

**WESTERN STATES WATER COUNCIL**

942 East North Union Avenue, Suite A-201 / Midvale, Utah 84047-1764 / (801) 561-5300 / FAX (801) 255-9642

Web Page: [www.westgov.org/wswc](http://www.westgov.org/wswc)

October 28, 2005

Mr. P. Patrick Leahy  
Acting Director  
U.S. Geological Survey  
John W. Powell Federal Building, MS 100  
12201 Sunrise Valley Drive  
Reston, Virginia 20192

Dear Mr. Leahy:

On behalf of the Western States Water Council, representing the governors of eighteen western states, I am writing to raise your awareness of our concern regarding the Landsat Program, which provides U.S. satellite images of the Earth's land surface and surrounding coastal areas. Specifically, we are alarmed by the potential loss of the thermal band which presently provides useful and increasingly critical information for the management of western water resources. The thermal band provides data vitally important to the computation of evapotranspiration. The Idaho Department of Water Resources has been involved with NASA for a number of years in an operational remote sensing application development project. The Surface Energy Balance Algorithm for Land (SEBAL) relies on thermal data from the Landsat satellites to compute evapotranspiration for water management uses.

We understand that current plans under the Landsat Data Continuity Mission call for the Landsat satellites to be replaced with the National Polar-Orbiting Operational Environmental Satellite System. We would strongly urge you to ensure that the appropriate thermal sensors are included to replace the present Landsat capabilities and data, and will work with the Congress to ask for adequate funding.

No other remote sensing capabilities available at this time, nor for the foreseeable future, can provide the high resolution, continuous coverage, workable return time (8-16 days, the shorter the better), consistency of viewing angle and time of day, nor the long history allowing analysis of the evolution and change in evapotranspiration. This is clearly a successful story in matching the value of research and practical applications.

This information is of tremendous value, and is gaining wide-spread use in the West. It has been used in California, Colorado, Idaho, Montana, Nevada, New Mexico, Texas, Utah, Washington and Wyoming for such diverse purposes as: (1) evaluating interstate river compact and international treaty compliance with respect to depletions from irrigation; (2) measuring ground water recharge and the impacts of pumping ground water on the water table and natural vegetation; (3) evaluating impacts on endangered species; (4) studying the impacts of land use

Mr. Leahy  
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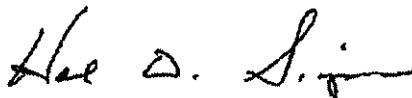
Position #271

transitions from agricultural to residential use; (5) regulation of surface and ground water use and administration of water rights; (6) determining a multi-basin water balance for planning purposes; (7) better managing irrigation practices to achieve water savings; and (8) evaluating spatial and seasonal trends in agricultural water use.

Such activities have been undertaken over the past five years or have been proposed in the Arkansas, Bear, Boise, Lemhi, Upper and Lower Colorado, Upper and Middle Rio Grande, Milk, North Platte, Russian, Salmon, San Juan, Snake, South Platte and Yakima River Basins, as well as East Texas (using Landsat thermal images from 1985 to the present). This work has involved federal, state and local agencies, and tribal members, as well as academic interests and consulting groups. More and more uses of Landsat data for water management will continue to emerge in the future, due in part to the substantial drop in costs for ETM and TM images since 1998.

We strongly support NASA and NOAA spending to provide for the continued availability of Landsat-comparable thermal data, and oppose any move to delete the thermal band from future satellites. We hope to be able to work with you to ensure the availability of this data for the growing number of applications that will continue into the future as we struggle to balance water uses and demands in the West.

Sincerely,



Hal Simpson, Chairman  
Western States Water Council

cc. Dr. Michael Griffin, Administrator, NASA  
Vice Admiral Conrad C. Lautenbacher, Administrator, NOAA  
John Cunningham, Systems Program Director, NPOESS  
Bill Ochs, Project Manager, Landsat Data Continuity Mission, NASA  
John Keys, Commissioner, Bureau of Reclamation  
Dr. Gene Whitney, Science Policy Analyst, National Science and Technology Council

POSITION05 LANDSAT Position - Leahy.wpd

In Reply Refer To:  
Mail Stop 517  
#200656-DO

12-7-05

Mr. Hal Simpson  
Chairman, Western States Water Council  
942 East North Union Avenue  
Suite A-201  
Midvale, Utah 84047-1764

refer to WG

Dear Mr. Simpson:

Thank you for your letter dated October 28, 2005, expressing the Western States Water Council's desires with respect to inclusion of a thermal band on the next generation Landsat-type sensor. I appreciate that thermal data is very important to you and your member States. Scientists at the U.S. Geological Survey (USGS) are also users of thermal data from Landsat 5 and Landsat 7.

