

Murry Salby writes...

Performing research on this topic is not like any other on which I have worked. And I've worked on a few. The recent promotion by Desmog is the latest in a stream of attempts to distract from the science which, until now, have been tolerated in silence. Nonetheless, I welcome the opportunity to finally address the NSF investigation, which was fraught with inconsistency.

The NSF investigation has a long and curious history.

I performed applied research, such as the processing and analysis of satellite data, in a consulting firm along with colleagues. That work was performed in compliance with University of Colorado (CU) policy, which provided for a fraction of academics' time to be devoted to outside work.

A proposal relying on satellite data that was developed there was submitted to NSF. Of 4 reviews, it received 3 ratings of "Excellent" and 1 of "Very Good" (an uncommon occurrence). Among the reviewers' assessments:

"the potential payoffs from the continued pursuit of the proposed research are substantial"
"among the best 10% of projects I have reviewed".

The proposal was declined – over a technicality.

The proposal was later re-submitted, with the technicality addressed. To avert wasting more of the scientific community's time, the revised proposal included a description of the original proposal's reviews, along with why it had been declined. NSF then required the reviewers to repeat the process. Reviewers, after having instructed NSF to fund the work, were then critical of NSF officials, over their handling of the proposal. Despite the vulnerability of their own support, they questioned why the original proposal had not been funded and why, instead, NSF officials had needlessly wasted the scientific community's time and resources. A couple of weeks later, NSF notified us that it was opening an investigation.

The purported stimulus for the investigation was a complaint which had been filed, claiming that the proposal resembled another which had been submitted from CU (one that was submitted originally to a different agency, long before, and not funded). That complaint would have come months earlier, with the proposal's original submission.¹ We rejected the claim. The proposal from CU (submitted to NOAA) concentrated on dynamical changes in the troposphere: the relationship between changes in the winter and summer hemispheres and their impact on the tropopause. With those features, the study was then to use auxiliary data on cloud and precipitation (Global Cloud Imagery (GCI) and derived precipitation that were produced at CU) to investigate coherent changes in the tropical circulation and in deep convection. The proposal from the consulting firm (submitted to NSF) concentrated on chemical changes in the stratosphere, in 3D observations of chemical structure which had been produced from satellite measurements by the consulting firm.

¹ The complaint to NSF followed, notably, on the heels of a long-running internal dispute at CU.

With those resources, that study was to have constructed a life cycle of anomalous ozone and, together with other stratospheric diagnostics, was to have produced a seasonal forecast of chemical structure.

Material common to the proposals was concentrated in the introductory development, existing knowledge that laid a foundation for the new work to be performed.² More importantly, the timing and interaction with agency officials is significant to how those proposals came to be submitted. The proposal from CU (to NOAA) was submitted to NOAA two years earlier. It was rated highly, but not funded. [Fig 1a](#) NOAA encouraged its submission at the next opportunity, a year later. That opportunity was (unknown to us) moved forward and therefore missed. NOAA officials then encouraged us to submit the material to NSF, which had no restriction on submission date. NOAA suggested that it could co-sponsor the research if parts were re-submitted to NOAA at the next opportunity, the following year. We took this suggestion to NSF officials, who confirmed the possibility of co-sponsorship by the two agencies and invited the proposal. [Figure 1a](#) is a written follow up of the phone conversation, prior to the proposal's submission to NSF. At NSF's request, we provided the respective contact at NOAA. [Fig 1b](#)

NSF had been expressly notified that such material had been submitted to NOAA. In fact, we had been working jointly with officials at the two agencies to coordinate its co-sponsorship, exchanging the names of the respective contacts. The submission of material to the two agencies should therefore hardly have come as a surprise. The sites where individual components were to have been performed were dictated by the resources required for those tasks (GCI that was produced at CU vs 3D observations of chemical structure that were produced by the consulting firm) and by the status of research personnel who would perform those tasks. The re-submission to NSF came two years after the original submission to NOAA. By that time, the co-PI, who had been working on a degree at CU, had graduated with his PhD. The proposal to NSF was to serve as his transition to the consulting firm, which was to become his research home. Among the consulting firm's founders, he was its President.

The investigation pursued numerous targets, finding little of substance.

When one target proved fruitless, it adopted another.

After years of searching, the best it could come up with was:

- (i) A claim that time sheets had been completed retrospectively, while I was overseas on sabbatical. Acknowledged as the investigation's most significant finding, the claim was, by its own admission, mere speculation. It was inconsistent with the physical evidence: Time sheets for when I was in the US were printed on Letter size paper (the US std) [Fig 2b](#), whereas those for when I was overseas were printed on A4 size paper (the European std) [Fig 4](#). Both complied with the amount of time that CU provided for outside work.

