

**Geophysical Fluid Dynamics Laboratory
June 30 – July 2, 2009 Laboratory Review**

**Response to Review Recommendations and Implementation
Plan**

March 3, 2011

**Submitted by V. Ramaswamy, GFDL Director, Brian Gross, GFDL Deputy Director, and
GFDL Scientific Group Leaders**

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Introduction

The Geophysical Fluid Dynamics Laboratory (GFDL) is extremely grateful to the Review Team for the time and effort they put into reviewing GFDL's science. We are very pleased with the findings of the Review Team, particularly their recognition of GFDL's "remarkable accomplishments of its recent past", "the excellent quality of the lab's research on the underlying dynamics of climate variability and climate change" and that "decades of hard work have brought GFDL to a position of world leadership in climate modeling and in the fundamental science of climate dynamics and physical climatology". We also greatly appreciate the insightful recommendations provided by the Review Team regarding ways GFDL can improve itself and its contributions to climate science within NOAA, the Nation, and the World, especially in the areas of strategic planning for GFDL's research and modeling, improving its external partnerships, and recruitment and retention of GFDL staff. We hope that the detailed responses to each recommendation below demonstrate GFDL's commitment to implementing the Review Team's suggestions.

- 1. GFDL's core strengths, in climate model development and in basic research on climate processes and climate change, should be preserved at all costs. These core strengths are unique within NOAA and vital to NOAA's mission. Any reconsideration of GFDL's activities and role within NOAA should acknowledge the importance of these core strengths. New activities should only be mandated for the lab to the extent that they can be undertaken without compromising the lab's strengths in its core areas.**

Thank you to the Panel for the highly complementary assessment. This is an apt recognition of the payoffs of NOAA's investments in long-lead-time science and an acknowledgment of the value of GFDL's scientific accomplishments over the years.

A general note of importance is that GFDL's scientific research is guided by NOAA Mission-relevant objectives toward being a world-class climate modeling institution. The research needed involves long lead times and appropriate utilization of resources that are sustained over time. The recent call for "strengthening science in NOAA" emphasizes

the need to maintain the vision of comprehensive research in climate and Earth Systems modeling and applications leading to NOAA-relevant advancements in knowledge, data, information and products.

To this end, and to preserve and improve the strengths of GFDL recognized by the Panel, we have worked actively and directly with OAR, the nascent Climate Service (CS), and NOAA Senior Management on the NOAA Next Generation Strategic Plan (NGSP), CS documents such as its Vision document and Implementation Plan, and on our own Strategic Plan. These products bear a strong imprint of GFDL participation and reflect GFDL's expertise. GFDL will continue to provide major inputs into OAR-Next (OAR as it will exist after the formation of the CS), the CS, and NOAA by leading key activities in these organizations, particularly in NOAA's new Strategic Execution and Evaluation (SEE) Implementation Plan development process.

- 2. The panel strongly recommends that GFDL be moved from its present location to the main Princeton campus. GFDL would benefit tremendously from greater access to Princeton's intellectual talent pool and fundraising resources. In addition, the move would facilitate interaction between lab scientists and Princeton students, to the benefit of both.**

We thank the Panel for this bold recommendation. Comments to this effect have been made in other forums, and this recommendation has also emerged from earlier review panels that have reviewed Princeton University. Another point to note is that GFDL's lease expires at the end of 2016, and if GFDL is to continue at its present location, the lease has to be renewed with Princeton University in the very near future. In the wake of the recommendation here, a Committee with members drawn from each section of the Laboratory and Isaac Held as the Chair was formed by the Director to explore the various options for the future of GFDL's location, including moving to Princeton University as well as *status quo*. Additionally, the need for expansion of the Laboratory was also examined in view of office space becoming increasingly tighter by the year as the climate sciences expand rapidly. This Committee delivered its findings to the Laboratory in February 2011.

- 3. To further its efforts in Earth System Modeling, GFDL should recruit and hire a scientific leader in biogeochemistry. Among other things, a strong in-house leader for ESM activities would help to build the partnership with collaborators at Princeton University.**

Building off GFDL's successful coupled atmospheric-ocean general circulation model (AOGCM) efforts, we invested a substantial amount of resources towards developing an earth system modeling (ESM) capability over the past several years. As of the date of the External Review, we had produced a successful prototype ESM (ESM2.1). We showed results from this model at the review. At that time, we had also developed and were finalizing two new ESMs (ESM2M and ESM2G). Since the review, these two new

models are being integrated to produce results for inclusion in the next IPCC report (AR5). These models include new state-of-the-art land and ocean biogeochemical components, which are being used to address and reduce uncertainty associated with carbon flows through the earth climate system.

