

## Curriculum Vitae (as of June, 2012) of Dr. Prasad S. Thenkabail

USGS Global croplands, their water use & food security 2012, (<https://powellcenter.usgs.gov/globalcroplandwater/>)  
**Book (Chief Editor; Published 2011):** "Hyperspectral Remote Sensing of Vegetation" (Taylor and Francis; October 2011)  
**Book (Chief Editor; published 2009):** "Remote Sensing of Global Croplands for Food Security" (Taylor and Francis; 2009)

**Editor-in-Chief** (2010-present), Remote Sensing Open Access Journal

**Editorial Board (2006-current)**, Remote Sensing of Environment

**Guest Editor (2012)**, ASPRS PE&RS Special Issue on Global Croplands and their Water Use for Food Security

**Leader, USGS Powell Center Project** on Global Croplands and their Water Use for Food Security

**NASA NRA grant winner (2000-2002, 2011-2012) as PI:** "Characterization of Eco-Regions for Africa" and HyspIRI

**Member (2007-2011):** Landsat Science Team

**Adjunct Professor (2010-present)**, Department of Soil, Water, and Env. Science (SWES), University of Arizona (UoA)

**Coordinator (2010-present):** Committee for Earth Observation Systems (CEOS) Agriculture Societal Beneficial Area (SBA)

**Guest Editor for Special issue on "Global Croplands" (2010)** for Remote Sensing Open Access Journal

**USGS Science Advisor (2010-present):** for Land Surface Imaging Virtual Constellation Team

**Advisory Group Member**, GEO Task US-09-01a Agriculture Societal Beneficial Area

**Co-Lead (2010-present) with Tom Weiner:** Water for the World Project of IEEE

**Head, Remote Sensing and GIS unit (2004-2008):** International Water Management Institute (IWMI)

**Group head, global research division (2005-2008):** International Water Management Institute (IWMI)

**Project leader (2004-2008):** Global Irrigated Area Mapping (GIAM) and Global Map of Rainfed Cropland Areas (GMRA)

**Award winning Team (2007):** Best Team Award for the Global Irrigated Area Mapping (GIAM) team by IWMI

**Best scientific papers (in 2008 and 1995):** American Society's Photogrammetric Engineering and Remote Sensing (PE&RS)

**Special Achievement in GIS (SAG) award 2007** by ESRI: for web (<http://www.iwmigiam.org>; [iwmidsp.org](http://www.iwmidsp.org)) & related work

**Scientific Advisory Board Member (2000-2003):** Rapideye-German Satellite Company, which recently launched 5 satellites

### Country Work experience:

**East Asia:** China

**S-E Asia:** Cambodia

**Middle East:** Israel, Syria

**North America:** United States, Canada

**South America:** Brazil

**Central Asia:** Uzbekistan

**South Asia:** Bangladesh, India, Myanmar, Nepal, and Sri Lanka

**West Africa :** Rep.of Benin, Burkina Faso, Cameroon, Central African Republic, Cote d'Ivoire, Gambia, Ghana, Mali, Nigeria, Senegal, and Togo.

**Southern Africa:** Mozambique, South Africa

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### 1.0 Personal Information

**Last Name:** Thenkabail

**Middle Initial:** S.

**First name:** Prasad

**Date of Birth:** August 19, 1958

**Country of Citizenship:** United States of America (USA)

### 2.0 Contact details

**Dr. Prasad S. Thenkabail, Ph.D.**

Research Geographer-15

U. S. Geological Survey (USGS)

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Flagstaff, AZ 86001

USA

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Dr. Prasad S. Thenkabail, Research Geographer-15, U.S. Geological Survey (USGS)

E-mail: [pthenkabail@usgs.gov](mailto:pthenkabail@usgs.gov), [thenkabail@gmail.com](mailto:thenkabail@gmail.com)

Web sites:

<https://powellcenter.usgs.gov/globalcroplandwater/>  
<http://www.sciencebase.gov/catalog/folder/4f79f1b7e4b0009bd827f548>  
[http://powellcenter.usgs.gov/current\\_projects.php#GlobalCroplandMembers](http://powellcenter.usgs.gov/current_projects.php#GlobalCroplandMembers)  
<https://profile.usgs.gov/professional/mypage.php?name=pthenkabail>  
<http://arizona.usgs.gov/Flagstaff> ; <http://www.usgs.gov>

**New book:** [Hyperspectral Remote Sensing of Vegetation \(Taylor and Francis\CRC press\)](https://www.crcpress.com/product/isbn/9781439845370;jsessionid=tg8zyfgPA8f4L3HD05szog**)  
[http://www.crcpress.com/product/isbn/9781439845370;jsessionid=tg8zyfgPA8f4L3HD05szog\\*\\*](https://www.crcpress.com/product/isbn/9781439845370;jsessionid=tg8zyfgPA8f4L3HD05szog**)

**Also book on:** ["Remote Sensing of Global Croplands for Food Security" \(Taylor and Francis\CRC press\)](http://www.amazon.com/Remote-Sensing-Croplands-Security-Applications/dp/1420090097)  
<http://www.amazon.com/Remote-Sensing-Croplands-Security-Applications/dp/1420090097>

**Recent past research:**

<http://www.iwmigiam.org> Global Irrigated Area Map and rainfed croplands (project chief)  
<http://waterdata.iwmi.org/dtViewCommon.php> IWMI data storehouse pathway (chief architect)

### 3.0 Key Qualifications and achievements overview

**Dr. Prasad S. Thenkabail** is, currently, a Research Geographer (GS15; the highest GS Research level) at the U.S. Geological Survey (USGS), USA. His roles include being: 1. lead researcher for a number of projects, and 2. co-ordinator of the Committee for Earth Observation Systems (CEOS) Agriculture Societal Beneficial Area (SBA) with contribution to the efforts of CEOS, GEO, and GEOSS. **Currently, he provides scientific/intellectual leadership in several research projects of National and International importance that include:**

- **Project Lead (2010-present): Hyperspectral remote sensing of vegetation and agricultural crops.** Published a new book (myself as chief editor) entitled: "Hyperspectral Remote Sensing of Vegetation" (Taylor and Francis): <http://www.crcpress.com/product/isbn/9781439845370> (USGS GAM and LRS funded).
- **Project Lead (2011-present): Hyperspectral Infrared Imager (HyspIRI) Research** on "Water Use and Water Productivity of Key World Crops using Hyperion-ASTER, and a Large Collection of in-situ Field Biological and Spectral Data in Central Asia" (NASA HyspIRI funded).
- **Project Lead (2011-present): Global croplands and their water use for food security in the twenty-first century** using advanced remote sensing data and methods: (e.g., [http://powellcenter.usgs.gov/current\\_projects.php#GlobalCroplandMembers](http://powellcenter.usgs.gov/current_projects.php#GlobalCroplandMembers)) (USGS Powell Center Funded).
- **Project Lead (2009-present), Automated Cropland Classification Algorithm (ACCA):** (e.g., <http://www.sciencebase.gov/catalog/folder/4f79f1b7e4b0009bd827f548>) **within WaterSMART** (Sustain and Manage America's Resources for Tomorrow) Project: Development of a remote sensing based agricultural cropland classification algorithm (ACCA) to support Water Use on Irrigated Lands through Advanced Remote Sensing and Surface Energy Modeling (USGS WaterSMART funded).
- **Project scientist (2009-2010): cropland mapping in non-presence countries using automated cropland classification algorithm (ACCA).** Croplands at 30m-250m for 20 Asian Countries (within FEWSNET project). (USGS FEWSNET funded).

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- **Project advisor (2011-present): Water productivity mapping in the irrigated croplands of California** using multi-sensor remote sensing (*USGS Mendenhall funded*).
- **Co-Lead (2010-present):** Water for the World Project of IEEE (*IEEE Funded*).
- **Global Coordinator (2010-present):** Committee for Earth Observation Systems (CEOS) Agriculture Societal Beneficial Area (SBA). Contribution to Global Earth Observing (GEO) and Global Earth Observing System of Systems (GEOSS) (*USGS nominated*).
- **Guest Editor, August 2012 PE&RS special issue (with cover page, highlight article, foreword).** American Society of Photogrammetry and Remote Sensing **PE&RS special issue** on “Remote Sensing of Global Croplands and their Water Use for Food Security in the Twenty-first Century”. PE&RS editorial board invited.
- **Guest Editor “Global croplands” special issue** for Remote Sensing Open Access Journal (22 papers). **Published; 2010.**
- **Leading proposals, mentoring younger researchers** (e.g., helping them develop proposals, mentoring them).
- **Adjunct Professor (2010-present),** Department of Soil, Water, and Environmental Science (SWES), University of Arizona (USA).

Dr. Thenkabail has conducted pioneering research and has widely published on Hyperspectral remote sensing of vegetation and agriculture including a recent seminal **book on “Hyperspectral Remote Sensing of Vegetation” published by Taylor and Francis:** <http://www.crcpress.com/product/isbn/9781439845370>. His publications on Hyperspectral remote sensing of agriculture are widely quoted. This work also lead Prasad to be on the **scientific advisory board** of Rapideye, a private German Earth Resources Satellite Company. He played a pivotal role in recommending the design of wavebands in the rapideye sensor onboard a constellation of 5 satellites [TACHYS (Rapid), MATI (Eye), CHOMA (Earth), CHOROS (Space), TROCHIA (Orbit)] Launched recently by Rapideye. Especially, his research played a key role in selection of “red-edge” band.

More recently, Dr. Thenkabail conducted pioneering work on **Global irrigated area mapping (GIAM) and global mapping of rainfed cropland areas (GMRCA)** (<http://www.iwmigiain.org>) using multi sensor remote sensing and spectral matching techniques. This work has lead to many peer-review publications and **a book entitled: “Remote Sensing of global croplands for food security”** (publisher: Taylor and Francis\CRC press). He has given numerous lectures, worldwide, on GIAM and GMRCA in places such as NASA Ames, China, India, Israel, Landsat Science Team, University of New Hampshire (UNH), and Boston University (BU). He has lead and conducted GIAM workshops in Beijing, China, New Delhi, India, and Tel Aviv, Israel. Dr. Thenkabail was the chief architect of numerous other International remote sensing science and applications projects when working for the International Water Management Institute (IWMI) and these projects include: A. global irrigated and rainfed cropland area mapping (<http://www.iwmigiain.org>), B. IWMI data storehouse pathway (<http://waterdata.iwmi.org/dtViewCommon.php>; earlier <http://www.iwmidsp.org>), C. drought monitoring project in Afghanistan, Pakistan, and parts of India (<http://dms.iwmi.org>), D. inland valley wetland mapping in Africa, E. Characterization of Eco-regions in Africa, and F. Tsunami Satellite Sensor Data Catalogue

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(<http://csi.cgiar.org/tsunami.asp>). He has trained and built capacity in remote sensing and GIS in all International Institutes he worked. Prasad's publications were selected as **one of the best 5 papers** consecutively for 3 years (2004-2006) in the International Water Management Institute's (IWMI's) annual research meeting (ARM). His team was also awarded the **"best team"** at IWMI during ARM 2006.

