CONCLUSIONS AND ACTION PLAN/NEXT STEPS

As noted in the publication “National Aviation Weather Initiatives," the safe and efficient operation of the National Airspace System is a national priority. It is only through the combined efforts of the agencies having roles and responsibilities for aviation weather support that improvements and modifications can be put into place that will lead to vital reductions in the rate of weather-related accidents and weather-related aviation delays.

The July 2000 Aviation Weather Users Forum, sponsored by the OFCM and the FAA, provided another critical step in developing improved aviation weather services by reviewing the progress made in major initiatives identified and agreed upon by federal agencies and coordinated with industry and research partners. Four major objectives/goals were set for the Aviation Weather User Forum:

(1) To highlight programs/processes which have been implemented recently, or are now ready for implementation.
(2) To identify ongoing programs which show promising results and must be supported with continuing resources to reach fruition.
(3) To illuminate gaps where no work is ongoing or planned.
(4) To identify overlaps and assess them.

At the conclusion of the forum, it was clear that the aviation weather community has made progress in many of the initiatives. These included increased computing power and the application of better models, tailored products, visualization techniques, communications, training, cockpit displays, and updated policies and procedures. The community can take pride in the progress made by each of the agencies supporting aviation. Collaboration, coordination, and leveraging have had the effect of multiplying the benefits of applications designed to meet specific aviation weather support requirements.

However, participants in the forum agreed that not all of the objectives laid out in the “Strategic Plan” and the “Initiatives Document” and, in particular, the major focus areas of the forum, were met. Gaps remain that will require continued effort to improve deficiencies in technical knowledge, the implementation of new technologies, and the identification of new requirements that have emerged or will emerge. These gaps must be dealt with while facing time and resource constraints.

Six overarching areas of concern were identified where collective attention, action and priority are needed. They are:

(1) The need to develop *a comprehensive National Aviation Weather Training Program.* This action is driven by common and unique training requirements from a broad spectrum of people who operate in the aviation system. For example, pilot weather training needs differ significantly from those of the forecaster, controller, or dispatcher. Training cannot be overlooked or be an

after-thought. It must be tailored to the needs of the user and it must be recurring to keep users abreast of changes in products and technology.

(2) The need for *a comprehensive examination of the roles, missions, and functions between the private and public sectors in the provision of timely, accurate, relevant, mission tailored weather support* to the full spectrum of aviation activities. The debate regarding the boundary where public (government) responsibility stops and private sector opportunity begins remains controversial. The aviation weather support area, in particular, should be examined and an agreement reached regarding the public/private domain of aviation weather support.

(3) The need for *a review and improvement of the process for establishing, validating, and prioritizing requirements*. The existing process appears to be loosely structured, somewhat ad hoc, less than all inclusive, and without clarification of how and when requirements will be addressed and by whom. Time and resource constraints experienced by both government and industry, coupled with ever-increasing demand for services, dictate that we examine this process as quickly as possible.

(4) The need to *examine the coordination and collaboration process for research and development*. While recognizing that mission oriented agencies must, of necessity, do what is required to meet their own specific requirements for aviation weather R&D, there clearly exists the opportunity for leveraging resources and technology through collaboration and mutual advocacy of programs. Further, the R&D activities of the private sector and universities must be integrated into an overall strategy for aviation weather R&D to achieve the greatest cost effectiveness. The tie-in of the coordination process for R&D with the requirements process addressed in (3) above is absolutely essential for the greatest efficiency and effectiveness.

(5) The need to develop *a coordinated process to assure that improvements in products, dissemination, and training satisfy requirements, are integrated and properly reflected in appropriate policy and procedures*. There must be "buy-in" to the "process" by all participants in the National Airspace System (NAS) which will be most effective through collaboration and coordination among agencies.

(6) Finally, it was the sense of those in attendance at the Forum that *the National Research Council (NRC) should consider ways to review and report on progress by federal agencies on recommendations provided in the NRC Report, "Aviation Weather Services, A Call for Federal Leadership and Action" (1995).* Further, if resources would permit, it was suggested that the NRC also *consider undertaking a study to examine the issue of the private sector and public sector boundary/responsibilities* with regard to aviation weather support.

