traditional fire weather support provided in the past, especially if the Warning and Coordination Meteorologists at each local office begins to acquire IMET type capabilities.

- NOAA's Incident Meteorologist (IMET) Workshop
- Advanced Fire Weather Forecasters Course (S-591) – Converted to Distance Learning
- Environmental Spill Response Course for IMETs

The IMET Workshop provides training to IMETs on new technology advances and techniques. The existing Advanced Fire Weather Forecasters Course (S-591) has been updated and converted to a distance learning course. The Environmental Spill Response Course for IMETs is provided by NOAA's Office of Response and Recovery and is necessary for the IMET program expansion into all hazards. As in FY07, a limited number of IMETs will be trained in FY08.

Forecaster Development Program

The Forecaster Development Program (FDP) provides a training plan for new meteorologist interns, as well as for newly hired forecasters who lack NWS experience. The FDP also provides updated and advanced training for current meteorologists. The FDP for new meteorologists was updated in FY06 and the NSTEP process for FY08 approved the following courses for meteorologists:

- CRS Network Operations
- COMET Mesoscale Analysis and Prediction (COMAP) Course

The COMAP course was converted to a 3-week residence course in FY06 and FY07 and was held in FY2007. To continue the SOO Training in FY 2008, the COMAP residence course was approved. However, three distance courses required for completion of the additional COMAP credits were deemed to be a lower priority for this cycle, and several SOOs will not be able to complete the 3 credits needed for COMAP during this fiscal year.

For more information on the new COMAP blended course that was developed in conjunction with the recommendations from the Science and Operations Officer/Training Advisory Panel (SOO/TAP) may be found at the following WEB site:

Integrated Warning Process

Training addressed by the Integrated Warning Process team is directed at NWS field forecasters with the goal of increasing scientific understanding of the elements involved in the warning and decision making process. Expected results from this training include improved skills in decision making and ultimately better service in the issuance of mission-critical warnings.

- Advanced Warning Operations Course (AWOC) – Core and Severe Tracks
- WES Development and Support
- Effective Storm Based Warnings II

AWOC – Core and Severe Tracks will again be offered and updated in FY08. Development and support will also continue on the WES, with additional simulations developed to support NWS forecast and warning operations. Field training is needed for final implementation of the change to Storm Based Warnings (polygon warnings)

Winter Weather

Winter weather training requirements will be addressed in FY08 with the offering of the courses below.

- Canada Winter Weather Workshop (mostly outside funding)
- Canada Mountain Weather – Preparation for Vancouver 2010 Winter Olympics (mostly outside funding)
- Advanced Warning Operations Course (AWOC) – Winter Weather Track

The Canada Winter Weather Workshop, mostly but not entirely, funded by the Meteorological Service of Canada (MSC) will again be offered in FY08. Two Western Region, two Alaska Region, and one NCEP forecaster will represent the NWS.

The newest AWOC course called AWOC – Winter Weather Track will also continue. This AWOC course, offered via WEB modules, will address forecast/warning/climatological tools and methodologies for operational winter weather products and customer service issues. AWOC – Winter Track includes two WES simulations dealing with winter weather events. The Canada Mountain Weather Course will have a follow up class in FY08. This course at COMET trains Canadian and United States weather forecasters in mountain meteorology in preparation for the Vancouver, British Columbia, Canada Winter Olympics in 2010.

Information Technology

IT training is regarded as mission-critical to ensure operational continuity of IT networks and services.

- Information Technology (IT) System Administration Networking and Security (SANS) course

Funds, though likely not sufficient, are provided for the existing IT SANS course or equivalent training in FY08, which is mandatory training for new IT personnel who have administrator or root user level access. Initiatives have been undertaken to make this part of the next LMS upgrade which is required to cover all legislatively mandated training. The hope is that this will be a significant money saver. Work is also being done to come up with a SANS delta course so the full SANS course will not have to be retaken every two years per NOAA IT policy.

Safety/Environment

Safety and environmental focal points in NWS offices promote the critical value of safety and environmental compliance to all employees, and focal points must ensure that applicable laws and regulations are being followed. The following training courses and new initiatives will be offered in FY08:

- Safety
- Environmental Compliance
- Fall Protection and Rescue (attrition)
- Fall Protection and Rescue (re-certification)
- Safety Refresher
- Environmental Compliance Refresher

There were several other safety and environmental initiatives proposed for FY08, however, budget constraints prohibited the funding of these and Regional Training Funds are an extremely limited source available to fund some of this additional training.

Hydrology

Hydrology is another extensive mission-critical program within the NWS. The following training courses and new initiatives will be offered in FY08:

- Advanced Hydrologic Applications
- Flash Flood Hydrology and Quantitative Precipitation Estimation (QPE) Workshop
- Advanced Hydrologic Science
- Hydrologic Model Calibration – RFC workshops
- Enhancements to AWIPS Hydrologic Applications
- * Deterministic and Probabilistic Verification
- * Distributed Hydrologic Modeling
- * The Use of GFE in the RFC
- * Short and Long Term Ensembles
- * Precipitation Processing

The dedicated hydrology development DL team at COMET will continue to be funded jointly by the Training Division and the NWS OHD in FY08. This item falls under the non-discretionary funding section in Table 3. The hydrology team will focus on the development of training in the following areas:

- * Precipitation Processing

- * Distributed Hydrologic Modeling
- * Deterministic and Probabilistic Verification
- * The use of GFE in the RFC
- * Short and Long Term Ensembles

Space Weather

Space Weather is having more operational impact at field offices than ever before, requiring enhanced awareness by NWS employees. In FY05, a WEB module was developed to increase the understanding and potential impact of space weather phenomena on general aviation and other infrastructures. However, this module received very limited viewing by NOAA and NWS employees. The Space Environment Center (SEC) and NSTEP agree that with the current state of limited resources, the marketing and promotion of this module and related materials available at SEC's WEB site will provide basic Space Weather training and education in FY08.

Public Health/Air Quality

WEB modules on dispersion modeling currently exist for use by NWS field forecasters in support of emergency management agencies after the release of hazardous gases or materials in the atmosphere. A WEB-based training program for dispersion and NWS response to toxic atmospheric releases was finalized in FY06. NSTEP found no additional requirements or need for air dispersion training in FY08. However, there is a concern that new discussions with DHS, FEMA and the Emergency Management communities may lead to new requirements for NWS operations. One example would be the need to provide training in the running of and interpretation of a dispersion model at each WFO.

Numerical Weather Prediction

The accuracy of NWS forecasts is largely driven by the forecaster's ability to correctly interpret and understand the available operational numerical weather prediction (NWP) guidance. In order to maintain and improve forecaster proficiency in a period of rapidly evolving NWP systems, two dedicated project scientists will continue to provide this training. This item falls under the non-discretionary funding section in Table 3.

FDTB provides one dedicated FTE in support of Weather Research and Forecasting (WRF) Environmental Modeling System (EMS) (workstation version) development, training and support (both domestic and international) and for the SOO Science & Training Resource Center (STRC - strc.comet.ucar.edu).

- Short and Long Term Ensembles
- Keeping Current on NWP model development
- Update the Operational Models Matrix
- * Effective Use of NWP
 - Bias Correction in the NCEP ensemble suite
 - Convective Forecasting NWP refresher
 - The North American Ensemble Forecast System
 - Gleaning Useful Information from the models
 - Using NWP Models to Investigate the Forecast Problem.

- * WRF EMS (workstation)

NWP training initiatives which will be funded in FY08 involve the appropriate use of various model guidance ranging from Short and Long Term Forecast Ensembles, to the appropriate use of local area and high resolution models. NSTEP ranked training on the new and evolving models as highly needed and desired. The NWP trainers will also maintain and update the “Characteristics of Operational NWP Models” matrix. This matrix, located at COMET’s METED WEB site, gives one-stop information on numerical model configurations for NCEP, Navy, Air Force, and Canadian models, and discusses operational implications in addition to simply documenting what is in the models. A new and likely multi-year project, called Effective Use of NWP, is recommended. This project will tackle bias correction for the NCEP ensemble suite, convective forecasting, and how to correctly and efficiently gather relevant data from the model to provide the best service possible for customers and users.

Observing and Data Acquisition

Two courses will be offered again in FY08 to support mission-critical programs with regards to data acquisition and observations.

- Data Acquisition and Operations (DATAC)
- Cooperative Network Operations

Training requirements for the NWS data acquisition process are met by the DATAC course and the Cooperative Network Operations course. The Cooperative Network Operations course also supports the Cooperative Observer Program Portions of this course will continue to be examined for possible conversion to Distance Learning and resultant cost savings.

Climate

- Climate Services Operations
- Climate Variability Symposium

There will be one offering of the Climate Services Operations Course and the one offering of the Climate Variability Symposium in FY08.

