Conversation Contents

Fwd: Draft PD's and DM's for the Reorganization

Attachments:

/46. Fwd: Draft PD's and DM's for the Reorganization/1.1 PD - AD for Integration Draft 10.5.2017.doc
/46. Fwd: Draft PD's and DM's for the Reorganization/1.2 PD Assistant Director_draft 10.5.17.doc
/46. Fwd: Draft PD's and DM's for the Reorganization/1.3 PD Associate Director Alaska Draft 10.5.2017.doc
/46. Fwd: Draft PD's and DM's for the Reorganization/1.4 Office of Administration2.docx
/46. Fwd: Draft PD's and DM's for the Reorganization/1.5 Alaska2.doc
/46. Fwd: Draft PD's and DM's for the Reorganization/1.6 Core Science Systems2.docx
/46. Fwd: Draft PD's and DM's for the Reorganization/1.7 Ecosystems2.doc
/46. Fwd: Draft PD's and DM's for the Reorganization/1.8 Energy and Environmental Health2.doc
/46. Fwd: Draft PD's and DM's for the Reorganization/1.9 Land Resources2.docx
/46. Fwd: Draft PD's and DM's for the Reorganization/1.10 Natural Hazards2.docx
/46. Fwd: Draft PD's and DM's for the Reorganization/1.11 Water2.doc
/46. Fwd: Draft PD's and DM's for the Reorganization/1.12 Office of the Director2.docx

"Applegate, David" <applegate@usgs.gov>

From:	"Applegate, David" <applegate@usgs.gov>
Sent:	Mon Oct 09 2017 23:01:28 GMT-0600 (MDT)
To:	William Werkheiser <whwerkhe@usgs.gov>
CC:	"Ostroff, Andrea" <aostroff@usgs.gov>
Subject:	Fwd: Draft PD's and DM's for the Reorganization
Attachments:	PD - AD for Integration Draft 10.5.2017.doc PD Assistant Director_draft 10.5.17.doc PD Associate Director Alaska Draft 10.5.2017.doc Office of Administration2.docx Alaska2.doc Core Science Systems2.docx Ecosystems2.doc Energy and Environmental Health2.doc Land Resources2.docx Natural Hazards2.docx Water2.doc Office of the Director2.docx

Bill,

Roseann has shared draft DM chapters as well as draft PD's for the Assistant Directors, AD for Integration, and AD for Alaska.

As you'll see in the email below and the attachments, there are lots of questions being posed. The immediate one is distribution -- hopefully we'll get a chance to discuss before you head to the airport.

Dave

David Applegate, Ph.D.

Acting Deputy Director
U.S. Geological Survey
12201 Sunrise Valley Drive MS 111, Reston VA 20192
703 648 6600 voice, 703 648 7031 fax
applegate@usgs.gov

---------- Forwarded message ----------
From: **Roseann Gonzales-Schreiner** <rgonzales-schreiner@usgs.gov>
Date: Mon, Oct 9, 2017 at 11:57 PM
Subject: Draft PD's and DM's for the Reorganization
To: applegate@usgs.gov

Dave:

For your review and distribution to those affected are the future state DM chapters and PDs. I apologize that I cannot send these to you in a better format but I am locked out of my laptop for some reason. I am having to work with my phone. While I will get this straightened out tomorrow, I thought it would be best to share these with you so that you can start to look at them and distribute. We have done what we can with the information we have available. We believe it is best for you to have a chance to look at this and talk to Bill and the affected individuals or organizations.

These issues that are listed in the remainder of my message were identified as part of my discussions with my staff and are also shown at the top of each of documents.

Let me know if you need to talk about these. We look forward to your feedback

I believe the Human Capital team , specifically Sharon and Cindy, have been very responsive to my request and feedback in developing these drafts. I hope you find them useful.

