Report NP212 – April 2012

NP 212 Climate Change, Soils and Emissions Research

Christina Woods
Program Analyst

Donald P. Knowles, Scientific Quality Review Officer
(January 2009-December 2010)

9/4/2012
Date

David Marshall, Scientific Quality Review Officer
(January 2011-December 31, 2011)

8/24/12
Date

Michael S. Strauss, Peer Review Program Coordinator

4/09/2012
Date

Office of Scientific Quality Review
Agricultural Research Service
United States Department of Agriculture

Introduction

This Panel Report provides the background on the 2010-2011 National Program (NP) 212 Climate Change, Soils and Emissions Research Panel Review. The project plans reviewed by these panels were applicable to the mission of the National Program to "*improve the quality of atmosphere and soil resources affected by, and having an effect on agriculture, and to understand the effects of, and prepare agriculture for, adaptation to climate change.*"

In collaboration with the Office of Scientific Quality Review (OSQR), and the National Program Leaders, Drs. Charles Walthall and Matt Smith, divided 36 plans into 12 panels. These plans were broken down into two review cycles, the first one occurring in 2010 and the second one in 2011. After considering several candidates, Drs. Don Knowles and Dave Marshall, Scientific Quality Review Officers appointed a chair for each of the 12 panels (Table 1).

Table 1. Breakdown of the Climate Change, Soils and Emissions Research Panels

Panel	Panel Chair	Panel Meeting Date	Number of Panelists	Number of Projects Reviewed
212 Climate and Greenhouse Gases (2010)	Dr. Shashi Verma, Charles Bessey Professor, School of Natural Resources, University of Nebraska, Lincoln, NE	March 28, 2011	5	4
212 Erosion (2011)	Dr. Mike Singer, Professor Emeritus, Dept Land, Air & Water Resources, University of California, Davis, CA	May 25, 2011	5	4
212 Gaseous Emissions (2010)	Dr. John Walker, Senior Chemist, US EPA, Natl Risk Mgmt Res Lab, Research Triangle Park, NC	December 10, 2009	4	3
212 Greenhouse Gases and Soil Systems (2010)	Dr. Charles Rice, University Distinguished Professor, Dept Agronomy, Kansas State University, Manhattan, KS	February 10, 2010	3	2
212 Impact: Crop Production & Agroecosystems (2010)	Dr. John Horowitz, Research Economist, USDA, ERS, Resource, Environment, & Science Policy Branch, Washington, DC	January 21, 2010	6	5
212 Impacts: Managed Ecosystems (2010)	Dr. Monique LeClerc, Professor, Lab for Environmental Sciences, The University of Georgia, Griffin, GA	January 8, 2010	5	3
212 Landscape Management (2010)	Dr. Jennifer Harden, Soil Scientist, U.S. Geological Survey, Menlo Park, CA	February 24, 2010	4	3
212 Nutrient Cycling (2011)	Dr. Frank Coale, Professor & Dept Chair, Dept Environ Science & Technology, University of Maryland, College Park, MD	February 28, 2011	4	3
212 Particulate Matter (2010)	Dr. Robert Avant, Jr., Bioenergy Program Director, Texas Agrilife Research, Taylor, TX	December 8, 2009	3	1
212 Particulate Matter (2011)	Dr. David Marshall, SQRO	April 2011	3	1
212 Soil Degradation (2011)	Dr. Warren Dick, Professor, School of Environment & Natural Resources, Ohio State University, Wooster, OH	March 22, 2011	4	3
212 Soil Management (2011)	Dr. Dwayne Edwards, Professor, Dept Biosystems & Agricultural Engineering, University of Kentucky, Lexington, KY	March 23, 2011	5	4

Dr. Michael Strauss, Peer Review Program Coordinator, and Drs. Knowles and Marshall presented an orientation to the Panel Chairs. Drs. Knowles and Marshall subsequently approved the candidate panelists selected by each Chair. The approvals took into account conflicts of interest and followed guidelines for diversifying panel composition geographically, institutionally, and according to gender and ethnicity. Panelists demonstrated a recognizable level of knowledge of recent research within their respective fields of climate change, soils and emissions. The panels received a telephone/web-based orientation. The Office of National Programs (ONP) provided an overview of the NP 212 Climate Change, Soils and Emissions Research Program. All panels were convened online.

Panel Review Results

Along with the Panel's written recommendations, OSQR sends each Area Director a worksheet that shows each reviewer's judgment of the degree of revision (action class score) their project plan requires. The action classes of the panelists are converted to a numerical equivalent, averaged, and a final action class rating is assigned.

Scientists are required to respond to reviewer queries and recommendations, revise their project plans as appropriate, and submit a formal statement to OSQR through their Area Director. The project plans are implemented following approval and certification from the SQRO. Low scoring plans are subject to re-review by the panel (see below).

If the action class is:

> **No Revision Required.** An excellent plan; no revision is required, but minor changes to the project plan may be suggested.
>
> **Minor Revision Required.** The project plan is feasible as written and requires only minor clarification or revision to increase quality to a higher level.
>
> **Moderate Revision Required.** The project plan is basically feasible, but requires changes or revision to the work or one or more objectives, perhaps involving alteration of the experimental approaches in order to increase quality to a higher level and may need some rewriting for greater clarity.
>
> **Major Revision Required.** There are significant flaws in the experimental design and/or approach or lack of clarity which hampers understanding. Significant revision is needed.
>
> **Not Feasible.** The project plan, as presented, has major flaws or deficiencies, and cannot be simply revised. Deficiencies exist in approach, experimental design, presentation, or expertise which makes it unlikely to succeed.

For plans receiving one of the first three Action Classes (No Revision, Minor Revision, and Moderate Revision) scientists respond in writing to panel comments, revise their project plan as appropriate, and submit the revised plan and responses to OSQR through their Area Office. These are reviewed by the SQR Officer at OSQR and, once they are satisfied that all review

concerns have been satisfactorily addressed, the project plan is certified and may be implemented.

When the Action Class is Major Revision or Not Feasible, responses and revised plans are provided as above, but must then be re-reviewed by the original review panel that provide a second set of narrative comments and Action Class based on the revised plan. If the re-review action class is no revision, minor or moderate revision the project plan may be implemented after receipt of satisfactory response and SQRO certification, as described above. One plan that received a Moderate Revision score on re-review was not satisfactorily revised and thus not certified. Of the plans submitted for review 97% were certified.

Plans receiving major revision or not feasible scores on re-review are deemed to have failed. The action class and consensus comments are provided to the Area but there is no further option for revision of such plans. Low scoring or failed plans may be terminated, reassigned, or restructured, at the discretion of the Area and Office of National Programs.

NP 212 Program Review Overview

In general comments during debriefings following panel deliberations. The panel reviewers, in general, already had a high view of ARS and the peer review process supports it. They felt that the process countered the sometimes negative impression that USDA is "in the pocket" of industry. Reviewers suggested that larger plans were more of a challenge to review because of both size and breadth. They also noted that connection between the objectives and the teams who strive to meet those objectives is sometimes weak both within the plans and between the different scientists working on them. Improved awareness between these groups could result in much more success for all parties.

Table 2 shows the initial and final scores broken down by percentages for the first and second cycle panels. In initial review, the second cycle received nearly half minor revision or better, down slightly from the first cycle. Also, the proportion of major revision or not feasible in the second cycle was slightly higher than the first cycle. All projects passed review in both cycles including those that scored major revision or not feasible in the initial review. One project did not complete review and was not certified.