Marine/Tsunami

A Basic Tsunami training module was produced in FY07 and Advanced Tsunami Training is being developed by OAR/PMEL (see more information under International Program). COMET produced a number of marine training modules in FY06 for Rip Currents, Shallow Water Waves, and Winds in the Marine Boundary Layer. No new marine training is planned for FY 2008.

Aviation

- Funds from OCWWS’ Aviation Services Branch and Training Division will support a Distance Learning team at COMET that collaborates with WDTB in the development of Aviation training. The focus of this team will be the continued development of DLAC-2:

Building an Effective Terminal Aerodrome Forecast (TAF) with the production of two modules and corresponding WES cases.

Various funding sources have supported aviation training requirements during the past several years. In FY06, an Aviation Operations Course in DL format (DLAC-1) was delivered with the goal of increasing forecaster awareness of how aviation products and services impact the aviation user community. In FY06, funds from OCWWS' Aviation Support Branch partially supported a DL team at COMET in the development of DLAC-2: Building an Effective TAF and this will be continued in FY08

During the NSTEP meeting in Norman, there were many discussions on the future of the NWS aviation program. The new NWS senior management team has stated that a renewed focus on the Aviation Program is one of the top priorities for FY2008. As the details of the revised Aviation Program are developed, changes may be necessary to the FRG recommendations.

Integrated Sensor Training

Funding is again provided to support NOAA's VISIT program. The VISIT team includes staff from NWS, NESDIS, and NOAA's Cooperative Institutes (CIRA and CIMSS). The VISIT team supports satellite and related remote sensing training and provides assistance with live and recorded teletraining. The Warning Decision Training Branch supports radar training.

- Funding is recommended to support NOAA's Virtual Institute for Satellite Integration Training (VISIT), and the VISIT team includes staff from NWS, NESDIS, and Cooperative Institutes (CIRA and CIMSS). The VISIT team supports satellite and related remote sensing training. The Warning Decision Training Branch supports radar training.
- VISIT teletraining and software – Satellite Data Products for Forecasts and Warnings
- WSR-88D Initial Radar Operations Course (DLOC)
- National Polar-Orbiting Operational Environmental Satellite System (NPOESS)/Userport Training (NPOESS Funding)
 - NESDIS/Integrated Program Office funding supports a Distance Learning team at COMET in the development of NPOESS training, education, and outreach.
- Geostationary Operational Environmental Satellite (GOES) online updates (NESDIS funding)
- Satellite Hydrology and Meteorology (SHyMet) (NESDIS funding)
- * 88-D RADAR Build Training
- * 4-Dimensional visualization of RADAR data
- * Terminal Doppler Weather Radar (TDWR) interpretation
- * Dual Polarization RADAR upgrade

The VISIT program provides science infusion training directly to forecasters and other staff. Training is done by teletraining sessions using VISITview software, which allows for a live, annotated presentation of graphics with an expert instructor. Once the live teletraining sessions are completed, they are recorded and added to the VISIT and DOC/NOAA/NWS Learning Management System (LMS) WEB sites for students to use at any time. Funding also supports the

evolution of the VISITview software and the delivery of a wide array of teletraining sessions on topics such as AWIPS satellite data and products, including new polar satellite imagery and products. In addition to the sessions developed by the VISIT team, the funding supports teletraining done by other NOAA training teams, such as the climate, NWP, aviation, and international training communities. In collaboration with the VISIT program, in FY08 NESDIS is funding the continuation of the SHyMet course for NWS forecasters which is an extension of the SHyMet for Interns course produced in FY06. This later course will be revised and taught again in FY08. The WSR-88D DLOC, now called IROC, will again be offered in FY08 for new NWS forecasters and interns who have not completed the original WSR-88D residence course or a previous DLOC. IROC utilizes blended learning with teletraining sessions and a 3-day residence workshop. WSR-88D Build Training will also continue to be offered, and this training will allow forecasters to keep pace with software and hardware upgrades associated with the new ORDA unit. The NPOESS program will continue to provide funds to support a Distance Learning Team at COMET in the development of NPOESS/Userport training and education activities regarding current and future polar-orbiting satellite systems. NESDIS will continue to provide funding for COMET for insertion of GOES data and products into WEB-based modules.

Homeland Security/Emergency Response

Since September 11, 2001, NWS field offices have been asked to play an ever-increasing role in providing support to the emergency management community and other federal/state/local agencies during and after major emergencies. A COMET module, NWS Support during Hazardous Materials Emergencies, was completed in FY06 and well-received by NWS offices. During the NSTEP meeting, the group believed that more localized training is needed in FY08 and hence no national initiatives were approved. However, the new NWS Senior Management team has stated that there will be a renewed emphasis on Emergency Management program. As with Aviation program, if this emphasis includes training, changes to the FRG recommendations will be necessary.

Administration

NWS administrative personnel are responsible for implementing and sustaining a wide range of administrative/budget programs including budget formulation and execution, travel, human resources, property, and procurement. Training will be required on new processes to ensure current standards are met within the multiple program areas. In many cases, administrative/budget personnel will be expected to train other personnel on these new processes. New technology and e-Learning modules, such as GoTo Meeting and the many off the shelf modules available on the DOC Learn LMS sites, can effectively handle this training along with “train-the-trainer” sessions at national FMC conferences. As a result of these options and due to continued tight budgets, no funds were allocated for this area in FY08.

Management/Leadership

NOAA/NWS requires 80 hours of residence management training for new supervisors and encourages leadership training for all supervisors as part of their long-term professional development. In addition and traditionally, the NWS provides training on daily field operations.

- Field Operations Management

- Management and Supervision
- Executive Leadership Seminar

The residence supervisory training requirement is met by the current Management and Supervision course. Both the Executive Leadership Seminar and the Management and Supervision course are open to attendees from other NOAA Line Offices and other federal agencies. The Executive Leadership Seminar develops advanced leadership competencies. The Field Operations Management course provides important personnel and policy information and guidance to our field forecasters and shift leaders.

All three offerings are part of a progressive and sequential approach to leadership development and are believed to be necessary for the future success of NOAA and the National Weather Service.

Training Infrastructure

- Implement, Expand and manage the new DOC Learn Learning Management System (LMS). In addition to the use of FTEs within TD, funds are provided for LMS support positions at COMET and WDTB.

Diversity/EEO

Diversity training in our workforce enhances teamwork, recognizes differences and similarities in people, and develops better working relationships on an individual and organizational level. The NSTEP team funded a WEB-cast entitled “The Potential is Yours” by Griggs Productions in FY06. This diversity training for all NWS and NOAA employees replaced the outdated NWS diversity module produced in the mid 1990s. Similar requirements for diversity training were submitted for this year’s NSTEP plan and the requirements that were submitted can be fulfilled within existing courses...especially Field Operations Management and Management and Supervision. Both of these courses are delivered as residence training at the National Weather Service Training Center in Kansas City, Missouri.

Regional Training Funds

The Regional Training Funds are often the only available resource to meet unique training requirements in mission-critical areas. The constrained budget environment once again forced the Regional Training Funds to be significantly reduced in FY08. Nonetheless, without this source of funds, the Regions/NCEP would lose all flexibility in meeting their unique high priority training items. The Regional Training Funds are typically used for the following areas of training, which did not receive sufficient funding in the FY08 NSTEP process:

- Local facilities training
- Local IT training such as system administration, networking, security, etc.
- Specialized safety training
- Additional scientific training from local universities
- Training for administrative personnel
- Travel for NWS/university projects and workshops supporting collaborative research

- Purchase of innovative software to support and enhance distance education and training

Section B. International Training Plans

Note that most of the International Training activities are not vetted through the NSTEP or PPBES processes. This alternative training process is primarily the result of funding that comes into NOAA and NWS through the State Department. As such, OCWWS and the NSTEP team is still looking at the best approach for incorporating International Training into the overall NWS training planning process.

*** International Training on Disaster Response, NWP, China (CMA), GEOSS (Satellites) and International Training Desks**

The Tropical and South America Forecast Training Desks at NCEP train about 12 forecasters each year during their four month sessions. Both these Desks stress operational forecasts with numerical weather prediction forecasting. Training in hydrology is also being offered.

The Africa Desk trains six climate specialists per year and forms a partnership with the African Meteorological Services through data and product exchange. The Africa Desk students assess vulnerability in Africa related to food security and water supplies with partial funding from the USAID/Famine Early Warning System Project. E-Learning on-line Graduate Degree in Meteorology and Hydrology for Caribbean and North-South American forecasters will start in the fall 2006. About 24 forecasters will be trained and it will take about three years to graduate.