Thanks.
Roseann

Attached are the draft future DM's with notes and questions at the top and comments within the body. There are the following recurrent themes:

- O.k. to use the same generic language for each Assistant Director position?
- Do we want to use titles for positions aside from the AD, Deputy AD and Assistant Director or should we just describe programs? There are inconsistencies between mission areas.
- Do we want to describe all of our SL's or none? Right now, we are inconsistent between mission areas.
- Do we want to include any Centers? Currently Alaska Science Center; EROS (which is an SES position), National Climate Change and Wildlife Science Center and NGTOC are included in those chapters. The other science centers in Land Resources and the other mission areas are not included.

As far as Geoff Plumley's position, we will likely need ERB approval since his official title is the AD for Environmental Health and must be changed. Initially, we thought we might be able to do a realignment and pen and ink changes to the PD, but the title change and the change in reporting relationship may be enough to require ERB approval. We are checking with the Department to confirm.

Attached are the 3SESPD's that are ready. At the top of each of the PD's are the major issues/concerns we have identified in comparing the duties as we understand them from the information that has been provided to us and comparing that information to the checklist for SES positions.

Conversation Contents

Uncertainty Language

Attachments:

/54. Uncertainty Language/1.1 Uncertainty_09072017_forDept.docx
/54. Uncertainty Language/4.1 Uncertainty_09072017_forDept.ig.docx

"Raff, David" <draff@usbr.gov>

From:	"Raff, David" <draff@usbr.gov>
Sent:	Thu Sep 07 2017 14:42:58 GMT-0600 (MDT)
To:	"Goklany, Indur" <indur_goklany@ios.doi.gov>
CC:	Ryan Nichols <ryan_nichols@ios.doi.gov>, "Palumbo, David" <dpalumbo@usbr.gov>, Virginia Burkett <virginia_burkett@usgs.gov>, William Werkheiser <whwerkhe@usgs.gov>
Subject:	Uncertainty Language
Attachments:	Uncertainty_09072017_forDept.docx

Good Afternoon Goks,

Per our discussion last week please find attached proposed uncertainty language to be used in future Reclamation planning studies. We have incorporated comments and edits internally here at Reclamation as well as with USGS. Please let us know if you have an additional insights or concerns. To reiterate there would still be additional uncertainty discussions within each technical chapter and report but that this would be proposed to be upfront in planning documents with minor alterations to fit each specific project.

Finally as we discussed would like to keep under two pages to match expectations of a summary or executive summary for planning studies and are hoping you will have the opportunity to review in the next couple weeks.

We still owe you both the final Klamath Basin Study and the Niobrara when it goes to OMB. I will get you those shortly.

Thank you,
Dave
--
David Raff, PhD, PE | Science Advisor and Scientific Integrity Officer | Department of the Interior Bureau of Reclamation | 1849 C Street NW, Washington DC 20240 | draff@usbr.gov | 303-445-4196 (O) | 202-440-1284 (C)

"Goklany, Indur" <indur_goklany@ios.doi.gov>

From:	"Goklany, Indur" <indur_goklany@ios.doi.gov>
Sent:	Thu Sep 07 2017 15:08:21 GMT-0600 (MDT)
To:	"Raff, David" <draff@usbr.gov>
CC:	Ryan Nichols <ryan_nichols@ios.doi.gov>, "Palumbo, David" <dpalumbo@usbr.gov>, Virginia Burkett <virginia_burkett@usgs.gov>, William Werkheiser <whwerkhe@usgs.gov>
Subject:	Re: Uncertainty Language

Thanks David. I'll send you my comments as soon as I can, but no later than next week.

On Thu, Sep 7, 2017 at 4:42 PM, Raff, David <draff@usbr.gov> wrote:

> Good Afternoon Goks,
>
> Per our discussion last week please find attached proposed uncertainty language to be used in future Reclamation planning studies. We have incorporated comments and edits internally here at Reclamation as well as with USGS. Please let us know if you have an additional insights or concerns. To reiterate there would still be additional uncertainty discussions within each technical chapter and report but that this would be proposed to be upfront in planning documents with minor alterations to fit each specific project.
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Thank you,
Dave
--
David Raff, PhD, PE | Science Advisor and Scientific Integrity Officer | Department of the Interior Bureau of Reclamation | 1849 C Street NW, Washington DC 20240 | draff@usbr.gov | 303-445-4196 (O) | 202-440-1284 (C)