The proposed timing makes the claim implausible.

The alleged action would have come two years after the onset of the investigation. To have completed time sheets then, so long after the investigation had begun, would have been bizarre.

² The investigator had no expertise in this field. He simply counted words, principally in the foundational development of the two proposals.

In fact, the time sheets had been completed long before and regularly submitted to administrative staff who filed them. All but the most recent had remained in the US, in another office. [Figures 2a, 2b, and 3](#) display two of several submissions. Note: I was not overseas until December 2006 (cf [Fig 4](#)).

The investigator also questioned the hours that had been devoted during certain intervals. Scientists don't work the hours of bureaucrats. When confronted with a complex problem, a methodical scientist will work all hours until its solution has been achieved.

Figures 1 and 2 invalidate the report's principal claim – a speculation which (after years of investigation, numerous unrelated targets, and, by the report's own admission) was the most significant issue the investigation could produce. The material in Figs 1 and 2 reveals a very different picture than the one painted. The investigation could have obtained and reported such information. It didn't.

- (ii) A claim that, when my formal involvement went from part-time employee to consultant, additional paperwork for notice should have been filed.³ The consideration invoked to make this claim was semantic. Contrary to the tone of the report, budgetary considerations before and after the purported additional requirement, were substantively unchanged. There was no change in cost, or administrative support, or overhead, or remuneration for work, or facilities, or in the work that was performed.

Administrative paperwork was filed, not by scientific staff, but by administrative staff – who complied with all policy and reporting. Further, the feature which purportedly required additional paperwork had, in fact, been reported to NSF – every 3 months in expense reports. The NSF administrators had this information before them for years. Yet, they raised no issue of noncompliance. Nor did they advise our administrative staff of a requirement of additional paperwork. Had they done so, it would have been promptly provided. If NSF administrative staff did not know that additional paperwork was required, for information of which they had been notified, how could our administrative staff know?

The inconsistencies surrounding these claims were ignored by the NSF investigation. It's noteworthy that NASA, for whom we also performed outside work, operated under the same arrangements. In Mar 2006, we contacted NASA to enquire if *it* had additional requirements of relevance. As grant charges were unchanged, NASA couldn't even understand the issue. Its research continued without question. [Fig 4](#)

The report claimed the university substantiated conflicts of interest.

This position just happened to absolve the university of responsibility for its policies on outside work, with which we had been compliant. Such work was not merely permitted, it was encouraged:

“Consultation work is a desirable and legitimate function... and should be encouraged”

“Outside work during leaves of absence is the concern only of the individual and agency”
(CU Faculty Handbook)

³ The transition occurred after the President of the consulting firm and co-PI received his PhD, whereupon the firm was to become his research home.

The CU paperwork that was required had been submitted and approved, as it was by other CU academics who performed similar outside work.⁴ Our outside work involved satellite data produced by the consulting firm. It was applied in nature, distinct from theoretical research that I performed at CU. Under no circumstances would that work have been performed at the university. Such work was analogous to outside work by other CU academics. As the university was devoid of relevant expertise, it would have been ill equipped to even evaluate conflict of interest.

It is noteworthy that, during the NSF investigation, CU modified its policies on outside work - the ones with which we had complied. The new policies and paperwork were not installed until I returned from sabbatical. I then had no outside work. There was nothing to file. Had the university's earlier policies been satisfactory, why was it necessary to modify those policies?

These considerations are plainly relevant to the report's claims. The investigation could have obtained and reported the information. It didn't.

The NSF investigation also claimed that I received compensation far beyond what had been budgeted. What the investigation failed to disclose was that the excess compensation was not on top of my university salary, as the report implied, but *in place of it*. During several periods, I was on leave from the university – not its employee and not receiving salary.

A key researcher on outside grants left the consulting firm. He was hired away by a lab, ironically, an NSF lab. (A few years later, the NSF lab dropped him during one of its perennial budget exercises.) His departure from the consulting firm left us holding the bag to perform work for which he had been budgeted. Others in the firm were approached to pick up the slack. They declined. The responsibility then fell to me. To avoid defaulting on research obligations, which would have wasted the preceding investment of grant funds, I completed that work. I did so during time that was available for outside work and during periods when I was on leave from the university – not receiving salary from it. [Figure 5](#) compares university salary for two calendar years. During the first, I was continuously employed by the university. During the second, I was on leave for part of the academic year. My salary was then reduced by ~35%.