NOAA's VISIT program collaborates with NCEP's South America Training Desk to conduct monthly satellite weather briefings using the VISITview program. This effort is part of the World Meteorological Organization (WMO) Virtual Laboratory for Education and Training in Satellite Meteorology. The WMO established a Focus Group for the Americas and the Caribbean in December 2003. As an active participant in the WMO VL, NOAA leads a Focus Group in conducting monthly satellite weather briefings using VISITview program developed through the Virtual Institute for Satellite Integration Training (VISIT). At the satellite weather briefing session done in April 2006, a new record was set with 55 participants representing 20 different countries.

Based on the success of the Focus Group, WMO organized a High-Profile Training Event (HPTE) in October 2006 that linked together eight Centers of Excellence around the world. For the Americas, this included Costa Rica, Barbados, Argentina and Brazil. The WMO plans to make extensive use of NOAA's VISITview program and lecture materials developed by NOAA and cooperative institute scientists. The host server for the HPTE will be the VISITview computer at NOAA's Cooperative Institute for Research in the Atmosphere (CIRA). The VISIT and COMET programs are working with NESDIS and NWS International Affairs (IA) offices to develop a training program to support NOAA's GEOSS of the Americas program that provides Geostationary Operational Environmental Satellites (GOES) 10 coverage for South America. The move of the GOES-10 satellite is viewed by the National Oceanic and

Atmospheric Administration (NOAA) as a major contribution towards the implementation of the Global Earth Observation System of Systems (GEOSS).

The Pacific Forecast Training Desk trains about six forecasters for a month each year. The Pacific training program stresses operational forecasting, satellite meteorology, and numerical weather prediction forecasting. This training emphasizes the benefit of using numerical models to predict the weather, and understanding the importance of data interpretation and quality control for data-sparse regions.

Chinese Meteorological Agency (CMA) Training

The Training Division staff in coordination with NWS IA provided extensive support for training of a group of 10 high-level managers from CMS from April through July of 2007. All of these CMA leadership training activities were done using existing resources (mostly staff time from the two branches and the training center). CMA was so pleased with this low cost training activity that they are requesting additional training support for more of their staff in FY 2008. At the request of CMA and NWS IA, Training Division and its partners are preparing a series of proposals for CMA that specify various training options in support of their requests. A critical issue for TD is that all available resources (staff and budget) are already allocated per this Implementation Plan for 2008. Even with significant funding, it will be difficult for TD and its partners to support most of these new requests from CMA. As such, TD will be working with its partners to see what assistance can be provided by using staff and resources outside of TD.

COMET International Training

NOAA's NWS International Affairs (IA) Office provides funds to the COMET Program for translation of their online training materials. Most of the translations are done in Spanish to help with the GEOSS of the Americas efforts. Some COMET modules are also translated into French with funding provided by the Meteorological Service of Canada (MSC).

In June 2007, NWS IA provided additional funds of over \$300K to the COMET Programs. Most of these funds will be used to develop training materials in FY 2008. The primary areas of development will include:

- Packaging of existing satellite training materials to support GEOSS of the Americas/Caribbean Satellite workshop in October 2008.
- Capture selected lectures from GEOSS of the Americas workshop and prepare several Webcasts.
- In conjunction with NCEP South Africa Desk and FDTB, provide support for NWP (WRF EMS and Ensembles) 2-week workshop in South Africa in fall 2008. Workshop Follow-On Training: Capture workshop presentations, edit, and publish them on a web site.
- Provide support and host 2-week WMO International Hydrometeorology Workshop in Summer 2008 with some assistance from FDTB and NWS IA.

- Assist with development of On-line Tsunami Warning System Multimedia Reference Guide by creating an engaging introduction and making guide available via the internet.
- Additional Ideas for Chapter 3 Tsunami Resource Guide:
The existing resource guide, Chapter 3, describes several purposes. COMET may develop materials that support or better fulfill these purposes without duplication. Because print media is limited in how it can achieve effective learning, interactive multimedia will be used to help it achieve its goals.
- Update & Translate Hurricane Strike! Module

Hurricane Strike! project can become a real showcase for NWS and International Affairs. By updating the content, and then developing multiple languages and versions for Caribbean and Pacific Islands, the reach of this project can be expanded to children throughout WMO Region IV and Region V. The module, intended for middle school aged children, has already been done by 2,000,000 school children in the US. The amount of updates, revisions and translations is dependent of the final level of funding provided by IA to the COMET program. These funds could range from 10K (basic update) to over 280K to provide a completely new module for an Island version with translations in Spanish and French.

- Adapt COMET modules for international use.

COMET modules are used now in 197 countries, a testimony to their usefulness. However, they are used with North American case studies and applications, and generally in English. A major project for NWS IA would be to begin the systematic funding of adaptations. The cost of adaptation can be highly variable, but using a figure of about 25% of its original cost would provide sufficient funding. The basic hydrology course would cost \$90 to \$120K to complete for Africa. In addition, it could be translated into Spanish and French by the translation teams at COMET.

COMET has active satellite training in the International Arena that is part of the NOAA/EUMETSAT/UCAR international joint training program. COMET and European Organization for the Exploitation of Meteorological Satellites (EUMETSAT) prepared a WEB cast on the new METOP Polar Orbiting Satellites. COMET is working with EUMETSAT to develop additional Webcasts based on an HPTE session and on the advanced imager on METEOSAT Second Generation (MSG). This MSG module is supported by NESDIS GOES-R program as it helps provide initial training on their advanced imager instrument.

Section C. Other Training Expenditures

Plans are presented below for non-discretionary Base-funded and AWIPS-funded training activities in FY08. Refer to Table 3 for a breakout of training expenditures associated with these non-discretionary Base and AWIPS funds.

Base-Funded Activities:

1. COMET/University Corporation for Atmospheric Research (UCAR) Cooperative Agreement (Core funding, Hydrology Team, LMS Support).

Core funding (Base) for the COMET/UCAR Cooperative Agreement supports the following costs:

- Infrastructure and Administrative Costs
- A specialized DL team delivering WEB-based training modules (Appendix 2, Section A, Marine/Tsunami, Fire Weather, Forecaster Development)
- Support for the COMET Meteorology, Education, and Training (METED) WEB site
Support for NOAA/NWS Residence Training
Outreach support for collaborative field office/university research (Funded by the NWS Office of Science and Technology – OS&T).

Other COMET activities in Table 3 are the COMET Hydrology Team which is jointly supported by Training Division and Office of Hydrologic Development Base funds, the NWP team, and the Aviation Team sponsored by OCWWS Aviation Branch. Training plans for the DL development in FY08 were described in Section IV, Hydrology and Aviation. Funds are also approved for NWS support of the Learning Management System (LMS) by a COMET employee and for translations of modules with funds from the NWS's International Program.

2. Training Division Operating Budgets and Communications.

These are the Base-funded non-labor operating budgets for the Training Division Headquarters (OS6), the Forecast Decision Training Branch (FDTB, OS63), and the National Weather Service Training Center (NWSTC, OS61). The annual operating budget for these facilities includes printing, supplies, equipment, staff travel, and staff training. The annual cost for communications, including teletraining and teleconferencing, are also listed in this section.

3. Miscellaneous Costs.

Learning Management System (LMS): NOAA has assumed the costs for the NWS portion of LMS for FY08. The OCWWS Training Division works in concert with NOAA and the Department of Commerce (DOC) personnel on continued development and upgrade of the LMS.

The Training Division also oversees the implementation of the LMS for NWS. The LMS is expected to streamline planning, registration, completion, and tracking of training activities at all levels of the NWS. The NWS LMS is a WEB-based system hosted by Learn.com Corporation, and it is part of a NOAA and DOC LMS initiative. Part of the LMS is the inclusion of third-party on-line courses on a variety of topics. All NWS employees and contractors have access to a suite of e-learning courses developed by Skillsoft, at least through May 31, 2008.

Additional information about LMS and e-learning can be found at the following WEB site:

<http://doc.learn.com/>

- University Assignment Program (UAP): Discussions between the FRG and OS6 resulted in the decision that no funds will be allocated for this training resource in FY08.
- Leadership Competencies Development Program (LCDP): NOAA has assumed all funding for this program in FY08.
- Prior Year Costs: Money has been set aside for prior year cost in FY08 for on-line access for the following three AMS journals: Monthly Weather Review, Weather and Forecasting, and the Journal of Hydrometeorology. Since the AMS journals are primarily used for science and technology transfer, the FRG strongly believes the costs of the journals should be a joint responsibility of OCWWS, OHD, and OS&T and should use every resource available to leverage the best cost for these journals.

