

Christopher Charles Funk

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Education

Ph.D.

UCSB Geography: Modeling patterns of interannual variability in sub-Saharan Africa rainfall to support Food Security (December, 2002).

M.A.

UCSB Geography: VDELB: An internal gravity wave based diagnostic precipitation model (June, 1999)

B.A.

University of Chicago Fundamentals/Philosophy of Science (June, 1989).

CURRENT EMPLOYMENT

Research Geographer, (GS15.5) US Geological Survey, Earth Resource Observation and Sciences Center (EROS)

Research Director, UCSB Geography Climate Hazard Group (CHG), 2008 to present

As Research Director of the Climate Hazards Group (CHG, chg.geog.ucsb.edu) I help plan, oversee, and participate in the research of a ~18 person research center focused on improved Early Warning and Environmental Monitoring (EWEM) and Land Change/Climate Change science. Primarily supported by the USGS EROS early warning and environmental monitoring group and the USAID Famine Early Warning Systems Network (FEWS NET), the CHG develops new science and new scientific datasets to help describe and understand the Earth and minimize loss of life. My position involves basic research which informs the development of long term research strategies. This long term planning involves critical decisions regarding remote sensing strategies, algorithm development, and a deep understanding of climate variability and potential opportunities for drought prediction and climate attribution. Daily advisement is provided to CHG-affiliated researchers, post-docs, programmers and early warning specialists. I provide high level inputs into USAID development projects, FEWS NET, and US Climate Change activities, while providing mentoring and training in the United States and Africa. My CHG collaborations have resulted more than 90 papers, reports and book chapters since 2011. New insights into African drought helped support lifesaving interventions in 2011, 2012, 2014, 2015/16 and 2017.

Past Employment

Assistant Director, UCSB Geography Climate Hazard Group (CHG), 2003-2009

- Associate Research Professor, Department of Geography, UC Santa Barbara
- Co-managed international 13 member staff. PI or Co-PI on 7 grants.
- Improved hydrologic early warning systems and forecasts.

Senior Scientist (SAIC), USGS FEWS NET – EROS Data Center, 2001-2003

- Science coordinator for 5 international FEWS NET scientists.
- Developed new environmental monitoring tools
- Carried out climate modeling and forecasting to support Famine Early Warning.

Duties: Science coordinator for 6 international FEWS NET scientists. Developed new environmental monitoring tools, e.g., the Forecast Interpretation Tool, facilitating the use of seasonal climate forecasts by FEWS NET food security analysts. Carried out climate modeling and forecasting to support Famine Early Warning.

Accomplishments: Established USGS FEWS NET Special reporting. Produced 9 reports and 3 publications. Climate modeling identified anthropogenic drought and impacts in vulnerable areas of eastern Africa. Forecast 2002/03 drought in Southern Africa, leading directly to timely decision-making for sustained emergency food aid programs by USAID and the World Food Program. Improved early warning monitoring and forecasting.

DATES From: 1997 To: 2001

Graduate Researcher/Instructor, University of California, Santa Barbara Geography Dept

Duties: Developed geo-spatial rainfall modeling techniques, analyzed African climate variability & drought for FEWS NET, taught Tropical Meteorology, Physical Climatology, Geographic Computing.

Accomplishments: 7 peer reviewed publications. EPA STAR Doctoral Fellowship. NDVI-ENSO teleconnection paper earned *Letter of the Year* Citation by the Int J Rem Sens. Created the Collaborative Historical African Rainfall Model (CHARM).

SELECTED HONORS AND AWARDS

July 2018 Invited panelist WCRP Grand Challenge on Weather and Climate Extremes
March 2018 Story on [‘Climatologists render skillful predictions of drought that help avert famine’](#)
March 2018 Research mentioned in NYT Story [‘Hotter Drier Hungrier’](#)
Dec 2017 Selected Panelist for BAMS Climate Attribution Issue Media Release
Oct 2017 UCSB Current story on [‘Planning for the Future’](#) and GEC article
June 2017 Climate Hazards Group awarded Inspiring Service Emerald award
Mar 2017 Featured on KCRW’s To the Point story on [‘Fighting back Famine in Somalia’](#)
Mar 2017 UCSB Current story on [‘Learning from History’](#) and NASAS SERVIR award.
Mar 2017 VoA Research special [on African Climate Change](#)
Jan 2017 Research featured in NYT [editorial](#) on Madagascar drought
Dec 2016 Research contributes to NYT Article [‘Road on Fire’](#)
Dec 2016 USGS [Featured Story](#) - Warmer Ocean Waters Seen to Spur Drought in Africa
Nov 2016 Nominated for SAMMIE Service to America for 2015 Ethiopia drought monitoring
Aug 2016 Invited as editor for Nature Scientific Data
July 2016 Interviewed by Voice of America regarding [potential La Niña drought](#)
June 2016 Article in The Conversation discusses helping [Africa cope with Natural Disasters](#)
April 2016 CHIRPS data featured as a tool [revolutionize climate adaptation](#)
May 2015 USGS News Release [Heat Accelerates Dry in California Drought](#)
Feb 2015 USAID Food for Peace Facebook chat on African climate change and food security.
Sept 2014 BAMS climate attribution issue released, media coverage on CA article follows.
May 2014 Article on CHIRPS in the [Environmental Monitor](#)
May 2014 USGS Top Pick on CHIRPS data set [“The State of Rain”](#)
Feb 2014 Featured as a ‘Working Geographer’ in a Geography text book by Nelson Publishing

June 2012 USGS topline [story](#) on American and African drought.
 May 2012 USGS science [pick](#) - Evapotranspiration studies could help keep Africa's Sahel green
 Apr 2012 USGS science [pick](#) - Poor Spring Rain Projected in Africa -
 Nov 2011 USGS topline [story](#) – Helping to save lives in Africa
 Nov 2011 Mali paper featured in [Nature Climate Change](#)
 Nov 2011 Research featured in article at [thinkprogress.org](#)
 Sep 2011 Interviewed by Jai Ranganathan for Miller-McCune [Podcast](#)
 Aug 2011 Research featured in article in [Huffington Post](#)
 Aug 2011 USGS [Top Line Story](#) – USGS Science supports famine declaration
 Aug 2011 Research featured in NY Times [blog](#) by Andrew Revkin
 Aug 2011 Nature Worldview [piece](#) – We thought trouble was coming
 May 2011 Research featured in [Geospatial Revolution](#) -
 Mar 2011 Real world Geographer – [National Geographic](#):
 Mar 2011 Research featured on [Solve Climate News](#)
 Feb 2011 Nature Climate Change Research [Highlight](#)
 Jan. 2011 [USGS](#) and [UCSB](#) Climate Dynamics press release
 Nov 2009 NASA [Article](#) on "Remote Sensing of Agriculture for Food Security Monitoring"
 Oct 2009 Research presented to the House Foreign Affairs committee
 Aug 2009 Earthzine [article](#) on reaching the Millennium Development Goals
 Feb. 2009 Earth Observer [article](#) on forecasting and earlier early warning .
 Dec 2008 Zimbabwe MODIS analysis featured in EARTH magazine
 Aug 2008 [UCSB](#) & [NASA](#) Proceedings paper press releases
 Mar 2008 BBC [interview](#)
 Feb 2008 Science Perspectives [piece](#)
 Jan 2008 National Geographic News [Article](#)