This was hardly the first time that responsibilities had to be rearranged to accommodate the departure of research staff. Such rearrangement is routine to meet grant obligations, because the timeline of grants seldom coincides with the availability of individuals to perform the work. This applies equally in a university environment, where student enrollment and graduation operate independently. There was not even a suggestion that funds be repaid, because the research that had been funded was eventually completed – for the costs which had been budgeted and had been approved.

⁴ It's noteworthy that CU appoints academics only during the academic year. During other periods, it has no authority over their time (ibid).

The purported excess of compensation was for work when I was not employed at the university and, therefore, not on top of but in place of university salary. Revealed is a very different picture than the one painted. The investigation could have obtained and reported this information. It didn't.

The report claimed further that I overcharged grants for indirect costs on a subcontract. The purported subcontract was for *my role* – a role which was already listed explicitly on the grants. That role was likewise unchanged, relying on the same facilities and administrative support that had been approved.

In fact, my service was provided with *no indirect costs*, with one exception: \$37.50. [Figure 3](#) includes the administrative charge for tallying hours on time sheets. This charge was in lieu of time which would have been charged to grants by other administrators to perform the same task. Before monthly invoicing was requested, even that charge was not included. Displayed in [Figure 6](#) is the respective monthly invoice. Except for \$37.50 to produce the invoice, there was *no indirect cost*. This was *the only additional charge*.⁵

This became an issue because the NSF investigator made it an issue. The report's claim, if not misleading, was plainly untrue. The investigation could have obtained and faithfully reported this information. It didn't.

The NSF report was not produced while I resided in the US. In fact, the ensuing action was not adopted until ~2 years after I had moved to Australia. (When I accepted a chair overseas, it had been more than a year since I had last received contact from NSF. I understood the matter to have been closed, as in an earlier investigation of CU referenced below.) The matter was re-activated only after I filed an action against CU to recover my computer files – the records of my career over 3 decades. Those files were withheld by CU, despite repeated requests to release them. Included were codes that supported my teaching, my research, even the basis of my book.

The NSF action would have prevented me from receiving support for myself or for technical staff (for 3 years) – *if I resided in the US*. I didn't. Because I resided overseas, on foreign salary, those avenues of support were not even available.

The NSF action was of no practical consequence, a cosmetic exercise. It could only undermine my litigation against CU.

The matter with CU was settled when CU released my computer files. CU then paid legal costs. It also provided the computer servers on which my files resided, major equipment that had not even been requested.

Without the litigation against CU, my computer files would not have been released. And, without those files, the book I published in 2012, *Physics of the Atmosphere and Climate* (which, incidentally, credited Macquarie University), would not have been produced. Nor would research which I have managed to complete.

⁵ Notice that my time to fulfill the responsibilities of a computer programmer was billed at a rate well below the rate at which my time was approved.

Challenging the NSF report to correct the record would have been a costly and protracted exercise – for no practical consequence. It wasn't worth it. This would have been obvious when NSF officials took the action.⁶

The NSF report ignored the above inconsistencies. It also omitted another matter of significance. The circumstances had been set in place earlier by an internal dispute at CU, one that culminated in a different NSF investigation. The earlier investigation was not of our consulting firm, but of the university. Whereas the investigation of our consulting firm was conducted by a Scientific Investigator, the investigation of the university was conducted by a Criminal Investigator. The investigation of the university concerned the misappropriation of ~\$100,000 in research funds, which mysteriously disappeared while I was away on sabbatical.⁷ That investigation was closed when the research funds were returned to my group. A CU official refused to divulge the source of the returned funds, implying it would jeopardize their return by undermining subsequent recourse.

These circumstances, and supporting evidence, place the NSF report into perspective. That said, the relevance of this material to the science at hand is nonexistent. No amount of distraction will alter the observed behavior.

Murry Salby

⁶ It's noteworthy that the NSF report, which was stamped "Confidential", was developed as an internal document for distribution only to the two parties: Me and CU. Unfit for public release, its disclosure other than by NSF was prohibited.

⁷ The investigation of CU just happened to coincide with the two proposals that were coordinated between NOAA and NSF - the subject of the anonymous complaint to NSF and the purported stimulus for the later investigation of our consulting firm. A similar complaint was received by CU administration, from the party embroiled in the controversy surrounding my research funds.

From mls Tue Feb 4 12:33:41 2003
Received: by lightning.asac.org (8.9.3/1.1.29.3/04Feb03-1145AM)
id MAA0000001089; Tue, 4 Feb 2003 12:33:39 -0700 (MST)
Date: Tue, 4 Feb 2003 12:33:39 -0700 (MST)
From: Murry Salby <mls@asac.org>
Message-Id: <200302041933.MAA0000001089@lightning.asac.org>
To: jfein@nsf.gov
Subject: Proposal
Cc: mls@asac.org
Status: R

Dear Jay,

Just a note to alert you to a proposal that will be submitted to Climate Dynamics. The material develops a comprehensive observational study of stratosphere-troposphere interaction.

