

National Aeronautics and Space Administration

Applied Sciences Advisory Group

**October 21-22, 2010
NASA Headquarters
Washington, DC**

MEETING SUMMARY

Peter G. Meister
Executive Secretary

Raymond Hoff
Chair

Applied Sciences Advisory Group

NASA Headquarters
Washington, DC 20546
October 21-22, 2010

Meeting Summary

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*Minutes Prepared By:
David J. Frankel
Consultant*

Applied Sciences Advisory Group

NASA Headquarters
Washington, DC 20546
October 21-22, 2010

Meeting Summary

Thursday, October 21, 2010

Welcome

Mr. Peter G. Meister convened the Applied Sciences Advisory Group (ASAG) meeting and introduced the ASAG Chair, Dr. Raymond Hoff. Dr. Hoff welcomed everyone to the meeting. At his request, the members in attendance introduced themselves. He noted that three openings on the ASAG would soon be filled with new appointments.

Review of ESS Meeting/Last ASAG Meeting Outcomes

Dr. Hoff reviewed the ASAG's action items from its October 15, 2009 meeting and described the ASAG's activities over the past year. He expressed concern with the minutes from the last meeting, noting that they were too detailed and appeared to inappropriately reflect a "stream of consciousness." Dr. Hoff reported that he attended the last Earth Science Subcommittee (ESS) meeting where he provided a briefing on the last ASAG meeting. He described the ESS involvement in ESD Research Program's Annual Performance Goals review and explained its green, yellow, and red ranking system. He questioned whether this might be used for evaluating the Applied Sciences Program (ASP). The ASAG will be on the agenda at the ESS meeting in November. Last November, the ASAG sent a letter on its progress to NASA Administrator Charles F. Bolden. An acknowledgement was received from Mr. Bolden, who thanked the ASAG for its involvement in the Earth science program. Dr. Hoff described the ASAG's goals for the current meeting. First, provide advice and guidance to the Acting Director on restructuring the ASP. Second, evaluate the ASP's progress and how to assess that progress. Third, prepare for the ESS November meeting.

Ethics Training

Mr. Michael Monahan, Esq., from NASA's Office of the General Counsel, briefed the ASAG members on the legal requirements pertaining to ethics. Each ASAG member is a Special Government Employee (SGE) and the government's ethics laws apply to all SGEs. Mr. Monahan described the standards of conduct and the criminal statutes on ethics. He cautioned the ASAG members to only give advice and not to direct civil servants. He also cautioned the ASAG members to avoid giving commercial endorsements using social media while acting in their official NASA capacity. Any ASAG member having a specific issue should bring it to Mr. Meister's attention, who would then contact the General Counsel's office.

Applied Sciences Program –Update

Dr. Hoff introduced Mr. Lawrence Friedl, ASP Acting Director. Mr. Friedl thanked the ASAG for its assistance and insight on identifying what should be introduced into or removed from the Program. The key topics and recommendations from the ASAG's October 2009 meeting were reviewed. Mr. Friedl discussed a chart on the Program's goals and actions. The first goal is to advance the use of NASA Earth science in policymaking, resource management and planning, and disaster response. The key actions for this goal are to identify priority needs, conduct applied research to generate innovative applications, and support projects that demonstrate uses of NASA Earth science. The second goal is to establish a flexible program structure to meet diverse partner

needs and applications objectives. The key actions for this goal are to pursue partnerships to leverage resources and risks and extend the Program's reach and impact. The third goal is to ensure that NASA's flight missions plan for and support applications goals in conjunction with their science goals, starting with mission planning and extending through the mission life cycle. The key actions for this goal are to enable application identification early in the satellite mission life cycle and facilitate effective ways to integrate end-user needs into satellite mission planning. Mr. Friedl gave his assessment on the Program. Attention to budget commitments has improved, but more work is needed on pro-actively communicating project progress and successes. The Program is hampered by inadequate centralized information on projects. The Program Managers' responsibilities exceed their time and capacity. As a result, project tracking and "harvesting" results are sidelined. There was a discussion on the 2010 NASA Authorization Act provisions that affect Earth science applications.