Figures 1-4 show the distribution of initial and final scores assigned by the first (2001, 2002, 2004) and Second (2010-2011) Cycles Climate Change, Soils and Emissions Research Panels. The first cycle panels initial score was higher (5.22; minor) than the second cycle score (4.50; moderate). Initial scores were improved with the first cycle higher (5.86; minor) than the second cycle (5.48; minor).

Table 2. Initial and Final Scores for the First (2001, 2002 & 2004) and Second (2010 & 2011) Cycle Distribution Broken Down by Percentages for the NP 212 Climate Change, Soils and Emissions Research Panels

First Cycle, 2001, 2002 & 2004	Initial Review						Final Review						
	% No Rev	% Min Rev	% Mod Rev	% Maj Rev	% Not Feas	Avg Initial Score	% No Rev	% Min Rev	% Mod Rev	% Maj Rev	% Not Feas	Avg Final Score	% of Plans Certified
202 Productive & Sustainable Systems (16)	0.0%	68.8%	12.5%	18.8%	0.0%	5.05	0.0%	75.0%	25.0%	0.0%	0.0%	5.50	100.0%
202 Conservation, Nutrients & Other (17)	47.1%	17.6%	23.5%	11.8%	0.0%	5.70	47.1%	17.6%	35.3%	0.0%	0.0%	6.26	100.0%
203 Panel Review (5)	20.0%	40.0%	40.0%	0.0%	0.0%	5.50	20.0%	40.0%	40.0%	0.0%	0.0%	5.50	100.0%
204 Panel Review (11)	9.1%	45.5%	18.2%	18.2%	9.1%	4.55	27.3%	45.5%	27.3%	0.0%	0.0%	5.91	100.0%
Totals	20.4%	42.9%	20.4%	14.3%	2.0%	5.22	24.5%	44.9%	30.6%	0.0%	0.0%	5.86	100.0%
Second Cycle, 2010 & 2011	Initial Review						Final Review						
	% No Rev	% Min Rev	% Mod Rev	% Maj Rev	% Not Feas	Avg Initial Score	% No Rev	% Min Rev	% Mod Rev	% Maj Rev	% Not Feas	Avg Final Score	% of Plans Certified
212 Climate and Greenhouse Gases (4)	0.0%	50.0%	50.0%	0.0%	0.0%	5.00	0.0%	50.0%	50.0%	0.0%	0.0%	5.00	100.0%
212 Erosion (4)	0.0%	50.0%	50.0%	0.0%	0.0%	5.00	0.0%	50.0%	50.0%	0.0%	0.0%	5.00	100.0%
212 Gaseous Emissions (3)	0.0%	33.3%	33.3%	33.3%	0.0%	3.83	33.3%	33.3%	33.3%	0.0%	0.0%	5.50	100.0%
212 Greenhouse Gases & Soil Systems (2)	0.0%	50.0%	50.0%	0.0%	0.0%	5.00	0.0%	50.0%	50.0%	0.0%	0.0%	5.00	100.0%
212 Impact: Crop Production and Agroecosystems (5)	40.0%	0.0%	20.0%	40.0%	0.0%	5.05	60.0%	20.0%	20.0%	0.0%	0.0%	6.72	100.0%
212: Impacts: Managed Ecosystems (3)	0.0%	33.3%	66.7%	0.0%	0.0%	4.40	0.0%	33.3%	66.7%	0.0%	0.0%	4.40	100.0%
212 Landscape Management (3)	0.0%	0.0%	100.0%	0.0%	0.0%	2.00	33.3%	33.3%	33.3%	0.0%	0.0%	6.00	100.0%
212 Nutrient Cycling (3)	0.0%	66.7%	33.3%	0.0%	0.0%	5.50	0.0%	66.7%	33.3%	0.0%	0.0%	5.50	100.0%
212 Particulate Matter (2)	0.0%	50.0%	0.0%	50.0%	0.0%	4.33	50.0%	50.0%	0.0%	0.0%	0.0%	7.00	100.0%
212 Soil Degradation (3)	0.0%	66.7%	0.0%	33.3%	0.0%	4.67	0.0%	100.0%	0.0%	0.0%	0.0%	5.67	100.0%
212 Soil Management (4)	0.0%	50.0%	25.0%	25.0%	0.0%	4.30	0.0%	50.0%	50.0%	0.0%	0.0%	4.60	75.0%
Totals	3.0%	45.5%	30.3%	21.2%	0.0%	4.55	15.2%	56.0%	28.8%	0.0%	0.0%	5.64	97.0%

Figure 1. Initial Review Scores for the First (2001, 2002, 2004) and Second (2010, 2011) Cycle Distribution for the NP 212 Climate Change, Soils and Emissions Research Panels (average score 5.22; 4.50, respectively). The number of plans reviewed by each cycle is in parentheses. Number over columns are the actual number of plans receiving that score.

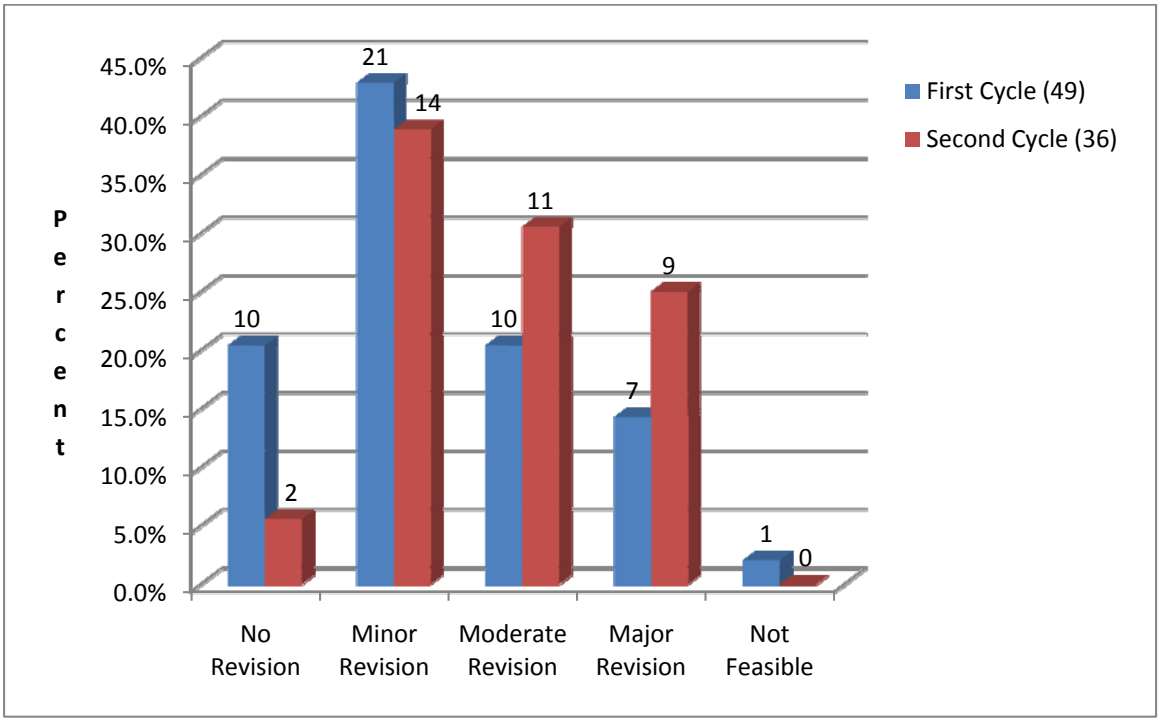


Figure 2. Final Review Scores for the First (2001, 2002, 2004) and Second (2010, 2011) Cycle Distribution for the NP 212 Climate Change, Soils and Emissions Research Panels (average score 5.86; 5.48, respectively). The number of plans reviewed by each cycle is in parentheses. Numbers over columns are the actual number of plans receiving that score.