Current Grants and Awards

PI USAID Global Climate Change, *Projecting Future Impacts of Drought on Crop Production and Water Availability*, \$450K, 6/2016-5/2018. James Verdin also PI.
 Co-PI NSF INFEWS/T1: *Understanding multi-scale resilience options for climate vulnerable Africa*, UCSB sub-contract \$203K, 10/2016-9/2019. PI Ben Zaichick JHU.
 PI NASA NNX16AM02G *Rainfall Climatology and Forecasts for Predicting Crop Yields in Ethiopia*, \$234K, 8/2016-8/2018, Co-PI Husak
 Co-PI, NASA SERVIR, *Enhancing Eastern and Southern Africa climate services by increasing access to remote sensing and model datasets*, \$600K, 6/2016-5/2019, PI Shukla.
 PI, NASA NNX13AQ95A, *Leveraging CMIP5 and NASA/GMAO Coupled Modeling Capacity for SERVIR East Africa Climate Projections*, \$330 K 8/2013-1/2017. Co-PI Husak.
 Co-PI, NASA NNX15AL46G, *Predicting Middle Eastern and African Seasonal Water Deficits using NASA Data and Models*, \$217K million, 4/2015-3/2019.
 USGS coordinator, USGS cooperative agreement: *Identification of Seasonal and Decadal Drought Through Monitoring and Modeling*, \$9.3 million, 2/2014-2/2019. PI: Husak, Co-PI Michaelsen.
 USGS coordinator, USGS cooperative agreement: *Innovations for an Integrated Approach to Climate Analysis and Food Security Monitoring*, \$459K 12/12/2012-2/11/2014, PI: Husak, Co-PI Michaelsen.
 USGS coordinator, USGS cooperative agreement: *Monitoring and Forecasting Climate, Water and Land Use for Food Production in the Developing World*, \$4 million, 10/2008-9/2013. PI: Husak, Co-PI Michaelsen.
 Co-PI, USAID, *Planning for Resilience in East Africa through Policy, Adaptation, Research and Economic*

Development, \$3 million, 10/2013-9/2018.

Co-I, NASA, *Seasonal Prediction of Hydro-Climatic Extremes in the Greater Horn of Africa under Evolving Climate Conditions to Support Adaptation Strategies*, \$1.4 million, PI: Tadesse.

Past Grants

Co-PI, NASA, *A Long Time-Series Indicator of Agricultural Drought for the Greater Horn of Africa*, \$1.6 million, 10/2013-9/2016. PI: Verdin.

PI, NOAA, NA11OAR4310151, *A Global Standardized Precipitation Index supporting the US Drought Portal and the Famine Early Warning System Network*, \$298K 9/2011-8/2014. Co-PIs Husak, Michaelsen, Carr.

Co-PI, NASA, *A Land Data Assimilation System for Famine Early Warning*, \$1.5 million, 7/2012-8/2015. PI: Verdin.

Co-PI, USAID GCC, *Building Africa's capacity to analyze and adapt to climate change*, \$500 K, 10/2012-9/2015. PI: Verdin.

Co-PI, USGS, *Spatially Explicit Modeling and Monitoring of Hydroclimatic Extremes: Reducing the Threat to Food Security in the Developing World*, \$6.2 million, 10/1/2003-9/2008. PI: Michaelsen.

PI, NASA, *Analyzing persistent tropical and sub-tropical precipitation variations using quasi-global satellite rainfall, evaporation and moisture transports*, \$450K, 3/2007-3/2009.

CO-PI, USGS, *Agro-meteorological monitoring in Afghanistan*, \$529K,

PI, USDA, *Estimating cropped area in Niger with remotely sensed imagery*, \$101K, 7/2006-7/2012, Co-PI Michaelsen.

PI, UMASS, *Empirical and diagnostic analysis of the influence of the Madden Julian Oscillation in Central America*, \$32K, 9/2005-11/2008

PI, NASA, *Developing an Improved Drought Early Warning Data Portal*, \$71K, 10/2008-9/2009.

PI, NOAA, *Applying Climate Information in Central America*, \$45K

Co-PI, USDA, *Enhancing Water Table Monitoring in Afghanistan*, \$165,000

PI, NOAA, *Enhancing Caribbean Climate Services to Support Disaster Risk Reduction*, \$100K, 10/2011-9/2014. Co-PI Pulwarty.

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- Funk, C.**, Curtin, K., Goodchild, M. F., Montello, D., Norohna, V., 1998: Formulation and test of a model of positional distortion fields. Third International Symposium on Spatial Accuracy Assessment in Natural Resources and Environmental Sciences, Quebec City, Canada, May, 1998.
- Funk, C.**, Michaelsen, J. and Verdin, J., 2000: Famine Early Warning System in Africa and method for high resolution precipitation and NDVI forecasting. Denver University Geography Department, April 13th, 2000. **Invited** Presentation.
- Funk, C.** 2000: Multiscale Precipitation Forecasting. EPA Science to Achieve Results Workshop Washington DC.
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- Funk, C.** and H. Gadain, 2003: Data and Techniques to assist RVF/Forage Model Development; Livestock Experts Workshop, Nairobi Kenya, April 2nd, 2003.
- Funk, C.**, 2004: Forecasting the Water Requirement Satisfaction Index, Climate Outlook Forum, San Jose Costa Rica. August 2004.
- Funk, C.**, Pedreros, D., L. Aguilar, and Senay, G. 2004: Led 4-day forecast interpretation training workshop, San Jose Costa Rica. August 2004.
- Funk, C.**, 2004: Rainfall estimation efforts in 2004. FEWS NET Science Workshop, Sioux Falls, SD, October, 2004.
- Funk, C.**, 2004: Statistical Models of NDVI Change using precipitation and relative humidity. FEWS NET