Applied Sciences Program – Progress, Accomplishments, and Activities

Mr. Friedl reported on the Program's 2010 progress, accomplishments, and activities. Copies of the Program's 2009 Annual Report were distributed. He noted that the Program's website (<http://appliedsciences.nasa.gov/>) has been reorganized and improved. He described recent products from the ASP. One product is being used operationally to formulate and validate volcanic ash advisories for aviation hazards. Dr. Hoff observed that there is an interest in knowing whether NASA will provide real time data for planning flight missions and suggested that more work is needed on how near real-time flight mission data can be enabled. Mr. Friedl agreed to have Mr. John Haynes, ASP Program Manager, follow-up on this with Dr. Hoff. Mr. Friedl described ASP participation, both direct and indirect, in the Research Opportunities in Space and Earth Science (ROSES) omnibus solicitation. Charts describing recent workshops were presented. This past June, a Workshop to Examine Analytic Methods for Determining the Value of Information, commissioned by the ASP, was organized and hosted by Dr. Molly Macauley. Dr. Hoff suggested that it might be useful to ask Dr. Michael Freilich, Earth Science Division (ESD) Director for metrics on how to evaluate accomplishments.

Applied Sciences Program – Implementation and Operations

Mr. Friedl presented charts contrasting the Program's current thematic applications areas with the nine Societal Benefit Areas (SBAs) designated by the U.S. Group on Earth Observations (USGEO), established under the White House Office of Science and Technology Policy (OSTP). He presented several charts describing the Program's planned budgetary priorities. He described how the Program identifies and prioritizes high-reward applications ideas and committed partners. The Program's current prioritization for the nine SBAs was shown in a chart. Water, Health/AQ, Ecological Forecasting, and Disasters received higher scores in the priority setting criteria. Agriculture, Climate, Weather (Aviation), Energy, and Oceans received lower scores. Dr. Kass Green complimented the Program on its transparent process. She explained that it is a good idea for the Program to focus its attention on some areas because there is a limited budget. Dr. Hoff suggested sharing the prioritization with all NASA Centers, having it vetted within the NASA system, and getting the widest possible input into the process. Mr. Friedl stated that they are looking at having partners contribute to the funding for the Program's projects. Some "in-kind" contributions have been allowed, but there will need to be actual cost sharing. Dr. Hoff explained that this leads to a greater commitment from the partner. Dr. William Hooke suggested including state and local agencies. Dr. Hoff noted that cost-sharing to leverage current funding may be a metric for success and that another is maintaining credit for a product. He cautioned that cost-sharing could be a "minefield" if done with a commercial entity and advised that it is easier to accomplish when there is a government-to-government exchange. Mr. Friedl described the responsibilities and priority functions for the ASP's Program Managers. They are overburdened and cannot be expected to cover more than one application area. The ASAG discussed the need to have the ASP's Acting Director position become permanent. Ms. Green advised that it is time for that decision to be made. Dr. Hoff concurred and observed that the perception in the community is that the ASP is a program that is "on the cusp."

Mr. Friedl suspended the balance of his presentation until later in the afternoon.