He was the main PI for the NASA funded project called **Characterization of Eco-regions in Africa (CERA)** The award was \$561, 000 over 3 years + about \$300, 000 data grant Principal Investigator (along with Prof. Mark Ashton of School of Forestry and Environmental Sciences, Yale University). He worked on hyperspectral remote sensing and carbon stock estimations from remote sensing. He has lead many innovative projects such as: **1. Water productivity mapping** in Uzbekistan and Israel using remote sensing, **2. Drought monitoring** in Afghanistan, Pakistan, and parts of India using remote sensing ([dms.iwmi.org](http://dms.iwmi.org)), **3. Wetland mapping** in Africa using remote sensing (<http://wetlands.iwmi.org/>; <http://www.iwmi.cgiar.org/wetlands/SrilankaRuhuna.asp>), **4. Best site selection** for rice cultivation in Africa through spatial modeling techniques, **5. Drought monitoring** of India using AVHRR time-series.

**Prasad lead the remote sensing programs in 3 International Institutes:**

2. **International Water Management Institute (IWMI), 2003-2008:** Principal Researcher, Head of remote sensing and GIS,, and one of the 3 group heads of the global research division with the IWMI based in Sri Lanka with global mandate for water;
3. **International Center for Integrated Mountain Development (ICIMOD), 1995-1997:** Remote sensing expert, based in ICIMOD Nepal with mandate to work in Hindu-Kush Himalayas; and
4. **International Institute of Tropical Agriculture (IITA), 1992-1995:** Remote sensing expert, based in Nigeria with mandate to work in sub-Saharan Africa.

**In addition, he has worked in 3 leading institutes of excellence as a remote sensing scientist:**

5. **Yale Center for Earth Observation (YCEO), 1997-2003:** Associate research scientists, YCEO, Yale University, USA;
6. **Ohio State University (OSU), 1988-1992:** PhD graduate student, OSU, USA;
7. **National Remote Sensing Agency (NRSA), 1986-1988:** Scientist, NRSA, Indian Space Research Organization, India.

The **USGS and NASA selected** Prasad to be on the **Landsat Science Team** (2007-2011) for a period of 5-years ([http://landsat.gsfc.nasa.gov/news/news-archive/pol\\_0005.html](http://landsat.gsfc.nasa.gov/news/news-archive/pol_0005.html); <http://ldcm.usgs.gov/intro.php>). Currently, he is the **Editor-in-Chief** of *Remote Sensing Open Access Journal* (<http://www.mdpi.com/journal/remotesensing/editors/>) and is on the **editorial board** of *Remote Sensing of Environment* and *Journal Remote Sensing*. He is the **editor-in-chief of two pioneering books:** 1. *Remote Sensing of Global Croplands for Food Security* (Taylor and Francis, 2009); and 2. *Hyperspectral Remote Sensing of Vegetation* (Taylor and Francis; expected publication: October, 2011). In June 2007, Prasad's team was recognized by the Environmental System Research Institute (**ESRI**) for **"special achievement in GIS" (SAG award)** for their Tsunami related work ([tsdc.iwmi.org](http://tsdc.iwmi.org)) and for their innovative spatial data portals (<http://waterdata.iwmi.org/dtViewCommon.php>; earlier <http://www.iwmidsp.org>). In

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2008, Prasad and co-authors were the Second Place Recipients of the 2008 John I. Davidson **ASPRS President's Award** for practical papers (for their paper on Spectral Matching Techniques used in mapping global irrigated areas). He won the 1994 **Autometric Award** of the American Society of Photogrammetric Engineering and Remote Sensing (ASPRS) for superior publications in remote sensing. He was on a 3 member **scientific advisory board** of the Rapideye (a German Satellite Company) helping them design best wavebands for studying agriculture. Rapideye is now a constellation of 5 satellites orbiting the Earth.

Dr. Thenkabail has 27+ years experience working as a well-recognized international expert in remote sensing and geographic information systems (RS/GIS) and their application to agriculture, wetlands, natural resource management, water resources, forests, sustainable development, and environmental studies. His work experience spans over **25+ countries** spread across West and Central Africa (Rep. of Benin, Burkina Faso, Cameroon, Central African Republic, Côte d'Ivoire, Gambia, Ghana, Mali, Nigeria, Senegal, and Togo), southern Africa (Mozambique, South Africa), South Asia (Bangladesh, India, Myanmar, Nepal, and Sri Lanka), Southeast Asia (Cambodia), the Middle East (Israel, Syria), East Asia (China), Central Asia (Uzbekistan), North America (the United States), South America (Brazil), and Pacific (Japan).

Dr. Thenkabail obtained **Ph.D. from the Ohio State University** (1992). His Master's degree in Hydraulics and Water Resources Engineering (1984), and Bachelor's degree in Civil Engineering (1981) were from the Mysore University (India). He began his professional career as a lecturer in hydrology, water resources, hydraulics, and open channel flow in the colleges affiliated to Bangalore and Mysore University (India). He has 100+ publications, mostly peer-reviewed research papers in major International remote sensing journals.

## 4.0 Education

1992	Ph.D. Agricultural Engineering (remote sensing: dissertation and specialization), <b>Ohio State University (USA).</b>
1984	M.E. Hydraulics and Water Resources Engineering, <b>Mysore University (India).</b>
1981	Civil Engineering, <b>Mysore University (India).</b>

## 5.0 Language Skills

	<u>Written</u>	<u>Spoken</u>
English	excellent	excellent
Kannada	excellent	excellent
Tulu	none	okay

## 6.0 Professional Experience *[starting with current]*

- October 2008-present Research Geographer-15, U.S. Geological Survey, USA.  
**(A) Book on** Hyperspectral Remote Sensing of Vegetation (Taylor and Francis; published in October, 2011);  
**(B) Water productivity mapping** using remote sensing in Irrigated croplands of California. USGS Mendenhall Research. Mendenhall fellow: Dr. Michael Marshall.  
**(C) HypspIRI (Hyperspectral Infrared Imager) research (NASA funded)** studying water Use and water productivity of 5 world crops. Post doc: Dr. Isabella Mariotto;  
**(D) Global cropland mapping and their water use.** USGS Powell Center Working Group. ASPRS PE&RS August 2012 Special Issue on Global Croplands  
**(E) Automated Cropland Classification Algorithm (ACCA)**: Global cropland mapping algorithms: e.g., <http://www.sciencebase.gov/catalog/folder/4f79f1b7e4b0009bd827f548>;  
**(F) CEOS Global coordinator**: Agricultural Societal Beneficial Area coordinator (Ag. SBA);  
**(G) GEO Water (co-lead IEEE Water for the World)**;
- March 2003-September 2008  
 (a) Principal Researcher, Global Research Division,  
 (b) Head of Remote Sensing and GIS,  
 (c) Group head, Global research division, and  
 (d) Project leader, Global Irrigated Area Mapping.  
**International Water Management Institute (IWMI), Colombo, Sri Lanka**  
**Countries worked**: China, India, Ghana, Israel, Malaysia, Mozambique, South Africa, Sri Lanka, USA, and Uzbekistan.
- April 1997-March, 2003  
 Associate Research Scientist (remote sensing),  
**Yale Center for Earth Observation, (YCEO), Yale University, USA.**  
**Countries worked**: Nigeria, Benin, and Cameroon, and Syria.
- Nov. 1995-Jan.1997  
 Remote Sensing Specialist,  
**International Centre for Integrated Mountain Development, (ICIMOD), Nepal.**  
**Countries worked**: Bangladesh, China, India, Myanmar, and Nepal.
- July 1992-Nov, 1995  
 Remote Sensing Specialist,  
**International Institute of Tropical Agriculture (IITA), Nigeria.**  
**Countries worked**: Nigeria, Republic of Benin, Togo, Ghana, Cote D’Ivoire, Burkina Faso, Mali, Senegal, Gambia, and Cameroon.
- Sep. 1988-June 1992  
 Graduate Research Associate and Ph.D. candidate,  
**Ohio State University, USA**  
**Countries worked**: USA
- Dec. 1986-June 1988  
 Scientist, Department of Space, Government of India, National  
**Remote Sensing Agency (NRSA), India.**  
**Countries worked**: India
- Jan. 1984-Dec. 1986  
 Lecturer in hydrology, hydraulics, open channel flow.  
**Mysore and Bangalore University (India). Affiliated colleges, India.**  
**Countries worked**: India

## 7.0 Awards, Honors, Service *[starting with most recent]*

- 2012-present **Subject Matter Expert**, sub-area **Consumptive use** (under water resources), United States National Earth Observation (NEO) Portfolio Assessment Office of Science and Technology Policy (OSTP), **White House**;
- 2011-present **Editor-in-Chief, Remote Sensing Open Access Journal**. Involves making final decisions on every peer-review article published in the Journal. Also, advising the journal, maintaining quality, and bringing new idea. Occasional editorials.

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- 2011-present **Major review panels for selecting proposals**  
 1. NASA Terrestrial Ecology Panel  
 2. U.S. Army Corps of Engineers, the Engineer Research and Development Center (ERDC)  
 3. The United States - Israel Binational Agricultural Research and Development Fund  
 4. Reviewer of Prof. Brian Wardlow, who applied for promotion to Research Associate Professor here in the School of Natural Resources (SNR), University of Nebraska-Lincoln
- 2011-present **Global coordinator, Committee on Earth Observation Satellite (CEOS) Agricultural Societal Beneficial Area (Ag. SBA)**
- 2008-present **Peer-reviewed manuscripts for journals for following Journals:**  
 Remote Sensing of Environment (RSE);  
 Photogrammetric Engineering and Remote Sensing (PE&RS);  
 International Society of Photogrammetry and Remote Sensing (ISPRS PHOTO)  
 Remote Sensing Open Access Journal (RS OAJ)  
 IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing  
**(JSTARS)**  
 Journal of Applied Remote Sensing (JARS)  
 Applied Geography  
 Computers and Electronics in Agriculture  
 Sensors  
 Environmental Conservation  
 Agriculture Forest and Meteorology  
 Biosystems Engineering  
 Agricultural Water Management  
 Canadian Journal of Remote Sensing;  
 Computational Geosciences;  
 Journal of spatial hydrology;  
 Journal of Environmental management;  
 Natural hazards;  
 Urban Water;  
 Water Resources Research  
 Landscape Ecology
- 2008 **Second Place Recipients of the 2008 John I. Davidson ASPRS President's Award for Practical papers (Paper entitled: "Spectral Matching Techniques to Determine Historical Land use/Land cover (LULC) and Irrigated Areas using Time-series AVHRR Pathfinder Datasets in the Krishna River Basin, India. Photogrammetric Engineering and Remote Sensing. 73(9): 1029-1040.")**
- 2007 **Special achievement in GIS (SAG) award from ESRI.** Awarded for the International Water Management Institute (IWMI) from Environmental Systems Research Institute (ESRI) for our innovative spatial data and knowledge gateway: <http://www.iwmidsp.org>. SAG award sites selected from 300,000 sites globally. I received the award on behalf of IWMI as its head of RS\GIS unit from Mr. Jack Dangermond, President of ESRI on June 19, 2007 at the San Diego Convention Center, San Diego, USA.
- 2006 **Best team:** The Global Irrigated Area Mapping (GIAM) team headed by me was awarded the "best team" during the IWMI's annual research meeting of 2006.