- Science Workshop, Sioux Falls, SD, October, 2004.
- Funk**, C., 2005: FEWSNET research related to Central Southwest Asia. Workshop on the Hydrology of Central Southwest Asia. Annual Meteorological Society annual meeting, San Diego. Jan 15th, 2005.
- Verdin, J., **Funk**, C., Magadzire, T., Michaelsen, J., and Husak, G. 2005: Monitoring and Forecasting Drought in Southern Africa during the 2002-2003 season. Poster. Annual Meteorological Society annual meeting, San Diego. Jan 14th, 2005.
- Funk**, C. and Brown M., 2005: An empirical study of the links between NDVI and atmospheric variables in Africa with applications to forecasting vegetation change and precipitation. American Meteorological Society annual meeting, San Diego. Jan 14th, 2005.
- Funk**, C., Techniques for providing precipitation time-series for river basins in Afghanistan, USGS Afghanistan Water Team meeting, USGS EROS, Sioux Falls, South Dakota. September, 2005.
- Funk**, C., Remotely Sensed Aids to Cropped Area and Production Estimates, Famine Early Warning System Network 2005 Science meeting, Sept. 2005.
- M.E. Brown, C.C. **Funk**, T. Boudreau and C.J. Tucker., Multiple Roles of Satellite Data in Livelihood-Based Famine Early Warning for Decision Makers, US Climate Change Science Program's Climate Science in Support of Decision Making Workshop, Arlington Virginia, 10/2005.
- Funk**, C., Recent dryness in eastern subtropical Africa, Drought and Agricultural Monitoring meeting, USGS Menlo Park, Dec 6th 2005.
- Funk**, C. and Husak, G. Workshop Coordinators, Drought and Agricultural Monitoring meeting, USGS Menlo Park, Dec 6th 2005.
- Funk**, C., Verdin, J., Senay, G., Techniques for monitoring and predicting water vulnerability with an application in Ethiopia, American Geophysical Union Fall Meeting in San Francisco, December 2005.
- Freund, J.T., Husak, G., **Funk**, C., Brown, M. E., Galu, G., Identifying the Impact of Natural Hazards on Food Security in Africa: Crop Monitoring Using MODIS NDVI Time-Series, American Geophysical Union Fall Meeting in San Francisco, December 2005.
- Brown, M and **Funk**, C., Inter-seasonal NDVI Change Projections for Food Security and Disease Early Warning in Africa, American Geophysical Union Fall Meeting in San Francisco, December 2005.
- Advisor, Contributions of Remote Sensing for Decisions about Human Welfare, National Research Council meeting, January 30-31, 2006 in the National Academies of Science Keck Center, 500 5th Street NW, Washington DC, 1/2006.
- Funk**, C., "Famine Early Warning Science", UCSB Back-to-School Night, 10/27/2006.
- Verdin, K., Pedreros, D., Godt, J., Verdin, J., Worstell, B., **Funk**, C., Global Slope Dataset for estimation of landslide occurrence resulting from earthquakes Global Slope Dataset for estimation of landslide occurrence resulting from earthquakes, ESRI Users Conference 2006 -- San Diego Convention Center, 8/2006.
- Funk**, C., Remotely Sensed Aids to Cropped Area and Production Estimates, Famine Early Warning System Network Science Meeting, 9/2006.
- Funk**, C., Decision support for earlier warning and long range humanitarian planning, FEWS NET Team Meeting, USAID, Washington DC., 10/2006.
- Funk**, C., Trends in Food Security and Climate Change in Africa, UCSB Back-to-school Night, 10/2006.
- Funk**, C., Recent Climate Hazard Group Research. FEWS NET Science Meeting, 11/2006.
- Brown, M., Choularton, R. and **Funk**, C., Natural Disaster Scenarios in the Food Security Early Warning Contingency Planning Process: the Role of Remotely Sensed Vegetation and Rainfall Data, Fall meeting of the American Geophysical Society in San Francisco CA December 11-15, 2006.
- Funk**, C., Artan G., Monitoring large-basin low-frequency hydrologic variability in sub-Saharan Africa, Fall meeting of the American Geophysical Society in San Francisco CA, December 11-15, 2006.
- Funk**, C., Drought Tendencies in Eastern And Southern Africa, USGS EROS Data Center, Sioux Falls, SD. 12/2006, **Invited** noontime seminar.
- Funk**, C., "Kicking off the CAN", Science workplan for MFR forecasting of precipitation and vegetation, NASA DSS Planning meeting, USGS EROS Data Center, 12/2006.
- Funk**, C., Husak, G., Michaelsen, J., Love, T. and Pedreros, D. (2007) Third generation rainfall climatologies: satellite rainfall and topography provide a basis for smart interpolation. Crop and Rangeland Monitoring Network for the Greater Horn of Africa Workshop, Nairobi Kenya, March 2007.
- Funk** C. & M. Budde, National MODIS NDVI-based production anomaly estimates for Zimbabwe, Crop and Rangeland Monitoring Network for the Greater Horn of Africa Workshop, Nairobi, Kenya. March 2007.
- Funk** C., NASA-Supported Climate Early Warning, USGS FEWS NET Science Meeting, August 6-7, 2007, NOAA Earth System Research Laboratory, Boulder, Colorado.

Funk C., Verdin J., Brown, M., Galu G. Long term trends in climate and related vulnerabilities, USGS FEWS NET Science Meeting, August 6-7, 2007, NOAA Earth System Research Laboratory, Boulder, Colorado.

Funk C., Rainfall Estimate Enhancement, USGS FEWS NET Science Meeting, August 6-7, 2007, NOAA Earth System Research Laboratory, Boulder, Colorado.

Funk C., Reduced onshore moisture transports threaten food insecure eastern and southern Africa Organizer, Earth System Research Laboratory Workshop, Climate Change and Predictability: Implications for Food Security in Africa and Beyond, NOAA/ESRL. Friday August 3rd, 2007, **Invited Talk**.

Husak, G.J., Marshall, M., **Funk**, C., Pedreros, D., Michaelsen, J., Harrison, L., Developing Cropped Area Estimates for Niger From Multi-sensor Satellite Imagery, EOS Trans. AGU 88(52), Fall Meet. Suppli., B13D-1532, December, 15, 2007.

Freund, J.T., **Funk**, C., Budde, M.E, Michaelsen, J., MODIS NDVI-Based Crop Production Estimates for Zimbabwe in 2006/07, EOS Trans. AGU 88(52), Fall Meet. Suppli., B13D-1533, December, 15, 2007.

Brown, ME, **Funk**, CC, Galu, G, Choularton, R., Integrating earth observations and model results provides earlier Famine Early Warning, EOS Trans. AGU 88(52), Fall Meet. Suppli., H31L-05. December, 17, 2007.

Funk, C., Dettinger, M., Verdin, J., Examining the potential impact of a warming ocean on food insecure Africa: concerns and mechanisms for abrupt climate change, EOS Trans. AGU 88(52), Fall Meet. Suppli., GC33A-0946, December, 17, 2007.

Funk, C. & Verdin, J., Climate Change, Agricultural Capacity and trends in African Food Security, AAAS symposium on Climate Change and African Food Security, Boston, February 17th, 2008

Funk, C. Using TRMM for drought monitoring, NIDIS Knowledge Assessment Workshop: Contributions of Satellite Remote Sensing to Drought Monitoring, Boulder, Co, Feb. 7th, 2008. **Invited** Panelist/Presenter.

Funk, C., Huffman, G., Verdin, J., Verdin, K., Climatologically Assisted Satellite Estimation, 3rd International TRMM Meeting, Las Vegas, NV, Feb. 5th 2008.

Climate Change: Our Health in the Balance-Panel Discussion, Ventura, CA, (2008) KEYT news coverage. March 16, 2008.m **Invited** Panelist.

Funk, C., Improving agro-climatic hydrologic modeling in Africa through the use of high-resolution climatologies, NASA Precipitation Monitoring Mission, Science Team Meeting, Fort Collins, CO, 8/2/2008

Funk, C., Early Warning Decision Support, Climate Change, and the Early Warning Explorer, IRI, Palisades, NY, 10/15/2008. **Invited** Lecture.

Funk. C. & Verdin, J. An integrated climate service strategy for African drought monitoring and prediction: linking information to action, Fall meeting of the American Geophysical Society in San Francisco CA December 11-15, 2008.

Funk, C., USGS Drought monitoring consultancy to India (12 talks), 1/10/2009-1/21/2009.

Funk, C., Validation of Satellite Estimates for Africa, **Invited** Panelist, International Workshop on satellite rainfall estimation for drought early warning, Joint Research Centre, Ispra, Italy, 2/2009.

Verdin, J., **Funk**, C., M. Dettinger, M. Brown (2009) Estimating probabilistic rainfall and food security outcomes for eastern and southern Africa, Annual Meeting of the Canadian Geo-physical Union, Toronto, Canada, May 27th, 2009.

Funk, C., Integrated monitoring with climate projections, Boulder, Co, USGS FEWS NET Science Meeting, 6/15/2009.

Funk, C., Climate Change, Agriculture and Alternatives to Marine Production, 6th WIOMSA Symposium, Reunion, August 27th 2009, **Invited** presentation.

Funk, C., USGS Climate Change Science for Famine Early Warning, USGS Main Office, Geography Discipline, Reston, 8/11/2009, **Invited** lecture.