Flight Program Overview

Mr. Friedl introduced Mr. Stephen Volz, Associate Director for Flight Programs, ESD, Science Mission Directorate (SMD). Mr. Volz briefed the ASAG on what Flight Programs is doing to coordinate with and support the ASP. The 2009 Senior Review on Flight Programs included a National Interests panel, which addressed operational uses and applications. He described the flight programs' morning and afternoon flight constellations and explained how they produce more data together than they would separately. Missions in formulation and development, and mission studies in pre-formulation were described. The Decadal Survey states that NASA needs to make a greater effort to enable the societal benefits that could be achieved from its orbiting observatories. Accordingly, Decadal Survey missions have been initiated with an enhanced focus on applications. Mr. Volz described what is being done to improve assessing project and program applications and presented charts showing how the applied science community is being included in mission requirements. Data integration is needed across all platforms and activities in addition to data from orbiting satellites. He explained how science questions and societal benefits drive expectations. Quicker data usability, easier portability, and more transparency are expected. The state of Earth System science is demanding more fusion data products, faster. Operational users need to better understand what the higher level products will be, when they will have them, and how long they will continue. He discussed how data system capabilities have evolved and described the role to be performed by newly chartered Earth Science Data Systems Working Groups (ESDSWG). The mission development teams are focused on primary science; however, the missions are able to return much more, so it becomes a question of requirements vs. capabilities. At the Project level they are holding mission specific applications workshops and adding specific applications requirements to the Level 1 mission performance requirements. At the Program level, they are conducting cross-disciplinary applications workshops. At the Division and Agency level, they are fostering collaboration with other Federal agencies and supporting international coordination activities on data standards. In response to a question on whether he had the right staffing, Mr. Volz explained that having "man-to-man" coverage from applied science on each mission would not be an effective solution to getting a greater applications awareness into the flight program. It would be more effective to get everyone in the flight program to think more about applied science. Every science team should recognize they have to think more about applied science. They could do that easily if asked to and the organization is starting to give them that direction.

Dr. Hoff thanked Mr. Volz for his presentation.

Applied Sciences Program –Implementation and Operations (Cont'd)

Mr. Friedl continued his discussion on implementation and operations in the ASP. He described an ASP plan to use "Associates," who would assist the Program Managers. Ms. Green stated this is a good idea. Mr. Friedl explained ASP is also interested in using Flight Mission representatives at the Centers. He discussed the implications for the USGEO SBAs because the ASP cannot fund each area. It entails a risk in losing applications communities. Mr. Friedl identified that they have recommended to the ESD Direction to maintain the Weather applications area.

Applied Sciences Program – Key Challenges

Mr. Friedl discussed key challenges and opportunities for the ASP. Mr. Friedl stated that the goal is to support all nine SBAs. At last year's meeting, the ASAG advised that the Program should be building knowledge, not just generating examples of applications. He would like to know who the audience for that is and what research should be sought if a solicitation was intended. Dr. Hoff responded that using a solicitation to study how to study applications is not a good idea. The Program should be about more than applications; it should include the process for getting science to applications. It is a knowledge generating process. Ms. Green explained it is important for the Program to do its "lessons learned." The Program should promote the message that applications is science; however, research into that the management of research-to-operations paradigm should be left to others.

The ASAG discussed the process for getting applications representatives on Research & Analysis (R&A) projects. Dr. Moran explained that people need to better understand what is meant by “application” when they are applying for an applications position so that they know it is research, it is science, and they are developing new knowledge. Mr. Friedl requested advice on whether applications representatives on Mission Science teams should be full-time or part-time. Dr. Hoff suggested having one or two full-time people serve as applications representatives.

The ASAG discussed the optimal size for project teams. Mr. Friedl noted the trade-off between more projects with smaller teams and fewer projects with larger teams. Mr. Friedl observed that larger teams tend to be more successful in receiving awards.

Mr. Friedl suspended the balance of his presentation until later in the afternoon.