We thank the panel for noting that GFDL is the appropriate entity to spearhead NOAA's ESMS effort. We agree with the assertion in the review that this effort is currently understaffed and under-resourced. In fact, we had submitted a funding request to NOAA asking for more resources in the way of additional staff before the External Review (the process was started in early 2008). We are pleased that this request is included in the President's FY 2011 budget and are hopeful that Congress will approve the request.

We also have developed a plan for expansion of the group working on ESMS at GFDL as funding becomes available. This plan was developed before the External Review. We will update this plan in the light of the Review and events of the past year, and submit it as part of a bigger GFDL 5- to 10-year plan for research and growth; a first draft of this plan will be completed in Spring 2011, as discussed in the response to Recommendation #7 below.

We acknowledge the importance of strong leadership in earth system modeling for the laboratory's future. GFDL will use two strategies to meet this need: (1) develop talent in-house to fill this role, and (2) continue to seek scientists with proven leadership in this area from outside the lab. Because of the early stages of our Earth System modeling effort, which has largely focused to date on model development rather than applications, we believe that the review may not have made fully evident the potential of some existing junior staff to grow into leadership roles.

- 4. GFDL should become more engaged with the decadal climate prediction problem. While there may be valid scientific reasons for a cautious approach, GFDL should not ignore the demands placed on NOAA to provide forecast guidance on timescales of years to decades. One first step in this direction could be an organized research effort focused on the attribution problem.**

A vigorous research program is now underway at GFDL to better understand decadal variability and predictability in the climate system. This effort will take advantage of newly allocated funding within NOAA. This includes ongoing efforts to improve GFDL's newly developed coupled assimilation system, research to explore the inherent predictability of the climate system and to improve our understanding of the mechanisms and impacts of decadal variability, and the development of a prototype decadal prediction system. Integral to this is also the development of a high resolution coupled climate model to assess the robustness of simulated decadal variability in more energetic climate models; this effort is already underway using computing resources awarded to GFDL through the Department of Energy's INCITE program. GFDL's approach to addressing the attribution problem will be addressed in the GFDL 5-10 year strategic plan.

An additional key component is the use of models to assess the adequacy of various observing systems both for characterizing decadal variability and for initializing models.

Additional staff will be recruited to augment this activity, building on an existing strong base. The first of these, a visiting scientist, has been hired. GFDL is anticipating the appointment of one or more additional visiting scientists in FY11 from position advertisements currently running in various forums.

- 5. The lab should work proactively with NOAA administrators to define its role within the NCS. If routine, operational prediction on multi-year and longer timescales is mandated as part of the NCS, decisions must be made regarding the involvement of GFDL. These are not easy decisions, and GFDL must take an active role in the decision process.**

GFDL has played an active role in the development of the Climate Service (CS). GFDL was a principal participant in the development of the CS Vision Document and Implementation Plan. GFDL's imprint is clear in the way the Vision Document articulates the role of understanding and modeling (GFDL's forte) as core capabilities in reaching the CS Strategic Goals, especially toward "Improved understanding of the changing climate system and its impacts". GFDL made (and will continue to make) significant contributions not only to the development of this objective but also toward the other three CS objectives. A rich set of current year deliverables from GFDL, which includes research and modeling needed to understand decadal predictability, is crucial for advancing NOAA's CS. GFDL is also making major contributions to NOAA's Environmental Modeling Enterprise and Holistic Understanding Enterprise Implementation Plans, which are being coordinated by OAR-Next.