Funk C., Integrating Trend Analyses into Famine Early Warning, Denver University, 9/15/2009, **Invited** Seminar

Funk C. and Verdin, J., Climate change Impacts on Food Security: Findings and Workplan, The Global Water Initiative - Implications of Climate Change and Variability on African Water Resources, September 21-23 2009, University of Cambridge, United Kingdom, **Invited** Presentation

Funk C (2009) Walker, Hadley, Supply, Demand, Geospatial Modeling and Preventing Famine, UCSB Spatial Seminar, Sept 14th 2009.

Funk C (2009) Understanding the Role of Water Vapor Transport Anomalies in Asian and African Monsoon Droughts Using New Satellite Observations NASA Precipitation Monitoring Mission meeting, Salt Lake City, Oct. 27 2009 .

Verdin J. and C. **Funk**, How famine early warning can highlight priorities for climate change adaptation, American Meteorological Society, January, 2009.

- Funk C** (2009) Climate Change Research Plan, FEWS NET Remote Monitoring Meeting, Geography Department, University of California Santa Barbara, California February 23-24, 2010
- Funk C** (2009) Enhanced Precipitation Datasets, FEWS NET Remote Monitoring Meeting, Geography Department, University of California Santa Barbara, California February 23-24, 2010
- Funk, C., Verdin, J., Rowland J.** (2010) Understanding and adapting to climate impacts on food security, USGS Climate Change Conference, Broomfield, Co, March 9-11.
- Funk, C., J. Verdin, C. Peters-Liddard, S. Yatheendradas, A. McNally** (2010) A Land Data Assimilation System for Famine Early Warning, 3rd USGS Modeling Conference: Understanding and Predicting for a Changing World, 7-11 June 2010 Broomfield, Colorado
- Funk C.,** 2010, Precipitation Indices for the Americas, Workshop on Re-establishing the Caribbean Regional Climate Outlook Forum, Shell Suites, University of the West Indies, Cave Hill Barbados June 21-23, 2010, **Invited** Presentation.
- Funk, C. and Greg E.,** Update on the Early Warning Explorer, USGS FEWS NET Science Meeting, Boulder, CO, 8/27/2010
- Funk, C.,** Eastern African Climate Change Analyses to Guide Adaptation, Kenya Mission, Nairobi, Sept. 7th 2010
- Funk, C.,** Eastern African Climate Change Analyses to Guide Adaptation, 25th East African Climate Outlook Forum, Kisumu, Kenya, Sept. 10th 2010, **Invited** Presentation.
- Marshall, M T, **Funk, C C,** Michaelsen, J (2010) Spatio-temporal Characteristics of Actual Evapotranspiration Trends in sub-Saharan Africa, H24B-06, 12/14/2010, Moscone South, San Francisco, 2010. Presentation.
- Thorpe, AK, Bradley, ES, **Funk, C,** Roberts, DA, Leifer I, Dennison, PE, Margulis, J Poster, Mapping methane from marine and terrestrial hydrocarbon seepage using AVIRIS, A53D-0283, 12/17/2010, Moscone South, San Francisco, 2010. Poster
- Pedrerros, D, Michaelsen, J , Carvalho, L V, **Funk, C C,** Husak, G J, The Effect of El Niño on Agricultural Water Balances in Guatemala, AGU Fall Meeting, NH21A-1401, change adaptation with insights from famine early warning (**Invited**), H21I-03, 12/14/2010, Moscone South, San Francisco, 2010. Poster
- Funk, C C,** Verdin, J P, Informing climate change adaptation with insights from famine early warning, H21I-03, Tuesday 12/14/2010, 3022 Moscone West. **Invited** Presentation.
- McNally, A., S. Yatheendradas, H. Jayanthi, C. Peters-Lidard, C. **Funk,** J.P Verdin, J. Michaelsen. Improving agricultural drought monitoring in Africa with unbiased rainfall fields and detailed land surface physics, Presented by A. McNally at American Geophysical Meeting: Drought and Food Security, 14 December 2010 San Francisco.
- Harrison, L., Michaelsen, J., **Funk, C.,** Tarnavsky, E., Marshall, M., Brown, M. (2011) Temperature-driven PET Projections, AMS 2011 Annual Meeting, 25th Conference on Hydrology Tuesday, Jan 25 2011, Seattle, WA.
- Soni Yatheendradas, Christa Peters-Lidard, Amy McNally, Chris **Funk,** James Verdin, Harikishan Jayanthi (2011) Enhancing the Famine Early Warning Systems Network (FEWS NET) over Africa by tracking agricultural drought using NASA product-based FEWSNET Land Data Assimilation System (FLDAS) NASA Water Resources Applications Program, Washington DC, April 21st 2011.
- Funk. C.** (2011) Monitoring Drought Across Many Scales, DDAD2011, Purdue University, June 21-22nd, **Invited** keynote and panelist.
- Funk C.** (2011) FEWS NET Climate Change Datasets, Analyses and Plans, Third International Crop and Rangeland Monitoring meeting, Nairobi, Kenya, September 28th. Session chair and keynote presenter.
- Funk C.** (2011) Evaluating the drought monitoring capabilities of rainfall estimates for Africa, Third International Crop and Rangeland Monitoring meeting, Nairobi, Kenya, January 26th. Session chair and presenter.
- Funk C. and Verdin J.** (2011) Understanding and Adapting to More Frequent Droughts in Eastern Africa, World Climate Research Programme meeting, Denver, Co, October 26th. **Invited** Poster.
- Jayanthi, H., McNally A., **Funk C.,** Verdin J. (2011) Application of the LIS to drought monitoring, November 16th, PECORA, Washington DC.
- Rowland J., **Funk, C.,** Galu G., Magadzire, Drought and famine early warning in the Horn of Africa, COP 17 side event, 2011, Durban, South Africa.
- Dettinger, M. D., Earman, S., & **Funk, C. C.** (2011, December). Climate Change and Groundwater-Implications for Global Food and Water Security. In AGU Fall Meeting Abstracts (Vol. 1, p. 01). Abstract Number
- McNally, A., Yatheendradas, S., Jayanthi, H., **Funk, C. C.,** & Peters-Lidard, C. D. (2011, December). Validating modeled soil moisture with in-situ data for agricultural drought monitoring in West Africa. In AGU Fall