FACA Briefing

Mr. Friedl introduced Ms. P. Diane Rausch, Director, NASA Advisory Committee Management Division. Ms. Rausch briefed the ASAG members on their responsibilities as a Federal Advisory Committee Act (FACA) advisory committee. The ASAG is one of two congressionally mandated FACA committees in NASA. The other is the Aeronautics Safety Advisory Panel (ASAP). The FACA requires filing a charter for the committee with Congress, maintaining a balanced membership, holding public meetings, keeping minutes or meeting summaries, allowing the public to file written statements, announcing meetings in the Federal Register, and maintaining all committee documents for public inspection. Each FACA advisory committee must have a Designated Federal Official (DFO) who calls, attends and adjourns meetings, works with the advisory committee Chair, approves agendas, and maintains required official records. The DFO for the ASAG is Mr. Peter Meister. The FACA goals include reducing inappropriate influence on government decisions, eliminating government decisions made behind closed doors, and improving public confidence in Agency decision-making. All deliberations to reach a “consensus” on advice to be given to the Agency are to occur in a public meeting. A “consensus” requires a quorum. There is no requirement for voting. Virtual committee meeting deliberations are allowed if there is public access and notice in the Federal Register. Closed meetings are allowed for specified reasons. Administrative work and preparatory work are activities that are not subject to FACA requirements, provided the DFO has issued a “non-FACA meeting” determination memo. Pursuant to NASA Policy Directive (NPD) 1150.11, NASA-sponsored advisory committees must operate in full compliance with the FACA. NASA advisory committees are solely advisory in nature. Only NASA officials may determine Agency policy or direct Agency programs and actions. Meeting minutes will be taken by Mr. David Frankel, and will be posted to the ASAG web site soon after the meeting. Each ASAG member has been appointed by the NASA Administrator, Mr. Bolden, based on the member's expertise. Each member is an SGE, subject to ethics regulations, and must recuse him or herself from discussions on any topic in which there could be a potential conflict of interest.

Dr. Hoff thanked Ms. Rausch for her presentation.

Federal Geographic Data Committee (FGDC) Overview and Discussion

Dr. Hoff introduced Mr. Ken Shaffer, Deputy Executive Director, FGDC Secretariat. Mr. Shaffer briefed the ASAG on the FGDC. It is a Federal committee that promotes geospatial data. Its goal is to build the National Spatial Data Infrastructure (NSDI). The Office of Management and Budget (OMB) created the FGDC in 1990 by issuing Circular A-16. The FGDC is led by a Steering Committee, which is assisted by an Executive Committee and Coordination Group. NASA sits on both committees, but NASA's position on the Coordination Group is vacant. The FGDC stakeholders and partners include state, Tribal, local government, academia, private sector, and the general public. The FGDC receives assistance from the National Geospatial Advisory Committee (NGAC). The FGDC is responsible for three significant websites: www.Recovery.gov, www.Data.gov, and www.geoplatform.gov. The President's FY 2010 and 2011 Budgets require Federal data managers for geospatial data to move to a portfolio management approach. The framework for this has been defined by the FGDC in the “Modernization Roadmap for the Geospatial Platform.” NASA can bring recommendations and initiatives to the FGDC for collaboration, consideration, or response. Mr. Shaffer noted

that there is an opportunity for coordination between the ASAG and the NGAC. In response to a question from Dr. Hoff, Mr. Shaffer stated that the FGDC portfolio has not yet been identified. Ms. Green suggested that the ASP should become more involved with the FGDC. Dr. Hoff suggested it would be worthwhile to hold a workshop between NASA and FGDC. Ms. Green explained that it is important for NASA to be involved while the platform's budget is being developed.

Dr. Hoff thanked Mr. Shafer for his presentation.

Applied Sciences Program –Key Challenges (Cont'd)

Mr. Friedl continued his discussion on key challenges for the ASP. He noted the growing emphasis on climate research and requested advice on what ASP should exert in that field. Dr. Hoff stated that NASA may not be the right Agency to get involved with research into mitigation as a response to a changing climate because NASA does not have the full suite of expertise in the social sciences. Mr. Friedl introduced Mr. Brad Doorn, ASP Program Manager, who discussed program management issues on carbon topics. Dr. Doorn described a scoping study that will develop a strategy for NASA to support carbon policy and carbon management decisions, and he discussed budgetary growth for the Carbon Monitoring System activity. Mr. Friedl asked for the ASAG's guidance on keeping a program manager involved in this area, noting that attention to this area would come at the expense of other items. Dr. Hoff recommended stepping back until usable data becomes available. Ms. Green stated that the ASAG needs more time to consider this issue.