Actions Plan/Next Steps

While the discussion above addresses the six major overarching areas of concern, there was also consensus at the forum that there are a number of specific action items that must

be reflected here for completeness and given the appropriate priority for continued progress. In the interest of moving ahead without delay, a mechanism is suggested for addressing each action item; that is, an entity is designated as being responsible to assure that these critical items get the attention they deserve.

The Office of the Federal Coordinator for Meteorology:

- Coordinate interagency initiatives to standardize formats and protocols for products disseminated and used at all levels of the NAS
- Guide the development of a "product description document" that compiles validated aviation weather products (recently implemented or ready for implementation) by general, commercial, corporate, and military aviation
- Coordinate the development of a comprehensive National Aviation Weather Training Program that identifies training capabilities and facilitates varying levels of training required by all providers and users of weather services in the NAS
- Explore ways to effect closer and more effective partnerships in the areas of requirements definition, product development and validation, R&D initiatives, and the implementation of policy and procedures for the improved performance of the aviation weather support system
- Explore improvement possibilities in the interagency infrastructure which establishes the requirements setting process
- Continue to promote collaboration, cooperation, and advocacy among the agencies and universities for improvements in forecasting capabilities including fine scale (storm scale) modeling, volcanic ash, convective weather, etc.
- Arrange a follow-on forum in early summer 2001

The National Aviation Weather Program Council (through its Joint Action Group):

- Monitor and provide oversight for action items identified in the Aviation Weather User Forum

The Joint Action Group for Aviation Weather (JAG/AW):

- Complete Tier 3 (Service Design) process
- Facilitate the Tier 4 (Budgets and Schedule) process
- Explore and make recommendations regarding weather product standardization, utility, accessibility, and simplicity, considering the varying levels of understanding required by pilots, controllers, dispatchers, and others in the decision process
- Explore the methodology and infrastructure for new product requirements, validation, training, and implementation
- Explore alternatives and recommend guidelines for rapid prototyping
- Address, taking into account the need for effective coordination and cooperation among stakeholders, the full spectrum of issues related to the area of "weather in the cockpit" (e.g., product relevance and complexity; bandwidth; training required; hardware certification; aircraft retrofit; and human factors with regard to cockpit workload)

The FAA and the NWS:

- Explore the initiative to bring aviation weather services back into the Air Traffic Control System Command Center at Herndon, VA
- Address initiatives for improvement of the process for acquiring and disseminating pilot reports
- Support the development and employment of electronic pilot reports
- Examine the issue of the public/private responsibility boundary regarding aviation weather services

The National Research Council (NRC) should:

- Consider ways to review and report on progress by federal agencies on recommendations provided in the NRC Report, "Aviation Weather Services, A Call for Federal Leadership and Action," (1995). This study would examine the current state of affairs and present findings and recommendations in terms of current requirements, achievements to date, and known time and resource constraints
- Consider undertaking a study to examine the private sector-public sector boundary/responsibility in the area of aviation weather support
- Consider conducting a study to examine progress by the agencies on recommendations from the NRC Report "Weather for Those Who Fly" (1994)

Conclusion

The Aviation Forum was successful in bringing the federal agencies, industry and the research community together to assess the progress of initiatives identified and coordinated in activities that led to publication of the "National Aviation Weather Program Strategic Plan" and the "National Aviation Weather Initiatives" documents. The work already completed on many of the initiatives, along with the implementation of actions/next steps described above, will achieve the key objectives set forth by the agencies. These are:

- Provide improved aviation weather information
- Enhance the ability of decision makers to use the information
- Improve the capabilities of aircraft to fly safely and efficiently in all types of weather
- Facilitate improvements by forging the required institutional arrangements
- Direct and utilize research related to aviation weather

In summary, improvements in aviation weather support will result in a safer and more efficient operation by all users of the National Airspace System and thus greatly benefit the citizens of the United States.