- Meeting Abstracts (Vol. 1, p. 1323). Abstract Number
- Funk**, C. C., Mishra, V., & Davenport, F. (2011, December). Hydrologic and Undernourishment Trends In Food Insecurity Hotspots. In AGU Fall Meeting Abstracts (Vol. 1, p. 04). Abstract Number GC11C-04. **Invited Talk**.
- Funk**, C. C., Williams, A. P., Mishra, V., Barlow, M. A., Hoerling, M. P., & Hoell, A. (2011, December). Potential Change in the Indian Monsoon Circulation. In AGU Fall Meeting Abstracts (Vol. 1, p. 0158). Abstract Number A31F-0158. **Invited**.
- Pedrerros, D., **Funk**, C., Michaelsen, J., Peterson, P., Verdin, A., Magadzire, T., & Rodriguez, M. (2011, December). Validation of the FEWS NET Satellite Estimated Rainfall Enhancement Process. In AGU Fall Meeting Abstracts (Vol. 1, p. 0098). Abstract Number A31C-0098.
- Thorpe, A. K., Roberts, D. A., Dennison, P. E., Bradley, E. S., & **Funk**, C. C. (2011, December). Detection of trace gas emissions from point sources using shortwave infrared imaging spectrometry. In AGU Fall Meeting Abstracts (Vol. 1, p. 0366). Abstract Number A13E-0366.
- Dennison, P. E., Qi, Y., Thorpe, A. K., Pardyjak, E., Roberts, D. A., Bradley, E. S., & **Funk**, C. C. (2011, December). High Spatial Resolution Mapping of Power Plant Carbon Dioxide Plumes Using Imaging Spectrometer Data. In AGU Fall Meeting Abstracts (Vol. 1, p. 05). Abstract number A41H-05.
- Budde, M. E., Rowland, J., Senay, G. B., **Funk**, C. C., Pedrerros, D., Husak, G. J., & Bohms, S. (2011, December). New and Improved Remotely Sensed Products and Tools for Agricultural Monitoring Applications in Support of Famine Early Warning. In AGU Fall Meeting Abstracts (Vol. 1, p. 0558). Abstract Number B13B-0558.
- Funk**, C. Hoell, A. and Michaelsen, J. (2012) Exploring the recent intensification of the Walker Circulation, and its implications for climate change and prediction, **Invited** seminar, UCSD Scripps Institute, 3/31/2012.
- Funk** C. and Eilert G. (2012) African food security is a feature of US national security, National Research Council, National Academy, Washington DC., March 30th 2012. **Invited** presentation.
- Funk** C. (2012) Rainfall Outlook for 2012 - FEWS NET main office, Washington DC, March 29th 2012. **Invited** presentation.
- Funk** C. (2012) The Intensified Walker Circulation, USGS Climate and Landuse Webinar series, April 18th 2012. **Invited** presentation.
- Funk**, C. (2012) Developing Integrated Climate Services, **Invited** seminar, Environmental Engineering Seminar Series, UC Irvine, 5/25/2012.
- Funk**, C., A. Hoell, J. Verdin, J. Rowland, G. Husak (2012) Geospatial Hydroclimatology - Pacific SST Impacts, National Research Program, USGS EROS, Sioux Falls, SD, September 19, 2012.
- Funk** C. and G. Galu Custom seasonal forecasts for GHA (2012) FEWS NET Science Meeting October 2-3, 2012 University of California, Santa Barbara - Agricultural Drought: New Directions in Risk Assessment, Monitoring, and Forecasting, October 2nd, 2012.
- Funk**, C. and G. Eilerts, G. Galu (2012) PREPARED and CC adaptation outreach, FEWS NET Science Meeting October 2-3, 2012 University of California, Santa Barbara
- Funk** C. and J. Rowland (2012) Update on Climate Change Fact Sheet series, FEWS NET Science Meeting October 2-3, 2012 University of California, Santa Barbara, Agricultural Drought: New Directions in Risk Assessment, Monitoring, and Forecasting, October 2nd, 2012.
- Funk** C. (2012) Using Climate Change Analyses to Guide Adaptation, UCSB CHG-Michigan State University working group discussions, Santa Barbara, CA, September 27th 2012.
- Funk** C. (2012) Roundtable Discussion on the Future of Food, Annual Meeting of the Society for Environmental Journalists, Lubbock, TX, October 10th 2012. **Invited** panelist.
- Funk** C. (2012) Future Climate, John Hopkins University, Climate Dynamics Of Tropical Africa, Baltimore, MD, November 16th 2012. **Invited** keynote speaker.
- Robertson, F. R., Roberts, J. B., **Funk**, C. C., Lyon, B., & Ricciardulli, L. (2012, December). Upper-Ocean Heat Balance Processes and the Walker Circulation in CMIP5 Model Projections. In AGU Fall Meeting Abstracts (Vol. 1, p. 1244). Abstract Number GC51E-1244.
- Budde, M. E., Rowland, J., Senay, G. B., **Funk**, C. C., Husak, G. J., Magadzire, T., & Verdin, J. P. (2012, December). Monitoring Global Food Security with New Remote Sensing Products and Tools. In AGU Fall Meeting Abstracts (Vol. 1, p. 04). Abstract Number B53H-04.
- Mahowald, N. M., Harrison, L. S., Shukla, S., & **Funk**, C. C. (2012, December). Can earth system models be used for impact studies?. In AGU Fall Meeting Abstracts (Vol. 1, p. 02). Abstract Number GC32B-02.
- Shukla, S., **Funk**, C. C., Dettinger, M. D., & Robertson, F. R. (2012, December). Evaluation of CMIP5 models in the context of food security assessments in Sahel and Eastern Africa. In AGU Fall Meeting Abstracts

- (Vol. 1, p. 0965). Abstract Number GC41B-0965.
- Funk**, C. C., & Dettinger, M. D. (2012, December). Water Vapor, Differential Rates of Warming, Available Potential Energy, and the Hadley Circulation. In AGU Fall Meeting Abstracts (Vol. 1, p. 1264). Abstract Number GC53A-1264. **Invited Talk**.
- Pricope, N. G., Michaelsen, J., Husak, G. J., **Funk**, C. C., & Lopez-Carr, D. (2012, December). Emerging landscape degradation trends in the East African Horn. In AGU Fall Meeting Abstracts (Vol. 1, p. 07). Abstract number GC53E-07.
- Husak, G. J., & **Funk**, C. C. (2012, December). Agricultural Early Warning Informing Humanitarian Response in East Africa for 2012. In AGU Fall Meeting Abstracts (Vol. 1, p. L05). Abstract Number H31L-05.
- Barlow, M. A., **Funk**, C. C., & Hoell, A. (2012, December). West Pacific Trends and the Walker Circulation. In AGU Fall Meeting Abstracts (Vol. 1, p. 07). Abstract Number GC44D-07.
- Pedrerros, D. H., **Funk**, C. C., Husak, G. J., Michaelsen, J., Peterson, P., Lasndsfeld, M., ... & Rodriguez, M. (2012, December). Developing New Rainfall Estimates to Identify the Likelihood of Agricultural Drought in Mesoamerica. In AGU Fall Meeting Abstracts (Vol. 1, p. 1596). Abstract Number NH21B-1596.
- Harrison, L. S., Michaelsen, J., **Funk**, C. C., Carvalho, L. V., Still, C. J., McNally, A., & Peters-Lidard, C. D. (2012, December). Identifying surface response to drought and heat with a land surface model and NDVI. In AGU Fall Meeting Abstracts (Vol. 1, p. 0247). Abstract Number A13D-0247.
- Thorpe, A. K., Dennison, P. E., Roberts, D. A., Bradley, E. S., & **Funk**, C. C. (2012, December). Airborne mapping of methane, carbon dioxide, and water vapor plumes using imaging spectrometry. In AGU Fall Meeting Abstracts (Vol. 1, p. 01). Abstract Number A41N-01.
- McNally, A., **Funk**, C. C., Yatheendradas, S., Michaelsen, J., Cappelarere, B., Peters-Lidard, C. D., & Verdin, J. P. (2012, December). Improving agricultural drought monitoring in West Africa using root zone soil moisture estimates derived from NDVI. In AGU Fall Meeting Abstracts (Vol. 1, p. 02). Abstract Number GC44A-02.
- Husak, G. J., **Funk**, C. C., Verdin, J. P., Rowland, J., & Budde, M. E. (2012, December). Remote Sensing and Capacity Building to Improve Food Security. In AGU Fall Meeting Abstracts (Vol. 1, p. 05). Abstract Number ED22A-05.
- Funk**, C. and Dettinger M. (2012) Water Vapor, Differential Rates of Warming, Available Potential Energy, and the Hadley Circulation, poster, AGU, 2012 Fall Meeting, AGU, San Francisco, Calif., 3-7 Dec.
- Co-Chair - Variations in Surface Wind Patterns and the Walker Circulation: Observations and Model Predictions I, AGU, 2012 Fall Meeting, AGU, San Francisco, Calif., 3-7 Dec.
- Co-Chair - Observed and Projected Climate Change Impacts on Water Resources and Agriculture I, AGU, 2012 Fall Meeting, AGU, San Francisco, Calif., 3-7 Dec.
- Funk**, C. and G. Husak, J. Michaelsen, A. Hoell, and J. Verdin , 2013: East African Drought Prediction and Humanitarian Responses in 2012, Annual Meeting of the American Meteorological Society, Austin TX, 7 January 2013.
- Funk**, C. and M. Barlow and A. Hoell , 2013: Low Frequency Variations in the Hadley and Walker Circulations, Annual Meeting of the American Meteorological Society, Austin TX, 9 January 2013.
- Funk**, C. and Verdin J. , 2013: Science strategies to support the USAID PREPARED project, PREPARED kickoff meeting, 3/29/2013-4/2/2013, Arusha, Tanzania.
- Funk** C. , 2013: SST Signals Contributing To East African drying, NOAA ESRL science planning meeting, Boulder, CO, August 14th-15th, 2013.
- Funk**, C. , 2013: KPFA roundtable discussion on Climate Change and Food. August 23rd 2013. **Invited** panelist.
- Funk**, C. and Verdin J. , 2013: Developing a climate trend analysis toolset and training program for East African Community scientists, USAID PREPARED project, Nairobi, Kenya, September 1st-4th, 2013. **Invited** Presentation.
- Funk**, C. , 2013: The FEWS NET Land Data Assimilation System, Lincoln Nebraska, NASA Applied Sciences Water Resources Workshop, Tuesday Sept. 24th, 2013.
- McNally, A., Shukla, S., **Funk**, C. C., Husak, G. J., Arsenault, K. R., Peters-Lidard, C. D., & Verdin, J. P. (2013, December). Agricultural drought analysis and famine early warning with the FEWS NET land data assimilation system. In AGU Fall Meeting Abstracts (Vol. 1, p. 1084). Abstract Number GC13B-1084.
- Verdin, A., Rajagopalan, B., & **Funk**, C. C. (2013, December). Improving High-resolution Spatial Estimates of Precipitation in the Equatorial Americas. In AGU Fall Meeting Abstracts (Vol. 1, p. 04). Abstract Number H41M-04.
- Funk**, C. C., Hoerling, M. P., Hoell, A., Verdin, J. P., Robertson, F. R., Alured, D., & Liebmann, B. (2013, December). Exploring Western and Eastern Pacific contributions to the 21st century Walker circulation