"Goklany, Indur" <indur_goklany@ios.doi.gov>

From:	"Goklany, Indur" <indur_goklany@ios.doi.gov>
Sent:	Tue Sep 12 2017 13:21:43 GMT-0600 (MDT)
To:	"Raff, David" <draff@usbr.gov>
CC:	Ryan Nichols <ryan_nichols@ios.doi.gov>, "Palumbo, David" <dpalumbo@usbr.gov>, Virginia Burkett <virginia_burkett@usgs.gov>, William Werkheiser <whwerkhe@usgs.gov>
Subject:	Re: Uncertainty Language

My edits are on the attached.

Also, just for information, following is the abstract of a new paper that indicates that CO2 may have increased the water use efficiency of plants globally. Unfortunately, I don't have access to the full text version.

==========

Atmospheric evidence for a global secular increase in carbon isotopic discrimination of land photosynthesis

Ralph F. Keeling[a,1], Heather D. Graven[b,c], Lisa R. Welp[d], Laure Resplandy[a], Jian Bi[a], Stephen C. Piper[a], Ying Sun[e], Alane Bollenbacher[a], and Harro A. J. Meijer[f]

Author Affiliations

Edited by Mark H. Thiemens, University of California, San Diego, La Jolla, CA, and approved August 10, 2017 (received for review November 23, 2016)

Significance

Climate change and rising CO_2 are altering the behavior of land plants in ways that influence how much biomass they produce relative to how much water they need for growth. This study shows that it is possible to detect changes occurring in plants using long-term measurements of the isotopic composition of atmospheric CO_2. These measurements imply that plants have globally increased their water use efficiency at the leaf level in proportion to the rise in atmospheric CO_2 over the past few decades. While the full implications remain to be explored, the results help to quantify the extent to which the biosphere has become less constrained by water stress globally.

Abstract

A decrease in the $^{13}C/^{12}C$ ratio of atmospheric CO_2 has been documented by direct observations since 1978 and from ice core measurements since the industrial revolution. This decrease, known as the ^{13}C-Suess effect, is driven primarily by the input of fossil fuel-derived CO_2 but is also sensitive to land and ocean carbon cycling and uptake. Using updated records, we show that no plausible combination of sources and sinks of CO_2 from fossil fuel, land, and oceans can explain the observed ^{13}C-Suess effect unless an increase has occurred in the $^{13}C/^{12}C$ isotopic discrimination of land photosynthesis. A trend toward greater discrimination under higher CO_2 levels is broadly consistent with tree ring studies over the past century, with field and chamber experiments, and with geological records of C_3 plants at times of altered atmospheric CO_2, but increasing discrimination has not previously been included in studies of long-term atmospheric $^{13}C/^{12}C$ measurements. We further show that the inferred discrimination increase of 0.014 ± 0.007 ‰ ppm^{-1} is largely explained by photorespiratory and mesophyll effects. This result implies that, at the global scale, land plants have regulated their stomatal conductance so as to allow the CO_2 partial pressure within stomatal cavities and their intrinsic water use efficiency to increase in nearly constant proportion to the rise in atmospheric CO_2concentration.

==========

On Thu, Sep 7, 2017 at 4:42 PM, Raff, David <draff@usbr.gov> wrote:
Good Afternoon Goks,

Per our discussion last week please find attached proposed uncertainty language to be used in future Reclamation planning studies. We have incorporated comments and edits internally here at Reclamation as well as with USGS. Please let us know if you have an additional insights or concerns. To reiterate there would still be additional uncertainty discussions within each technical chapter and report but that this would be proposed to be upfront in planning documents with minor alterations to fit each specific project.

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We still owe you both the final Klamath Basin Study and the Niobrara when it goes to OMB. I will get you those shortly.