Mr. Meister adjourned the ASAG meeting for the day.

Friday, October 22, 2010

Welcome

Mr. Meister convened the ASAG meeting. Dr. Hoff welcomed everyone back to the second day of the ASAG meeting.

Performance Measurement

Technology Readiness Levels for Applications

Mr. Friedl noted that the ASAG, at its last meeting, had asked the ASP to do performance metrics and to look at project and program success metrics. He described technology readiness levels (TRLs) as a systematic means to assess and communicate the evolving maturity level of a particular technology or application project, allowing a comparison across multiple projects. It is a way to articulate expectations to project teams. It also enables the Program to provide additional guidance and support to streamline the transition to maturity and to increase in the probability of success. There are nine TRL-A stages and Mr. Friedl explained how they are used. He described the results from using TRL-As in a recent survey of projects in ROSES. Dr. Hooke commented that this metric doesn't convey the impact of a successful project. He suggested that another metric for success might be imitation by other organizations. It was also noted that the use of "TRL" as a descriptor may be confusing and terms like "Application Readiness Levels" or "Application Readiness Index" might be considered.

Performance Measures

Mr. Friedl explained that the Program had been working on developing performance management measures with consulting firm Booz Allen Hamilton. Performance management is a discipline that uses performance measurement information to focus an organization on achieving results. Performance measures are the parameters against which progress towards goals can be assessed. He presented a chart illustrating the

difference between outputs, outcomes, and impacts. He explained that outcomes are the results and impacts are the general benefits to society from the outcome. Measures for performance are needed in three tiers: program, portfolio, and project. He presented a chart showing proposed measures for the three tiers and the ASAG discussed the proposed measures. Dr. Hooke noted that one or two project's success might justify all the work that the Program is doing. Dr. Hoff advised that more ASP success stories should be included with ESS success stories in order to secure funding. Ms. Green complimented the Program for the progress it has made in a year, coming from being unfocused to being focused and from no metrics to a good set of metrics. Dr. Macauley advised that "in kind" cost sharing can be used as a metric if it is well documented. Dr. Hoff advised that continued credit to NASA following a project's conclusion could also be a metric. It is up to the Program, not the user, to do the tracking and is up to the Program to claim the credit.

Impact Analysis

Mr. Friedl described impact analyses as addressing the "so what" question on societal benefits. He explained that OMB is emphasizing program evaluation and has provided special FY11 funding to enable Agencies to build capacity for those reviews throughout the government. The only NASA projects chosen for this came from the ASP. The ASAG discussed the impact evaluations that ASP conducted in FY10 to prepare for FY11. Mr. Friedl described lessons-learned from those evaluations that may be useful for future evaluations on the impacts from NASA investments. Anticipated impacts should be identified in initial project documentation. Project staff and stakeholders should be involved early and often to identify impacts. Care should be exercised to document how and when NASA information was used. Dr. Macauley explained that the art of program evaluation is an imperfect science.

Proposed Findings, Observations and Recommendations

Dr. Hoff led a discussion on proposed Findings, Observations and Recommendations. The discussion was to be followed by a meeting with the ESD Director to finalize the results.

Dr. Hoff presented proposed Observations acknowledging work by Mr. Friedl and the Program Staff. After discussion, the ASAG approved the following Observations:

- The Director and Program Managers are complimented on the remarkably improved degree of visibility into the program.
- The willingness to share details of the program funding and direction with the ASAG helped us dramatically understand the issues facing the ASP.

Dr. Hoff presented a proposed Observation on the critical relationship between ASP and the ESD. After discussion, the ASAG approved the following Observation:

- The Applied Sciences Program is a critical part of the Earth Sciences Division.