- intensification and teleconnected precipitation declines. In AGU Fall Meeting Abstracts (Vol. 1, p. 02). Abstract Number GC14B-02. **Invited** Presentation.
- Funk**, C. C., Shukla, S., Hoerling, M. P., Robertson, F. R., Hoell, A., & Liebmann, B. (2013, December). Predicting and attributing recent East African Spring droughts with dynamical-statistical climate model ensembles. In AGU Fall Meeting Abstracts (Vol. 1, p. 0967). Abstract Number GC51B-0967.
- Verdin, J. P., Rowland, J., Senay, G. B., **Funk**, C. C., Budde, M. E., Husak, G. J., & Jayanthi, H. (2013, December). Earth Observations for Early Detection of Agricultural Drought in Countries at Risk: Contributions of the Famine Early Warning Systems Network (FEWS NET). In AGU Fall Meeting Abstracts (Vol. 1, p. L06). Abstract Number B33L-06.
- Peterson, P., **Funk**, C. C., Husak, G. J., Pedreros, D. H., Landsfeld, M., Verdin, J. P., & Shukla, S. (2013, December). The Climate Hazards group InfraRed Precipitation (CHIRP) with Stations (CHIRPS): Development and Validation. In AGU Fall Meeting Abstracts (Vol. 1, p. 1417). Abstract Number H33E-1417.
- Rajagopalan, B., Verdin, A., Mendoza, P. A., Kleiber, W., McCreight, J. L., Wood, A. W., ... & **Funk**, C. C. (2013, December). Bayesian Methods for Hydrometeorological Modeling and Forecasting. In AGU Fall Meeting Abstracts (Vol. 1, p. 06). Abstract number H11K-06.
- Pedreros, D. H., Magadzire, T., **Funk**, C. C., Verdin, J. P., Peterson, P., Landsfeld, M., & Husak, G. J. (2013, December). Building Climate Service Capacities in Eastern Africa with CHIRP and GeoCLIM. In AGU Fall Meeting Abstracts (Vol. 1, p. 02). Abstract Number ED22A-02.
- Shukla, S., **Funk**, C. C., Verdin, J. P., & Peters-Lidard, C. D. (2013, December). Food and water security scenarios for East Africa over next 20 years. In AGU Fall Meeting Abstracts (Vol. 1, p. 06). Abstract number GC11E-06.
- Funk**, C. (2014, August) New Frontiers in Seasonal Prediction in Africa, NASA IDS: Seasonal Prediction of Hydro-Climatic Extremes in the Greater Horn of Africa, The First Participatory Research Workshop and Project Meeting, August 11 - 12, 2014, Sheraton Hotel, Addis Ababa, Ethiopia. (**Invited**).
- Shukla S, **Funk** CC, Peterson PJ, Landsfeld MF, Pedreros DH, Verdin JP, Rowland JD, Romero BE, Husak GJ, Michaelsen JC, Verdin AP , 2014: The Climate Hazards Group InfraRed Precipitation with Stations (CHIRPS) dataset: quasi-global precipitation estimates for drought monitoring, Presented at "Trending Now: Water" 7th International Scientific Conference on the Global Energy and Water Cycle, July 15th, The Hague, Netherlands.
- Funk** C , 2014: CHIRPS: a new 1981-now, 0.05 degree rainfall monitoring product for drought early warning, Chris **Funk**, Conference On: Information for Meeting Africa's Agricultural Transformation and Food Security Goals (IMAAFS) October 2nd, 2014, UNCC Conference Centre, Addis Ababa, Ethiopia (**Invited Talk**).
- Funk**. C , 2014: Advancing FEWS NET gradient-based Climate Science, FEWS NET Science Meeting: New Science to enable us to place droughts in historic context, November 19-20, 2014, NOAA Earth System Research Laboratory, Boulder, Colorado.
- Funk** C and Galu G , 2014:, An integrated drought prediction system for Eastern Africa to support food security, Global Drought Information System International Meeting, Dec 11th, CalTech, Padasena, CA. (**Invited Talk**).
- Funk** C and Hoell A , 2014: Attribution of Recent Droughts in California and the south-central US, USGS Climate Change and Land Use Meeting, Reston VA, April 30th.
- Tadesse T, Zaitchik BF, Habib S, **Funk** CC, Senay GB, Dinku T, Policelli F, Block P, Baigorria GA, Beyene S, Wardlow B and Hayes MJ , 2014:, GC52B-06, Seasonal Prediction of Hydro-Climatic Extremes in the Greater Horn of Africa Under Evolving Climate Conditions to Support Adaptation Strategies, Dec 19th, AGU, Moscone Center, San Francisco.
- Funk** C, Hoerling MP, Hoell A, Liebmann B, Verdin JP and Eilerts G , 2014:, GC51F-04, Exploring Pacific Climate Variability and Its Impacts on East African Water Resources and Food Security, Dec 19th, AGU, Moscone Center, San Francisco (**Invited Talk**).
- Pricope NG, Husak GJ, **Funk** CC and Lopez-Carr D , 2014:, H51T-01, The Climate-Population Nexus in the East African Horn: Emerging Degradation Trends in Rangeland and Pastoral Livelihood Zones, Dec 19th, AGU, Moscone Center, San Francisco (**Invited Talk**).
- Verdin, JP, Galu G, Magadzire T, Pedreros DH, **Funk** CC, Budde ME, Husak GJ, Peterson P, Landsfeld MF and White L , 2014: B43G-06, Building Capacity for Production of Gridded Precipitation Products in the East Africa Community, Dec 18th, AGU, Moscone Center, San Francisco. Poster.
- Budde ME, Galu G, **Funk** CC, Verdin JP and Rowland J , 2014:, B33E-0224, Famine Early Warning Systems Network (FEWS NET) Contributions to Strengthening Resilience and Sustainability for the East African