As you may be aware, the actively cooled thermal sensor technology employed for Landsat 5 and Landsat 7 was a large factor in the overall cost of both systems. When the original Landsat Data Continuity Mission specifications were produced, the available thermal sensing technology was deemed too immature and risky to make it a firm, baseline requirement. Rather, the National Aeronautics and Space Administration and the USGS may encourage instrument manufacturers to offer a thermal band option for any Landsat follow-on instrument that is proposed.

In addition to encouraging industry to continue to innovate, the USGS is also actively working with other nations that are, or will be, collecting thermal data. In particular, we are working closely with the governments of China and Brazil to obtain better, more frequent access to thermal data from their China-Brazil Earth Resources Satellite systems until such time as a U.S. thermal capability exists.

Again, I thank you and your fellow members for your interest and support. If you have any questions please contact Jay Feuquay, Program Coordinator for Land Remote Sensing at (703) 648-5057 or feuquay@usgs.gov.

Sincerely,

P. Patrick Leahy  
Acting Director

cc: Dir File, MS 114  
Dir Chron (4), MS 114  
Geo Chron  
LRS Chron

USGS:Geography:RByrnes:sd:11/15/2005:703-648-4567:C/My Documents/200656-DO.doc

**CORRESPONDENCE BRIEF**

**ACCN#: 200656-DO**  
**Date: November 15, 2005**

**Subject:**

This is a response to a letter from Mr. Hal Simpson, Chairman of the Western States Water Council. In his letter, Mr. Simpson raises concerns that a next generation Landsat sensor will not have a thermal band (10400 nm – 12500 nm). Mr. Simpson gives several examples of the uses of the thermal information currently occurring in several western States and strongly urges the U.S. Geological Survey (USGS) to ensure that a thermal channel is included on the next Landsat type sensor. He further states that his organization would work with Congress to ask for adequate funding. Similar letters were sent to NASA, NOAA, the NPOESS Integrated Program Office, the Bureau of Reclamation, and Gene Whitney at OSTP.

**Background:**

The thermal channel became a casualty of budget considerations early in the development of the LDCM data specifications. In the past NASA has been reluctant to push for a thermal channel on LDCM for the following reasons:

1. The cryogenically-cooled, older technology used on present Landsat satellites is too expensive and heavy to put on the future Landsat Data Continuity Mission (LDCM).
2. New microbolometer technology for measuring earth surface temperature is still relatively immature and perhaps too risky to incorporate on the LDCM.
3. NASA has not been able to identify a sufficient customer base for thermal (surface temperature) data.

The first two points are probably still true, although the technology has advanced over the last several years. There is question about the third point, however, as lower data costs and broader use have generated Mr. Simpson's letter.

**Summary of Correspondence:**

The Director thanks Mr. Simpson for his letter and states that the USGS remains committed to long-term Landsat data continuity. The Director further states that USGS scientists also make use of the thermal data and that we will continue to work with NASA to encourage instrument manufacturers to consider proposing a thermal channel as an option on LDCM. The USGS will also continue working with the Chinese and Brazilians to gain access to thermal data from the CBERS series of remote sensing satellites.

**Correspondence has been coordinated with:**

Headquarters Land Remote Sensing Staff

\_\_\_/S/ Jay Feuquay \_\_\_\_\_  
 Jay Feuquay  
 Land Remote Sensing Coordinator

\_\_\_/S/ Richard Hogan \_\_\_\_\_  
 Richard L. Hogan  
 Chief of Operations, Geography