Thank you,
Dave
--
David Raff, PhD, PE | Science Advisor and Scientific Integrity Officer | Department of the Interior Bureau of Reclamation | 1849 C Street NW, Washington DC 20240 | draff@usbr.gov | 303-445-4196 (O) | 202-440-1284 (C)

"Goklany, Indur" <indur_goklany@ios.doi.gov>

From:	"Goklany, Indur" <indur_goklany@ios.doi.gov>
Sent:	Tue Sep 12 2017 13:31:41 GMT-0600 (MDT)
To:	"Raff, David" <draff@usbr.gov>
CC:	Ryan Nichols <ryan_nichols@ios.doi.gov>, "Palumbo, David" <dpalumbo@usbr.gov>, Virginia Burkett <virginia_burkett@usgs.gov>, William Werkheiser <whwerkhe@usgs.gov>
Subject:	Re: Uncertainty Language
Attachments:	Uncertainty_09072017_forDept.ig.docx

Thanks David. Here is the attachment. Sorry for forgetting to include it -- got too interested in the abstract.

On Tue, Sep 12, 2017 at 3:21 PM, Goklany, Indur <indur_goklany@ios.doi.gov> wrote:
My edits are on the attached.

Also, just for information, following is the abstract of a new paper that indicates that CO2 may have increased the water use efficiency of plants globally. Unfortunately, I don't have access to the full text version.

==========

Atmospheric evidence for a global secular increase in carbon isotopic discrimination of land photosynthesis

Ralph F. Keeling[a,1], Heather D. Graven[b,c], Lisa R. Welp[d], Laure Resplandy[a], Jian Bi[a], Stephen C. Piper[a], Ying Sun[e], Alane Bollenbacher[a], and Harro A. J. Meijer[f]

Author Affiliations

Edited by Mark H. Thiemens, University of California, San Diego, La Jolla, CA, and approved August 10, 2017 (received for review November 23, 2016)

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Abstract

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==========

On Thu, Sep 7, 2017 at 4:42 PM, Raff, David <draff@usbr.gov> wrote:

Good Afternoon Goks,

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Thank you,
Dave
--
David Raff, PhD, PE | Science Advisor and Scientific Integrity Officer | Department of the Interior Bureau of Reclamation | 1849 C Street NW, Washington DC 20240 | draff@usbr.gov | 303-445-4196 (O) | 202-440-1284 (C)

Conversation Contents

Fwd: some language you can draw from in the draft USGCRP Climate Science Special Report (CSSR)

Attachments:

/57. Fwd: some language you can draw from in the draft USGCRP Climate Science Special Report (CSSR)/1.1 image.png

"Burkett, Virginia" <virginia_burkett@usgs.gov>

From:	"Burkett, Virginia" <virginia_burkett@usgs.gov>
Sent:	Thu Aug 31 2017 13:59:13 GMT-0600 (MDT)
To:	William Werkheiser <whwerkhe@usgs.gov>
Subject:	Fwd: some language you can draw from in the draft USGCRP Climate Science Special Report (CSSR)
Attachments:	image.png

Dave R did not want to circulate his draft until he worked on it more. Probably a good idea. Below is the kind of language we have in the executive summaries of NCA4 and CSSR about the sources of uncertainty in GCM output.

---------- Forwarded message ----------
From: **Burkett, Virginia** <virginia_burkett@usgs.gov>
Date: Wed, Aug 30, 2017 at 4:39 PM
Subject: some language you can draw from in the draft USGCRP Climate Science Special Report (CSSR)
To: "Raff, David" <draff@usbr.gov>, "Palumbo, David" <dpalumbo@usbr.gov>

Dave,

Below is some text about model uncertainty from Chapter 2 of the NCA4 report - which is a summary of the CSSR - that you might use for the your boilerplate. This language has been reviewed by the National Academies and it serves the similar function for the NCA4 report as your boilerplate for your Water Resources Studies.

Virginia

"Uncertainty in climate sensitivity arises from the interconnected nature of the earth–atmosphere–ocean system. Changes in one aspect of the system can lead to self-reinforcing cycles that can either amplify (creating a positive feedback) or weaken (creating a negative feedback) the climate system's responses to human and natural influences. These feedbacks operate on a range of timescales from very short (essentially instantaneous) to very long (centuries)."