AWIPS-Funded Activities:

1. COMET/UCAR Cooperative Agreement (Core funding and NWP Project Scientists).
Core funding (AWIPS) for the COMET/UCAR Cooperative Agreement supports the following costs:

- Infrastructure
- Two project scientists for NWP initiatives (Section IV, Numerical Weather Prediction)
- Support for the COMET METED WEB site

2. FDTB (OS63) AWIPS Operating Budget.

This portion of the FDTB budget is the operating costs associated with the IFPS and AWIPS teams which include printing, supplies, equipment, staff travel and staff training.

3. NWSTC (OS61) AWIPS Operating Budget

This portion of the NWSTC budget is the operating costs associated with the IFPS team which includes printing, supplies, equipment, staff travel and staff training.

4. WDTB (OS62) AWIPS Operating Budget

Portion of the AWIPS budget is for WDTB training development (shown in Table 2) and operating activities which includes printing, supplies, equipment, staff travel and staff training.

Appendix 3: Proposed Training Needs for FY09 – FY14

Training for FY09 through FY14 was defined using the Program Planning, Budget, and Execution System (PPBES) of NOAA, Operations and Services Improvement Process (OSIP). This was done in two ways. The first set of data (Table 1) assumed the training budget would remain steady state; while the second set of data (Table 2) assumed the training budget would be fully funded from FY09 through FY14. Table 1 shows number of hours of training for residence and distance learning module sessions from FY09 through FY14. In FY08 about 54,500 hours of training will be offered in residence classes. This number will drop in FY08 to about 44,500 hours as more distance learning training becomes available, and will remain about steady state through FY13 when the number of residence hours will be 46,539 hours. Students trained in FY08 will maximize at 1,331 and drop to about 1,000 students in FY13.

Correspondently, the number of hours of distance learning will increase from 69,500 hours in FY08 to over 81,000 hours in FY13. Module delivery will increase from 69,500 hours to over 81,000 hours from FY08 to FY13, an increase of about 17%. The increase in distance learning hours and the corresponding decrease in residence learning hours is intended to reduce the amount of training funds spent on travel, and more importantly, reflects the anticipated need for more “just-in-time” training for our workforce as the pace of technology and scientific infusion is expected to increase during this period. Table 3 provides a more detailed course and module listing for FY08 through FY14.

Table 1: Training FY09 through FY14 Assuming Steady-State Funding

Title	FY09	FY10	FY11	FY12	FY13	FY14
Residence Courses	48,614 Hours	45,541 Hours	46,414 Hours	44,733 Hours	46,569 Hours	44,721 Hours

Title	FY09	FY10	FY11	FY12	FY13	FY14
Residence Courses	1,030 Students	1,007 Students	1,013 Students	922 Students	1,023 Students	920 Students

Title	FY09	FY10	FY11	FY12	FY13	FY14
Distance Learning	73,130 Hours	74,930 Hours	76,730 Hours	78,630 Hours	81,130 Hours	80,720 Hours

Title	FY09	FY10	FY11	FY12	FY13	FY14
Distance Learning	25,310 Module Sessions	26,380 Module Sessions	27,380 Module Sessions	28,480 Module Sessions	30,030 Module Sessions	31,010 Module Sessions

Table 2 provides the resident and distance learning training that could be accomplished from FY 09 through FY 14 if funding would be available for training. For example, an additional 18,000 hours of residence training for over 300 more students would be possible in FY 09. This positive trend would continue through FY 14. Hours of distance learning training would increase by over 34,000 hours or by almost 50%. A corresponding increase would take place in the number of modules delivered. Similar trends in the increase of distance learning would occur through FY 14.

Table 2: Training FY09 through FY13 Assuming a Fully Funded Training Budget

Title	FY09	FY10	FY11	FY12	FY13	FY14
Residence Courses	64,566 Hours	63,678 Hours	63,552 Hours	62,479 Hours	62,066 Hours	59,980 Hours

Title	FY09	FY10	FY11	FY12	FY13	FY14
Residence Courses	1,374 Students	1,387 Students	1,507 Students	1,491 Students	1,354 Students	1,290 Students

Title	FY09	FY10	FY11	FY12	FY13	FY14
Distance Learning	104,000 Hours	108,000 Hours	111,800 Hours	116,000 Hours	120,600 Hours	125,000 Hours

Title	FY09	FY10	FY11	FY12	FY13	FY14
Distance Learning	33,950 Module Sessions	36,130 Module Sessions	38,220 Module Sessions	40,140 Module Sessions	42,650 Module Sessions	44,430 Module Sessions

Table 3: Projected Training for Fiscal Years 2009 – 2014

Fiscal Year 2009:

1. Observing System Maintenance, Upgrade, and Refresher Courses

- ASOS
- Cooperative Observing Program
- NEXRAD – Dual Polarization
- Upper Air Systems

2. Weather Dissemination Systems Maintenance, Upgrade, and Refresher Courses:

- AWIPS
- Console Replacement System
- LINUX
- NEXRAD – Dual Polarization
- WES Support

3. Advanced Warning Operations Courses

- Core
- Severe Weather
- Winter Weather
- Tropical

4. AWIPS

- Applications Development, Operations, and System Management Training
- AWIPS Operator Training
- AWIPS 2 Operator Training

5. Administrative, Management, and Leadership Training

- Effective Writing
- Executive Leadership Seminar
- Field Operations Management
- Labor Relations
- Leadership for Non-Supervisors
- Management and Supervision
- NOAA's NWS Course
- WCM Course

6. WSR-88D Distant Learning Operations Course (DLOC)

7. Safety and Environmental Training

- Fall Protection and Rescue
- CPR/First Aid
- Environmental Compliance
- Specialized Safety Training

8. Hydrology Training

9. Climate Training

10. Satellite Training

- GOES
- NPOESS

11. Weather Services Program Training

- Air Quality
- Aviation
- Fire Weather
- Marine
- Public
- Space Weather
- Tropical

- Tsunami
- 12. NEXRAD Operator Training – Dual Polarization
- 13. Enhanced Services Training
- 14. IFPS and Digital Services Training
- 15. COMET Mesoscale Analysis and Prediction (COMAP) Course
- 15. Emergency Manager Training
- 16. Homeland Security and Emergency Response Training

Fiscal Year 2010:

1. Observing System Maintenance, Upgrade, and Refresher Courses
 - ASOS
 - Cooperative Observing Program
 - NEXRAD – Dual Polarization
 - Upper Air Systems
2. Weather Dissemination Systems Maintenance, Upgrade, and Refresher Courses:
 - AWIPS
 - Console Replacement System
 - LINUX
 - NEXRAD – Dual Polarization
 - WES Support
3. Advanced Warning Operations Courses
 - Core
 - Severe Weather
 - Winter Weather
 - Tropical
4. AWIPS
 - Applications Development, Operations, and System Management Training
 - Operator Training
5. Administrative, Management, and Leadership Training
 - Effective Writing
 - Executive Leadership Seminar
 - Field Operations Management
 - Labor Relations
 - Leadership for Non-Supervisors

- Management and Supervision
- NOAA's NWS Course
- WCM Course

6. WSR-88D Distant Learning Operations Course (DLOC)

7. Safety and Environmental Training

- Fall Protection and Rescue
- CPR/First Aid
- Environmental Compliance
- Specialized Safety Training

8. Hydrology Training

9. Climate Training

10. Satellite Training

- GOES
- NPOESS

11. Weather Services Program Training

- Air Quality
- Aviation
- Fire Weather
- Marine
- Public
- Space Weather
- Tropical
- Tsunami

12. NEXRAD Operator Training – Dual Polarization

13. Enhanced Services Training

14. IFPS and Digital Services Training

15. Emergency Manager Training

16. Homeland Security and Emergency Response Training

Fiscal Year 2011:

1. Observing System Maintenance, Upgrade, and Refresher Courses

- ASOS
- Cooperative Observing Program

- NEXRAD
- Upper Air Systems

2. Weather Dissemination Systems Maintenance, Upgrade, and Refresher Courses:

- AWIPS
- Console Replacement System
- LINUX
- NEXRAD
- WES Support

3. Advanced Warning Operations Courses

- Core
- Severe Weather
- Winter Weather
- Tropical

4. AWIPS

- Applications Development, Operations, and System Management Training
- AWIPS Operator Training

5. Administrative, Management, and Leadership Training

- Effective Writing
- Executive Leadership Seminar
- Field Operations Management
- Labor Relations
- Leadership for Non-Supervisors
- Management and Supervision
- NOAA's NWS Course
- WCM Course

6. WSR-88D Distant Learning Operations Course (DLOC)

7. Safety and Environmental Training

- Fall Protection and Rescue
- CPR/First Aid
- Environmental Compliance
- Specialized Safety Training

8. Hydrology Training

9. Climate Training

10. Satellite Training

- GOES
- NPOESS

11. Weather Services Program Training

- Air Quality
- Aviation
- Fire Weather
- Marine
- Public
- Space Weather
- Tropical
- Tsunami