- 2006 **Best paper (one of the 5).** One of the 5 best papers in the IWMI Annual research meeting (ARM) 2006. Biggs, T., Thenkabail, P.S., Krishna, M., GangadharaRao, P., and Turrall, H., 2006b.. Vegetation phenology and irrigated area mapping using combined MODIS time-series, ground surveys, and agricultural census data in Krishna River Basin, India. *International Journal of Remote Sensing*. 27(19):4245-4266.
- 2006 **Associate-editor-in-chief, Journal of Spatial Hydrology** (An official publication of American Spatial Hydrology Union (ASHU).
- 2005 **Editor, Remote Sensing of Environment (RSE).** Selected to serve on the Editorial Team of RSE- the best remote sensing journal in the World.
- 2005 **Best paper (one of the 5).** One of the 5 best papers in the IWMI Annual research meeting (ARM) 2005. "Thenkabail, P.S., Schull, M., Turrall, H. 2005. Ganges and Indus River Basin Land Use/Land Cover and Irrigated Area Mapping using Continuous Streams of MODIS Data. *Remote Sensing of Environment*. Remote Sensing of Environment, 95(3): 317-341."
- 2004 **Best paper (one of the 5),** One of the 5 best papers in the IWMI Annual research meeting (ARM) 2004. "Thenkabail, P.S., Gamage, N., and Smakhin, V. 2004. The use of remote sensing data for drought assessment and monitoring in south west Asia. IWMI Research report # 85. Pp. 25. IWMI, Colombo, Sri Lanka."
- 2001 Member, **Scientific Advisory Board, RapidEye**(satellites, remote sensing, and agriculture),Germany. 2001.
- 2001 Strathmore's **Who's Who in remote sensing 2001** (ISSN Library of Congress 1076-6375; ISBN 1-809347-01-9).
- 1994 American Society for Photogrammetry and Remote Sensing, **Autometric Award 1994 (outstanding publication in remote senibest paper).**
- 1988-1992 Ohio State University, **Graduate Research Assistantship** with full tuition 1988-1992.
- 1991 Ohio State University, **finalist**, graduate research forum, 1991.
- 1981-1983 Government of India **higher education fellowship**, 1981-1983.
- 1991 Gamma Sigma Delta (honor society:agriculture), nominated for **life membership** by faculty.

## 8.0 News maker profiles (samples)

### 1. People of Landsat in the NASA GSFC web page (2007):

[http://landsat.gsfc.nasa.gov/news/news-archive/pol\\_0005.html](http://landsat.gsfc.nasa.gov/news/news-archive/pol_0005.html)

### 2. Remote Sensing of Environment Editorial Board

[http://www.elsevier.com/wps/find/journaleditorialboard.cws\\_home/505733/editorialboard#editorialboard](http://www.elsevier.com/wps/find/journaleditorialboard.cws_home/505733/editorialboard#editorialboard)

3. **Can the realm of the stars give life?: How water management on Earth is Aided by Space-based Remote sensing** By David Bullock. *Space Lifestyle Magazine*. Winter/Spring 2008. Issue 2, No. 1. Pp 32-35. Based on extensive interview with Prasad S. Thenkabail. [www.spacelifestylemag.com](http://www.spacelifestylemag.com).

4. **"Not a drop to drink: the heat is on"** Chapter 3, Page 32. *National Geographic book on Water*. Upcoming. ISBN: 978-1-4263-0359-3. <http://www.nationalgeographic.com/books>; <http://www.ngchildrensbooks.com>

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**5. ESRI special achievement in GIS (SAG) award 2007 podcast:**

[http://www.esri.com/news/podcasts/speaker\\_series.html](http://www.esri.com/news/podcasts/speaker_series.html); <http://events2.esri.com/uc/2007/sag/list/>

**6. Landsat Science team Spotlight (2007):**

[http://landsat.usgs.gov/project\\_facts/landsatupdates/2007/Vol\\_1\\_Issue\\_4/Vol\\_1\\_Issue\\_4.php](http://landsat.usgs.gov/project_facts/landsatupdates/2007/Vol_1_Issue_4/Vol_1_Issue_4.php)

**7. Water Monitoring Alliance profiles IWMIDSP lead by myself (2007)**

<http://www.watermonitoringalliance.net/index.php?id=355>

**8. NASA news: Scientist delivers seminar on mapping global irrigation**

<http://center.arc.nasa.gov/2007/06/29/scientist-delivers-seminar-on-mapping-global-irrigation/>

**9. CGIAR climate change research (2006):**

<http://www.cgiar.org/newsroom/releases/news.asp?idnews=523>

**10. Rapideye (five satellites ready for launch in 2008) scientific advisory board press release (2001):**

[http://www.rapideye.de/upload/documents/Press\\_Releases/Archive/2001/Nov\\_18-21\\_2001\\_-\\_RE\\_Takes\\_the\\_Test-Review\\_of\\_RE\\_Products\\_and\\_Services.pdf](http://www.rapideye.de/upload/documents/Press_Releases/Archive/2001/Nov_18-21_2001_-_RE_Takes_the_Test-Review_of_RE_Products_and_Services.pdf).

**11. Yale bulletin and calendar (May 5, 2000; Vol. 28, No. 31) (2000)**

Satellite images aid study of environmental threats in Africa

## 9.0 List of Assignments, Projects, Grant Awards

### 2008-present:

#### Ongoing Successful Awards:

- **USGS Powell Center Working Group on Global Croplands:** 2011. Proposal entitled: “Global Croplands and Their Water Use for Food Security in the Twenty-first Century”. Awarded about \$100,000 per year. PI: Prasad. S. Thenkabail.
- **NASA Hyperspectral Infrared Imager (HypIRI) proposal entitled:** “Water Use and Water Productivity of Key World Crops using Hyperion-ASTER, and a Large Collection of in-situ Field Biological and Spectral Data in Central Asia”. Proposal Submitted in Response to NASA ROSES HYSPIRI PREPARATORY ACTIVITIES USING EXISTING IMAGERY. NRA: NNH10ZDA001N-HYSPIRI (**PI:** Prasad Thenkabail, **co-Is:** Prof. Alfredo Huete (University of Arizona), Dr. Terry Slonecker (USGS)). \$109,221 for 1 year.
- **USGS WaterSMART, 2010-present. (Water Sustain and Manage America’s Resources for Tomorrow)** Project: Development of Automated Cropland Classification Algorithm and Development of a National Framework For Monitoring Water Use on Irrigated Lands through Advanced Remote Sensing and Surface Energy Modeling. **PI:** Prasad S. Thekabail. Overall remote sensing waterSMART is lead by Jim Verdin. Approximately \$150,000 per year.
- **USGS Mendenhall Postdoctoral Research Award to study California’s Water Productivity using remote sensing:** USGS Geography Research Opportunity Proposal entitled: “Impacts of irrigated water use in a changing climate: Measuring, mapping, and modeling trends and changes in agricultural water productivity for California”. For Mendenhall post-doctoral fellow awards. (**Mendenhall Scholar:** Dr. Michael Marshall; **Research Advisors:** Prasad Thenkabail and Dennis Dye). Approximately \$250,000 over 2 years.

#### Ongoing Pending proposals:

##### As PI:

Dr. Prasad S. Thenkabail, Research Geographer-15, U.S. Geological Survey (USGS)

**NASA ROSES HYspIRI 2012.** Thenkabail (PI). Water Productivity Modeling and Mapping of Eight Major World Crops through Extensive *in-situ*, AVIRIS Classic\NG, MASTER, and other Hyperspectral- Vegetation Indices (HVIS), Narrowbands (HNBS), and Broadbands (BBs) Dat Proposal Submitted in Response to A.26 HyspIRI Preparatory Airborne Activities and Associated Science and Applications Research: NNH11ZDA001N-HYSPIRI. \$594,768 over 3 years

**NASA ROSES SERVIR. 2012.** Prasad S. Thenkabail (PI), Trent Biggs (co-I), and Terrence Slonecker (co-I). 2011. Agricultural Cropland Area Database (ACAD) and Water Productivity Modeling and Mapping of Four Major World Crops in the NASA SERVIR Asian Countries (NSAC) using Satellite Sensor Data Fusion. NASA ROSES NNH11ZDA001N-SERVIR. \$945,777 over 4 years.

**USA and India Strategic Dialogue on Science.** Prasad S. Thenkabail (PI). gricultural cropland monitoring and determination of crop water productivity in India, *Agro-Climatological and Water Resource Availability Modeling for Agricultural Management in India USA-India joint scientific initiative within their strategic dialogue*, [Proposal in Support of an Evergreen Revolution for India](#). Proposal budget: about 5 million over 5 years.

### **PREVIOUS COMPLETED PROJECTS:**

- March 2004-Oct. 2008 **Project lead (remote sensing component)**  
**Water productivity methodology development.** Water productivity mapping using remote sensing techniques is carried out in the Syr Darya and Krishna river basins.
- March 2004-Oct. 2008 **Project lead (remote sensing component)**  
**Drought monitoring and assessment.** A drought monitoring system (DMS) has been developed for Afghanistan, Pakistan, and parts of India using MODIS and AVHRR data. [dms.iwmi.org](http://dms.iwmi.org)
- March 2003-Oct. 2008 **Project leader**  
 Development of the **International Water Management Institutes (IWMI's) data storehouse pathway (IWMIDSP)**. This is a highly successful global public good with a monthly visitor base of 2000+ people from over 70 Countries. <http://www.iwmidsp.org>
- April, 2000-March, 2003. **Co-principal Investigator**  
**"Research Characterization of Humid-Forest and Savanna Ecoregions of West and Central Africa using satellite Sensor Data of Three Eras"**. [NASA NRA-99-OES-04. Investigations that Contribute to the NASA Earth Science Enterprise's Modeling and Data Analysis]. **\$561, 000 over 3 years + about \$300, 000 data grant Principal Investigator** (along with Prof. Mark Ashton of School of Forestry and Environmental Sciences, Yale University).
- April 1997-March 2000. **Project scientist**  
**Landscape changes in the Near East.** NASA Grant to Yale University, New Haven (USA).
- November 1995-January, 1997 **Leadership (remote sensing)**  
 Remote sensing capacity building, training, curriculum, research, organizing workshops, and advocacy in regional member countries of the International Center for Integrated Mountain Development (ICIMOD) in Bangladesh, China, India, Myanmar, and Nepal.
- July 1992-November, 1995 **Leadership (remote sensing)**  
 Inland valley characterization of West and Central Africa, and Alternative to slash-and-burn benchmark area characterization in Congo basin working for the International Institute of Tropical Agriculture (IITA), Ibadan, Nigeria.
- August 1988-July, 1992 **Project scientist**  
 Soybean and corn crop growth and yield modeling using Landsat TM data in Northern Ohio, USA.
- December 1986-June, 1988. **Project scientist (one of the 4 lead scientists)**  
 Drought monitoring of India using NOAA AVHRR data. The National Remote Sensing Agency, India.