Dr. Hoff presented a proposed Recommendation for a permanent ASP Director. After discussion, the ASAG approved the following Recommendation:

- Lack of confirmed, permanent leadership of the Program has led to a perception of lack of commitment to the Program. The Committee recommends that NASA seek a permanent line for the Director of the Applied Sciences Program.

Dr. Hoff presented a proposed Finding on the need to increase resources for the ASP. After discussion, the ASAG approved the following Finding:

- As identified in our letter to Administrator Bolden in 2009, the Program continues to be understaffed and financially challenged for the breadth of societal benefit areas it needs to address.

While the out-year funding in the President's Budget is attractive, NASA must continue to increase resources for ASP.

Dr. Hoff presented a proposed Finding on the need for guidance on expectations for accomplishments. After discussion, the ASAG approved the following Finding:

- The ASAG would like to provide the advice needed to the Director on the efficacy of the Program. To do so effectively, it is important that the Director be given clear guidance of the expectations of what an "Accomplishment" for the Program actually means. "Knowing one when I see one" is probably insufficient guidance.

Dr. Hoff presented a proposed Finding on the Program's metrics. After discussion, the ASAG approved the following Finding:

- The Director has begun to state metrics for the Program. The ASAG believes that:
 - The TRL-A is a good method to address performance of applications.
 - The "skin-in-the-game" metric is important.
 - The development of fundamental knowledge needs to be included.
 - The sustainability of the application after NASA funding ends should be included.
 - The NASA attribution requirement needs to be resolved.

Dr. Macauley stated that these all were good, appropriate, internal management issues. She suggested that the first item to be raised should reaffirm the Congressional support for the ASP. The ASAG concurred with this suggestion. Dr. Macauley noted that giving guidance on areas like this is one reason for having an advisory group.

Meeting with Division Director

Dr. Freilich attended the meeting and Dr. Hoff presented to him the ASAG's Observations, Findings, and Recommendation. Dr. Hoff stated that the ASAG was impressed with the Program and complimented Mr. Friedl and his Program Managers. He asserted that applications are critical to the ESD and asked Dr. Freilich to describe the how he defined "applications." Dr. Freilich responded that it is a "superset" of the activities in the ASP Program and that when Congress uses the term, it is larger than the ASP. It is an important distinction because they are trying to break down the "stovepipes." Ms. Green stated that the ASAG is impressed with Mr. Friedl because he is working on the organization as well as in the organization; however, the ASP needs a director, not just an acting director. Dr. Macauley advised that applications can keep the Division relevant between flying missions. Dr. Freilich acknowledged that the ASP's visibility has developed and become larger than its budget. Dr. Hoff advised Dr. Freilich to stay vigilant to ensure that the budget for the ASP continues to grow. Dr. Freilich stated that the FY 11 budget is not threatened and that there are theoretical pressures on the FY 12 budget. He cautioned the ASAG against being overly concerned with "defensive questions" about the FY 12 budget.

Dr. Hoff reported that the ASAG has seen remarkable progress on developing metrics for measuring the Program, particularly the TRL methodology, and asked Dr. Freilich for guidance on how accomplishments would be determined in evaluating the Program's success. The ASAG wants to make sure it is understood that the ASP is not building applications; it is developing fundamental knowledge and requires the same intellectual activity as the R&A program. Dr. Freilich responded that in many ways, the work done in the ASP program is more difficult. Dr. Hoff stated that there is a need to know how long NASA would continue to receive credit when a product goes to an operational environment, like the National Oceanic and Atmospheric Administration (NOAA). Dr. Freilich responded that striving for recognition can be demeaning when the budget situation is not dire and allows NASA to do things well. There is a need to modulate branding. He stated that metrics should not be called TRL because that term is understood differently elsewhere. Using the phrase "application readiness index" would be fine. Dr. Hoff reported that the ASAG believes that the ASP's measurable performance has improved greatly over the past year. Dr. Freilich stated that he does not want to provide comprehensive guidance on how ASP defines accomplishments. This is because the ASP's work is so varied

that it would not be efficient to attempt to define accomplishments. He prefers to retain the “I know it when I see it” standard and leave it to the Program to justify its accomplishments.