12. NEXRAD Operator Training

13. Enhanced Services Training

14. IFPS and Digital Services Training

15. COMET Mesoscale Analysis and Prediction (COMAP) Course

16. Emergency Manager Training

17. Homeland Security and Emergency Response Training

Fiscal Year 2012:

1. Observing System Maintenance, Upgrade, and Refresher Courses

- ASOS
- Cooperative Observing Program
- NEXRAD
- Upper Air Systems

2. Weather Dissemination Systems Maintenance, Upgrade, and Refresher Courses:

- AWIPS
- Console Replacement System
- LINUX
- NEXRAD
- WES Support

3. Advanced Warning Operations Courses

- Core
- Severe Weather
- Winter Weather
- Tropical

4. AWIPS

- Applications Development, Operations, and System Management Training
- AWIPS Operator Training

5. Administrative, Management, and Leadership Training

- Effective Writing
- Executive Leadership Seminar
- Field Operations Management
- Labor Relations
- Leadership for Non-Supervisors
- Management and Supervision
- NOAA's NWS Course
- WCM Course

6. WSR-88D Distant Learning Operations Course (DLOC)

7. Safety and Environmental Training

- Fall Protection and Rescue
- CPR/First Aid
- Environmental Compliance
- Specialized Safety Training

8. Hydrology Training

9. Climate Training

10. Satellite Training

- GOES
- NPOESS

11. Weather Services Program Training

- Air Quality
- Aviation
- Fire Weather
- Marine
- Public
- Space Weather
- Tropical
- Tsunami

12. NEXRAD Operator Training

13. Enhanced Services Training

14. IFPS and Digital Services Training

15. Emergency Manager Training

16. Homeland Security and Emergency Response Training

Fiscal Year 2013:

1. Observing System Maintenance, Upgrade, and Refresher Courses

- ASOS
- Cooperative Observing Program
- NEXRAD
- Upper Air Systems

2. Weather Dissemination Systems Maintenance, Upgrade, and Refresher Courses:

- AWIPS
- Console Replacement System
- LINUX
- NEXRAD
- WES Support

3. Advanced Warning Operations Courses

- Core
- Severe Weather
- Winter Weather
- Tropical

4. AWIPS

- Applications Development, Operations, and System Management Training
- AWIPS Operator Training

5. Administrative, Management, and Leadership Training

- Effective Writing
- Executive Leadership Seminar
- Field Operations Management
- Labor Relations
- Leadership for Non-Supervisors
- Management and Supervision
- NOAA's NWS Course
- WCM Course

6. WSR-88D Distant Learning Operations Course (DLOC)

7. Safety and Environmental Training

- Fall Protection and Rescue
- CPR/First Aid
- Environmental Compliance
- Specialized Safety Training

8. Hydrology Training

9. Climate Training

10. Satellite Training

- GOES
- NPOESS

11. Weather Services Program Training

- Air Quality
- Aviation
- Fire Weather
- Marine
- Public
- Space Weather
- Tropical
- Tsunami

12. NEXRAD Operator Training

13. Enhanced Services Training

14. IFPS and Digital Services Training

15. COMET Mesoscale Analysis and Prediction (COMAP) Course

16. Emergency Manager Training

17. Homeland Security and Emergency Response Training

Fiscal Year 2014:

1. Observing System Maintenance, Upgrade, and Refresher Courses

- ASOS
- Cooperative Observing Program
- NEXRAD
- Upper Air Systems

2. Weather Dissemination Systems Maintenance, Upgrade, and Refresher Courses:

- AWIPS
- Console Replacement System
- LINUX
- NEXRAD
- WES Support

3. Advanced Warning Operations Courses

- Core

- Severe Weather
- Winter Weather
- Tropical

4. AWIPS

- Applications Development, Operations, and System Management Training
- AWIPS Operator Training

5. Administrative, Management, and Leadership Training

- Effective Writing
- Executive Leadership Seminar
- Field Operations Management
- Labor Relations
- Leadership for Non-Supervisors
- Management and Supervision
- NOAA's NWS Course
- WCM Course

6. WSR-88D Distant Learning Operations Course (DLOC)

7. Safety and Environmental Training

- Fall Protection and Rescue
- CPR/First Aid
- Environmental Compliance
- Specialized Safety Training

8. Hydrology Training

9. Climate Training

10. Satellite Training

- GOES
- NPOESS

11. Weather Services Program Training

- Air Quality
- Aviation
- Fire Weather
- Marine
- Public
- Space Weather
- Tropical
- Tsunami

12. NEXRAD Operator Training

13. Enhanced Services Training
14. IFPS and Digital Services Training
15. COMET Mesoscale Analysis and Prediction (COMAP) Course
16. Emergency Manager Training
17. Homeland Security and Emergency Response Training

Appendix 4: Table 1 - Residence Courses by Program Areas

FY08 OCWWS Training Division - DRAFT

Table 1: Residence Courses by Program Areas

	Funding Source	# Days / Course	ER	CR	SR	WR	PR	AR	NCEP	Other	Total Reqst Slots	# Students / Course	Courses Funded	Course Need	Single Class Hotel	Single Class PerDiem	Class G Instructor Hotel	Class G Instructor PerDiem	Contracts	Supplies	Cost Single Course	Total Cost																				
NWSTC																																										
ED01 - ASOS Maintenance	ASOS	13	2	4	4	11	2	1	0	0	24	8	3	3.00	13,784	12,052				1,292	27,128	\$81,384																				
HD03 - Advanced Hydrologic Applications	AWIPS	3	5	6	4	4	1	4	0	0	24	8	3	3.00	3,063	6,564	383	821		542	11,373	\$34,119																				
IT04 - AWIPS Applications Development	AWIPS	3.5	3	3	3	3	2	2	0	0	16	16	1	1.00	6,126	13,128				963	20,217	\$20,217																				
IT11 - AWIPS Operations Support	AWIPS	8	3	3	3	3	2	2	0	0	16	16	1	1.00	16,847	18,616	191	723		1,819	38,196	\$38,196																				
IT13 - AWIPS System Manager	AWIPS	12	9	5	6	8	2	2	0	0	32	16	2	2.00	26,036	23,320				2,468	51,824	\$103,648																				
IT10 - LINUX for WFOs / RFCs	AWIPS	11	8	7	3	8	3	5	2	0	36	12	3	3.00	12,635	13,962				1,330	27,927	\$83,781																				
HD02 - WHFS Workshop	AWIPS	3.5	0	0	0	0	0	0	0	0	27	8	0	3.38	3,063	6,564	383	821		542	11,372	\$0																				
EE02 - ART Rawinsonde System Maintenance	BASE	13	2	2	3	2	2	1	0	0	12	6	2	2.00	10,338	9,039				969	20,346	\$40,692																				
EE06 - NWR / Crown Transmitter Maintenance	BASE	3	6	6	2	3	1	2	0	0	20	5	4	4.00	1,914	4,103				301	6,318	\$25,272																				
EE05 NWR / Armstrong Transmitter Maintenance	BASE	3	7	7	2	7	2	0	0	0	25	5	5	5.00	1,914	4,103				301	6,318	\$31,590																				
EE07 - NWR / SRS Transmitter Maintenance	BASE	3	1	0	1	1	1	0	0	0	4	4	1	1.00	1,532	3,282				241	5,055	\$5,055																				
CL01 - Climate Services Operations	BASE	3	6	5	5	3	1	0	2	27	27	1	1.00	10,338	22,154	2,967	6,221		2,084	43,764	\$43,764																					
CL02 - Climate Variability Symposium (at COMET)	BASE	3	6	6	5	5	2	2	0	2	28	28	1	1.00							60,000	\$60,000																				
EE03 - CRS Maintenance	BASE	6	6	7	6	8	2	3	0	0	32	8	4	4.00	6,892	8,524				771	16,187	\$64,748																				
EE04 - CRS Network Operations	BASE	3	9	6	6	5	2	4	0	0	32	8	4	4.00	3,063	6,564				481	10,108	\$40,432																				
OB03 - Cooperative Network Operations	BASE	8	6	7	6	7	3	3	0	0	32	16	2	2.00	16,847	18,616	2,680	3,148		2,065	43,356	\$86,712																				
OB01 - Data Acquisition Operations	BASE	3.5	6	7	6	4	2	7	0	0	32	16	2	2.00	6,126	13,128	383	821		1,023	21,481	\$42,962																				
LE02 - Mgmt / Executive Leadership Seminar (ELS)	BASE	8.5	15	8	14	12	3	2	10	6	70	35	2	2.00	40,202	42,438	5,265	5,818	30,560	13,714	137,997	\$275,994																				
LE01 - Mgmt / Management and Supervision	BASE	9.5	6	6	6	6	2	5	5	4	40	20	2	2.00	22,973	24,250	191	723	5,300	2,672	56,109	\$112,218																				
LE03 - Mgmt / Field Operations Management	BASE	4.5	8	8	8	8	3	4	7	2	48	24	2	2.00	11,486	20,868				5,000	1,868	39,222	\$78,444																			
HD13 - WFO Hydrology Program Management	BASE	8	9	7	5	4	0	2	0	0	27	16	0	1.69	16,847	18,616	861	3,564	2,500	2,119	44,507	\$0																				
SA05 - Safety Training (attrition)	BASE	3.5	5	5	5	8	2	4	1	0	30	30	1	1.00	11,486	24,615			22,900	2,950	61,951	\$61,951																				
SA01 - Safety / Environmental Compliance (attrition)	BASE	3.5	3	5	6	10	2	1	0	0	27	27	1	1.00	10,338	22,154			24,600	2,855	59,947	\$59,947																				
SA02 - Safety / Fall Protection & Rescue (attrition)	BASE	2.5	2	3	3	3	2	3	0	0	16	16	1	1.00	6,126	13,128			17,169	1,821	38,244	\$38,244																				
SA06 - Safety / Fall Protection & Rescue (recertification)	BASE	2.5	19	28	25	30	16	10	0	0	128	16	8	8.00	4,595	12,344			17,169	1,705	35,813	\$286,504																				
SA02 - Safety / Fall Protection & Rescue (attrition)	NEXRAD																				12,621	\$0																				
SA06 - Safety / Fall Protection & Rescue (recertification)	NEXRAD																				143,252	\$0																				
EE09 - WSR-88D Open RDA Maintenance	NEXRAD	6	10	14	9	15	0	0	0	0	48	12	4	4.00	10,338	12,786					23,124	\$92,496																				
EE08 - WSR-88D Maintenance	NEXRAD	25	3	4	2	7	0	0	0	0	16	8	2	2.00	26,036	19,108				2,797	47,941	\$95,882																				
EE10 - RRS Maintenance	RRS	8	6	6	6	10	0	2	0	0	30	6	5	5.00	5,743	6,687				622	13,052	\$65,260																				
Total NWSTC																																										
																																									\$1,969,512	
FDTB / COMET																																										
HD11 - Flash Flood Hydro/QPE Workshop	AWIPS	3	6	6	5	4	2	2	0	2	27	27	1	1.00								57,000	\$57,000																			
ME08 - COMAP	BASE	15	5	4	4	3	1	1	2	0	20	20	1	1.00								167,000	\$167,000																			
ME26 - Canada Winter Weather Workshop	BASE	10	2	0	0	1	0	2	2	0	7	10	1	0.70								18,000	\$18,000																			
HD14 - Hydro / Advanced Hydrologic Science	BASE	8	4	3	4	3	1	2	0	1	18	18	1	1.00								98,000	\$98,000																			
HD08 - Hydro / Basin Customization	BASE	3	0	0	0	0	0	0	0	0	0	18	0	0.00								50,000	\$0																			
HD19 - Hydro / RFC/HPC Hydromet	BASE	6	0	0	0	0	0	0	0	0	24	0	0	0.00								50,000	\$0																			
ME27 - Canada Mountain Weather	BASE	5	0	0	0	2	0	2	0	0	4	4	1	1.00								6,200	\$6,200																			
																																										\$346,200
WDTB																																										
IROC	NEXRAD		22	22	22	22	22	6	1	3	120	20	6	6.00								31,333	\$254,000																			