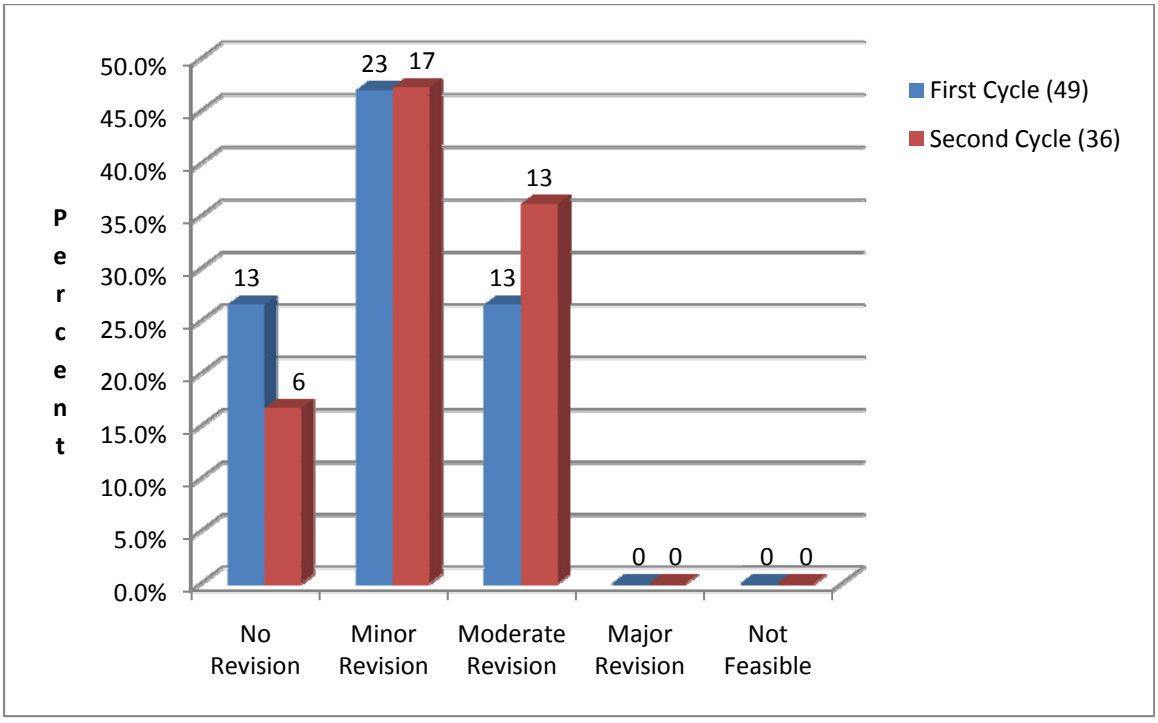


Figure 3. Initial and Final Scores for the First Cycle (2001, 2002, 2004) Climate Change, Soils and Emissions Research Panels

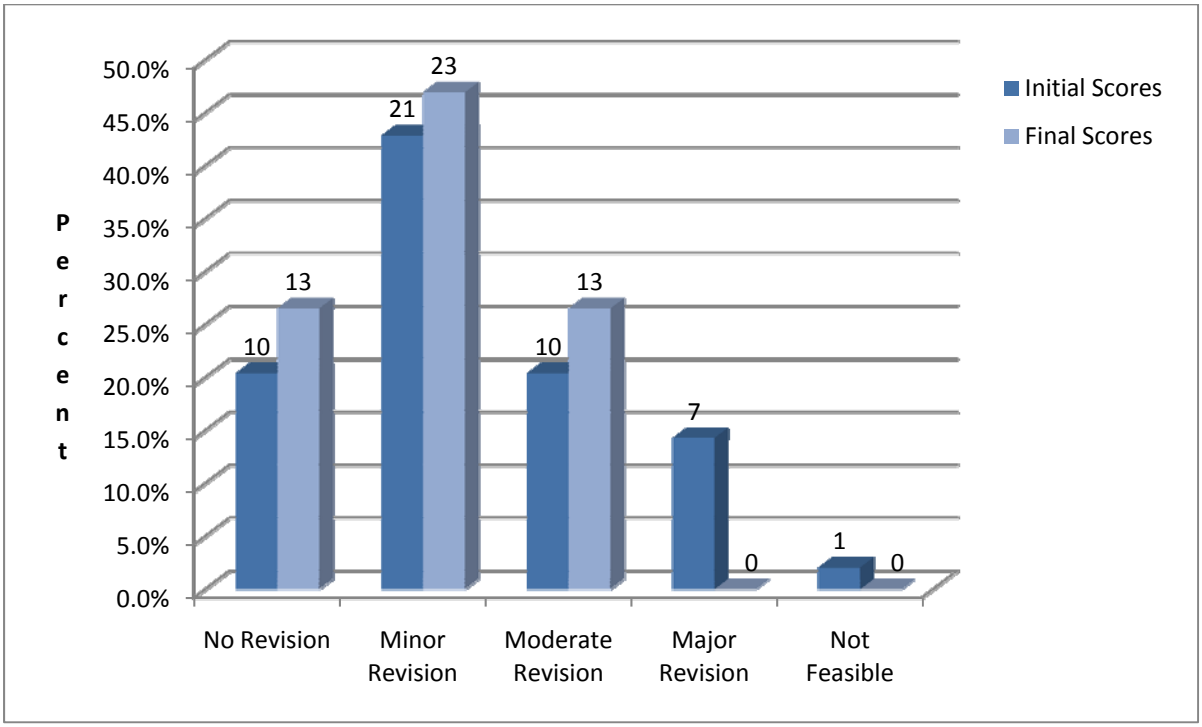
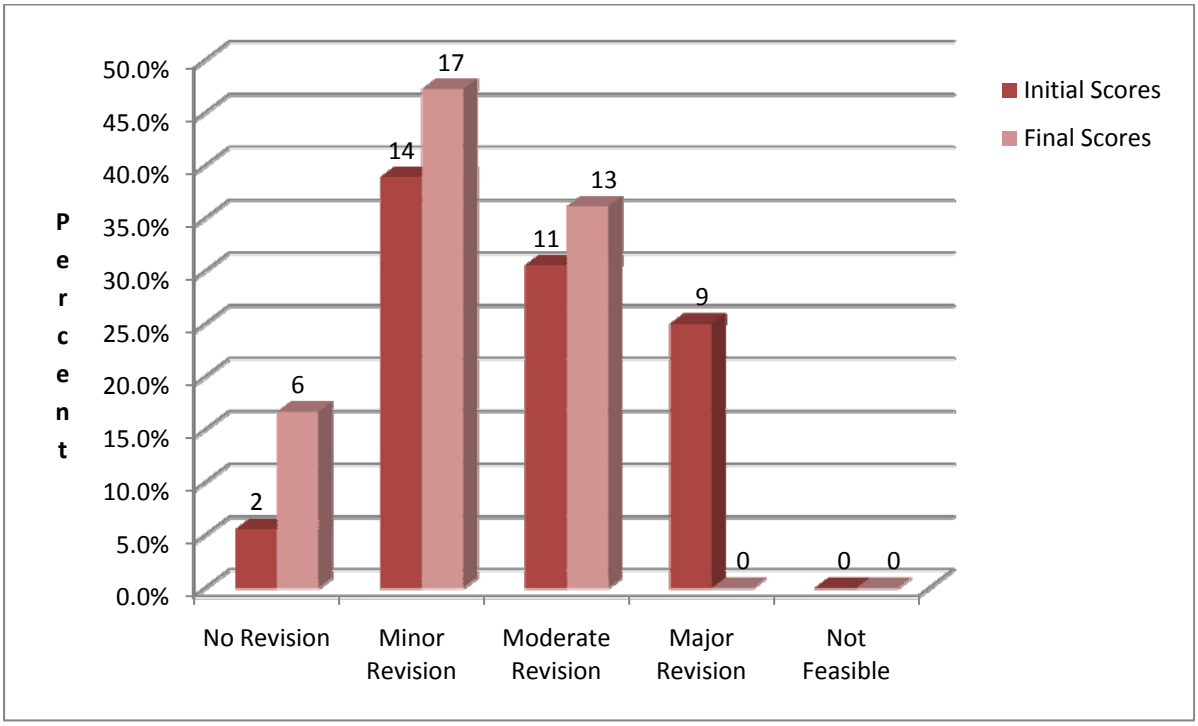