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Dr. Prasad S. Thenkabail, Research Geographer-15, U.S. Geological Survey (USGS)

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January, 1984-  
November, 1986

**Lecturer in civil engineering**

Lecturer in Civil Engineering (Hydraulics and water resources)

January 1983-  
December, 1983

**Masters student doing thesis**

Study of Western Ghat rivers of Kerala (India) for rainfall-runoff mathematical modeling, quantitative geomorphological studies, and raingauge network design.

## 10.0 Data and Knowledge Gateways released

Global public good (GPG) web portals released:

1. **USGS Global croplands, their water use & food security 2012**, (<https://powellcenter.usgs.gov/globalcroplandwater/>)
2. **Global irrigated area map and statistics (GIAM web portal), 2007**: This pioneering work provides irrigated area maps and statistics for all the countries in the world using remote sensing techniques. Visit: <http://www.iwmiGIAM.org>
3. **IWMI data storehouse pathway (IWMIDSP web portal), 2005**: This is a state-of-art spatial data gateway on river basins, Nations, Regions, and the World. The web portal has 3000+ registered users and is accessed by about 2000 visitors every month from 70+ countries. Visit: <http://waterdata.iwmi.org/dtViewCommon.php>; earlier <http://www.iwmidsp.org>
4. **Tsunami satellite sensor data catalogue (TSSDC web portal), 2005**: This is the collection of pre- and post-Tsunami very high and high resolution satellite imagery for the entire Tsunami affected area. Collected, streamlined, and made available to anyone. Please visit: <http://csi.cgiar.org/tsunami.asp>.

## 11.0 Workshops conducted/lead by me (2006-current)

**Herndon, VA.. 2011 November 13-18, 2011.** Workshop on “Advanced Hyperspectral Sensing of the Terrestrial Environment”. Pecora 18, My Role: Main workshop organizer and presenter. Other workshop organizers were: Dr. Dean Riley of the Aerospace Corporation and Prof. John Lyon of US Bureau of Land Management.

**Tel Aviv, Israel, May 13-15, 2008.** Workshop on “Water productivity mapping (WPM) and soil salinity mapping (SSM) through advanced remote sensing data and methods”. Israel-IWMI collaborative project. Hosted by Agricultural Research Organization, Israel. I have lead this project and chief co-ordinator of this workshop.

**Beijing, China, Sepetember 11-14, 2007.** Training workshop for the Chinese scientists on standardized groundtruth data collection approaches for the detailed irrigated area mapping of China at 30m spatial resolution. About 25 participants from Chinese Academy of Agricultural Sciences (CAAS), Chinese Academy of Sciences (CAS), and academic and governmental institutes attended the 4-day workshop\training that included 2 days of field visit to collect groundtruth data.

**Beijing, China, May 23, 2007.** Global irrigated area mapping (GIAM) workshop for China (GIAM China) held in Beijing on May 23, 2007. The International Water management Institute (IWMI) and the Chinese Academy of Sciences (CAAS) workshop on GIAM. I was the scientific lead conducting the workshop. About 50 participants from CAAS, Chinese Academy of Sciences (CAS), and academic and governmental institutes attended the 1-day workshop.

**New Delhi, India, April 13, 2007.** Global irrigated area mapping (GIAM) workshop for India (GIAM India) held in New Delhi, 2007. The International Water management Institute (IWMI) and the Indian Council for Agricultural Research (ICAR) workshop on GIAM. I was the scientific lead conducting the workshop. About 70 participants from various Indian Governmental and Academic Institutes attended the 1-day workshop.

**Colombo, Sri Lanka. September 25-27, 2006.** International workshop on Global Irrigated Area Mapping (GIAM). This workshop was attended by 70 participants from 16 countries including representatives from USGS, NASA, Yale University, and University of North Dakota. I lead the scientific and organizational aspects of this workshop.

## 12. PhD Students (Guided by me)

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Dr. Prasad S. Thenkabail, Research Geographer-15, U.S. Geological Survey (USGS)

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Student 1: “Mapping Irrigated areas of India using Terra\Aqua MODIS Time-series through Ideal Spectra Generation, Spectral Matching Techniques, and Hyperspectral Vegetation Indices, India”. Awarded Ph.D. by the Kuvempu University, Shimoga, Karnataka, India. February 2010. My role: co-advisor.

Student 2: “Methods and Approaches of irrigated area mapping at various spatial resolutions using AVHRR, MODIS, and LANDSAT ETM+ data for the Krishna river basin, India”. Awarded Ph.D. by the Jawaharlal Nehru Technological University, Hyderabad, India. My role: co-advisor.

### **13.0 Publications: Total: 3 books, ~94 papers.**

#### **Books:**

**Thenkabail, P.S.,** Lyon, G.J., and Huete, A. 2011. Book entitled: “**Hyperspectral Remote Sensing of Vegetation**”. CRC Press- Taylor and Francis group, Boca Raton, London, New York. Pp. 781 (80+ pages in color).

**Reviews of this book:** <http://www.crcpress.com/product/isbn/9781439845370>

**Thenkabail. P.,** Lyon, G.J., Turrall, H., and Biradar, C.M. 2009. Book entitled: “**Remote Sensing of Global Croplands for Food Security**” (CRC Press- Taylor and Francis group, Boca Raton, London, New York. Pp. 556 (48 pages in color). **Published in June, 2009.**

**Reviews of this book:**

<http://www.crcpress.com/product/isbn/9781420090093>

<http://gfmt.blogspot.com/2011/05/review-remote-sensing-of-global.html>

Murali Krishna Gumma and **Prasad S.Thenkabail.** 2011. Methods and Approaches of irrigated area mapping using Remote Sensing. LAP LAMBERT Academic Publishing GmbH & Co. KG Dudweiler Landstr. 99, 66123 Saarbrücken, Germany. Schaltungsdienst Lange o.H.G., Berlin Books on Demand GmbH, Norderstedt Reha GmbH, Saarbrücken Amazon Distribution GmbH, Leipzig. ISBN: 978-3-8443-1099-3, paperback, 156 pages.

#### **Peer-reviewed papers, Book chapters, Web Portals**

**Thenkabail, P.S. 2012. Principal Investigator.** USGS Global croplands, their water use & food security Web\Data Portal, (<https://powellcenter.usgs.gov/globalcroplandwater/>)

**Thenkabail, P.S., 2012.** The Committee on Earth Observation Satellites has released the 2012 [The Earth Observation Handbook](#), Special Edition for the **United Nations Conference on Sustainable Development, June 20-22, in Rio de Janeiro, Brazil.** USGS research geographer **Prasad Thenkabail** was the lead contributor for the Global Food Security Case Study:

[http://www.eohandbook.com/eohb2012/case\\_studies\\_global\\_food\\_security.html](http://www.eohandbook.com/eohb2012/case_studies_global_food_security.html)

**Thenkabail, P.S.,** Gumma, M.K., 2012. Selection of hyperspectral narrowbands (HNBS) and composition of hyperspectral two-band vegetation indices (HVIs) for biophysical characterization and discrimination of crop types using field reflectance and Hyperion/EO-1 data. . IEEE **Journal** of Selected Topics in Applied Earth Observations and Remote Sensing” (**JSTARS**). Accepted in June 2012.

Mariotto, I., **Thenkabail, P.S.,** Huete, H., Slonecker, T., Platonov, A., 2012. Hyperspectral versus Multispectral Crop- Biophysical Modeling and Type Discrimination for the HypsIRI Mission. Remote Sensing of Environment. In review.

**Thenkabail. P.S.** Wu, Z., Verdin, J., and Rowland, J. 2012. An automated cropland classification algorithm (ACCA) using Fusion of Landsat, MODIS, secondary, and in-situ data. *Remote Sensing Open Access Journal*. In Review.

**Thenkabail P.S.,** Knox J.W., Ozdogan, M., Gumma, M.K., Congalton, R.G., Wu, Z., Milesi, C., Finkral, A., Marshall, M., Mariotto, I., You, S. Giri, C. and Nagler, P. 2012. Assessing future risks to agricultural productivity,

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Dr. Prasad S. Thenkabail, Research Geographer-15, U.S. Geological Survey (USGS)

water resources and food security: how can remote sensing help?. Photogrammetric Engineering and Remote Sensing, August 2012 Special Issue on Global Croplands: Highlight Article. Accepted. In press.

Nagler, P., **Thenkabail, P.S.**, Milesio, C., Giri, C., Ozdogan, M., Knox, J., You, S., Congalton, R.G., Finkral, A., Nagler, P., Mariotto, I., Marshall, M., Wu, Z. 2012. Working Group on Global Croplands and Water Use for Food Security in the Twenty-first Century. Factsheet. U.S. Geological Survey.

**Thenkabail, P.S.**, Hanjra, M.A., Dheeravath, V., Gumma, M. 2011. **Book Chapter # 16:** Global Croplands and Their Water Use Remote Sensing and Non-Remote Sensing Perspectives. In the Book entitled: "Advances in Environmental Remote Sensing: Sensors, Algorithms, and Applications". Taylor and Francis Edited by Dr. Qihao Weng. Pp. 383-419.

**Thenkabail, P.S.**, Lyon, G.J., and Huete, A. 2011. **Book Chapter # 28:** Hyperspectral Remote Sensing of Vegetation and Agricultural Crops: Current Status and Future Possibilities. In Book entitled: "**Remote Sensing of Global Croplands for Food Security**" (CRC Press- Taylor and Francis group, Boca Raton, London, New York. Edited by Thenkabail, P.S., Lyon, G.J., and Huete, A. **To be published in June, 2009. Pp. 50 (approx.)**

**Thenkabail, P.S.**, Lyon, G.J., and Huete, A. 2011. **Book Chapter # 1:** Advances in Hyperspectral Remote Sensing of Vegetation. In Book entitled: "**Remote Sensing of Global Croplands for Food Security**" (CRC Press- Taylor and Francis group, Boca Raton, London, New York. Edited by Thenkabail, P.S., Lyon, G.J., and Huete, A. **To be published in June, 2009. Pp. 60 (approx.)**

Murali Krishna Gumma, Andrew Nelson, Prasad S. Thenkabail and Amrendra N. Singh, "Mapping rice areas of South Asia using MODIS multitemporal data", J. Appl. Remote Sens. 5, 053547 (Sep 01, 2011); doi:10.1117/1.3619838.

Gumma, M.K., **Thenkabail, P.S.**, Muralikrishna, I.V., Velpuri, M.N., Gangadhararao, P.T., Dheeravath, V., Biradar, C.M., Acharya Nalan, S., Gaur, A., 2011. Changes in agricultural cropland areas between a water-surplus year and a water-deficit year impacting food security, determined using MODIS 250 m time-series data and spectral matching techniques, in the Krishna River basin (India). International Journal of Remote Sensing 32(12), 3495-3520.