FUNDING SUMMARY

	Costs	All Tables Costs	Available fm Table 3	Remaining Funds	
TABLE 1 NWSTC BASE	\$1,354,529				78
TABLE 1 FDTB/COMET BASE	\$289,200				
TOTAL BASE (TABLES 1 and 2):		2,610,958	\$2,610,958	\$0	
TOTAL BASE Unfunded Table 1		420,909			
TABLE 1 NWSTC AWIPS	\$279,961				
TABLE 1 FDTB/COMET AWIPS	\$57,000				
TOTAL AWIPS (TABLES 1 and 2):		576,104	\$576,104	\$0	
TOTAL RRS:	\$65,260	\$65,260	\$67,585	\$2,325	
TABLE 1 NWSTC NEXRAD	\$188,378				
TABLE 1 WDTB NEXRAD	\$254,000				
TOTAL NEXRAD (TABLES 1 and 2):		764,378	\$767,000	\$2,622	
Table 1 ASOS	\$81,384				
TOTAL ASOS:		\$81,384	\$79,245	-\$2,139	

Appendix 5: Table 2 – Non Residence Courses

FY08 OCWWS Training Division - Final 6/20/07
 Table 2: Other Training by Program Areas (Discretionary)

	NOAA Strategic Goals	NWS GPRA Categories	FY08 Funded ?	Funding Source	Proposed Delivery (DL=Distance)	Request FY08 \$\$	FTE Resources F= FDTB W= WDTB N= NWSTC	Contractors C= COMET M= CIMMS	Comments
AWIPS									
AV10 - WES Simulations for DLAC 2	3,4, CP1	4	Yes	AWIPS	DL	\$37,000	.2 W	.8 M	37K from each - AWIPS & BASE 74K total
HD04 - FFMP AWIPS Delta Training	5, CP1	2	Yes	AWIPS	DL	\$16,000	.25 W	.2 M	
HD05 - AWIPS Build Updates to RFC Software	5, CP1	2	Yes	AWIPS	DL	\$0	.1 N		FTE Time for Development
HD06 - AWIPS Build Updates to WFO Hydrology Software	5, CP1	2	Yes	AWIPS	DL	\$0	.2 N		FTE Time for Development
IT02 - AWIPS 2 Developer Training	5, CP1	2	Yes	AWIPS	DL	\$0	.2 N		FTE Time for Development
IT03 - AWIPS 2 Development	5, CP1	1,2,3,4,5,6,7,8	Yes	AWIPS	DL	\$52,143	.1 W .2 N .2 F	.2M	AWIPS2 development costs - includes IT03/04/06 113K for all
IT04 - AWIPS 2 Local Applications Development	3,4,5, CP1	1,2,3,4,5,6,7,8	Yes	AWIPS	DL	\$0	.2 F .1 N		AWIPS2 development costs - includes IT03/04/06 113K for all
IT06 - AWIPS2 System Administration Development	3,4,5, CP1	1,2,3,4,5,6,7,8	Yes	AWIPS	DL	\$0	.7 N		AWIPS2 development costs - includes IT03/04/06 113K for all
IT08 - WES2 for AWIPS 2	2,3,4,5, CP1	1,2,3,4,5,6,7,8	Yes	AWIPS	DL	\$68,000	.1 W	1.1 M	add 22K from BASE - total 90K
ME20 - AWIPS Warning Related Delta Training	3,4,5, CP1,CP2,CP3,CP4	1,2,3,4,5,8	Yes	AWIPS	DL	\$66,000	.4 W .5 F	.8 M	
NP01 - Effective use of NWP	3,4,5, CP1,CP2,CP3,CP4	3,4,5,6	Yes	AWIPS	DL	\$0	.05 N	1 C	162K COMET
BASE									
AV04 - Aviation Terminal Forecasting (DLAC 2)	3,4, CP1	4	Yes	BASE	DL	\$0		2 C	additional 37K granted from Aviation Services Program
DS01 - Real Time Mesoscale Analysis	3, CP2	3,6	Yes	BASE	DL	\$0	.40 F		Development work
DS03 - IFPS / GFE Focal Point	3, CP1		Yes	BASE	DL	\$0	.3 N		
FW01 - Fire Weather Related IMET Training	3, CP1		Yes	BASE	Residence	\$123,000			Boise residence course
FW02 - Intermediate Fire Weather Course	3, CP1		Yes	BASE	DL	\$0		2 C	300K from Comet Base funding
IN01 - Implement and Support the LMS	2,3,4,5, CP1, CP3, CP5	1,2,3,4,5,6,7,8	Yes	BASE	DL	\$53,000	.2 W .2 F .1 N	.5 C .65M	75K Comet 53K WDTB
IS-02 Earth Observing and Forecasting Satellite Ops II	2,3,4,5, CP1, CP3, CP5	1,2,3,4,5,6,7,8	Yes	BASE	DL	\$375,000	.15 F		5 Visit
IT14/15 - GIS 101	2,3,4, CP1, CP2, CP3,CP4,CP5	1,2,3,4,5,6,7,8	Yes	BASE	DL	\$31,000			money to buy contracted GIS training modules
ME05 - Effective Storm Based Warnings II	3,4, CP1, CP2	1,2,3,5,8	Yes	BASE	DL	\$16,000	.2 W	.2 M	
HD15 - Hydrologic Model Calibration	5, CP1, CP3	2	Yes	BASE	Workshop	\$53,000			money only...traditional hydro workshop
Regional Training Funds	2,3,4,5, CP1, CP2, CP3	1,2,3,4,5,6,7,8	Yes	BASE	various	\$142,229			
Articulate presentation of AWIPS 2	3,4,5, CP1,CP2	1,2,3,4,5,6,7,8	Yes	BASE	DL	\$0			Produced with Ronla henry and Jason Tuell. NWSTC has the lead in TD. Presentation to be delivered early in FY08...time line to be determined by HOTG and NSTEP AWIPS 2 steering team.
IT08 WES2 for AWIPS2	2,3,4,5, CP1	1,2,3,4,5,6,7,8	Yes	BASE	DL	\$22,000			22K to accelerate delivery
AV10 - WES Simulations for DLAC 2	3,4, CP1	4	Yes	BASE	DL	\$37,000			37K from each - AWIPS & BASE 74K total
IT03 - AWIPS 2 Development	5, CP1	1,2,3,4,5,6,7,8	Yes	BASE	DL	\$61,000			AWIPS2 development costs - includes IT03/04/06 113K for all - money on hold / will assess and re-visit in February 2008 to determine where this money is best spent. This money will not be spent until evaluation of an updating AWIPS 2 training plan in early FY2008. Deirdre and Jason request to be in the meeting in February when this is discussed. Jim Poole will brief NSTEP when the requirements are finalized.
Hydro + Base									
HD10 - Distributed Hydrologic Modeling	5, CP1, CP3	2	Yes	Hydro + BASE	DL	\$0	.05 F	.15 C	23K from Comet Base
HD16 - Precipitation Processing	5, CP1, CP3	2	Yes	Hydro + BASE	DL	\$0		.1 C	25 K from Comet Base
HD17 - The use of GFE in the RFCs	5, CP1, CP3	2	Yes	Hydro + BASE	Blended	\$54,000	.10 F		
HD20 - Short and Long Term Ensembles	5, CP1, CP3	2	Yes	Hydro + BASE	DL	\$0	.6 F	.6 C	150K from Comet Base Funds
HD21 - Deterministic and Probabilistic Verification	5, CP1, CP3	2	Yes	Hydro + BASE	DL	\$0	.15 F	.1 C	15K from Comet Base
NEXRAD									