"Most of the climate projections used in this assessment are based on simulations by global climate models (GCMs). These complex, state-of-the-art mathematical and computer

frameworks use fundamental physics, chemistry, and biology to simulate many important aspects of Earth's climate. However, there are still elements of the Earth system that GCMs do not capture well (Flato et al. 2013). Self-reinforcing cycles or feedbacks within the climate system have the potential to amplify and accelerate human-induced climate change."

"How will global—and even more importantly, regional—climate change over the next few decades? Our ability to answer to this question is limited primarily by our imperfect ability to model natural variability (mostly related to uncertainty in specifying the initial conditions of the state of the ocean; Deser et al., 2012b) and other important aspects of the interconnected earth system. Further into the future, however, uncertainty in how human activities will evolve becomes increasingly important in determining the magnitude and patterns of future global warming. Even though natural variability will continue to occur, most of the difference between 8 present and future climates will be determined by choices that society makes today and over the 9 next few decades that determine emissions of carbon dioxide and other heat-trapping gases. The further out in time we look, the greater the influence of these human choices on the magnitude of future warming."

"Future climate projections are based on scenarios of greenhouse gas emissions and other pollutants from human activities. The scenarios used in this assessment are called "Representative Concentration Pathways" (RCPs; Moss et al. 2010), and are numbered according to changes in radiative forcing in 2100 relative to preindustrial conditions: +2.6, +4.5, 30 +6.0 and +8.5 watts per square meter (W/m2). Radiative forcing is a measure of the influence a factor (such as greenhouse gas emissions) has in changing the global balance of incoming and outgoing energy. Some scenarios are consistent with continued dependence on fossil fuels, while others can only be achieved by deliberate actions to reduce emissions. The resulting range reflects the uncertainty inherent in quantifying human activities and their influence on climate (e.g., Hawkins and Sutton 2009, 2011)."

"The future projections used in this assessment come from global climate models (GCMs) that reproduce key processes in the earth's climate system using fundamental scientific principles. GCMs were previously referred to as "general circulation models" when they included only the physics needed to simulate the general circulation of the atmosphere. Today, global climate models simulate many more aspects of the climate system: atmospheric chemistry and particles, soil moisture and vegetation, land and sea ice cover, and increasingly an interactive carbon cycle and/or biogeochemistry. Models that include this last component are also referred to as Earth System Models (ESMs) but climate models are constantly being expanded to include more of the physics, chemistry, and, increasingly, the biology and biogeochemistry at work in the climate system.

The ability to accurately reproduce key aspects of the Earth's climate varies across climate models. In addition, many models share model components or code, so their simulations do not represent entirely independent projections. The Coupled Model Intercomparison Project (CMIP5) provides a publically available dataset of simulations from nearly all the world's climate models. This assessment uses a weighted multi-model average of the CMIP5 models based on a combination of model skill and model independence to provide multi-model ensemble projections of future temperature, precipitation and other climate variables.

The resolution of global models has increased significantly over time. Even the latest experimental high-resolution simulations at 15–30 miles (25–50 km) per grid cell, however, are unable to simulate all of the important fine-scale processes occurring at regional to local scales. Instead, downscaling methods are typically used to correct systematic biases in global projections and generate the higher-resolution information required for impact assessments. There are two main types of downscaling: dynamical downscaling which uses regional climate models (RCMs) to calculate the response of regional climate processes to global change over a limited area; and empirical statistical downscaling models (ESDMs) which develop statistical relationships between real-world observations and historical global model output, then use these relationships to downscale future projections. Although dynamical and statistical methods

can be combined into a hybrid framework, many assessments still tend to rely on one or the other type of downscaling, where the choice is based on the needs of the assessment. Many of the projections shown in this report, for example, are either based on the original GCM simulations, on simulations that have been statistically downscaled using the LOcalized Constructed 8 Analogs ESDM (LOCA, Pierce et al. 2014)."