Gumma, M.K.; **Thenkabail, P.S.**; Hideto, F.; Nelson, A.; Dheeravath, V.; Busia, D.; Rala, A. Mapping Irrigated Areas of Ghana Using Fusion of 30 m and 250 m Resolution Remote-Sensing Data. Remote Sens. 2011, 3, 816-835.

Gumma, M.K., **Thenkabail, P.S.**, and nelson, A. 2011. Mapping Irrigated Areas Using MODIS 250 Meter Time-Series Data: A Study on Krishna River Basin (India). Water 2011, 3(1), 113-131; doi:10.3390/w3010113.  
[www.mdpi.com/journal/water](http://www.mdpi.com/journal/water).

**Thenkabail, P.S. 2010. Guest Editor:** Special issue on "Global Croplands" for Journal Remote Sensing. Total: 22 papers. [http://www.mdpi.com/journal/remotesensing/special\\_issues/croplands/](http://www.mdpi.com/journal/remotesensing/special_issues/croplands/).

**Thenkabail, P. S.. 2010.** Editorial. "Global Croplands and their Importance for Water and Food Security in the Twenty-first Century: Towards an Ever Green Revolution that Combines a Second Green Revolution with a Blue Revolution." Remote Sens. 2, no. 9: 2305-2312.

Vision Document: Wiener, T., and **Thenkabail, P.S.** (editors). 2010. A Blueprint for the Water for the World: Pathway to a Blue Revolution. IEEE, Piscataway, NJ, USA. Pp. 45. Please access the document at:<http://www.ieee-earth.org/wp-content/uploads/2009/10/final-A-Blueprint-for-Water-For-the-World-November-2010.pdf>

**Thenkabail P.S.**, Hanjra M.A., Dheeravath V., Gumma M. A. 2010. A Holistic View of Global Croplands and Their Water Use for Ensuring Global Food Security in the 21st Century through Advanced Remote Sensing and

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Dr. Prasad S. Thenkabail, Research Geographer-15, U.S. Geological Survey (USGS)

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Gumma, M., Nelson, A., **Thenkabail, P.S.**, Singh, A.N., Garcia, C., Maunahan, A., Villano, L. 2010. Mapping rice areas in South Asia. Rice Today. July-September, 2010. Pp. 42-43.

Dheeravath, V., **Thenkabail, P.S.**, Chandrakantha, G, Noojipady, P., Biradar, C.B., Turrall, H., Gumma, M.<sup>1</sup>, Reddy, G.P.O., Velpuri, M. 2010. Irrigated areas of India derived using MODIS 500m data for years 2001-2003. ISPRS Journal of Photogrammetry and Remote Sensing. <http://dx.doi.org/10.1016/j.isprsjprs.2009.08.004>. 65(1): 42-59.

Fujii, H., Gumma, M., **Thenkabail, P.**, Namara, R. 2010 (August). Suitability Evaluation for Lowland Rice in Inland Valleys in West Africa. Journal Transactions of the Japanese society of Irrigation, drainage and rural Engineering. page numbers:Vol.78 No.4 pp47-55. publisher: Japanese society of Irrigation, drainage and rural Engineering. (In Japanese with abstract in English).

Milesi C., Samanta A., Hashimoto H., Kumar K.K., Ganguly S., **Thenkabail P.S.**, Srivastava A.N., Nemani R.R., Myneni R.B. Decadal Variations in NDVI and Food Production in India. Remote Sensing. 2010; 2(3):758-776.

Gumma, M.K., **Thenkabail, P.S.**, Bubacar, B. 2010. Delineating shallow ground water irrigated areas in the Atankwidi watershed (Northern Ghana, Burkina Faso) using Quickbird 0.61 - 2.44 meter Data. African Journal of Environmental Science and Technology Vol. 4 (6), pp. xxx-xxx, June, 2010. Available online at <http://www.academicjournals.org/AJEST>. ISSN 1991-637X © 2010 Academic Journals.

Cai, X. **Thenkabail, P.** 2010. Using remote sensing to assess crop water productivity. SPIE Newsroom. DOI: 10.1117/2.1201002.002576. <http://spie.org/x39199.xml?highlight=x2420&ArticleID=x39199>.

**Thenkabail, P.S.**, Biradar C.M., Noojipady, P., Dheeravath, V., Li, Y.J., Velpuri, M., Gumma, M., Reddy, G.P.O., Turrall, H., Cai, X. L., Vithanage, J., Schull, M., and Dutta, R. 2009. Global irrigated area map (GIAM), derived from remote sensing, for the end of the last millennium. International Journal of Remote Sensing. 30(14): 3679-3733. July, 20, 2009.

Velpuri, M., **Thenkabail, P.S.**, Gumma, M.K., Biradar, C.B., Dheeravath, V., Noojipady, P., Yuanjie, L., 2009. Influence of Resolution or Scale in Irrigated Area Mapping and Area Estimations. Photogrammetric Engineering and Remote Sensing (PE&RS). 75(12): December 2009 issue.

Biradar, C.M., **Thenkabail, P.S.**, Noojipady, P., Yuanjie, L., Dheeravath, V., Velpuri, M., Turrall, H., Gumma, M.K., Reddy, O.G.P., Xueliang, L. C., Schull, M.A., Alankara, R.D., Gunasinghe, S., Mohideen, S., Xiao, X. 2009. A global map of rainfed cropland areas (GMRC) at the end of last millennium using remote sensing. International Journal of Applied Earth Observation and Geoinformation. 11(2). 114-129. [doi:10.1016/j.jag.2008.11.002](http://dx.doi.org/10.1016/j.jag.2008.11.002). January, 2009.

Cai, X.L., **Thenkabail, P.S.**, Biradar, C., Platonov, A., Gumma, M., Dheeravath, V., Cohen, Y., Goldshlager, N., Eyal Ben-Dor, Victor Alchanatis, and Vithanage, J.V. 2008. Water Productivity Mapping Methods and Protocols using Remote Sensing Data of Various Resolutions to Support "more crop per drop". Journal of Applied Remote Sensing. 3(1) 033557 (2009); doi:10.1117/1.3257643. Published October 12, 2009.

Chavula, G., Brezonik, P., **Thenkabail, P.**, Johnson, T., Bauer, M., 2009. Estimating chlorophyll concentration in Lake Malawi from MODIS satellite imagery, Physics and Chemistry of the Earth. *Parts A/B/C*. 34(13-16): 755-760. doi: [10.1016/j.pce.2009.07.015](http://dx.doi.org/10.1016/j.pce.2009.07.015).

Chavula, G., Brezonik, P., **Thenkabail, P.**, Johnson, T., Bauer, M., 2009. Estimating the surface temperature of Lake Malawi using AVHRR and MODIS satellite imagery, *Physics and Chemistry of the Earth. Parts A/B/C. 34(13-16): 749-754.* doi: [10.1016/j.pce.2009.08.001](https://doi.org/10.1016/j.pce.2009.08.001).

**Thenkabail, P.S.**, Biradar, C.M., Noojipady, P., Dheeravath, V., Gumma, M., Li, Y.J., Velpuri, M., Gangalakunta, O.R.P. 2009. **Book Chapter 3:** Global irrigated area maps (GIAM) and statistics using remote sensing. Pp. 41-120. In the book entitled: "Remote Sensing of Global Croplands for Food Security" (CRC Press- Taylor and Francis group, Boca Raton, London, New York. Pp. 475. Published in June, 2009. (Editors: Thenkabail. P., Lyon, G.J., Biradar, C.M., and Turrall, H.).

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**Thenkabail, P.S.** and Lyon, J.G. 2009. **Book Chapter 20:** Remote sensing of global croplands for food security: way forward. Pp. 461-466. In the book entitled: "Remote Sensing of Global Croplands for Food Security" (CRC Press- Taylor and Francis group, Boca Raton, London, New York. Pp. 475. Published in June, 2009. (Editors: Thenkabail. P., Lyon, G.J., Biradar, C.M., and Turrall, H.).

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#### **14.0 Recent Conferences\workshops\invited lectures (2001-2012 sample)**

**Thenkabail, P.S.**, August 30, 2012, Menlo Park, California: **Public Lecture**. Global Food Security in the 21<sup>st</sup> Century: the increasing need for food production, cropland areas, and agricultural water . At the USGS Menlo Park Western Geographic Science Center Headquarters, Open to Public.

**Thenkabail, P.S.**, July 10-11, 2012, Montreal, Canada: **Participated**. Group on Earth Observations (GEO) Global Agricultural Monitoring initiative (**GEO-GLAM**) Meeting.

**Thenkabail, P.S.** and Wu, Z., June 21, 2012, Flagstaff, AZ, USA: WaterSMART (Sustain and Manage America's Resources for Tomorrow.) meeting. **Presented**: "An Automated Cropland\Fallowland Classification Algorithm (ACCA) using Multi-sensor Remote Sensing".

Wu, Z. and **Thenkabail, P.S.**, June 21, 2012, Flagstaff, AZ, USA. WaterSMART (Sustain and Manage America's Resources for Tomorrow.) meeting. **Demonstrated** "Automated Cropland\Fallowland Classification Algorithm (ACCA)".

Marshall. M. and **Thenkabail, P.S.** June 21, 2012, Flagstaff, AZ, USA. WaterSMART (Sustain and Manage America's Resources for Tomorrow.) meeting. **Advisor**: "water productivity of irrigated croplands of California".

**Thenkabail, P.S. March 5-8, 2012.** NASA Terrestrial Ecology peer review panel: "Panel: New and Multisensor Approaches and Gulf of Mexico" to convene on. Washington, DC, USA.

**Thenkabail, P.S.** December 6-8, 2011. Attended. Water Census / WaterSMART Organizational Meeting this week in Reston, USA.

**Thenkabail, P.S. Pecora 18 conference, Herndon, VA.. 2011 November 13-18, 2011.** Workshop on "Advanced Hyperspectral Sensing of the Terrestrial Environment". Pecora 18, My Role: Main workshop organizer and presenter. Other workshop organizers were: Dr. Dean Riley of the Aerospace Corporation and Prof. John Lyon of US Bureau of Land Management.

**Thenkabail, P.S.**, Pecora 18 conference. Herndon, VA. November 13-18, 2011. Presented "An Automated Cropland Classification Algorithm (ACCA) using Advanced Remote Sensing Methods and Approaches".

**Thenkabail, P.S.**, Pecora 18 conference. Herndon, VA. November 13-18, 2011. Presented "IEEE Water for the World Projects: A Contribution to GEO Water and Agricultural Societal Beneficial Area".

**Thenkabail, P.S.**, Pecora 18 conference. Herndon, VA. November 13-18, 2011. Presented: "Hyperspectral Remote Sensing of Vegetation: Knowledge Gain and Knowledge Gap After 40 years of Research"

**Thenkabail P.S. October 29-Nov. 4. Presented:** "Improving Water Productivity for Agriculture - Predicting and Preventing Crisis in Irrigated Water Use in a Changing Climate". Global Humanitarian Technology Conference (GHTC), Seattle, WA.