- Community, Dec 17th, AGU, Moscone Center, San Francisco. Poster.
- Pedrerros DH, Rojas A, **Funk** C, Peterson P, Landsfeld MF and Husak GJ , 2014:, GC33C-0534, The Use of CHIRPS to Analyze Historical Rainfall in Colombia, Dec 18th, AGU, Moscone Center, San Francisco. Poster.
- Funk** CC, Stone D, Herring S and Hoell A , 2014:, Session Chairs, GC33H, The Emerging Science of Climate Attribution, Detection, and Trend Analysis I, Dec 17th, AGU, Moscone Center, San Francisco.
- Shukla S, Hoell A, Roberts JB, **Funk** cc and Robertson FR , 2014:, H32C-06, Skill Assessment of National Multi-Model Ensemble Forecasts for Seasonal Drought Prediction in East Africa, Dec 17th, AGU, Moscone Center, San Francisco.
- Funk** CC, Peterson P, Shukla S, Husak GJ, Landsfeld MF, Hoell A, Pedrerros DH, Roberts JB, Robertson FR, Tadesse T, Zaitchik BF, Rowland J and Verdin JP , 2014: GC31D-05, Improved Rainfall Estimates and Predictions for 21st Century Drought Early Warning, Dec 17th, AGU, Moscone Center, San Francisco (**Invited Talk**).
- Peterson P, **Funk** CC, Landsfeld MF, Husak GH, Pedrerros DH, Verdin JP, Rowland J, Shukla S, McNally A, Michaelsen J and Verdin A , 2014:, H24C-03, The Climate Hazards Group Infrared Precipitation with Stations (CHIRPS) Dataset: Quasi-Global Precipitation Estimates for Drought Monitoring and Trend Analysis, Dec 16th, AGU, Moscone Center, San Francisco.
- Hoell, A., Shukla S, Barlow M and **Funk** C. , 2014: H23N-1066, A Decade of Drought: Southwest Asia during the 2000s, AGU, Tuesday, December 16, Moscone West, Poster Hall.
- Mahowald NM, Lo F., Zheng Y., Harrison L., **Funk** CC , 2014:, B14A-08, Leaf Area Index in Earth System Models: Evaluation and Projections, Dec. 16th, Moscone West. AGU.
- Davenport F and **Funk** CC , 2014:, GC14B-07, Are Maize Yields Robust to Climate Change? An Analysis at Regional and Micro Scales in Kenya, Moscone West 3003, Decmeber 15th , AGU, San Francisco (**Invited Talk**).
- Husak GH, Budde ME, Rowland J, Verdin JP, **Funk**, CC and Landsfeld MF , 2014: A13H-3275, An Updated Decision Support Interface: A Tool for Remote Monitoring of Crop Growing Conditions, Moscone South, Dec 15th, Moscone Center, San Francisco
- Funk** C., Mishra V., and Shukla S. , 2014: Session Conveners - AGU - GC12B Observed and Projected Climate Change Impacts on Water Resources and Agriculture I, Dec 15th, Moscone Center, San Francisco.
- Funk** C, Peterson P, Shukla S, Husak G, Landsfeld M, Hoell A, Pedrerros D, Roberts JB, Robertson FR, Tadesse T, Zaitchik BF, Rowland J, and J. Verdin, 2015: Improved rainfall estimates and predictions for 21st century drought early warning, Thursday, 8 January 2015, American Meteorological Society Annual Meeting, Phoenix AZ.
- Funk** C, 2015: Exploring Pacific climate variability and its impacts on East African Water Resources and Food Security, Wednesday, 7 January 2015, American Meteorological Society Annual Meeting, Phoenix AZ.
- Hoell, A and **Funk** C, 2015: Decadal and Multi-decadal Contributions to the Anomalous Zonal Tropical Pacific Temperature Gradient and the Associated Global Impacts, Wednesday, 7 January 2015, American Meteorological Society Annual Meeting, Phoenix AZ.
- Hoell A, **Funk** C and Barlow M 2015: The Potential Predictability of Sub-Monthly Variability Over the Northwest Indian Ocean Rim Using the Madden Julian Oscillation, Thursday, 8 January 2015, American Meteorological Society Annual Meeting, Phoenix AZ.
- Shukla S, Roberts JB, **Funk** CC, Robertson FR, and A. Hoell, 2015: Seasonal Drought Prediction in East Africa: Can National Multi-model Ensemble Forecasts Help? Thursday, 8 January 2015, American Meteorological Society Annual Meeting, Phoenix AZ.
- Funk** C., Hoell A., Pedrerros P., Peterson P and White L, 2015: African Regional Data Issues, the World Climate Research Program Grand Challenge meeting on Climate Extremes, Sydney Australia, Feb 25th, 2015. **Invited Talk**.
- Funk**, C. 2015: Drought Causes, The AGU Chapman conference on the California Drought, Irvine, CA, April 20-22 2015. **Invited Talk**.
- Funk**, C. 2015: New Early Warning and Environmental Monitoring Research. Sioux Falls, SD, EROS center. **Invited Talk**.
- Funk**, C. 2015: Technical guidance on developing agro-climatic forecasts to support improved famine early warning. April 8th 2015, USAID, Washington DC.
- Funk**, C. 2015: Led week long 40-hour training on GeoMod – a tool for building East African climate change scenarios in Nairobi Kenya. August 10th-14th, International Centre for Climate and Prediction, Nairobi, Kenya. **Invited Training** in support of USAID PREPARED project.