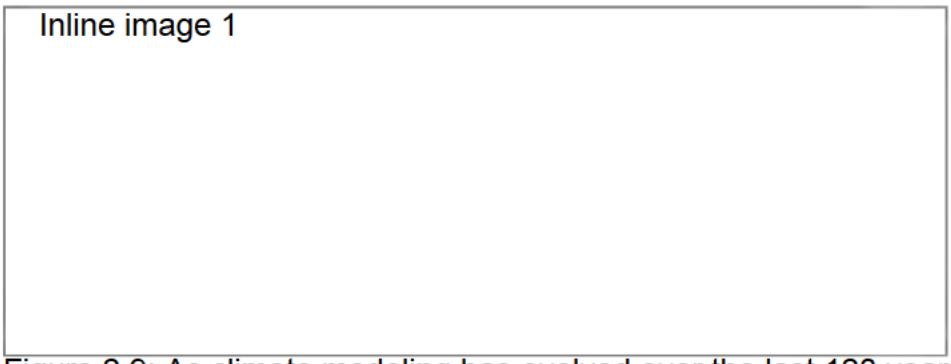

Figure 2.9: As climate modeling has evolved over the last 120 years, increasing amounts of 11 physics, chemistry, and biology have been incorporated into the models. This figure shows 12 when various processes and components of the climate system became regularly included in 13 global climate model simulations.

Conversation Contents

Fwd: Statutory Language for Climate Change Work

"Nowakowski, Judy" <jnowakowski@usgs.gov>

From:	"Nowakowski, Judy" <jnowakowski@usgs.gov>
Sent:	Mon Aug 21 2017 10:22:47 GMT-0600 (MDT)
To:	William Werkheiser <whwerkhe@usgs.gov>, David Applegate <applegate@usgs.gov>
Subject:	Fwd: Statutory Language for Climate Change Work

just fyi

---------- Forwarded message ----------
From: **Trent, Christopher** <ctrent@usgs.gov>
Date: Mon, Aug 21, 2017 at 12:16 PM
Subject: Re: Statutory Language for Climate Change Work
To: "Jester, Julia" <jjester@usgs.gov>
Cc: "Lukas, William" <wlukas@usgs.gov>, Congressional Affairs Team <cong_liaison@usgs.gov>, Judy Nowakowski <jnowakowski@usgs.gov>, Joanne Taylor <jctaylor@usgs.gov>

Double check PL 111-11. I think the carbon sequestration projects were it, but there might've been some climate-related water stuff in there.

Chris Trent
Congressional Affairs
(detail to) Bureau of Reclamation
usbr.gov
202-513-0503 (office)
571-524-1869 (mobile)

On Mon, Aug 21, 2017 at 11:33 AM, Jester, Julia <jjester@usgs.gov> wrote:
I think we should also bring Budget into this discussion to make sure we include appropriations language?

Here's some prose from CRS:

Climate and Land Use Change

Research related to climate variability and change was being done for many years at the USGS before it became a program area in 2008. For example, the National Climate Program Act of 1978 established an interagency climate program to address understanding of and adapting to natural and human-induced climate variability and its effects. [1] The DOI had a role on a climate advisory board, but the activities authorized under this act were administered by the Department of Commerce. Further, in 1990 Congress authorized the U.S. Global Change Research Program (USGCRP),[2] which aimed to research and respond to

natural and human-induced climate processes and their effects. Several Departments were authorized to participate in the program, including DOI. USGS has contributed to USGCRP by conducting research on the present and past climate variability and change of the Earth; natural and human effects on climate change; future changes in climate and their potential effects on resources; and strategies and methods for adaptation to changing climatic variables.[3] Land use change activities have been broadly conducted by the USGS since its inception. Research on land use change can include studying changes in land cover and conditions, determining how these changes affect processes (e.g., biogeophysical and biogeochemical processes), and understanding what factors drive land use changes, among other things. In addition to deriving its authority from the Organic Act, research on land use change also can be indirectly linked to some specific authorities. For example, the Land Remote Sensing Policy Act of 1992 authorized DOI to conduct research and develop programs that use Landsat data.[4]