Dr. Freilich discussed the upcoming ESS meeting. He sees no benefit to asking the ESS to evaluate the ASAG’s evaluation of the ASP. It is important to show the ESS that the reason the ASAG was established is because the ASP’s work is important. Ms. Green noted incredible progress in the Program’s management and requested Dr. Freilich’s comments. Dr. Freilich complimented the work being done on the organization. He suggested additional political sensitivity and observed that the Program in the past did not always focus on what others would regard as an accomplishment. There is a need to work on the perception held by the OSTP, OMB, and the Congressional oversight committees.

Dr. Hoff thanked Dr. Freilich for his participation and Dr. Freilich thanked the ASAG members for their assistance.

Discussion of Deliverables

The ASAG discussed the presentation to be made by Dr. Hoff and Mr. Friedl at the upcoming ESS meeting. Mr. Meister explained that the ASAG reports through the ESS, not to the ESS. Dr. Moran noted that it is difficult to change perceptions without a permanent program Director. The group discussed the letter that the ASAG planned to distribute about the meeting. Mr. Friedl stated that the Decadal Survey’s recommendations were taken into consideration when prioritizing the ASP’s nine program Areas. Dr. Macauley commented that the Decadal Survey’s recommendations were issued back in 2007, when climate and energy were not as important in the policy debate as they are today.

Public Input

Dr. Hoff asked the members of the public at the meeting whether any of them would like to briefly address the ASAP. There were no comments.

Review and Wrap-up

Dr. Hoff thanked Mr. Friedl and his team for their openness about the Program. Mr. Friedl thanked the ASAP members for their advice. He also thanked Mr. Meister for organizing the meeting, and acknowledged NASA’s Earth Science Technology Office (ESTO) for its assistance to the Program.

The meeting was adjourned.

**NASA Applied Sciences Program Advisory Group (ASAG)
Meeting #3**

October 21-22 2010

**NASA Headquarters
Washington, DC**

Agenda - Thursday October 21st Room Mic-7A

- 8:30 Welcome by Lawrence Friedl, Acting Director of Applied Sciences Program, and Raymond Hoff, ASAG Chair and Professor at UMBC
- 8:40 Review of ESS Meeting / Last ASAG Meeting Outcomes (Hoff)
- 9:00 Ethics Training (Office of General Counsel)
- 10:00 Applied Sciences Program
 - Applied Sciences Program Update
- 10:45 Break
- 11:00 Applied Sciences Program (continued)
 - Applied Sciences: FY2010 Activities
 - Applied Sciences: FY2011 Activities, Budget, etc.
- 12:30 Working Lunch (Flight Program Overview with Volz)
- 1:30 Applied Sciences Program (continued) & Earth Science Division
 - FY11 Climate Architecture
 - National Climate Assessment
 - Discussion
- 2:30 FACA Briefing (Rausch)
- 3:30 Break
- 3:45 FGDC Overview and Discussion with Kenneth Shaffer, Deputy Executive Director Federal Geographic Data Committee
- 4:45 Discussion of Deliverables
- 5:30 Adjourn

Agenda - Friday October 22nd Room Mic-3A

- 8:30 Performance Measures (Friedl)
 - Program Success Metrics
 - Technology Readiness Levels for Applications
 - Impact Analysis
- 10:00 Break
- 10:30 Discussion of Deliverable to ESS
- 12:00 Review and Wrap up