The CS's core capabilities in Understanding and Modeling and in the description of its societal challenges depend on GFDL's unique strengths in research and modeling. A variety of GFDL contributions to the CS in collaboration with other elements of the Service that have been articulated in the CS documents noted above. These naturally evolve from GFDL's long-term goals of improved understanding of the climate system and the development of increasingly credible models and include:

1. High resolution model simulations leading to increased understanding and more reliable projections of changes in regional climate, drought, and extreme events such as hurricanes, and global-to-regional changes in atmospheric composition including soot, sulfate and dust aerosols. We expect GFDL expertise to contribute to CS activities that seek to further refine or downscale these high-resolution simulations to the space and time scales of most relevance for impacts, and to quantify uncertainties, in part by analyzing our results in the context of the ensemble of the world's climate models.
2. Research on climate change and variations on decadal time scales, leading to assessments of the predictability of the climate system and to experimental decadal predictions.
3. Attribution studies of observed climate trends and inter-annual to inter-decadal variations. Understanding and communicating the causes of observed variations and changes to external forces and natural factors, and the consequences of physical and biogeochemical feedbacks on the climate system, will be a growing area of research at GFDL, and will also be an important area of collaboration with other elements of CS.

4. Earth System Modeling that is evolving rapidly at GFDL, facilitating research on the carbon cycle and other biogeochemical cycles and their impact on future climate change, as well as the effect of climate change on the land surface and ocean productivity. Potential collaborations with other CS and NOAA units include the impact of climate change on ecosystems, including fisheries.
5. Research on the interface between air chemistry and climate that provides improved understanding of the interactions between climate change and air quality, including global-scale transport of localized pollutant emissions, aerosol-cloud interactions and the stratospheric ozone layer.
6. The continued development and support of publicly available state-of-the-art Ocean Models, with a focus on ocean processes that control the temporal evolution of climate change and sea level, including the interaction between oceans and ice shelves and ice sheets.
7. The GFDL Data Portal, an existing GFDL service that enables public access to GFDL climate models, model output, and derived products, will serve as a vital link between GFDL and CS for model-derived products. We anticipate that providing CS-defined products as web services will be a growing area of collaboration between GFDL and CS.
8. National and International Assessments will continue to be a key element of GFDL's service, both through scientific participation, authorships and model simulations; these include IPCC, Ozone Assessments, NARCCAP and WMO expert assessments and the National Climate Assessments.

As an example of our new initiatives, we elaborate on the support that GFDL will provide the CS in regional climate projections. GFDL will leverage its growing involvement and expertise in high-resolution global atmospheric models to create an ensemble of regional climate projections for the 21st century, downscaled and bias corrected, with a special focus on North America. The ensemble would provide both a best estimate and estimates of uncertainty in climate projections on the scales relevant for impact assessments.

The initial system will be built upon the following structure. Global atmospheric models will be run at 25-50km resolution in time-slice mode, using as boundary conditions the ocean temperatures and sea ice distributions projected for the mid-to-late 21st century by an ensemble of coupled models in the archives of the Coupled Model Inter-comparison Project (CMIP), including the CMIP5 models as they become available (GFDL contributions to the CMIP5 archive are a significant component of GFDL's FY11 program deliverables). These results will then be refined using various approaches to statistical downscaling and bias correction. The output from this refinement step will provide our best estimates of the projected changes in meteorological and hydrological conditions, including extreme weather events and droughts, as well as various combinations of meteorological variables, or indices, commonly thought of as relevant for impacts.

Consistent with the external review, we believe strongly that a dedicated and vibrant research environment at GFDL is central to its ability to attract the world-class talent. This, along with collaborative efforts involving other research partners, forms the

scientific basis of a credible and authoritative CS. Only by continuing to attract, as well as retain, a talented pool of scientists will GFDL be able to achieve the fundamental breakthroughs, both now and in the future, that are vital to the long-term success of the CS. GFDL's input into the development of the CS is clear in the documents that exist today, and our contributions will continue to be integrated into those of the other components of CS through active participation in the CS development process, which should ensure long-term vitality and sustainability of the climate research and modeling environment at GFDL. GFDL has been and will remain a principal in establishing the strategic framework for the CS and in planning to meet the climate objectives within the NGSP, in part by emphasizing the requirement that climate services be based on credible science. GFDL, through its unique strengths in research and modeling, is also shaping the NOAA Holistic Understanding and Modeling Enterprises.