IS03 - WSR-88D Build Training	2,3,4,5, CP1	1,2,3,4,5,6,7,8	Yes	NEXRAD	DL	\$18,000	.95 W	.2 M	
ME12 - AWOC Core Track	2,3,4,5, CP1	1,2,3,4,5,6,7,8	Yes	NEXRAD	DL	\$10,000	.25 W	.1 M	
ME13 - AWOC Severe Track	2,3,4,5, CP1	1,2,3,4,5,6,7,8	Yes	NEXRAD	DL	\$14,000	.45 W	.2 M	
ME15 - AWOC Winter Weather Track	2,3,4,5, CP1	1,2,3,4,5,6,7,8	Yes	NEXRAD	DL	\$13,000	.30 W	.15 M	
ME18 - FSI Training in OB8.2	2,3,4,5, CP1	1,2,3,4,5,6,7,8	Yes	NEXRAD	DL	\$36,000	.25 W	.35 M	
ME21 - Terminal Doppler Weather Radar Training	2,3,4,5, CP1	1,2,3,4,5,6,7,8	Yes	NEXRAD	DL	\$11,000	.1 W	1.5 M	
ME22 - WES Development and Support	2,3,4,5, CP1	1,2,3,4,5,6,7,8	Yes	NEXRAD	DL	\$123,000	.1 W	1.5 M	
ME23 - Dual-Polarimetric Radar Operations	2,3,4,5, CP1	1,2,3,4,5,6,7,8	Yes	NEXRAD	DL	\$97,000	1 W	1 M	
Table 2 AWIPS						\$239,143			
Table 2 BASE						\$967,229			
Table 2 NEXRAD						\$322,000			
Table 2 Hydro + BASE						\$54,000			
Table 2 Total						\$1,528,372			

Appendix 6: Table 2a – Unfunded Non Residence Courses

FY08 OCWWS Training Division - Final 6/20/07

Table 2a: Other Training by Program Areas (Discretionary)

	FY08 Funded ?	Funding Source	Proposed Delivery (DL=Distance)	Request FY08 \$\$	FTE Resources			Contractors C= COMET M= CIMMS	Comments
					F= FDTB	W= WDTB	N= NWSTC		
AWIPS									
NP02 - NWP Model Changes in FY2008	No	AWIPS	DL	\$57,000				.3 C	
NP05 - NWP Course Update	No	AWIPS	DL	\$53,000				.35 C	
NP11 - Keeping Current on NWP Model Development	No	AWIPS	DL	\$27,000				.1 C	
WM07 - Emergency Manager Training	No	AWIPS	DL						costs vary
BASE									
AV07 - Volcanic Ash Monitoring	No	BASE	DL	\$34,000		.01 F		.2 C .1 Visit	
CL04 - Climate Data, Analysis and Goodness	No	BASE	DL	\$47,000		.05 W .1 F		.05 M .05 C	
CL06 - Climate Teleconnections	No	BASE		\$25,000					
DS02 - Emerging Topics	No	BASE		\$0		.4 F .2 F			cost estimate / .4F with no \$ amount
EE12 - Facilities Training Course	No	BASE		\$12,000					
FW03 - IMET Support for Environmental Spills	No	BASE	DL	\$10,000					
FW04 - NOAA Aircraft Safety Rules Training for IMETs	No	BASE		\$180,000					
FW05 - WCM / IMET All Hazards Training	No	BASE	DL	\$50,000					
FW06 - Fire Weather Forecaster Training II	No	BASE		\$180,000					
HD01 - QPF Forecasting in NDFD	No	BASE							fte costs only
HD07 - Basic Channel Hydraulics	No	BASE		\$50,000					
HD08 - Small Basin Customization and Management	No	BASE		\$0					
HD09 - Dam Break Modeling	No	BASE		\$150,000					
HD18 - RFC Operations	No	BASE		\$20,000					cost estimate - costs vary
HD19 - Precipitation Forecasting for Hydrologic Forecasters	No	BASE	Blended	\$61,000				.2C	
HD22 - Vertical Datums	No	BASE		\$5,000					
HD23 - WFO Hydrologic Operations	No	BASE		\$45,500					
IA01 - Decision Making in Weather Disasters	No	BASE	Blended	\$14,000				.15 M	
LE04 - Facilitation Skills for SOOs	No	BASE		\$1,000					
MA01 - High Resolution Wave Modeling	No	BASE		\$75,000					
ME02 - BOI/Veriv	No	BASE		\$30,000					cost estimate
ME03 - Tropical AWOC	No	BASE	DL	\$132,000		.4 W .1 F		.3 C .05 Visit .4M	
ME06 - Virtual Marine Workshop	No	BASE	DL	\$29,000		.05 W .1 F		.05 M	
ME07 - Boundary Layer Processes Virtual Workshop	No	BASE	DL	\$17,000		.05 F		.2 C	
ME09 - QPF and Flash Flood Processes	No	BASE	DL	\$99,000		.05 W .1 F		.05 M .3 C	
ME10 - Restructure Forecaster Development Course	No	BASE		\$6,000		.05 F .1 N			
ME11 - Mountain Meteorology	No	BASE	DL	\$45,000				.1 C	
NP08 - Centralized Smart Initializations	No	BASE		\$31,000					
OB02 - Data Acquisition Management	No	BASE	DL	\$0		.25 F			
WM02 - Meteorology Interpretation for Customers	No	BASE	Blended	\$29,000		.05 W .1 F		.05 M .1 C	
AV01 - Volcanic Ash Trajectory Forecasting	No	BASE	DL	\$98,000		.1W .1F		.2V	additional .3 for Aviation SME
AV02 - Changes in NWS Aviation Program	No	BASE	DL	\$8,000		.1W .1F			additional .3 for Aviation SME
AV03 - Change Management for Aviation	No	BASE	DL	\$8,000		.1W .1F			additional .3 for Aviation SME
AV08 - WFO Functions for CWSU Forecasters	No	BASE	DL	\$50,000		.05N .05W .05F			unsure of cost or mandate
AV09 - CWSU Functions for WFO Forecasters	No	BASE	DL	\$50,000		.05N .05W .05F			unsure of cost or mandate
AV11 - Aviation Weather Services Modernization	No	BASE	DL	\$8,000		.5N .1W .1 F			additional .3 for Aviation SME
AV05 - Long Haul Flight Impacts	No	BASE	DL	\$8,000		.1W .1F			additional .3 for Aviation SME
SP01 - Space Weather Training for Aviation	No	BASE	DL			.1F			costs vary for webcasts
SP02 - Space Weather General Training	No	BASE	DL			.1F			costs vary for webcasts
CL03 - Climate Forecast Verification	No	BASE	DL	\$0					
CL07 - Monsoons	No	BASE	DL	\$35,000					
WM01 - WCM Outreach	No	BASE	residence	\$100,000					only offered every other year
WM05 - WAS*IS	No	BASE	workshop	\$8,000					
DS05 - IFPS Science Techniques	No	BASE	Blended						
DS06 - Digital Services Technical Workshop	No	BASE	workshop	\$25,000					
ME16 - EF-Scale Damage Assessment	No	BASE	DL	\$5,000					
NEXRAD									
EE16 - Terminal Doppler RADAR Training	No	NEXRAD	DL	\$7,000		.5N			
Unfunded Known Training Requests				\$1,924,500					