Figure 4. Initial and Final Scores for the Second Cycle (2010, 2011) Climate Change, Soils and Emissions Research Panels



Panel Characteristics

ARS places responsibility for panel member selection primarily on external and independent Panel Chairs. ARS scientists, managers and the Office of National Programs may recommend panelists but the Panel Chair is under no obligation to use these recommendations. Several factors such as qualification, diversity, and availability play a role in who is selected for an ARS peer review panel. The 12 panels were composed of nationally and internationally recognized experts to review 36 projects primarily coded to the Climate Change, Soils and Emissions Research Program (See Table 1, page 2). The information and charts below provide key characteristics of the Climate Change, Soils and Emissions Research Panels. This information should be read in conjunction with the Panel Chair Statements.

Affiliations

Peer reviewers are affiliated with several types of institutions, especially universities, government, special interest groups, and industry. In some cases, peer reviewers have recently retired but are active as consultants, scientific editorial board members, and are members of professional societies. Also, several government-employed panelists are recognized for both their government affiliation and faculty ranking. Tables 2 and 3 show the types of institutions with which the Climate Change, Soils and Emissions Research Panel members were affiliated with at the time of the review.

Table 2. Faculty Rank of Panelists Affiliated with Universities

Panel	Professor	Associate Professor	Assistant Professor
Climate & Greenhouse Gases	3		
Erosion	4		
Gaseous Emissions	2	1	
Greenhouse Gases and Soil Systems	1	1	
Impacts: Crop Production & Agroecosystems	2	2	
Impacts: Managed Ecosystems	4		
Landscape Management	1		1
Nutrient Cycling	4		
Particulate Matter (2010)	1		
Particulate Matter (2011)	1		1
Soil Degradation	1	3	
Soil Management	3	1	1

Table 3. Other Affiliations Represented on the Panels

Panel	Government	Industry & Industry Organizations	Other
Climate & Greenhouse Gases	2		
Erosion	1		
Gaseous Emissions	1		
Greenhouse Gases and Soil Systems	1		
Impacts: Crop Production & Agroecosystems	1	1	
Impacts: Managed Ecosystems	1		
Landscape Management	2		
Nutrient Cycling			
Particulate Matter (2010)		2	
Particulate Matter (2011)		1	
Soil Degradation			
Soil Management			

Accomplishments

The peer review process is intended to be rigorous and objective, striving for the highest possible scientific credibility. In general, panelists are expected to hold a PhD unless the norm for their discipline tends to not require doctorate level education to achieve the highest recognition and qualification (e.g., engineers and modeling specialists). Panelists are also judged by their most recent professional accomplishments (e.g., awards and publications completed in the last five years). Finally, the panelists who are currently performing or leading research to address a problem similar to those addressed in the National Program are preferred. Table 4 describes their characteristics in the Climate Changes, Soils and Emissions Research Panels.

Table 4. The Panels' Recent Accomplishments

Panel	Published Articles Recently	Received Recent Professional Awards	Having Review Experience	Currently Performing Research
Climate & Greenhouse Gases	5	3	4	5
Erosion	4	3	3	4
Gaseous Emissions	4	2	4	4
Greenhouse Gases and Soil Systems	3	3	3	3
Impacts: Crop Production & Agroecosystems	6	1	6	6
Impacts: Managed Ecosystems	5	4	4	5
Landscape Management*	3	3	2	3
Nutrient Cycling	4	2	3	4
Particulate Matter* (2010)	2	3	3	2
Particulate Matter* (2011)	3	3	1	3
Soil Degradation	4	2	1	3
Soil Management	4	4	4	5

*Data not available.

Current and Previous ARS Employment

The Research Title of the 1998 Farm Bill 105-185, mandated ARS's requirements for the peer review of ARS research projects: 1) panel peer reviews of each research project were mandated at least every five years and 2) the majority of peer reviewers must be external (non-ARS scientists).

Table 6. Affiliations with ARS

Panel	Currently Employed by ARS	Formerly Employed by ARS
Climate & Greenhouse Gases	0	0
Erosion	0	0
Gaseous Emissions	0	0
Greenhouse Gases and Soil Systems	0	0
Impacts: Crop Production & Agroecosystems	0	1
Impacts: Managed Ecosystems	0	0
Landscape Management	0	0
Nutrient Cycling	0	0
Particulate Matter (2010)	0	0
Particulate Matter (2011)	0	0
Soil Degradation	0	0
Soil Management	0	2

Climate Change, Soils and Emissions Research Panel Chairs

Dr. Shashi Verma, Ph.D, ARS Panel Chair

Climate and Greenhouse Gases Panel

Charles Bessey Professor of Natural Resource Sciences, School of Natural Resources, University of Nebraska, Lincoln, Nebraska

Education: B.S. Ranchi University; M.S. University of Colorado; Ph.D. Colorado State University

Dr. Verma's areas of interests include climate change, carbon sequestration, greenhouse gases and agricultural meteorology. In 2002, he was named the Charles Bessey Professor of Natural Resource Sciences. He has been a member of the University of Nebraska-Lincoln faculty since 1972.

Dr. Michael Singer, Ph.D., ARS Panel Chair

Erosion Panel

Professor Emeritus, Department of Land, Air & Water Resources, University of California, Davis, California

Education: B.S. Cornell University; M.S. and Ph.D. University of Minnesota

Dr. Singer's areas of interests are soil management, soil conservation and soil erosion processes. Dr. Singer established a long-term research watershed, known as the Schubert Watershed, at the University of California Sierra Foothills Research and Extension Center.

Picture Not Available

Dr. John Walker, Ph.D., ARS Panel Chair

Gaseous Emissions Panel

Senior Chemist, U.S. EPA, National Risk Management Research Laboratory, Atmospheric Protection Branch, Research Triangle Park, North Carolina

Education: B.A., M.S. and Ph.D. North Carolina State University

Dr. Walker is a research scientist in the US EPA Office of Research and Development, National Risk Management Laboratory, Air Pollution Prevention and Control Division, (APPCD), Atmospheric Protection Branch (APB). His research interests include biogeochemical cycling of nitrogen, measurement and modeling of trace gas emissions from natural and agricultural sources, measurement and modeling of trace gas and particle air/surface exchange in agricultural and forest landscapes, processes of secondary aerosol formation in the atmosphere, micrometeorology

Dr. Charles Rice, Ph.D., ARS Panel Chair

Greenhouse Gases and Soil Systems Panel

University Distinguished Professor, Department of Agronomy Kansas State University, Manhattan, KS

Education: B.S. Northern Illinois University; M.S. and Ph.D. University of Kentucky

Dr. Rice has conducted long-term research on soil organic dynamics, nitrogen transformations and microbial ecology. Recently, his research has focused on soil and global climate change, including C and N emissions in agricultural and grassland ecosystems, and soil carbon sequestration and its potential benefits to the ecosystem.