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**Thenkabail, P.S.** October, 2011. Improving Water Productivity for Agriculture - Predicting and Preventing Crisis in Irrigated Water Use in a Changing Climate. Global Humanitarian Technology Conference. October 30-November 1, 2011. Seattle, Washington State, USA.

Sharma, C., **Thenkabail, P.S.**, Sharma, J.R., October, 2011. and Earth Observing Data and Methods for Advancing Water Harvesting Technologies in the Semi-arid Rain-fed Environemnts of India. Proceedings of the Global Humanitarian Technology Conference. October 30-November 1, 2011. Seattle, Washington State, USA.

**Thenkabail, P.S. October 19-26, 2012**. Limiting Greenhouse Gas (GHG) Emissions and Water Use from Global Croplands and yet Ensuring Global Food Security in the Twenty-first Century: Pathways and Strategies. Low Carbon Earth ummit, Dalian, China.

**Thenkabail, P.S. Sept. 26-30, 2011.** Working Group on Global Croplands (WGGC) Plan for the Week (Including Products Expected). USGS Powell Center Working Group on Global cropland and their water use for food security.

**Thenkabail, P.S. Sept. 26-30, 2011.** Global Croplands and their Water Use for Food Security in the 21<sup>st</sup> Century Advanced Remote Sensing and Non-remote Sensing Methods and Approaches. USGS Powell Center Working Group on Global cropland and their water use for food security.

**Thenkabail, P.S. Sept. 26-30, 2011.** Water Productivity Modeling and Mapping to Facilitate Production of “more crop per drop” Leading to Blue Revolution. USGS Powell Center Working Group on Global cropland and their water use for food security.

**Thenkabail, P.S. and Stryker, T. Sept., 2011.** JECAM and the GEO-G20 Global Agricultural Monitoring Initiative . CEOS-SIT workshop, Washington, DC.

**Thenkabail, P.S. , Sept., 2011.** Global Croplands and their Water Use for Food Security in the 21<sup>st</sup> Century Advanced Remote Sensing and Non-remote Sensing Methods and Approaches. Lecture @ USGS National Center @ Reston, VA. September 15, 2011 Lecture given to the Mid-America Consultants International (Team from Argentina and Brazil). Reston USGS HQ.

Thenkabail, P.S. Sioux Falls, USA. August 16-18, 2011. **Hyperspectral Remote Sensing of Vegetation: Knowledge Gain and Knowledge Gap After 40 years of Research.** Landsat Science Team Meeting.

Isabella Mariotto, Prasad S. Thenkabail, Alfredo Huete, E. Terrence Slonecker, Edward P. Glenn. and Alexander Platonov. August, 2011. Water Use and Water Productivity of Key World Agricultural Crops for Supporting Food Security Using Hyperspectral and Thermal Data. NASA Hyspri Workshop poster.

Prasad S. Thenkabail made a presentation entitled: “CEOS agricultural SBA perspectives” during the **CEOS Joint Experiment for Crop Area Monitoring (JECAM)**, Space Data Coordination Meeting, **Ottawa, Canada**, June 21-22, 2011. Water S

Prasad S. Thenkabail, June 13, 2011. made a presentation entitled: “**Predicting and Preventing Crisis in Irrigated Water Use in a Changing Climate Measuring, Modeling and Mapping Trends and Changes in Agricultural Water Productivity for California.** WaterSMART (Sustain and Manage America’s Resources for Tomorrow) Project team presentation.

Prasad S. Thenkabail made a presentation entitled: “CEOS space agency data coordination: global agricultural monitoring system of systems for Joint Experiment for Crop Area Monitoring (JECAM)” at the 26<sup>th</sup> **CEOS Stratetic Initiative Team (SIT)** meeting held in **Frascati, Italy** during 23-24, May, 2011.

**Maryland, USA.** May 17-18, 2011. (**Invited lecture**). HypIRI Symposium to be held in Goddard Space Flight Center, Greenbelt, MD. Presented: “**Hyperspectral Remote Sensing of Vegetation: Knowledge Gain and Knowledge Gap after 40 years of research**”.

Dr. Prasad S. Thenkabail, Research Geographer-15, U.S. Geological Survey (USGS)

**Curitiba city, Paraná State, Southern Brazil, April 30-May 5, 2011 (Invited keynote speaker).** Presented “Hyperspectral Remote Sensing of Vegetation” at the XV Brazilian Remote Sensing Symposium ([www.dsr.inpe.br/sbsr2011](http://www.dsr.inpe.br/sbsr2011)) to be held in Curitiba city, Paraná State, Southern Brazil, from April 30 to May 5, 2011.

**New Delhi, India. March 22-23. US-India strategic dialogue on science workshop.** Presented “Remote sensing of global croplands, their water use, and water productivity” at the US-India Water for Agriculture workshop. I was one of the 6 scientists representing USGS, USDA, and NASA.

**Phoenix, AZ. March 1-3, 2011.** A Knowledge-based Automated Cropland Mapping Algorithm using Advanced Remote Sensing Methods and Approaches. Landsat Science Meeting.

**Haifa, Israel (February 21-24, 2011). AGRI-SENSING 2011:** International Symposium on Sensing in Agriculture in Memory of Dahlia Greidinger (**Invited Keynote Speaker**). The Symposium will take place from February 21-24, 2011, at the Technion – Israel Institute of Technology in Haifa, Israel. Gave a lecture on: “Advances in Hyperspectral Remote Sensing of Vegetation and Agricultural crops”. Also, chaired a session on Precision Farming.

**Washington, DC region (Arlington, Virginia) on February 16-17, 2011. CEOS-GEO Actions Workshop.** Presented: “CEOS Space Agency Data for JECAM: Strategies and initiatives”.

**Seattle, American Society of Geographers (AAG), April 12-16, 2011.** Presented: “A Knowledge-based Algorithm for automated Agricultural Cropland Mapping Using Fusion of Landsat, MODIS, Secondary, and in-situ Data”

**Tokyo, Japan. March 14 and 15, 2011. Integrated Global Water Cycle Observations (IGWCO) Community of Practice (COP) annual science and planning meeting** at the University of Tokyo in Tokyo Japan on. Presented: “Agriculture and Water initiatives of IEEE Water for the World Project in contribution to GEO Water and GEO Agriculture”

Dalian, China. October 19-26, 2011. Low Carbon Earth Summit-2011 (LCES-2011), @ Dalian, China (**Invited Special Session Host**). My session is entitled: “*Session: Track 4-1-2: Limiting Greenhouse Gases and Water Use from Global Croplands and Ensuring Global Food Security in the Twenty-first Century: Pathways and Strategies (Part Two) . Oct. 20, 2011 (Thursday)*” with a theme of “Leading Green Economy, Returning to the Harmony Nature”, which will be held during October 19-26, 2011 at World Exposition Center, Dalian, China.

**Denver (Colorado). June 7-11, 2010. USGS 3<sup>rd</sup> Modeling Conference.** Special Session: Water Census and Ecosystems: Remote Sensing Based Models of Water Availability and Water Use (ET) in the Dry Ecosystems of the Southwestern USA. (**Special session by** Pamela Nagler and Prasad Thenkabail).

**San Diego, CA, USA. April 26-30, 2010.** Ammerican Society of Photogrammetry and Remote Sensing (ASPRS) Annual Conference. Special Session on “Uncertainties, Errors, and Accuracies in the Study of Terrestrial Essential Climate Variables (ECVs) using Remote Sensing” (**Special Session Hosted by: Prasad S. Thenkabail**). Will give a lecture entitled: “Uncertainties, errors, and accuracies in land use\land cover and biomass ECVusing hyperspectral, hyperspatial, and advanced multispectral data”.

**San Diego, CA, USA. April 26-30, 2010.** Ammerican Society of Photogrammetry and Remote Sensing (ASPRS) Annual Conference. Special Session on “Global Croplands and Their Water use” (**Special Session Hosted by: Prasad S. Thenkabail**). Will give a lecture entitled: “A holistic View of Global Croplands and Their Water use: Remote Sensing and non-remote sensing approaches”.

**San Diego, CA, USA. April 26-30, 2010.** Ammerican Society of Photogrammetry and Remote Sensing (ASPRS) Annual Conference. Will give a lecture entitled: “Phenological Studies using Spectral Matching Techniques: Global to Local Scales”.

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Dr. Prasad S. Thenkabail, Research Geographer-15, U.S. Geological Survey (USGS)

**Washington, DC. April 15-18, 2010.** Association of American Geographers (AAG). Special session on: “Hyperspectral Remote Sensing Applications at the U.S. Geological Survey” (Special Session co-hosted by Terrence Slonecker and Prasad Thenkabail). Will give a key talk entitled: “Advances in Hyperspectral Study of Agricultural Crops and Vegetation”.

**Tokyo, Japan. April 13-14, 2010.** CEOS Strategic Implementation Team (SIT) meeting.

**Sacramento, CA, USA. March 29-30, 2010.** USGS Delta Science Workshop. Made a presentation entitled: “Predicting and Preventing Crisis in Irrigated Water Use in a Changing Climate Measuring, Modeling and Mapping Trends and Changes in Agricultural Water Productivity for California”.

**Sao José dos Campos, Brazil. February 23-25, 2010.** CEOS Land Surface Imaging Constellation Study Team. Working Meeting. Also, INPE (Instituto Nacional de Pesquisas Espaciais or National Institute for Space Research, Brazil)-USGS, USA bilateral meeting. Made a presentation entitled: “Global croplands and their water use”.

**Washington, DC, USA. January 26-29, 2010.** Committee of Earth Observation Systems (CEOS) Global Earth Observing (GEO) actions workshop as Coordinator of CEOS Agricultural Societal beneficial Area (SBA). Contributed to 2 new CEOS Agricultural tasks on Global Agricultural Monitoring Systems AG-07-03a: (a) AG-07-03\_5 (global croplands and their water use assessments using multi-sensor remote sensing data fusion); and (b) AG-07-03\_6 (global initiative on the water for the world for food security through spaceborne data).

**SanJose, California, USA. January 19-21, 2010.** Landsat Science Team meeting. Attended.

**Ahmedabad, India. December 17-19, 2009.** International Workshop on “Impact of Climate Change on Agriculture”. Represented USGS. Made a Invited presentation entitled: “Global croplands and their water use: remote sensing and non-remote sensing approaches”. Chaired a session.

**Vancouver, Washington State, USA. November 3-4, 2009.** Landsat Data Products Workshop. Landsat Science Meeting. Made a presentation entitled: “Satellite Sensor Data normalization issues: A user's perspective”.

**Boston, MA, USA. October 27-29, 2009.** Landsat Data Products Workshop. Landsat Science Meeting. Made a presentation entitled: “Satellite Sensor Data normalization issues: A user's perspective”.