**Review and Approved by:** \_\_\_/S/ Barbara J. Ryan \_\_\_\_\_  
 Barbara J. Ryan  
 Associate Director for Geography

Mr. Hal Simpson, Chairman, Western States Water Council, writes to raise your awareness of their concern regarding the Landsat Program, which provides U.S. satellite images of the Earth's land surface and surrounding coastal areas. They understand that current plans under the Landsat Data Continuity Mission call for the Landsat satellites to be replaced with the National Polar-Orbiting Operational Environmental Satellite System. They strongly urge you to ensure that the appropriate thermal sensors are included to replace the present Landsat capabilities and data, and will work with the Congress to ask for adequate funding. Use subject in email:  Yes  No

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2	Correspondence Analyst	Valerie S Leonard	Valerie S Leonard	November 22, 2005	Ap
3	Staff Asst. (Special Issues)	Judy J Nowakowski	Judy J Nowakowski	November 22, 2005	Ap
4	Ofc. of Communications & Outreach	Paul R Beauchemin	Gloria J Johnson	November 29, 2005	Ap
5	Office of Budget & Performance	Carla M Burzyk	Catherine Reid	November 30, 2005	Ap
6	Correspondence Analyst	Laurie F Rinker	Laurie F Rinker	November 30, 2005	Ap
7	Senior Advisor to Dir.	Amy L Holley	Laurie F Rinker	December 1, 2005	Ap
8	Deputy Director	Robert E Doyle	Georgia J Diersing	December 6, 2005	Ap
9	Correspondence Analyst	Laurie F Rinker	Laurie F Rinker	December 8, 2005	Ap

**Additional Notifications of Review Process**

12/8/2005 12:25:08 PM - Laurie F Rinker : Tim Miller surnamed for Bob Hirsch on 12/9/05. CLOSED FOLDER

12/8/2005 8:27:53 AM - Valerie S Leonard : Pat Leahy asked for a surname from Bob Hirsch. Time Elliott is acting for Bob - gave folder to Mary for a Water surname.

11/30/2005 10:21:33 AM - Laurie F Rinker : FINAL to Amy, Bob, and Pat.

11/22/2005 10:19:53 AM - Gayle Ann Vasquez : Barbara Ryan felt that the letter is technical and if the Director would prefer she could sign it for him, his choice.

**History:**

Document Status:	Closed	Nara Retention:	<input checked="" type="radio"/> Yes <input type="radio"/> No
Date Closed:	December 08, 2005	Added to Chron:	Yes
Closed By:	Laurie F Rinker/DO/USGS/DOI		
Signed By:	P. Patrick Leahy/DO/USGS/DOI		
Reply Date:	December 07, 2005		

Select the templates that can be used with this profile(Optional):

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**CMS Number:** ~~200606-08~~ **Due Date:** November 14, 2005 **Action Office:** Assoc. Dir  
**Exec. Sec. ACCN #:** **Source:** Standard **Signature Level:** Geograph  
**Exec. Sec. Due Date:** Director  
**Subject:** Mr. Hal Simpson, Chairman, Western States Water Council, writes to raise your awareness of their concern regarding the Landsat Program, which provides U.S. satellite images of the Earth's land surface and surrounding coastal areas. They understand that current plans under the Landsat Data Continuity Mission call for the Landsat satellites to be replaced with the National Polar-Orbiting Operational Environmental Satellite System. They strongly urge you to ensure that the appropriate thermal sensors are included to replace the present Landsat capabilities and data, and will work with the Congress to ask for adequate funding.

**Addressee:** Patrick Leahy **Fiscal Year:** 2006  
**Date Rcvd:** October 31, 2005 **Date Created:** October 31, 2005  
**Source:**  Standard **Lead Action Office:**  Assoc. Director for Geography

**Work Days:** 10 **Coordinate With:**

**Sig Level:**  Director

**Due Date:** November 14, 2005 **X-Ref:**

**Due Date Extension:** **Categories:**

**Exec Sec ACCN #:** **Exec Sec Due Date:**

Documents associated with the profile

- Incoming Image -- added on 10/31/2005 by Laurie F Rinker
- Letter -- added on 11/22/2005 by Gayle Ann Vasquez

Correspondence From:

**First Name:** Hal  
**Last Name:** Simpson  
**Title:** Chairman  
**Organization:** Western States Water Council  
**Address:** 942 East North Union Ave., Suite A-201  
**City:** Midvale  
**State:**  Utah  
**Zip Code:** 84047-1764  
**Country:**

Correspondence To: Click to copy from->

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