- 6. The lab should expand its efforts to build partnerships within NOAA (e.g. other OAR labs, the CPO RISAs, and service branches like the Fisheries Service), other federal agencies, and academia. In particular, GFDL should seek to strengthen its partnership with Princeton University.**

The GFDL leadership agrees with this recommendation. In some ways, this recommendation is an extension of GFDL's long-standing policy of encouraging collaboration with leading research groups in areas of mutual interest, and in particular with our partners at Princeton University. GFDL recognizes that the range of scientific issues that are important to GFDL's research is increasing dramatically, and that there is a widening range of important societal questions that GFDL's expertise can help to address. This broadening scope calls for enhanced and expanded partnerships between GFDL and other parts of NOAA, other federal agencies and academia. In recent months, it is noted that GFDL has engaged in seeking out potential common fronts involving scientific outcomes with USGS, Forestry, Agriculture and Water sectors. These interactions will be nurtured appropriately in the context of growing the NOAA Climate Service.

Several line organizations within NOAA are already using models originally developed at GFDL. The GFDL hurricane model and various applications using the Modular Ocean Model (MOM) for coupled seasonal forecasts are the most obvious examples. Other examples include seasonal model runs provided to IRI, and the decadal runs for the Multi-Model Ensemble experiments at NCEP. As the models become proficient enough to be useful guides for addressing new questions of interest to NOAA, for example the impacts of climate change on marine ecosystems, GFDL's leadership commits to encouraging new collaborations with partners from other parts of NOAA e.g., its Ecosystems Goal. Indeed, since the Review, GFDL has expanded this collaboration by hiring a visiting scientist with expertise in modeling marine primary productivity over multiple decades.

Many GFDL scientists serve on the faculty of the Atmospheric and Oceanic Sciences Program (AOSP) at Princeton University, and make substantial contributions to its educational and research missions. GFDL has also maintained broad collaborations with

various academic departments at Princeton. GFDL and Princeton's Physics Department jointly organized a recent weeklong symposium on the theoretical aspects of the climate system. GFDL and the Princeton University's Civil & Environmental Engineering and Mechanical & Aerospace Engineering Departments have a newly funded, jointly supervised student project working on stably stratified turbulent boundary layers, which is an area of great interest. In addition, several additional Princeton faculty members from departments outside of Geosciences are being added as Adjunct faculty members of AOSP. These are all concrete examples of an extensive effort to broaden and deepen GFDL's connections with Princeton University. It is expected that these expansion efforts will continue as resources allow.

In addition, GFDL has been an active participant in several Climate Process Teams, and is a partner in three new teams that have recently been funded by NSF and NOAA. We see this as a particularly effective mode of collaboration with our partners in academia, especially as we draw upon their expertise to improve the comprehensive coupled climate models that GFDL develops for NOAA and the nation. GFDL's leadership is committed to encouraging this type of collaboration, both through formal programs like the Climate Process Teams, and through other collaborations with GFDL scientists that emerge organically.

7. **The lab should engage in more strategic planning activities. The lab should make a conscious, collective effort to define its research agenda, rather than relying entirely on an organic, bottom-up evolution of the agenda or an agenda set externally by the IPCC or other entity. Recommendations include a 5-year strategic R&D plan, updated every other year, periodic strategic planning retreats, and "town hall" meetings.**

The Lab agrees with the Review Committee's recommendation and proposes the following steps:

- a) Develop a GFDL Strategic Plan: A panel composed of members from the GFDL Research Council (RC) with strong representation from newer scientists at GFDL was formed by the Director and instructed to draft a 5-10 year strategic plan for GFDL Research and Development Activities out to 2020; a first draft is expected in Spring 2011. Input into the Strategic Plan includes NOAA's Next Generation Strategic Plan (NGSP), the NOAA Climate Service (NCS) Strategic Implementation Plan, NOAA Planning activities, recommendations from GFDL's quadrennial reviews, and the NOAA 5-Year Research Plan. The GFDL Strategic Plan will be reviewed by the full RC and approved by the Director by the end of 2011. Within 6 months thereafter, GFDL's implementation plan will be completed, whereby the methods of achieving its strategic goals will be articulated. In particular, one focus of the implementation planning will be on human and computing resources needed to reach GFDL's strategic objectives, while another will be the grand challenges in climate and Earth System sciences (for example, discussed at the NOAA Science Workshop, and in the Science Day at the NOAA SES Retreat). There will be an annual evaluation of GFDL's research accomplishments and their alignment with the strategic plan, and a

biennial review of GFDL's strategies and a Strategic Plan update to be held offsite. All-Hands meetings will be used to obtain inputs and strengthen key points of the Plan.