**Tucson, AZ. October 19, 2009. Invited Seminar Lecture Entitled** “A Holistic View of Global Croplands and their Water Use for Ensuring Global Food Security in the Twenty-first Century through Advance Remote Sensing and Non-remote Sensing Approaches”.

**Sioux Falls, SD, USA. September 23, 2009.** USGS Water Initiative/GIS and Remote Sensing Workshop. Made a presentation entitled: “Global croplands and their water use: using remote sensing and non-remote sensing approaches”.

**Sioux Falls, SD, USA. September 21, 2009.** Landsat User's Workshop. Made a presentation entitled: “Satellite Sensor Data normalization issues: A user's perspective”.

**Siem Reap, Cambodia. June 20-24, 2009.** Delta Research and Global Observation Network (DRAGON) meeting. Made presentation entitled: “Spatial Modeling for Decision Support in Selecting the Most Suitable Areas of Inland Valley Wetland Cultivation to Support Africa's Green and Blue Revolution”.

**Siem Reap, Cambodia. June 20-24, 2009.** Delta Research and Global Observation Network (DRAGON) meeting. Made presentation entitled: “The Use of Remote Sensing for the Characterization of Large River Basins: Studies Pertaining [to] Water Use, Water Productivity, Wetlands, and Agricultural Cropland Changes”

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**Flagstaff, AZ. June 3, 2009.** Made a presentation to U.S. Geological Survey HQ (Reston, Virginia on Webex) for the Dr. Ione Taylor (USGS Geography chief Scientists) on” “Remote Sensing of Global Croplands, Water, Carbon, Wetlands, and Food Security”

**Menlo Park, California.** May 20, 2009. Made a presentation at the U.S. Geological Survey (USGS) Western Region HQ entitled: “Remote Sensing of Global Croplands for Water and Food Security”.

**Accra, Ghana. February 24-25, 2009.** Workshop on Development of Small Scale Lowland Rice Fields In the Inland Valleys of Africa February 24-25, 2009, Accra, Ghana. Japan-IWMI Collaborative Project. Presentation entitled: “Inland Valley Wetland Mapping and Characterization Using Remote Sensing: Highlighting their Potential for Green and Blue revolution in Africa”.

**Accra, Ghana. February 24-25, 2009.** Workshop on Development of Small Scale Lowland Rice Fields In the Inland Valleys of Africa February 24-25, 2009, Accra, Ghana. Japan-IWMI Collaborative Project. Conference paper entitled: “A Spatial Model for the Best Site Selection of rice Cultivation in the Inland Valley Wetlands of Ghana using Remote Sensing and GIS”.

**Flagstaff, USA. February 12, 2009.** Made presentation entitled: “global irrigated area mapping (GIAM) and global map of rainfed cropland areas (GMRCA) at the end of the last millennium using remote sensing”. Presentations to USGS scientists.

**Kyoto, Japan. February 2-3, 2009.** Fifth Integrated Global Water Cycle Observations (IGWCO) meeting. Presentation entitled: “Remote Sensing of Global Croplands for Food Security: Collaborations, Partnerships, and Capacity Building”.

**Kyoto, Japan. February 4-6, 2009.** 3<sup>rd</sup> Global Earth Observing System of Systems (GEOSS) Asia Pacific Symposium. Presentation entitled: “Global Irrigated Area Map (GIAM) and Global Map of Rainfed Cropland Areas (GMRCA): at the end of the last millennium using time-series remote sensing”.

**Kyoto, Japan. February 6-7, 2009. Asian Water Cycle Initiative (AWCI) of the 3<sup>rd</sup> Global Earth Observing System of Systems (GEOSS) Asia Pacific Symposium.** Presentation entitled: “Water Productivity Mapping using Remote Sensing to solve Global Food Crisis”.

**Kyoto, Japan. February 4-6, 2009.** 3<sup>rd</sup> Global Earth Observing System of Systems (GEOSS) Asia Pacific Symposium. Paper entitled: Global Earth Observation System of Systems (GEOSS) Global Hydrologic Observing Network Architecture and Informatics by W. Pozzi, , B. Fekete, M. Piasecki, J. Goodall, T. Oki, R. Lawford, H. Kim, A. M. Castronova, D. Cripe, P. Fox, D. McGuinness, R. Raskin, C. J. Vorosmarty, P. Houser, P. Thenkabail, B. Doorn, R. Hartman, D. Matthews, H. Gupta, B. Imam, R. Schiffer, and E. L. Cox

**Fort Collins, USA. January 6-8, 2009.** Landsat Science Meeting discussions.

**Denver, Colorado, USA. Nov. 16-20, 2008. The 17<sup>th</sup> William T. Pecora Memorial Remote Sensing Symposium.** Global irrigated area map (GIAM) and Global Map of Rainfed Cropland Areas (GMRCA) at the end of the last millennium using time-series remote sensing. **Presentation.**

**Denver, Colorado, USA. Nov. 16-20, 2008. The 17<sup>th</sup> William T. Pecora Memorial Remote Sensing Symposium.** Resolution of Imagery and Irrigated Areas. **Presentation.**

**Denver, Colorado, USA. Nov. 16-20, 2008. The 17<sup>th</sup> William T. Pecora Memorial Remote Sensing Symposium.** Water Productivity Mapping (WPM) using Remote Sensing to support Grow More Crop per Drop. **Presentation and Poster.**

**Denver, Colorado, USA. Nov. 16-20, 2008. The 17<sup>th</sup> William T. Pecora Memorial Remote Sensing Symposium.** Sub-pixel area computation methods. **Poster.**

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**Denver, Colorado, USA. Nov. 16-20, 2008. The 17<sup>th</sup> William T. Pecora Memorial Remote Sensing Symposium.** Global irrigated area mapping at 500 m (GIAM 500m) using MODIS time-series India: 30 classes. **Poster.**

**Colombo, Sri Lanka.** Nov. 10-14, 2008. Asian Conference on Remote Sensing (ACRS). Benchmarking Cotton Water Use and Productivity Using Spectral Indices. **Poster.**

**Colombo, Sri Lanka. September 26, 2008. International Water Management Institute (Friday Seminar).** "Water Productivity Mapping from Remote Sensing to Pin-Point Areas of Low and High WP and help Assist in Finding Solutions to Global Food Crisis". **Presentation.**

**Tel Aviv, Israel, May 13-15, 2008 (organized and lead by me along with Dr. Yafit Cohen of ARO).** Workshop on "Water productivity mapping (WPM) and soil salinity mapping (SSM) through advanced remote sensing data and methods". Israel-IWMI collaborative project. Hosted by Agricultural Research.

**Accra, Ghana. March 17-18, 2008.** project initiation workshop on: "Contribution of Shallow groundwater irrigation to livelihoods security and poverty reduction in White Volta Basin: current extent and future sustainability" funded by Challenge Program for Water and Food (CPWF). I am one of the PI's.

**Accra, Ghana. June 2, 2008.** Wetland Project workshop (IWMI-Japan Collaborative project). Lecture on: "Spatial Models for best site selection for Rice Cultivation in the Inland Valleys".

**Landsat Science meeting,** Reston, Virginia. July 15-17, 2008. **Lecture on:** "Developing ideal spectral signatures of irrigated areas for spectral matching techniques and decision trees".

**Geneva, Switzerland. July 21-24, 2008.** IEEE water project meeting held at the World Meteorological Organization (WMO), Geneva. meeting, Reston, Virginia. July 15-17, 2008. Lecture on: 1. "Global Irrigated and Rainfed Cropland Areas and their Water Use from Spaceborne Remote Sensing", and 2. "Water Productivity Mapping from Remote Sensing to help grow "more crop per drop" and find Innovative Solutions to Global Food Crisis"

**Accra, Ghana. November 29, 2007.** "Methods and models for best (most suitable) site selections for inland valley wetland cultivation in the Kumasi area of Ghana". This is a Japanese funded project carried out by IWMI, Ghana office.

**Rome, Italy. October, 10, 2007.** Workshop on harmonization of spatial information in support of agricultural development and food security" **Gates foundation** organized workshop for International Institutes. Gave a talk on "Natural resources: Water Resources and Irrigation".

**Boston University, Boston, USA. July 3, 2007. Invited speaker.** "Global irrigated area mapping (GIAM) at various scales using remote sensing: methods and results".

**University of New Hampshire, New Hampshire, USA, July 2, 2007. Invited speaker.** Mini workshop on Agriculture, Irrigation, and Hydrology at Global Scale. Organized by Dr. Xiangming Xiao of the Earth, Oceans, and Space (EOS) group of the University of New Hampshire. I was the lead visiting speaker in the workshop. Gave lecture of "Global irrigated area mapping (GIAM) at various scales using remote sensing: methods and results".

**NASA Ames, California, USA. June, 18, 2007. Invited speaker.** "Global irrigated area mapping (GIAM) at various scales using remote sensing: methods and results". The NASA web portal reported: "Scientist delivers seminar on mapping global irrigation" (see: <http://center.arc.nasa.gov/index.php?tag=human-exploration>). "Dr. Prasad Thenkabail, Principal Researcher of the Global Research Division and Head of the Remote Sensing and Geographic Information Systems (GIS) divisions of the [International Water Management Institute](#) (IWMI) in Sri Lanka, gave a seminar to the Biospheric Science branch on June 18. He talked about "mapping global irrigated areas from remote sensing" which details his group's work in providing comprehensive assessments of water

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management for agriculture. IWMI provides country specific statistics, maps and datasets of irrigated areas and rainfed croplands throughout the world.”

**ESRI award. San Diego, California, USA. Attended.** The annual International users conference to receive the “special achievement in GIS” award from ESRI president Mr. Jack Dangermond.

**Landsat Science meeting, Corvallis, Oregon, USA. June 12, 2007. brief lecture on:** “Global irrigated area mapping (GIAM) at various scales using remote sensing: methods and results”.

**Beijing, China GIAM workshop. May 23, 2007.** Conducted, coordinated, and lectured on Global irrigated area mapping (GIAM) for China.

**New Delhi, India GIAM workshop. April 13, 2007.** Conducted, coordinated, and lectured on Global irrigated area mapping (GIAM) for India.

**Tashkent, Uzbekistan. April 16-18, 2007. Organized, coordinated, lectured** on Water productivity mapping (WPM) and soil salinity mapping (SSM) projects for Central Asia. Lectured on “Understand, Measure, Model, and Map Water Productivity and Soil Salinity” (Prasad S. Thenkabail, Chandrashekar M. Biradar, Alexander Platanov, Praveen Noojipady, and Jagath Vithanage).

**Pretoria, South Africa. January 22-27, 2007. Lectured on** “Wetland Mapping and Spatial Modeling for Change Detection and Study of Landscape Interactions in the Challenge Program Wetland sites of the Limpopo River Basin” (Prasad S. Thenkabail, Wasantha Kulawardhana, and Manohar Velpuri). Presented at the Challenge Program Workshop on Wetlands held at Pretoria, South Africa during January 21-25, 2007.