One of the primary functions of the Climate and Land Use Change program is the implementation and maintenance of the National Climate Change and Wildlife Science Center (NCCWSC) and its regional entities—currently referred to as Department of the Interior Climate Science Centers (DOI CSC's). These centers support research, assessment, and synthesis of global change data for use at regional levels. The DOI CSC's are intended to adapt and evaluate global climate change models to scales that are appropriate for research managers of species and habitats, and facilitate data integration and outreach to collaborators and stakeholders, including federal agencies. These centers were authorized in an appropriations law, the DOI, Environment, and Related Agencies Appropriations Act, 2008 (P.L. 110-161). Under this law, Congress appropriated funds to establish the National Global Warming and Wildlife Science Center. Further appropriations provided funds to create a network of Centers.

Julia Jester, Ph.D.
Congressional Liaison Officer
U.S. Geological Survey
o: 703-648-4300 c: 571-352-4677

On Mon, Aug 21, 2017 at 11:29 AM, Lukas, William <wlukas@usgs.gov> wrote:

> Remembered the Greenbook. Here's what I got. Any others that I'm missing?
>
> **15 U.S.C. 2901–2908** The National Climate Program Act of 1978. Establishes a national climate program to assist the Nation and the world in understanding and responding to natural and human-induced climate processes and their known and potential effects. The Department of the Interior has a mandated role in this Program.
>
> **15 U.S.C. 2921 et seq.** The Global Change Research Act of 1990. Establishes the United States Global Change Research Program aimed at understanding and responding to global change, including the cumulative effects of human activities and natural processes on the environment, to promote discussions toward international protocols in global change research, and for other purposes.
>
> * * * * * * * * * * * * * * * * * * *
>
> Bill Lukas | 202-208-4457
> USGS Liaison to Water & Science
> asws_liaison@usgs.gov
>
> On Mon, Aug 21, 2017 at 11:15 AM, Lukas, William <wlukas@usgs.gov> wrote:
>
> > Hi all
> >
> > Ryan Nichols asked me to look into any statutory or appropriations language that directs USGS to do any type of climate change work. I'm guessing it is associated with USGCRP but don't know for sure. Any help and

references appreciated.

Thanks.

Looping Judy & Joanne for awareness.

* * * * * * * * * * * * * * * * * * *

Bill Lukas | 202-208-4457
USGS Liaison to Water & Science
asws_liaison@usgs.gov

Conversation Contents

Fwd: Climate discussion

Attachments:

/70. Fwd: Climate discussion/1.1 KRBS_Full_Report_Final.docx
/70. Fwd: Climate discussion/2.1 KRBS_Full_Report_Final.docx

"Burkett, Virginia" <virginia_burkett@usgs.gov>

From:	"Burkett, Virginia" <virginia_burkett@usgs.gov>
Sent:	Fri Jul 07 2017 11:12:40 GMT-0600 (MDT)
To:	William Werkheiser <whwerkhe@usgs.gov>
Subject:	Fwd: Climate discussion
Attachments:	KRBS_Full_Report_Final.docx

Hi Bill, I'll give you a call about the context for the meeting with BoR, which is now set for Friday, July 21 at 9 am. I will fly in from EEOS the night before.
Virginia

---------- Forwarded message ----------
From: **Raff, David** <draff@usbr.gov>
Date: Fri, Jul 7, 2017 at 12:19 PM
Subject: Fwd: Climate discussion
To: Virginia Burkett <virginia_burkett@usgs.gov>

--
David Raff, PhD, PE | Science Advisor and Scientific Integrity Officer | Department of the Interior Bureau of Reclamation | 1849 C Street NW, Washington DC 20240 | draff@usbr.gov | 303-445-4196 (O) | 202-440-1284 (C)