Table 1	Unfunded	\$420,909
Table 2	Unfunded	\$0
Table 2a	Unfunded	\$1,924,500
Total	Unfunded	\$2,345,409

Appendix 7: Table 3 – Non Discretionary Funding

FY08 OCWWS Training Division - NSTEP 2008					
Table 3: Funded Training Activities (Non-Discretionary)					
	FY08	FY07	FY06**	FY05	FY04
	Funding	Funding	Funding	Funding	
NON-DISCRETIONARY BASE FUNDING (From PPBES - Local Forecasts and Warnings):					
TOTAL BASE START POINT:	\$ 5,100,000	\$ 5,100,000	\$ 3,964,000	\$ 5,100,000	\$ 5,800,000
1. Total for COMET Base: - - -	\$ 1,727,042	\$ 1,727,042	\$ 1,596,604	\$ 1,727,042	
Hydrology Team at Comet	\$ 177,000	\$ 171,000	\$ 166,000		
2. Total for Training Division Operating Budgets & Communications:	\$ 570,000	\$ 737,000	\$ 358,000	\$ 737,000	
Training Division (OS6) Base Operating Budget	\$ 80,000				
FDTB (OS63) Base Operating Budget	\$ 50,000				
NWSTC (OS61) Base Operating Budget	\$ 317,000				
Communications for Teletraining/Teleconferencing	\$ 30,000				
WDTB (OS62) Base Operating Budget	\$ 93,000				
3. Total for Other Operating Costs: (buffer and journals)	\$ 192,000	\$ 185,000	\$ 403,000	\$ 185,000	
4. Miscellaneous Costs	\$ -	\$ -	\$ -	\$ -	
University Assignment Program	\$ -				
Leadership Competency Development Program (LCDP)	\$ -	\$ -			
AMS Journals (\$132,000 in 07 & 08 - included in item #3)	\$ -	\$ 128,000		\$ 125,000	
5. TOTAL Infrastructure BASE BUDGET:	\$ 2,489,042	\$ 2,649,042	\$ 2,357,604	\$ 2,649,042	
WHAT'S LEFT:					
BASE FUNDS REMAINING FOR ALL BASE TRAINING REQUIREMENTS IN TABLES 1 AND 2:	\$ 2,610,958	\$ 2,450,958	\$ 1,606,396	\$ 2,450,958	
Percent of Total Base Funds Remaining:	51.2%	48.1%	0	48.1%	
TOTAL AWIPS START POINT	\$ 1,300,000	\$ 1,300,000	\$ 1,313,720	\$ 1,300,000	1,100,000
Infrastructure AWIPS FUNDING:					
1. Total for COMET AWIPS:	\$ 681,396	\$ 681,396	\$ 671,000	\$ 681,396	
2. Total for TD AWIPS Operating Budget: - -	\$ 42,500	\$ 42,500	\$ 40,000	\$ 42,500	
TOTAL Infrastructure AWIPS BUDGET:	\$ 723,896	\$ 723,896	\$ 711,000	\$ 723,896	
WHAT'S LEFT:					
AWIPS FUNDING REMAINING FOR ALL AWIPS TRAINING REQUIREMENTS IN TABLES 1 AND 2:	\$ 576,104	\$ 576,104	\$ 602,720	\$ 576,104	
TOTAL NEXRAD START POINT	\$ 1,217,000				
Infrastructure for NEXRAD funding (wdtb)	\$ 450,000				
WHAT'S LEFT:					
			**Before Third Quarter		
			\$1,038,250		
Other NOAA Programs					
Aviation	\$ 287,000	\$ 250,000	\$ 250,000	\$ 250,000	
Climate	\$ -	\$ -	\$ 50,000	\$ 35,000	
Fire Wx/IMET	\$ -	\$ -	\$ 100,000	\$ -	
Hydrology	\$ 210,000	\$ 205,000		\$ 200,000	
IA	\$ 100,000	\$ 475,000	\$ 25,000	\$ 50,000	
Marine	\$ -	\$ -	\$ -	\$ -	
NPOESS	\$ 392,000	\$ 382,000	\$ 360,000	\$ 371,000	
NESDIS/GOES	\$ 280,000	\$ 225,000	\$ 200,000	\$ 208,000	
NESDIS/SHyMet	\$ 175,000	\$ 150,000	\$ -	\$ 150,000	
NEXRAD	\$ 1,217,000	\$ 1,217,000	\$ 1,000,000	\$ 1,000,000	
ASOS	\$ 79,245	\$ 79,245	\$ 79,245	\$ 79,245	
RRS	\$ 67,585	\$ 67,585			
Space Environment	\$ -	\$ -	\$ -	\$ 50,000	
Total Other Programs	\$ 2,807,830	\$ 3,050,830	\$ 2,064,245	\$ 2,393,245	
Total Training Funds	\$ 9,207,830	\$ 9,450,830	\$ 7,341,965	\$ 8,793,245	
			\$ 8,380,215		

Appendix 8: Approximate Human Resources Distribution

Funding Source	Labor Costs (Federal FTEs)					Total
	COMET	FDTB	NWSTC	WDTB	TD	
ASOS			0.60			0.60
Avn						0.00
AWIPS		1.10	3.85	1.10		6.05
Base		3.15	17.85	0.25		21.25
Hydro+Base		1.00				1.00
IA						0.00
NESDIS		0.05				0.05
NEXRAD			2.00	8.80		10.80
NPOESS						0.00
OS&T						0.00
RSS			0.75			0.75
		5.30	25.05	10.15		40.50
Available Staffing		5.00	29.00	9.00		43.00

Appendix 9: Acronyms

ART - Automated Radio Theodolite

AWOC - Advanced Warning Operations Course

CIMMS - Cooperative Institute for Mesoscale Meteorological Studies (Norman, OK)

CIMSS - Cooperative Institute for Meteorological Satellite Studies (Madison, WI)

CIRA - Cooperative Institute for Research in the Atmosphere (Ft. Collins, CO)

CMA - Chinese Meteorological Agency

COMET - Cooperative Program for Operational Meteorology, Education, and Training

COMAP - COMET Mesoscale Analysis and Prediction

DATAAC - Data Acquisition and Operations

DL – Distance Learning

DLAC - Aviation Operations Course in DL format

DLOC - WSR-88D Initial Radar Operations Course

EMS - Environmental Modeling Systems

EUMETSAT - European Organization for the Exploitation of Meteorological Satellites

FRG - Field Requirements Group

FDTB - Forecast Decision Training Branch

FDP - Forecaster Development Program

HOTG - Heads of Training Group

GEOSS - Global Earth Observation System of Systems

GOES - Geostationary Operational Environmental Satellite

GPRA - Government Performance and Results Act

IMET - Incident Meteorologist

LCDP - Leadership Competencies Development Program

LMS – Learning Management System

MSC - Meteorological Service of Canada

MSG - METEOSAT Second Generation

NSTEP - National Strategic Training and Education Plan

NCEP - National Centers for Environmental Prediction

NPOESS - National Polar-Orbiting Operational Environmental Satellite System

NWSTC - National Weather Service Training Center

OCWWS - Office of Climate, Water, and Weather Services

ORDA - Open Systems Radar Data Acquisition

OSIP - Operations and Services Improvement Process

OS&T - Office of Science and Technology

QPE - Quantitative Precipitation Estimation

RRS - Radiosonde Replacement System

RTMA - Real Time Mesoscale Analysis

SANS - System Administration Networking and Security

SHyMet - Satellite Hydrology and Meteorology

TAF - Terminal Aerodrome Forecast

TDWR - Terminal Doppler Weather Radar

UCAR - University Corporation for Atmospheric Research

VISIT - Virtual Institute for Satellite Integration Training

WDTB - Warning Decision Training Branch

WMO - World Meteorological Organization

WRF - Weather Research and Forecasting