Picture Not Available

Dr. John Horowitz, Ph.D., ARS Panel Chair

Impact: Crop Production and Agroecosystems Panel

Research Economist, USDA, ERS, Resource, Environment, & Science Policy Branch, Washington, DC

Education: B.S. and M.S. Washington State University, Ph.D. University of California – San Diego

Dr. Horowitz is an economist with the Resource and Rural Economics Division. His research focuses on the economics of climate change, with special emphasis on the costs of agricultural greenhouse gas reduction. Economics of climate change; environmental valuation; environmental regulation; water pollution; discount rates; behavioral economics.

Dr. Monique LeClerc, Ph.D., ARS Panel Chair

Impacts: Managed Ecosystems Panel

Professor, Lab for Environmental Sciences, The University of Georgia, Griffin, Georgia

Education: B.S. McGill University, M.S. and Ph.D. University of Guelph

Dr. Leclerc joined the ranks of the faculty at the University of Georgia in 1995, where she served as an associate professor until 2001, when she became a full professor. Dr. Leclerc is interested in agricultural meteorology, biophysics, biometeorology, carbon fluxes, water vapor fluxes, microclimatology, transport of pollutants, greenhouse gases, and land use practices.

Dr. Jennifer Harden, Ph.D., ARS Panel Chair

Landscape Management Panel

Soil Scientist, U.S. Geological Survey, Menlo Park, California

Education: B.S., M.S. and Ph.D. University of California, Berkeley

Dr. Harden is a Soil Scientist on the research staff at the U.S. Geological Survey where she has served as project scientist and/or project chief since 1982. Dr. Harden's research interests are soil science; cycling; pedology; soil process; and biogeochemistry.

Dr. Frank Coale, Ph.D., ARS Panel Chair

Nutrient Cycling Panel

Professor and Department Chair, Department of Environmental Science and Technology, University of Maryland, College Park, Maryland

Education: B.S. University of Maryland; M.S. and Ph.D. University of Kentucky

Dr. Coale's research interests include agricultural nutrient management, soil phosphorus dynamics, and agroecosystem management. He has written numerous articles on nutrient management and edited "Chesapeake Bay Region Nutrient Management Training Manual."

Dr. Robert Avant, Jr., ARS Panel Chair

Particulate Matter Panel

Director, Bioenergy Program, Texas Agrilife Research, Taylor, Texas

Education: B.S. and M.S. Texas A&M University

Mr. Avant's distinguished career includes 30 years of government and private sector experience in agriculture, environmental, energy, and consulting engineering areas. His research interests include agricultural air quality engineering, bioenergy, agricultural production logistics.

Dr. Warren Dick, Ph.D., ARS Panel Chair

Soil Degradation Panel

Professor, School of Environment and Natural Resources, Ohio State University, Wooster, Ohio

Education: B.S. Wheaton College; M.S. and Ph.D. Iowa State University

Dr. Dick's research program focuses on soil biochemistry, microbiology and environmental soil chemistry: He is the caretaker of the longest continuously maintained no-tillage plots in the world. These plots have been no-tilled continuously since 1962 representing more than 40 years of no-tillage. As a result, many things can be learned about the impact of no-tillage on soil processes, production of crops (i.e. corn and soybeans), insect and weed responses, and other fundamental soil-plant interactions.

Dr. Dwayne Edwards, Ph.D. ARS Panel Chair

Soil Management Panel

Professor, Department of Biosystems and Agricultural Engineering, University of Kentucky, Lexington, Kentucky

Education: B.S. and M.S. University of Arkansas, Ph.D. Oklahoma State University

Dr. Edwards's professional specialties are research and teaching in the area of assessing surface water quality impacts of agricultural production practices (particularly animal production) and developing effective, practical technology to maintain high compatibility between efficient agricultural production and high environmental quality.

Panel Chair Statements

All Panel Chairs are required to turn in a statement that describes how their panel was conducted and possibly provide comments on the review process that might not otherwise be found in the individual research project plan peer reviews. Panel Chairs are given some guidelines for writing their statements, but are nevertheless free to discuss what they believe is most important for broad audiences.

University of Nebraska Lincoln

SCHOOL OF NATURAL RESOURCES

March 31, 2011

Dr. Don Knowles, Scientific Quality Review Officer
Office of Scientific Quality Review
Agricultural Research Service, USDA
5601 Sunnyside Avenue, MS 5142
Beltsville, MD 20705

Subject: NP212 Climate and Greenhouse Gases Panel (2011) Chair Statement

Dear. Dr. Don Knowles:

The NP212 Climate and Greenhouse Gases Panel (2011) completed its review and provided action class scores in an on-line panel meeting on March 28, 2011. In the following I provide some observations and suggestions.

- In December 2010, I was asked to serve as the chair of this panel. Having served as a member of such a review panel a few years ago, I appreciated the importance of such an effort. I spent considerable time looking for experts in appropriate scientific fields (I consulted many colleagues for their recommendations) and selected four outstanding scientists in North America to serve as primary / secondary reviewers of the four project plans to be reviewed. Working closely with Dr. Mike Strauss, we followed the OSQR guidelines and excluded reviewers with conflict of interest. The OSQR provided an excellent orientation briefing describing the scope of the review, role of the reviewers, scoring criteria and the entire process. After the receipt of the project plans, the reviewers spent considerable time reviewing them and provided comprehensive reviews of these plans. In our on-line panel meeting on March 28, strengths and weaknesses of each project were discussed in detail. Recommendations for improvement were outlined. In my opinion, the entire review process was efficient and the panel discussion was credible.

- In the orientation briefing, it was noted that the reviews are supposed to be similar to typical reviews of journal manuscripts. With this in mind, I would like to suggest that in future the individual reviews (instead of Combined Comments) be sent to lead scientists. Merging individual reviews tends to make the document somewhat "muddled and confusing". The lead scientists should be asked to provide a point-by-point response to all individual reviews (as is done in most journal manuscript reviews).

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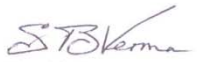
- In almost all project plans, there seemed to be a lack of integration and synthesis. The project leaders should be asked to provide a clear discussion of how their proposed measurements / analyses / modeling will be integrated into a set of products leading to new and worthwhile information. This should be done for each objective and perhaps for the entire project. I recommend that this be pointed out by the OSQR at early stages of preparation of various project plans.

I hope these suggestions will be useful for future panel reviews. Should you like to discuss these points or need additional information, please let me know. Thank you for giving me an opportunity to contribute to this worthwhile effort. I would like to express my sincere appreciation for the guidance and support provided by Dr. Mike Strauss throughout the review process.

Sincerely,



Shashi B. Verma
Charles Bessey Professor of Natural Resources
School of Natural Resources
University of Nebraska-Lincoln

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27 May 2011

Dr. Dave Marshall, Scientific Quality Review Officer
Office of Scientific Quality Review
Agricultural Research Service, USDA
5601 Sunnyside Avenue, MS 5142
Beltsville, MD 20705

RE: NP 212 Review Panel

Dear Dr. Marshall,

Thank you for the opportunity to participate in a scientific quality review of four proposals for your office. It reaffirms my belief that ARS is a superb research organization. Below, I respond to the four questions you asked me to respond to as panel chair. Please note that I am using "my" letterhead, but I am retired from the University of California and I do not maintain an office at this address. For future correspondence, please use my home address.

1. Did the NP 212 panel have discussions that reflected sound and credible scientific peer review? Yes. Each of the panel members had carefully read the proposals and all contributed to the reviews. Each of the panel members is and experienced scientist, familiar with the fields of study that were reviewed.