---------- Forwarded message ----------
From: **Erath, Amanda** <aerath@usbr.gov>
Date: Thu, May 18, 2017 at 3:05 PM
Subject: Re: Climate discussion
To: David Raff <draff@usbr.gov>
Cc: "Goklany, Indur" <indur_goklany@ios.doi.gov>, Marketa Elsner <mmcguire@usbr.gov>, Avra Morgan <aomorgan@usbr.gov>, "Dahm, Katharine" <kdahm@usbr.gov>, Arlan Nickel <anickel@usbr.gov>

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Building 67 (84-51000)
P.O. Box 25007
Denver, CO 80225-0007

Office: (303) 445-2766
Email: aerath@usbr.gov

On Fri, May 12, 2017 at 8:55 AM, David Raff <draff@usbr.gov> wrote:

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Virginia Burkett <virginia_burkett@usgs.gov>

From:	Virginia Burkett <virginia_burkett@usgs.gov>
Sent:	Wed Jul 12 2017 05:21:36 GMT-0600 (MDT)
To:	aterando@usgs.gov, whwerkhe@usgs.gov
Subject:	Fwd: Climate discussion
Attachments:	KRBS_Full_Report_Final.docx

Some background from BoR.

Sent from my iPhone

Begin forwarded message:

From: "Raff, David" <draff@usbr.gov>
To: Virginia Burkett <virginia_burkett@usgs.gov>
Subject: Fwd: Climate discussion

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"Burkett, Virginia" <virginia_burkett@usgs.gov>

From:	"Burkett, Virginia" <virginia_burkett@usgs.gov>
Sent:	Fri Jul 14 2017 10:33:30 GMT-0600 (MDT)
To:	William Werkheiser <whwerkhe@usgs.gov>
Subject:	Fwd: Climate discussion

just FYI from Adam

---------- Forwarded message ----------
From: **Terando, Adam** <aterando@usgs.gov>
Date: Fri, Jul 14, 2017 at 9:36 AM
Subject: Re: Climate discussion
To: "Burkett, Virginia" <virginia_burkett@usgs.gov>

Hi Virginia,

My initial take is that the approach does seem reasonable. I noticed the additional text added on 5/17/17 that discusses bias correction and the stationarity assumption in more detail. So the language as it reads now seems fairly comprehensive about the major uncertainties associated with climate models and statistically downscaled projections. I did find the inclusion of the passage about the 1998-2012 linear trend curious though.

If I were going to add anything (and it probably wouldn't fit into this report style or at least in this section), it would be a discussion of how, given these model and epistemic uncertainties, what are the suggested ways to interpret these projections? This gets more into the decision science realm and so I assume was outside the scope of this report. However, some discussion about the intended use and utility of the projections could be helpful. For example, is a probabilistic interpretation even possible? Or should this information really be viewed as a set of true *plausible scenarios* where no likelihood is attached to a given ensemble projection, but it is a known possibility under anthropogenic climate change that should be "stress-tested" for in the planning process.

Happy to discuss further or elaborate on specific points.

Adam

On Thu, Jul 13, 2017 at 6:06 PM, Burkett, Virginia <virginia_burkett@usgs.gov> wrote:

> Can you take a look at pages 3-87 to 3-90 in the attachment about GCM uncertainties, downscaling and outcomes with CMIP3 vs CMIP5? Does the BOR approach seem reasonable to you?
> Virginia
>
> On Thu, Jul 13, 2017 at 5:59 PM, Burkett, Virginia <virginia_burkett@usgs.gov> wrote:
>
> > Adam, are you available for a call tomorrow at 2:00 pm ET with BOR if Bill wants you on the line?
> >
> > ---------- Forwarded message ----------
> > From: **Virginia Burkett** <virginia_burkett@usgs.gov>
> > Date: Wed, Jul 12, 2017 at 7:21 AM
> > Subject: Fwd: Climate discussion
> > To: aterando@usgs.gov, whwerkhe@usgs.gov
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> > Sent from my iPhone
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Adam Terando
Research Ecologist, US Geological Survey
DOI Southeast Climate Science Center
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919.515.4448
http://globalchange.ncsu.edu/secsc/
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