**NASA Applied Science Advisory Group (ASAG) Members
August 2010**

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<p>Dr. Molly Macauley Senior Fellow and Research Director Resources for the Future 1616 P Street, NW Washington, DC 20036 Phone: 202-328-5043 macauley@rff.org</p>	<p>Dr. Bill Hooke AMS Policy Program and Senior Policy Fellow Disasters Roundtable 1120 G Street, NW, Suite 800 Washington, DC 20005 Phone: 202-737-9032 X420 hooke@ametsoc.org</p>
<p>Ms. Kass Green President Kass Green and Associates 1101 High Court Berkeley, CA 94708 Phone: 510-917-0384 kassgreen@earthlink.net</p>	<p>Dr. William B. Gail Director, Strategic Development Microsoft 1690 38th Street Boulder, CO 80301 Phone: 303-546-1429 Fax: 303-583-0246 bgail@microsoft.com</p>
<p>Dr. Susan Moran Adjunct Professor, University of Arizona Hydrologist USDA Southwest Watershed Research Center 2000 E. Allen Rd. Tucson, AZ 85719 Phone: 520-670-6380 X171 susan.moran@ars.usda.gov</p>	<p>Dr. Jacqueline Michel President Research Planning, Inc. 1121 Park Street Columbia, SC 29201 Phone: 803-256-7322 Fax: 803-254-6445 jmichel@researchplanning.com</p>

**Applied Science Advisory Group (ASAG)
NASA Headquarters
Washington, DC
October 21-22, 2010**

MEETING ATTENDEES

ASAG Members:

Hoff, Ray (Chair)	University of Maryland, Baltimore County
Glass, Greg	Johns Hopkins Bloomberg School of Public Health
Green, Kass	Kass Green and Associates
Hooke, Bill	Disasters Roundtable
Macauley, Molly	Resources for the Future
Meister, Peter (Executive Secretary)	NASA Headquarters
Moran, Susan	USDA Southwest Watershed Research Center

NASA Attendees:

Allen, Marc	NASA HQ
Chafer, Charles	NASA/GSFC
Cohen, Ellen	NASA HQ
Doorn, Bradley	NASA HQ
Eckman, Richard	NASA HQ
Freilich, Michael	NASA HQ
Friedl, Lawrence	NASA HQ
Burgess-Herbert, Sarah	NASA Fellow
Jurand, Deirdre	NASA Fellow
Leidner, Allison	NASA HQ
Luce, Peg	NASA HQ
Neil, Doreen	NASA HQ
Rausch, Diane	NASA HQ
Seebon, Michael	NASA HQ
Turner, Woody	NASA HQ
Volz, Stephen	NASA HQ
Walton, Amy	NASA HQ

Other Attendees:

Blankenship, Terry	Booz-Allen
Campbell, Julie	CMG, Inc.
Childs, Lauren	NASA DEVELOP
Frankel, David	Zantech/PBF
Mackey, William	ESA
Petheram, John	Lockheed Martin
Ruiz, Mike	NASA DEVELOP
Schaffer, Ken	FGDC
Shanley, Lea	NRC Mapping Science Center

**Applied Science Advisory Group (ASAG)
NASA Headquarters
Washington, DC
October 21-22, 2010**

LIST OF PRESENTATION MATERIAL

- 1) Chair's Review of 2010 ASAG Activities [Hoff]
- 2) Ethics Briefing for Special Government Employees Serving on NASA Advisory Committees [Monahan]
- 3) Current Situation – State of the Program [Friedl]
- 4) Applied Science Program Progress, Accomplishments, and Activities [Friedl]
- 5) Applied Science Program Implementation and Operations [Friedl]
- 6) Applied Science Program Key Challenges [Friedl]
- 7) NASA's Evolving Approach to Maximizing Applications Return from our Earth Observing Satellites [Volz]
- 8) Federal Advisory Committee Act [Rausch]
- 9) Federal Geographic Data Committee Overview Briefing [Shaffer]
- 10) Carbon Monitoring System [Doorn]
- 11) Applied Science Program Performance [Friedl]
- 12) Findings and Recommendations