Did the NP 212 panel have discussions that reflected ideas, creative thinking, and alternative approaches to improve the quality of research that may not have been considered by Agency scientists and staff? Yes. In addition to sharing the written comments from each panel member, we had an open and honest discussion of each proposal during our conference call. Both strengths and weaknesses of each proposal were discussed and suggestions made for improvements were voiced, discussed and included in the reviews.

2. What were the most notable characteristics of the discussion process and why? There was a surprising convergence of thinking among the reviewers. If one reviewer found a strength or weakness in a proposal, at least one other reviewer agreed. There was no rancor among reviewers. Differences of opinion were openly discussed until we reached a consensus. Each of the reviewers was well prepared to discuss his/her primary and secondary proposal and those proposals for which she/he had no direct responsibility. It was clear from the discussion that although each reviewer came to the review with a different area of expertise, each was well acquainted with the research areas being discussed and each contributed helpful comments during the review discussion. The variety of backgrounds and viewpoints was a strength of the review process.

3. What suggestions do you have to improve the peer review process? None. The process worked very well from my point of view. The size of the review panel was good. We agreed that having more than five reviewers on a conference call would not work nearly as well. Four proposals allowed for a thorough

discussion of each on one call. Additional proposals and individuals would have greatly complicated and lengthened the conference call, which we felt would not be good.

We agreed after the review that it would be helpful if images of the reviewers could be included on the web portion of the review. Photos would help "personalize" the discussion. There were some initial technical problems with the web-based portion of the review, but that is to be expected when different computer platforms are being used across the country. The issues were resolved within a few minutes.

4. Overall, was this an effective peer review panel? Yes. Perhaps the answer is self-serving, but I felt that each reviewer did his/her part well. The reviews were taken seriously. Each reviewer clearly spent adequate time reviewing the proposals and preparing for the conference call. The results should help the scientists doing the work to improve the focus of the research and perhaps to avoid some difficulties during the research. Research by its very nature is uncertain. Perhaps this is especially true with agricultural research that involves soil, water, atmosphere, climate, crops and people. My view is that these careful reviews will help to remove some of the uncertainty.

Sincerely,

Michael J. Singer

Michael J. Singer
Professor of Soil Science Emeritus

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NATIONAL RISK MANAGEMENT RESEARCH LABORATORY
Air Pollution Prevention and Control Division
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September 30, 2010

Dr. Don Knowles, Scientific Quality Review Officer
Office of Scientific Quality Review
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Beltsville, MD 20705

Re: NP 212 Gaseous Emissions Panel Review 2010 - Panel Chair Statement

Dear Dr. Knowles:

In my opinion, the NP 212 Gaseous Emissions panel conducted a high quality and comprehensive review of the three proposals that we were presented. The panel discussions reflected an understanding of the subject matter and interest in the proposed research. In addition to the critical elements of the review, panel members made suggestions for improving the quality of the research.

In this review, one of the proposals was particularly complex and contained project elements that covered multiple subject areas. A notable characteristic of the review process was the length of time needed to adequately review this detailed proposal. Given the broad scope and complexity of this proposal, a face-to-face meeting may have made the review process a little easier. Though, generally speaking, I like the online/telephone approach and expect it works well in most cases. In the future, perhaps such large proposals can be assigned more reviewers. Also, given the page limitations, this proposal would have benefited from the inclusion of supplemental information. Many of the reviewer questions were prompted by a lack of information in the proposal narrative that was due to length requirements and not indicative of a deficiency in the proposed research.

Overall, I feel that the review was scientifically credible and responsive to the specific objectives of the process. Thank you for the opportunity to participate.

Sincerely,

John T. Walker, Ph.D.

Senior Chemist

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16 March 2010

Dr. Don Knowles, Scientific Quality Review Officer
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Dear Dr. Knowles:

As Chair of the NP212 GHG and Soil Systems Panel Review the panel discussions focus on the science and did an excellent review of the two projects. It was apparent that the panel members had spent time on the review as several ideas and approaches were considered during the discussions. The comments will provide improvements in the projects that serve the science needs and the clientele. The teleconference review was an effective and efficient process that allowed for open discussion and recording of the panel comments. The panel had plenty of time to discuss the projects and the congenial atmosphere allowed equitable input. The panel members were knowledgeable and the diversity of the panel member experiences complimented the strengths of each.

The peer review process was very efficient and I believe all panel members were comfortable with the teleconferencing and the review process. I do not have any suggestions for improvements.

Sincerely,

Charles W. Rice

Charles Rice
University Distinguished Professor, Soil Microbiology

ERS
ECONOMIC RESEARCH SERVICE
United States Department of Agriculture

March 18, 2010

Dr. Don Knowles, Scientific Quality Review Officer
Office of Scientific Quality Review
Agricultural Research Service, USDA
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Re: Panel Chair Statement, NP 212 Impacts: Crop Production and Agroecosystem Peer Review Panel

Our panel reviewed 5 papers in a conference call on January 20, 2010. Here is my statement on the panel's process and findings:

1. Did the NP212 panel have discussions that reflected (i) sound and credible scientific peer review and (ii) ideas, creative thinking, and alternative approaches to improve the quality of research that may not have been considered by Agency scientists and staff?

The discussion clearly constituted sound and credible peer review.

It is less clear that the panel introduced ideas or approaches that would not have been considered by the scientists themselves. I suspect that most of the proposal strengths and weaknesses were already known to the scientists. It's hard to say.

2. What were the most notable (positive or negative) characteristics of the discussion process and why?

The discussion proceeded smoothly. All panel members were prepared; the papers each received the necessary amount of time; and the logistical arrangements facilitated good discussion. Review and scoring criteria were clear.

3. What suggestions do you have to improve the peer review process?

Because not all panelists read all of the papers, it was not clear that a meeting of the full panel was needed. Panelists who did not review the paper being discussed rarely had

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much to say, and their scores were likely based simply on the impressions of the reviewers who had read that paper. In other words, little if anything was added by having non-readers score proposals. (This is a problem for all panels but at least a remedy seems possible for this type of review.)

If the process is supposed to mimic journal review, then a journal-review process might be better: Reviewers would prepare a written review which would then be evaluated by the chair. In this case, each review could be evaluated by the other reviewer of that paper, to provide more back-and-forth knowledge sharing than a single editor's reading would provide.

4. Overall, was this an effective peer review panel?

I have served on many panels in my professional career; this panel clearly met the standard for integrity and effectiveness.

Yours truly,

John Horowitz (signed) John Horowitz

John Horowitz
Research Agricultural Economist
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The University of Georgia

College of Agricultural & Environmental Sciences
Laboratory for Environmental Physics

January 8, 2010

Dr. Don Knowles, Scientific Quality Review Officer
Office of Scientific Quality Review Agricultural Research Service, USDA
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Beltsville, MD 20705

Dear Dr. Knowles

Thank you for asking me to serve in the capacity of chair for this panel.

1. The panel, composed of leading researchers in the US, Canada and Europe, examined and discussed extensively the content of three very good research plans. The reviews were solid, specific, and overall, as supported by the secret vote, suggest an overwhelming level of consensus. Concrete suggestions and alternate methods of proceeding, e.g. using suggestions to make the science even more robust (e.g. more environmental measurements, adding concerns to spatial heterogeneities, uniformity in definitions of language used i.e. as in the use of NEP versus NEE) were made. Potential areas with foreseen challenges ahead were highlighted with insights into addressing those delicate areas were discussed.

2. The level of preparation for the discussion was very high for the vast majority of the panelists. About 45 minutes was spent on each project and, while the first and secondary reviewers went ahead and discussed their evaluation first, all panelists brought up their own personal experience and points of views.