**Landsat Science meeting, Sioux Falls, South Dakota, USA. January 9, 2007. brief lecture on:** “Global irrigated area mapping (GIAM) at various scales using remote sensing: methods and results”.

**FAO, Rome, June 2006. lead speaker from IWMI** (one lead speaker from IWMI and one from FAO). Thenkabail, P.S., Biradar, C.M., Turrall, H., Noojipady, P., Li, Y., Vithanage, J., Dheeravath, V., Velpuri, M., and Cai, X., 2005. Satellite Sensor Based Global Irrigated Area Map @ 10km (GIAM10km), 500-m (GIAM500m), and 30-m (GIAM30m). GIAM workshop held at the Food and Agricultural Organization of the United Nations (FAO) in Rome, Italy, during June 25-26, 2006.

**Hanoi, Vietnam, 2005. Contributed.** Thenkabail, P.S., Biradar, C.M., Turrall, H., and Schull, M. 2005. A Satellite Sensor Based Global Map of Irrigated Areas and Products. Presented at the 2nd Asian Conference on Remote Sensing (ACRS), held at Hanoi, Vietnam during November 7-11, 2005.

**New Delhi, India. Contributed.** Smakhtin, V. Thenkabail, P., Gamage, N, Weragala, N and Hughes, D. (2005) Drought Assessment and Monitoring in South Asia using climate and remote sensing data. In: Proc of the IWRA XII World Water Congress: Water for Sustainable Development – Towards Innovative Solutions, 22-25 November 2005, New Delhi, India. Vol 3 pp 6.97- 6.100

**IWMI Research Update, 2005. Research Update. Lead author.** News of the progress and Impact of IWMI’s research. Issue 2, 2005. International Water Management Institute, Colombo, Sri Lanka.

**Pecora conference in USA-** Global Map of Irrigated Areas, 2005. The First satellite sensor based Global Map of Irrigated Areas (GMIA) @ the end of the last millennium. the Pecora 16 meeting “Global Priorities in Land Remote Sensing” held at Sioux Falls South Dakota, USA during October 23-27, 2005. (Thenkabail, P.S., Biradar, C.M., Turrall, H., and Schull, M.).

**CSI conference in Kenya-** IWMI data storehouse pathway and GMIA, 2005. Science Applications of Spatial Data and Spatial Data Gateways @ IWMI. Presented at the CGIAR Consortium for Spatial Information, GeoSpatial

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Science Meeting and Planning Workshop held at Nairobi, Kenya during October 17-21st, 2005. (Thenkabail, P.S., Biradar, C.M., Islam, A., Vithanage, J., Noojipady, P., Dheeravath, V., Kulawardhana, W., Velpuri, M., Gunasinghe, S., and Alankara., R.).

**GISSL conference in Sri Lanka**- keynote address, 2005. IWMI-DSP- Geospatial digital gateway : A free gateway to geospatial data for Water and Natural Resources Management. Presented as a key Address in session 2 (Geoinformatics for Natural Resources Management) of the Second National Symposium on Geo-Informatics, Kandy, Sri Lanka. August 26, 2005. (Thenkabail, P.S., Biradar, C.M., Islam, A., Noojipady, P.).

**South Africa- wetland mapping, 2005.** Wetland Mapping, Classification, Characterization, and Spatial Modeling: A Comprehensive Methodology discussion for Mapping @ Local to Global Levels and @ all scales. To the IWMI South Africa Wetland Research Team in Pretoria in June, 2005. (Thenkabail, P.S., Kulawardhana, W., Islam, A., Biradar, C.M., Gunasinghe., S.).

**Uzbekistan- water productivity mapping, 2005.** Mapping Water Productivity in Benchmark River Basins: Remote Sensing based Strategies. In IWMI Tashkent, Uzbekistan to initiate Water Productivity Mapping (WMP). Tashkent, Uzbekistan on Sept. 26, 2005. (Thenkabail, P.S., Biradar, C.M., Hugh. T., Manthritillake, H., Vithanage, J.,).

**India- water productivity mapping, 2005.** Mapping Water Productivity in Benchmark River Basins: Remote Sensing based Strategies. In IWMI Hyderabad, India to initiate Water Productivity Mapping (WMP). Hyderabad, India, August, 2006. (Thenkabail, P.S., Biradar, C.M., Biggs. T., Murali Krishna, and Pardasarathi).

**Iranian delegation Lecture in Colombo.** Spatial Data in IWMI's Research Agenda Mapping, Classification, Characterization, and Spatial Modeling using Multi-Scale Time-Series Satellite Sensor Data. Presented to Iranian Delegation on May 2, 2005 @ IWMI HQ, Colombo, Sri Lanka. (Thenkabail, P.S., Biradar, C.M., Islam, A., Vithanage, J., Noojipady, P., Dheeravath, V., Kulawardhana, W., Velpuri, M., Gunasinghe, S., and Alankara., R.).

**IWMI-Friday Seminar lecture, 2005.** (Colombo). The First satellite sensor based Global Map of Irrigated Areas (GMIA) @ the end of the last mellenium. The International Water Management Institute (IWMI), Friday Seminar, October 14, 2005. (Thenkabail, P.S., Biradar, C.M., Turrall, H., and Schull, M.).

**UDA-Tsunami lecture, 2005** (Colombo). Tsunami Satellite Sensor Data Catalogue (TSSDC) @ IWMI: Making disaster management possible. The Urban Developmental Authority (UDA), Sri Lanka. March, 2005. (Thenkabail, P.S., Abayawardana., S.).

**Uniliver-Knowledge base system lecture, 2005.** (Colombo). KBS-Lanka knowledge Base System for Sri Lanka for disaster preparedness, rapid response, and assessment. Presented to the Uniliver board in order to seek fund for the aforementioned project (which was funded by 60k over 2 years). (Thenkabail, P.S., Smakhtin, V., Abayawardana., S., Gamage., N.).

**IWMI-Metadata lecture, 2005.** (Colombo). IWMI Metadata in FGDC Clearinghouse-A Working Model for Rapid Metadata Creation. Presented to IWMI Director General and Others (Noojipady., P., Thenkabail, P.S., marchand, P., and Zomer, R.).

**MODIS Vegetation Workshop II. 2004.** Attended the MODIS Vegetation Workshop II held at University of Montana at Missoula, Montana, USA during August 16-20, 2004. Also made a poster presentation entitled: "Mapping irrigated areas in Ganges river basin using MODIS time-series data".

**International workshop on drought assessment and mitigation in South West Asia, 2004.** Crystal Room, Taj Samudra Hotel, Colombo, Sri Lanka, 7 –8 October 2004. Presented "Drought Assessment and Monitoring in SouthWest Asia using remote sensing".

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**Remote sensing and GIS workshop for Trainers and Practitioners**, 2004. entitled: "Observing River Basins from Space-Why is it Important for IWMI?: A Remote Sensing and GIS (RS/GIS) Workshop for IWMI by IWMI": (a) June 21-25, 2004 specialists workshop, (b) June 28<sup>th</sup> awareness workshop. Held in Board room of IWMI Headquarters, Sri Lanka. **My role**: chief organizer, chief course designer with 5 main presentations. These RS/GIS training materials are available at: <http://www.iwmidsp.org>

**Challenge Program for Water and Food baseline conference. Nairobi, Kenya. 2003.** Baseline conference on Challenge Program for Water and Food. November 2-6, 2003. **Presentation**: Applying Remote Sensing and GIS Datasets for Monitoring Indicators in Challenge Program Basins: A vision for Databases, Data Products, Knowledge Bases, and Science Applications.

**International Water Management Institute (WMI) Friday Seminar. Colombo, Sri Lanka 2003.** Friday Seminar. **Presentation**: Remote Sensing in The Beginning of the New Millennium-Current Challenges and Future Possibilities for Integrating RS/GIS technologies in IWMI's Research Agenda.

**Challenge Program for Water and Food Data Workshop. Colombo. Sri Lanka. 2003. Presentation**: Data workshop for the Benchmark Basins within the Challenge Program for Water and Food. May, 2003. The Use of Remote Sensing for the Characterization of Large River Basins: Issues for the Challenge Program's Benchmark basins.

**Pecora 2002.** Denver, Colorado. Pecora 15 Land Satellite Information IV. November 12 - 14, 2002, Denver, Colorado. **Presentation**: Biomass Estimation and Carbon Sequestration in the Oil Palm Plantations of African Derived Savannas using IKONOS Data.

**NASA.** High Spatial Resolution Commercial Imagery Workshop, March 25-27, 2002, USGS, Reston, Virginia, USA. Made a **poster presentation** entitled: "Oil palm biomass estimation and carbon stock calculations in the derived savannas of Africa using IKONOS data".

**Upper Mid-West Aerospace Consortium (UMAC).** March 28, 2002, Grand Forks, North Dakota, USA. Made a **conference call presentation** entitled: "Natural Resources and Environmental Assessment and Management Issues in the Eco-Regions of Africa using Satellite Sensor Data of Three Eras".

**Cameroon. Field work** and seminar for Characterization of Eco Regions in Africa (CERA) project. March 3-15, 2002. (in Collaboration with the International Institute of Tropical Agriculture, IITA).

**USEPA.** A remote sensing and GIS accuracy assessment symposium, December 11-13, Las Vegas, Nevada, USA. Will make a presentation entitled: "Accuracy assessment for determining best hyperspectral wavebands for agriculture and precision farming". **Invited lecture.** Paper as book chapter in 2002.

**NASA.** EO-1 Hyperion and ALI data users workshop, November 28-29, 2001, Maryland, USA. **Attended.** **RapidEye** (Germany). Information workshop, November 18-20, Munich, Germany. Advised as one of the 5 **Advisory board member** for RapidEye, A German company specializing in launchings, operating, and marketing satellite sensor data for agriculture, forestry, and natural resources.

**Veridian.** Third International Conference on Geospatial Information in Agriculture and Forestry, November 5-7, 2001, Denver, Colorado, USA. **Made a presentation** entitled: "Strengths and limitations of hyperspectral and hyperspatial datasets in agricultural crops". **Paper in conference proceedings.**

**Veridian.** Third International Conference on Geospatial Information in Agriculture and Forestry, November 5-7, 2001, Denver, Colorado, USA. **Made a presentation** entitled: "Characterization of Humid-forest and Savanna ecoregions of West and Central Africa using satellite sensor data of three eras". **Paper in Conference proceedings.**

**Karnataka Remote Sensing Center** (India), July 16, 2001, Karnataka, India. Made a presentation entitled: "Hyperspectral and hyperspatial datasets for agriculture and natural resources". **Invited lecture.**

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**ASPRS.** Gateway to the New Millennium, April 23-27, Annual Conference of the American Society of Photogrammetry and Remote Sensing (ASPRS), St. Louis, Missouri. **Attended.**

**NASA.** High Spatial Resolution Commercial Imagery Workshop, March 19-22, 2001, Greenbelt, Maryland, USA. **Made a presentation** entitled: "Characterizations of humid forest and savanna ecoregions of West and Central Africa using satellite sensor data of three eras".

## **15. References**

On Request.