- b) Participate in the development of related and complementary Strategic Plans: GFDL will become a key organization within the CS. Its strategic goals will necessarily align with those of the CS and with the NOAA NGSP, as well as the NOAA 5-Year Research Plan. GFDL scientists are, and will remain, key contributors to the development of these complementary plans. Additionally, with plans within NOAA for strengthening science and especially transformational research, GFDL aims to contribute and collaborate in a significant manner to NOAA's fundamental advancements in the physics, biogeochemistry, dynamics and ecology of the Earth System. At the recent Science Workshop to discuss NOAA's Grand Challenges, 4 GFDL scientists participated in framing the major science challenges over the next two decades.
- c) Assess the degree to which GFDL should drive, or be driven by, external activities such as the IPCC and the development of the NOAA climate service: Although there was some disagreement among the panel members about the extent of the IPCC's influence, GFDL recognizes that the IPCC time scale is somewhat artificial when considering scientific advancements and their expression in climate models. As part of the development of its Strategic Plan, GFDL must have an open discussion about its strategy for participating in the IPCC and other national and international assessments, the benefits to NOAA and improvement of scientific knowledge per se, and the balance to be struck in terms of time and other resources between the routine delivery of model simulation outputs for assessment purposes and the creative but appropriate science that is in part curiosity-driven and in part driven by relevance for science-driven products of the NOAA Climate Service.

8. The lab should address its shortcomings in minority recruitment and gender balance.

GFDL accepts this comment and will intensify its efforts in this regard over the next three years. Over the past two years, there have been significant additions with respect to under-represented groups at all levels: Administrative Staff (1), Visiting Scientists (3), and Scientific Staff (3). As a consequence, the balance for new hires is much better than for the total GFDL employee pool. GFDL scientists will expand their participation in activities designed to attract under-represented groups, including the Earth Science Women's Network, summer student and intern programs, job and career fairs, American Meteorological Society and American Geophysical Union meetings, and engagement of primary and secondary educators in the vicinity of GFDL. NOAA's Equal Employment Opportunity and workforce management teams will be asked to help GFDL develop additional strategies to address its shortcomings in minority recruitment and gender balance. GFDL's Deputy Director serves on the NOAA Advisory Committee for the Interdisciplinary Scientific Environmental Technology (ISET) Cooperative Science

Center (CSC), and he presented an invited talk to ISETCSC students on February 11, 2011. GFDL will continue to explore the ISETCSC program as a source of qualified students and visiting scientists.

It should be noted that the turnover of GFDL employees is relatively small because the average residence time of GFDL employees is relatively long, so improving the balance in the employee pool will take some time.

Perhaps one of the most significant steps that GFDL (and NOAA) can take to enhance the participation of under-represented groups in NOAA's mission is to build a diverse pool of graduate students and postdocs, which are the lifeblood of our research enterprise. To this end, GFDL will engage its Cooperative Institute partners, which are the source of graduate students advised by GFDL scientists, in developing long-term approaches to achieve a better representation of minorities and women in their graduate student pool. Part of this effort must include consideration of ways to attract and retain vibrant scientists to advise these students in exciting research projects, which is discussed under the other Recommendations addressed in this response.

Requests will be made to NOAA via the Line Office, paying due attention to the Line Office reorganization planned in connection with the NOAA Climate Service, for augmentation of fiscal resources over the next 4 years to support new and enticing research. New funding represents perhaps the best opportunity for rapidly addressing GFDL's shortcomings in minority recruitment and gender balance. However, these considerations may have to be considerably tempered in light of the recent pessimistic budget outlooks.

9. Lab managers should strive for greater transparency and participation in the decision-making process, so that junior scientific staff are more informed and involved in management decisions affecting the lab.

GFDL agrees with this recommendation. As a start, GFDL has begun posting on its internal website the minutes of the meetings of its two Councils: the Research Council, which deals primarily with scientific direction, and the Management Council, which deals primarily with day-to-day functioning of the lab.

Because of its significance in bringing new ideas into GFDL and for identifying possible areas of collaboration, junior scientific staff have created a seminar series and with managing the seminar curriculum for an increasingly expanding scientific scope of the Nation, NOAA and the Lab.

GFDL will consider further how junior staff can directly contribute to GFDL's decision-making processes in ways that are consistent with GFDL's organizational and supervisory structure, to be discussed during the development of GFDL's strategic and implementation plans (see response 7a). Specifically, GFDL has started inviting newer scientists to GFDL Research Council meetings to address selected subjects as a way to

enhance interactions with senior staff, and a nucleus of junior scientists has begun interacting with the GFDL Front Office in addressing that group's overall well being.