The logistical arrangements, including the difficult date setting, the reception of the package and preliminary paperwork, the modus operandi, all were excellent.

The early briefing to the panel chair was extremely helpful as well and provided the necessary background against which to adapt the reviews. To my knowledge, none of the panelists had any conflict of interest with the project researchers. The understanding of the review criteria and roles as peer reviews had been thoroughly explained earlier by Dr. Mike Strauss and were both appropriate and necessary.

The scoring of the proposal was discussed again at the beginning of the meeting and was well understood by all. The decades of experience of the researchers in the panel along with the clarity of the process and the explanations given led to a high level of consensus in the reviews and scoring.

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3. Since the process went so well, I would recommend that it be used by other federal agencies in their evaluation of research proposals. This demonstrates the level of satisfaction with the process. In addition, the e-meeting format also saves research dollars, has a low carbon footprint as well and makes enlisting select and busy seasoned researchers easier.

4. This panel was an extremely effective peer review panel and I would not be surprised if it were one of the best in years.

In short, I cannot be more pleased with the overall process, from beginning to the end.

With regards,

Monique Y. Leclerc
Regents Professor

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Dr. Don Knowles, Scientific Quality Review Officer
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Agricultural Research Service, USDA
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Dear Dr. Knowles,

The panel for NP 212 Landscape Management reviewed three proposals and made recommendations through the review process. The panel found the review process to be sound, fair, and efficient. We found that the level and number of proposals was reasonable for this committee, in other words 3 long proposals were a reasonable amount of work. Assignments for leading discussions were appropriate. In general, the level of preparation by the panelists seemed excellent and I think we had thorough and fruitful discussions about each project. I especially appreciated the effort that you and your staff were willing to invest for getting and keeping us organized: this made my job really easy and our time was spent reading and assessing the science rather than the logistics. Thank you for this efficiency.

We have a few suggestions to scientists and managers that might help booster the alignment of the research with the overall goals of the program:

First the need for basic, creative research by federal agencies is great: research that is simply based on monitoring or based on other, outside needs is subject to a lack of cohesiveness and focus that forces excellence and relevance. We appreciate the pressures on leaders of large projects to accommodate the increasing need for science information, but all of us felt that the core research was at its best when the researchers invested in exercises of questions and hypotheses. While not all elements of research can be motivated by such exercises, it was clear that the best methods and best articulation of science was reflected in proposals/parts of proposals that included some questioning and hypothesizing. Thus we encourage you to continue to require research methods as a core of your projects.

Second, cohesiveness could be better served by reconsidering the project size. It would appear that some of these projects are too large in both scope and size. We suggest you consider (or allow or encourage) narrowing some of the research projects to teams who work together on specific tasks and questions.

Respectfully,

Dr. Jennifer W. Harden
Research Soil Scientist
U.S. Geological Survey

UNIVERSITY OF MARYLAND

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March 1, 2011

Dr. Don Knowles, Scientific Quality Review Officer
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Dear Dr. Knowles,

The ARS project review panel for NP 212 Nutrient Cycling met on February 28, 2011, and conducted discussions and evaluations of three projects: 1) Controls on microbial community structure and function in soil and rhizosphere; 2) Function of arbuscular mycorrhizal fungi in organic and conventional agriculture; 3) Improving nutrient utilization in western irrigated crop production systems. The panel conducted rigorous and credible scientific peer review of the projects and offered several creative ideas and alternative approaches to improve the quality of research that may not have been considered by Agency scientists and staff.

The level of preparation for the discussion by the primary and secondary reviewers was exceptional. Each proposal was thoroughly reviewed and the depth and detail of the reviews were impressive. The panel spent adequate time discussing each project. Common elements of the multiple reviews were emphasized and points of divergence among the reviewers were evaluated, discussed and resolved.

The combination of web and teleconference was a great format for the review process and was managed efficiently and professionally. We did not encounter any issues of conflict of interest among the peer reviewers and the ARS scientists involved in the projects. The introductory materials provided by OSQR clearly explained the review process, the review criteria and the role of the peer reviewers. The reviewers' comments and suggestions were accurately compiled into the review document. The real-time, online scoring of the project proposals by the review panel members was excellent and provided valuable immediate feedback to the panel members.

Overall, this was a superior review process that proved highly effective and efficient peer review of the proposed research projects by a highly qualified panel of scientists. I was delighted with the process and was happy to serve as Chair of the panel.

Best regards,

Frank J. Coale, Ph.D.
Professor and Department Chair

AgriLIFE RESEARCH
Texas A&M System

January 15, 2010

Dr. Don Knowles, Scientific Quality Review Officer
Office of Scientific Quality Review
Agricultural Research Service, USDA
5601 Sunnyside Avenue, MS 5142
Beltsville, MD 20705

Dear Dr. Knowles:

During the fall of 2009, I lead a review panel of senior technical experts from industry and a major commodity organization for programs in the NP 212 area. The panel was originally established to review two plans, but because of loss of principal staff, one was postponed. Specifically, the team evaluated the capabilities, technical approaches, assumptions, and resources and identified and made recommendations on areas that could improve the quality of research.

The Panel feels that this review process was conducted very efficiently, and the ARS team should be commended on the web-based technology used for the review. This is a very cost effective and time efficient way to engage reviewers. Instructions were clear and concise and communications were relevant and timely.

The Panel appreciates the opportunity to provide input on an area which will have increasing importance to US agriculture and we encourage ARS to continue to provide requisite resources in terms of personnel and facilities to conduct air quality research. Please feel free to contact me, if there are additional questions. bavant@tamu.edu 979/845-2908

Sincerely,

Robert V. Avant, Jr., P.E.
Program Director

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September 13, 2011

Dr. Dave Marshall, Scientific Quality Review Officer
Office of Scientific Quality Review
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Beltsville, MD 20705

Dear Dr. Marshall,

I recently served as the chair of a panel reviewing research plans for projects in the National Program 212 – Climate Change, Soils and Emissions Research area. I identified three highly qualified panelists to conduct a thorough and complete scientific review of three different project plans. The panelists were invited to participate in this review during the first weeks of March, 2011 and we met by telephone/computer interface to discuss our review comments and recommendations on March 22, 2010. Our meeting on March 22 lasted a little more than 1.5 hours and we discussed each of the project plans for slightly more than 30 minutes.

The panelists selected are internationally recognized for their research programs and their areas of expertise fit well with the research plans so that a robust review could be conducted. The panelist that was the lead reviewer for a project plan initiated the discussion and this was followed by comments from the secondary review. As panel chair, I had read all four project plans. We focused primarily on the research approaches and procedures in each of the project plans. Did they adequately address the research needs and objectives? Did they represent creative scientific thinking? Were the proper procedures being proposed to conduct the research? For all three project plans, the review panel was impressed with the breadth of work proposed and the resources available to move forward in completing stated objectives.

The discussions during the phone and computer conference meetings were frank and everyone contributed. The arrangement to conduct this panel by telephone/computer interface worked well. With three proposals and three review panelists (in addition to me), the group was small enough to have a good interaction and exchange of information and ideas about the research plans, even though we were not face-to-face. I was impressed with the way each panelist took their responsibilities seriously and carefully read the research plan for which they were the primary reviewer and then led the discussion related to that particular research plan. Review panelists were also familiar with the proposals on which they were the secondary or tertiary reviewer.

The three panelists and I submitted substantial comments and suggestions for improving the research plans. The project plans were generally written in sufficient detail, even though they represented work to be conducted over a five-year period. The primary and secondary reviewers were able to gain a clear understanding of (1) the research goals and (2) the research approaches

and procedures to be used. This allowed our meeting on March 22 to focus on the "big picture" issues instead of getting bogged down on minor details.