I had hoped to already have support in place for this work, from NOAA or NASA. However, efforts to garner support from those agencies seem to have fallen victim to provincial interests, while wasting the better part of 2 years. The material was reviewed highly, indeed enthusiastically: Very Good - Excellent by over half a dozen referees. A survey of comments:

"unusually carefully prepared and argued"
"highly relevant"
"impressive results that clearly justify the study"
"clearly important"
"presenting very new and exciting insights"
"proposed investigation is destined to succeed"
"definitely deserves support"

Yet, the study was not funded. An internal reviewer wanted us to generate a "customer base" for ozone forecasts:

I had intended to resubmit to NOAA. However, we were not notified of the early deadline for NOAA's RA this year, which was missed.

At this point, I have several immediate needs that require me to complete this work, as well as to meet publication costs and requests for my participation: A pilot study, developed in the proposal, appeared recently in JCL. It will be highlighted in the Feb issue of BAMS. Along with other material stemming from this work, no explicit funding is in place to cover those publication costs. I have been asked to present an invited talk on this material at an upcoming workshop on stratosphere-troposphere interaction and the AO, to be held at the end of spring, also to present this material at the IUGG in Sapporo this summer. No funding is in place to support either. I realize that the time to process this proposal may not permit these matters to be resolved within 3-4 months. However, should a clear indication become available within that time frame, it would enable me to temporarily meet these obligations from other support.

If you have any questions, let me know.

Regards,
Murry

Figure 1a

From mls Thu Feb 6 05:58:39 2003
Received: by lightning.asac.org (8.9.3/1.1.29.3/04Feb03-1145AM)
id FAA0000002152; Thu, 6 Feb 2003 05:58:38 -0700 (MST)
Date: Thu, 6 Feb 2003 05:58:38 -0700 (MST)
From: Murry Salby <mls@asac.org>
Message-Id: <200302061258.FAA0000002152@lightning.asac.org>
To: jfein@nsf.gov
Subject: Re: Proposal
Cc: dwharris@nsf.gov, mls@asac.org, sreid@nsf.gov
Status: R

Thanks Jay.

I spoke with Chris Miller at NOAA.
He looked into the possibility of resubmitting
following the deadline for the NOAA RA.
After coming up empty handed,
he suggested that I approach CLIVAR at NSF.

-Murry

PS: Please refer to the proposal section Closing Remarks,
which addresses work schedule & budget.

>From jfein@nsf.gov Wed Feb 5 15:39:28 2003
Received: from ursa.nsf.gov by thunder.asac.org (5.65v4.0/1.1.19.2/07Aug98-0622PM)
id AA25257; Wed, 5 Feb 2003 15:39:27 -0700
Received: from ursa.nsf.gov (localhost [127.0.0.1])
by localhost.nsf.gov (Postfix) with ESMTMP id 55EB71F078F
for <mls@asac.org>; Wed, 5 Feb 2003 17:39:29 -0500 (EST)
Received: from nsfmail05.nsf.gov (nsfmail05.nsf.gov [128.150.130.44])
by ursa.nsf.gov (Postfix) with ESMTMP id 2B9561F078F
for <mls@asac.org>; Wed, 5 Feb 2003 17:39:28 -0500 (EST)
Received: by nsfmail05.nsf.gov with Internet Mail Service (5.5.2656.59)
id <DWACHSY7>; Wed, 5 Feb 2003 17:39:27 -0500
Message-Id: <6492B50B48408E428561B21B8C0AC6EBCAE539@nsfmail05.nsf.gov>
From: "Fein, Jay S." <jfein@nsf.gov>
To: 'Murry Salby' <mls@asac.org>
Cc: "Reid, Stephen J." <sreid@nsf.gov>, "Harris, Darryl" <dwharris@nsf.gov>
Subject: RE: Proposal
Date: Wed, 5 Feb 2003 17:39:22 -0500
Mime-Version: 1.0
X-Mailer: Internet Mail Service (5.5.2656.59)
Content-Type: text/plain;
charset="iso-8859-1"
Status: R

Murry: I'll look forward to receiving the proposal. Thanks for bringing me
up to date on past and current research. i just approved your final reports
for the climate grant (interannual variations and solar activity) and your
Large Scale dynamics grant (Ozone and trop structure). regards, jay

Who was the NOAA program director?