- 10. The lab should strive to create and strengthen opportunities for the advancement of junior scientists. Procedures should be established to help junior scientists grow into more senior roles, including procedures to facilitate the involvement of newer scientists in advising students.**

The Lab's Research Council (RC) has taken up this point. Discussions have been held with the Lab's newer Staff to determine how their interests and advancement can be best promoted. The Lab has drawn up a number of points that are being implemented now.

- Commitment to allow talented newer scientists who are showing considerable promise to have a priority in the recruitment of Visiting Scientists in growth and important climate science areas. Meetings to select visiting scientists are held biannually.
- Ongoing consideration of how to allow newer staff to take the lead on important topical areas where the investigations might lead to novel findings and visibility for the concerned investigators.
- As a consequence of the Lab review, there are plans to revisit the Group structures, with the possibility of revising the structure or adding distinct sub-structures so as to assure a greater degree of participation and corresponding recognition on the part of the junior Staff. This will be taken up in the context of GFDL's implementation plan discussed in response 7a.
- New scientists will be given higher priority when assigning scientists to represent GFDL to distinguished visitors and collaborators and at prominent scientific meetings.
- Encouraging scientists, especially interested junior staff, through explicit activities in their performance plans to work in communications areas e.g., consultants on museum exhibits, forums on climate science and its impacts. This was taken up during the performance review cycle in the fall of 2010.

Some actions have already been completed:

- Discussion with Princeton University's AOS Program has now resulted in the flexibility of a formal recognition by the University of GFDL's junior scientists, who are not part of the GFDL Adjunct Faculty, for their contributions to mentorship of Ph. D. students' theses and possibly lectures. These will be under the title of "Visiting Research Scholar" and is consistent with the University's practice in its other Departments.
- After a long time and several recommendations by GFDL, AOS Program has added 2 new Faculty members in new areas (lower stratosphere and land surface). Their expertise will add to fostering excitement in the newer areas of climate research amongst the Lab's junior scientists.
- Discussions have begun with the Department of Civil and Environmental Engineering (CEE) at Princeton University on how increased synergy can be achieved towards joint research ventures in areas of mutual interest such as

turbulence and boundary layer, computational fluid dynamics, aerosols and air pollution, and clouds. While GFDL brings in its strength in modeling, CEE brings in their laboratory and measurement/observational skills. As a start, 3 of the newer scientists from GFDL are engaged in teaching or co-mentoring graduate students and postdocs, and have been recognized by CEE, adding to their career accomplishments.

- 11. The lab should establish a nominations committee for achievement awards, to ensure that lab scientists are publicly recognized for their scientific achievements and community service work.**

GFDL agrees with this recommendation. In response, GFDL has developed a small committee comprised of five research scientists and lab support staff to assume responsibility for identifying potential awards and honors for GFDL staff (both within and outside of NOAA), recommending strategies for nominating GFDL scientists taking into consideration all areas and disciplines, and managing the nomination process. As awards and honors from different sources and at various levels require varying degrees of preparation, by the end of June 2011, GFDL will determine if more than one standing committee is necessary.

For the current year, GFDL is nominating several scientists for diverse Honors for AMS, AGU, Presidential Early Career Award for Scientists and Engineers (PECASE), OAR, NOAA, and DOC medals.

- 12. For the next quadrennial review, the lab should write a synthetic assessment of its activities to accompany its PowerPoint presentations. Furthermore, panelists should be encouraged to work together to produce a consensus document. Finally, time should be allotted during the review for informal meetings with scientists, particularly junior scientists, and for an open session to discuss the problems and challenges facing the lab.**

GFDL agrees with the first and third recommendations. In response, GFDL will:

- provide a written synthesis of its research activities during the review period, including an assessment of gaps in its research portfolio to be addressed through the development of its strategic and operating plans,
- consider ways to allot time for additional informal meetings with all cadres of scientists, including extending the review period.

For recommendation 2, the possibility of empowering a review committee to develop a consensus report was duly considered during the development of the laboratory review process. However, due to the requirements of the Federal Advisory Committee Act, it was not feasible to pursue that mechanism for this type of review.