Of the three research plans, one was voted as having deficiencies and a rewrite was requested. This was done and this one research plan was resubmitted. The panel met again on July 28 to review the revised research plan and this time it was considered acceptable.

The help by the USDA staff to make sure panelists did not have a conflict of interest was appreciated by the panel chair when various people were being considered to serve on this review panel. The USDA staff did a good job clearly defining what was expected of us and how to complete the review process without injecting any personal comments about the quality of the project plans that we were asked to review. In summary, the review process went smoothly and allowed expert input, external to USDA, into the project plans.

Sincerely,

Warren A. Dick

Warren A. Dick
Professor, Soil Science

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29 September 2011

Dr. David Marshall, Scientific Quality Review Officer
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Dear Dr. Marshall,

It was my honor to chair this year's Soil Management Review Panel as part of USDA ARS's review of the Climate Change, Soils and Emissions National Program. The following are my observations and comments regarding my experience.

The review panel consisted of accomplished scientists who took very seriously their task of adding value to the overall program, as was reflected in the wide-ranging and detailed discussions during our meetings. Owing to the panel's expertise and efforts as well as the outstanding support of the Office of Scientific Quality Review (OSQR), I am confident that each proposal was provided with an objective, scientifically sound and credible peer review. On several occasions, members conceived and communicated positive ideas and suggestions with the potential for improving the quality of the proposed research, ideas and suggestions that might not have arisen without the review process.

Among the more noteworthy characteristics of the process would be the convenience of the reviews, discussions and votes. The OSQR was highly successful in ensuring that all required materials were on-hand in a timely manner, that the software used to facilitate discussions and votes was available and operational, and that all members fully understood their roles as well as the procedures to be followed. I would also say that OSQR was exceptionally professional and tactful in answering several tough questions that arose in such a way as to provide the members with the required information in a thoroughly unbiased fashion. In short, OSQR's role as facilitator and provider of information enabled the panel to focus solely on the scientific issues.

With regard to suggestions for process improvements, I would say that our only potential limitation would have been our incomplete knowledge on some aspects of how ARS research is conducted and managed. This limitation was very satisfactorily overcome, however, as a result of OSQR's expertise and support. This being the case, I can offer no substantial suggestions on how the process could be improved, and I recommend maintaining it as-is.

My overall impression of the process is that it is highly effective, providing maximum opportunity for scientifically sound and objective reviews with the potential for assisting and supporting ARS's outstanding scientists. I am hopeful that this panel served creditably in this role, and I am grateful for the opportunity to have participated.

Sincerely,

Dwayne R. Edwards
Professor and Director of Graduate Studies

Projects Reviewed by the Animal Health Panels

Beltsville Area

Steven Britz

Effects of Elevated Atmospheric CO2, Environmental Stress and Edaphic Conditions on Bioactive Compounds in Brassica Crops

James Bunce

Response and Adaptation of Crops and Weeds to Elevated CO2 and Global Warming

Jeffrey Buyer

Controls on Microbial Community Structure and Function in Soil and Rhizosphere

E. Raymond Hunt

Quantifying and Monitoring Nutrient Cycling, Carbon Dynamics and Soil Productivity at Field, Watershed and Regional Scales

Laura McConnell

Discerning the Fate of Atmospheric Agricultural Emissions in the Chesapeake Bay Region

Mid South Area

L. Jason Krutz

Agrochemical and Weed Seed Fate and Transport in Mid-South Crop Production Systems

Stephen Prior

Enabling Management Response of Southeastern Agricultural Crop and Pasture Systems to Climate Change

Midwest Area

Jane Johnson

Advancing Sustainable and Resilient Cropping Systems for the Short Growing Seasons and Cold, Wet Soils of the Upper Midwest

L. Darrell Norton

Biogeochemical Processes and Soil Management Impacts on Soil Erosion, Soil/Air/Water Quality, and Greenhouse Gas Emissions

Daniel Olk

Soil Management for Enhanced Agricultural Productivity and Sustainable Biofuel Feedstock Production

John Prueger

Management of Agricultural and Natural Resource Systems to Reduce Atmospheric Emissions and Increase Resilience to Climate Change

Kenneth Sudduth

Landscape-Based Crop Management for Food, Feed, and Bioenergy

Rodney Venterea

Increasing Sustainability and Mitigating Greenhouse Gas Emissions of Food and Biofuel Production Systems of the Upper Midwestern U.S.

North Atlantic Area

David Douds

Function of Arbuscular Mycorrhizal Fungi in Organic and Conventional Agriculture

Richard Zobel

Constructing Soils for Sustainable Agricultural, Recreational, and Developed Environments

Northern Plains Area

Ronald Follett and Ardell Halvorson

Management Practices to Mitigate Global Climate Change, Enhance Bioenergy Production, Increase Soil-C Stocks, and Sustain Soil Productivity and Water Quality

Mark Liebig

Soil and Gas Flux Response to Improved Management in Cold, Semiarid Agroecosystems

Jack Morgan and Dana Blumenthal

Global Change in Semi-Arid Rangelands: Ecosystem Responses and Management Adaptations

Shannon Osborne

Soil and Crop Management Systems for Improved Natural Resource Quality and Efficiency

John Tatarko

Soil Resources and Air Quality Affected by Wind Erosion and Fugitive Dust Emissions: Processes, Simulation, and Control

Gary Varvel

Management Strategies for Meeting Agronomic, Environmental, and Societal Crop Production Demands

Merle Vigil

Sustainable Dryland Cropping Systems for the Central Great Plains

Pacific West Area

David Huggins

Mitigating Agricultural Sources of Particulate Matter and Greenhouse Gas Emissions in the Pacific Northwest

David Tarkalson

Improving Nutrient Utilization in Western Irrigated Crop Production Systems

Jeffrey White

Predicting Impacts of Climate Change on Agricultural Systems and Developing Potentials for Adaptation

Stewart Wuest

Improved Soil Management Practices for Tilled Summer Fallow in the Pacific Northwest

Scott Yates

Reducing Contamination from Agricultural Chemicals

South Atlantic Area

Leon Allen, Jr.

Impact of Climate Change on Plant Defense Responses Induced by Insect Herbivores and Plant Pathogens

Kent Burkey

Strategies to Predict and Manipulate Responses of Crops and Crop Disease to Anticipated Changes of Carbon Dioxide, Ozone, and Temperature

Warren Busscher

Improving Chemical, Physical, and Biological Properties of Degraded Sandy Soils for Environmentally Sustainable Production

Timothy Strickland

Soil Processes in Production Systems that Incorporate Biofuel Feedstocks into Southeastern Agriculture

Southern Plains Area

Veronica Acosta-Martinez

Sustainable Agro-Ecosystems that Control Soil Erosion and Enhance the Environment

Gregory Holt

Improving Air Quality of Agricultural Operations and Processes

Herbert Polley

Grassland Productivity and Carbon Dynamics: Consequences of Change in Atmospheric CO2, Precipitation, and Plant Species Composition, and Options for Management

Kenneth Potter

Assessing and Improving Management Effects on Soils

Office of Scientific Quality Review

The Office of Scientific Quality Review (OSQR) manages and implements the ARS peer review system for research projects, including peer review policies, processes and procedures. OSQR centrally coordinates and conducts panel peer reviews for project plans within ARS' National Program every five years.

OSQR sets the schedule of National Program Review sessions. The OSQR Team is responsible for:

- Panel organization and composition (number of panels and the scientific disciplines needed)
- Distribution of project plans
- Reviewer instruction and panel orientation
- The distribution of review results in ARS
- Notification to panelists of the Agency response to review recommendations
- *Ad hoc* or re-review of project plans

Contact

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