-----Original Message-----

Figure 1b

To: Steve [REDACTED]

From: Murry Salby

Date: August 20, 2005

Steve,

The following items require your attention:

[REDACTED]

2. Enclosed are time sheets for me during the period May 2004 - May 2005.

[REDACTED]

If you have any questions, let me know.

Thanks

-Murry

Figure 2a

TIME SHEET

Name *Seley*
 Pay Period Ending *5/7/05*

Week 1

Day	Sun	Mon	Tue	Wed	Thurs	Fri	Sat	Totals
Date							4/30	
Hours								
Scientific Support								
Contract #1								
Contract #2						9.5		
Contract #3								
Programming								
Contract #1								
Contract #2								
Contract #3								

Week 2

Day	Sun	Mon	Tue	Wed	Thurs	Fri	Sat	Totals
Date							5/7	
Hours								
Scientific Support								
Contract #1							9.5	
Contract #2								
Contract #3								
Programming								
Contract #1								
Contract #2								
Contract #3								

Figure 2b

Steve,

Below is a tally of my hours devoted to ASA contracts, by month, from the date of the last tally/invoice. After confirming against time sheets, please prepare invoices by individual months (at ASA's request) and dated accordingly, billing my time at the previous rates:

62.50/hr scientific support
23.00/hr programing support.

To my monthly effort, add 0.75 hrs of administrative fee, at 50.00/hr, for providing invoices monthly.

If you have any questions, let me know.

Thanks

Murry

Dates of Service

8/7/05-8/31/05

9/1/05-9/31/05

10/1/05-10/31/05

11/1/05-11/30/05

12/1/05-12/31/05
=====

Figure 3

Personal Effort Report
Murry L Salby

2-Week Reporting Period Ending 5/20/07

Date/ Contract	Mon	Tues	Weds	Thurs	Fri	Sat	Sun
							5/13
0214						16	4
Date/ Contract	Mon	Tues	Weds	Thurs	Fri	Sat	Sun
							5/20
0214						14	6

Figure 4

a Control number		OMB No. 1545-0008		This information is being furnished to the Internal Revenue Service. If you are required to file a tax return, a negligence penalty or other sanction may be imposed on you if this income is taxable and you fail to report it.	
c Employer's name, address, and ZIP code		UNIVERSITY OF COLORADO			
		5 Medicare wages and tips		6 Medicare tax withheld	
		83432.01		1209.76	
		7 Social security tips		8 Allocated tips	
		9 Advance EIC payment		10 Dependent care benefits	
		11 Nonqualified plans		12a	
e Employee's first name and initial Last name		13 Statutory employee Retirement plan Third-party sick pay		12b	
MURRY L SALBY		<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>		E 10500.00	
		14 Other		12c	
				12d	

Form **W-2** Wage and Tax Statement **2001** Department of the Treasury - Internal Revenue Service Copy C For EMPLOYEE'S RECORDS. (See notice to Employee on back of Copy B). This information is being furnished to the Internal revenue Service.

a Control number		OMB No. 1545-0008		This information is being furnished to the Internal Revenue Service. If you are required to file a tax return, a negligence penalty or other sanction may be imposed on you if this income is taxable and you fail to report it.	
c Employer's name, address, and ZIP code		UNIVERSITY OF COLORADO			
		5 Medicare wages and tips		6 Medicare tax withheld	
		56352.71		817.11	
		7 Social security tips		8 Allocated tips	
		9 Advance EIC payment		10 Dependent care benefits	
		11 Nonqualified plans		12a	
e Employee's name, address, and ZIP code		13 Statutory employee Retirement plan Third-party sick pay		12b	
MURRY L SALBY		<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>			
		14 Other		12c	
		BEX 80.91		12d	

Form **W-2** Wage and Tax Statement **2005** Department of the Treasury--Internal Revenue Service Copy C--For EMPLOYEE'S RECORDS. (See notice to Employee on back of Copy B).

Figure 5

December 31, 2005

Atmospheric Systems and Analysis Corporation



**Invoice
#123105 08**

Date of Service	Description	Total
8/7/05-8/31/05	Technical Services Contract #03-002 Scientific Support, M. Salby, 98 hours	\$6125.00
8/7/05-8/31/05	Technical Services Contract #03-002 Programming Services, M. Salby, 40 hours	\$920.00
8/7/05-8/31/05	Technical Services Contract #03-004 Scientific Support, M. Salby, 56 hours	\$3500.00
8/7/05-8/31/05	Administrative Fee/Monthly invoicing	\$37.50
TOTAL DUE		\$10582.50

EIN: 20-0154386

Figure 6