- Funk**, C. 2015. Using GeoMod to build African climate change scenarios, FEWS NET Science meeting, October 15th, Santa Barbara CA.
- Landsfeld, M. L., Daudert B., Friedrichs M., Morton C., Hegewisch K., Husak GJ, **Funk** CC, Peterson P., Huntington JL, Verdin JP, Williams EL, An Agro-Climatological Early Warning Tool Based on the Google Earth Engine to Support Regional Food Security Analysis, Thursday, 17 December 2015, AGU Fall Meeting San Francisco (poster)
- Harrison L, **Funk** CC, Verdin JP, Pedreros DH, Shukla S, Husak GJ, Contrasting rainfall declines in northern and southern Tanzania: Potential differential impacts of west Pacific warming and east Pacific cooling, GC31H-08, Wednesday, 16 December 2015
- Pedreros DH, **Funk** CC, Brown ME, Korecha D, Seid Y, Exploring Agro-Climatic Trends in Ethiopia Using CHIRPS, GC41B-1100, Thursday, 17 December 2015 (poster)
- Funk** C. and Hoell A, Exploring the active role of water vapor in creating more extreme SSTs and climate variations, GC43D-04, Thursday, 17 December 2015
- Hoell A, Barlow M, **Funk** C, Cannon F, A Physical Model for Extreme Drought over Southwest Asia, GC44A-05, Thursday, 17 December 2015
- Funk** C., Buja L., Mishra V, Shukla S, Session Chair. Observed and Projected Climate Change Impacts on Water Resources and Agriculture I, II, III, Friday, 18 December 2015
- Kelly C, **Funk** CC, McNally A, and Shukla S, Climate Change And Hydrologic Instability In Yemen (Invited), Friday, 18 December 2015, GC54A-02.
- Husak GH, Hobbins M, Verdin JP, Peterson P, **Funk** CC, Using the SPEI to Estimate Food Production in East Africa, H13G-1622, Monday, 14 December 2015 (poster)
- Walsh MK, Brown ME, Backlund PW, Antle JM, Carr ER, Easterling WE, **Funk** CC, Murray A, Ngugi M, Barrett CB, Ingram JSI, GC53H-01: Global Food Security in a Changing Climate: Considerations and Projections (**Invited**) Friday, 18 December 2015
- Funk** C, Hoell A, Shukla S, Kelley C, Harrison L, Recent potentially predictable droughts associated with the west Pacific warming mode and ENSO, H21O-01, Tuesday, 15 December 2015 (**Invited**)
- Shukla S, **Funk** CC, Zaitchik BF, Narapusetty B., Arsenaault KR, Peters-Lidard CD, H52A-05: Seasonal Scale Water Deficit Forecasting in East Africa and the Middle East Region Using the NMME Models Forecasts, Friday, 18 December 2015
- Verdin, JP, Peters-Lidard C, McNally A, Arsenaault, K., Wang S, Kumar S, Shukla S, **Funk** CC, Fall G, Karsten L, Land Surface Modeling Applications for Famine Early Warning H52E-06: Land Surface Modeling Applications for Famine Early Warning (**Invited**), Friday, 18 December 2015
- Peterson P, **Funk** CC, Landsfeld MF, Pedreros DH, Shukla S, Husak GJ, H41D-05: The Climate Hazards Group InfraRed Precipitation with Stations (CHIRPS) v2.0 Dataset: 35 year Quasi-Global Precipitation Estimates for Drought Monitoring Thursday, 17 December 2015
- Shukla S, Husak GJ, **Funk** CC, Verdin JP, Incorporating Medium-Range Weather Forecasts in Seasonal Crop Scenarios over the Greater Horn of Africa to Support National/Regional/Local Decision Makers, PA51A-2198, Friday, 18 December 2015 (poster)
- Brown ME, Antle JM, Backlund PW, Carr ER, Easterling WE, Wallsh M, Ammann CM, Barrett CB, Bellemare MF, Dancheck V, **Funk** C, Grace K, GC54A-01: Climate Change and Global Food Security: Food Access, Utilization, and the US Food System (**Invited**) Friday, 18 December 2015
- Funk** C, 2016: Temperature and Drought Contributions to Migration and Failing States, The Anacapa School, Santa Barbara, CA. January 2016. **Invited** Presentation.
- Funk** C, 2016: New USGS research works across scales to save lives, EROS Center, Sioux Falls SD, January 2016.
- Funk**, C. 2016: CHIRPS and Climate Services to Support Resilient Development and Improved Agricultural Monitoring, Ethiopia. **Invited Talk** and advisement in support of President Obama's Climate Services for Resilient Development pilot project in Ethiopia. February 2016.
- Funk** C, New science for improved hydrologic early warning and prediction, UC Irvine Civil and Environmental Engineering seminar Series, April 15th 2016. **Invited Colloquium**.
- Funk** C, 2016: Synopsis of Recent Research, Stanford Earth Science Seminar, Stanford, Palos Alto, CA, April 27th 2016. **Invited Colloquium**.
- Funk** C, 2016: FEWS NET Science Briefing: La Niña outlook for 2016 and 2017, Washington DC, USAID, May 19th 2016. **Invited Colloquium**.
- Funk** C, 2016: Niger Climate Resilience, presentation, Federal Working Group on Climate Resilient Development, July 30th 2016.
- Funk** C, 2016: Recent advances by the FEWS NET science team contribute to improved early warning in

- Africa and Latin America, EROS noon seminar, Sioux Falls SD, **Invited** Presentation. September 6th 2016.
- Funk C.**, CHIRPS and FEWSNet's use of satellite rainfall products for early drought warning, International Precipitation Working Group Meeting, Bologna Italy, October 6th, 2016. **Invited** Presentation.
- Funk C.**, James P Verdin, Gideon Galu, Denis Macharia, Shraddhanand Shukla, Laura Harrison, Amy McNally, Christa D Peters-Lidard, Franklin R Robertson, Jason B Roberts, Diego H Pedreros, Gregory J Husak, Pete Peterson, Seth Peterson, Greg Ederer, Martin Francis Landsfeld (2016) GC43F-03: Advancing Integrated African Early Warning Science and Climate Services (Invited) Thursday, 15 December 2016 14:10 - 14:30 Moscone West - 3003
- McNally A, McEvoy D, Huntington JL, Husak GJ, **Funk CC**, Senay GB, Verdin JP, Jansma T, Dewes C (2016) GC43F-02: What role does evaporative demand play in driving drought in Africa? Thursday, 15 December 2016 13:55 - 14:10 Moscone West - 3003.
- Shukla S, Hobbins M, McEvoy D, Husak GJ, Dewes C, McNally A, Huntington JL, **Funk CC** and Verdin JP (2016) H14B-04: Monitoring and Forecasting Reference Evapotranspiration for Food Security Assessments Monday, 12 December 2016 16:45 - 17:00 Moscone West – 3016
- Dinku T, **Funk CC**, Tadesse T (2016) H12D-01: Validation of CHIRP Satellite Rainfall Estimates over Africa, Monday, 12 December 2016 10:20 - 10:35 Moscone West - 3022
- Landsfeld MF, Hegewisch K, Daudert D, Morton C, Husak GJ, Friedrichs M, **Funk CC**, Huntington JL, Abatzoglou JT, Verdin JP (2016) PA14B-05: Generating Southern Africa Precipitation Forecast Using the FEWS Engine, a New Application for the Google Earth Engine Monday, 12 December 2016 17:00 - 17:15 Moscone South - 309.
- Budde ME, **Funk C**, Husak GJ, Peterson P, Rowland J, Senay GB, Verdin JP (2016) GC51F-03: Earth Observations for Early Detection of Agricultural Drought: Contributions of the Famine Early Warning Systems Network (FEWS NET) Friday, 16 December 2016 08:30 - 08:45 Moscone West – 3003
- Funk C., Shukla S., Galu G and Husak G, **Invited GeoMod Training**, Maanzoni Kenya, Feb 19th-March 4th 2017.
- Funk C., Advances in Earth Science to support improved humanitarian early warning in a warming world: application – Somalia, **Invited Colloquia**, Vanderbilt University, March 14th 2017.
- Funk C, Relating unusually warm Indo-Pacific SSTs to recent African Droughts: Opportunities and strategies for prediction and improved Food Security Outlooks, FEWS NET Science Meeting, Washington DC, September 7, 2017.
- Funk C, Non-stationarity in Precipitation Estimates, FEWS NET Science Meeting, Washington DC, September 7, 2017.
- Funk C., CHIRTSmax - A Satellite Based Tmax Environmental Record, FEWS NET Science Meeting, Washington DC, September 7, 2017.
- Herring S., Funk C., King A.; **Media Release, Invited Panelist**, BAMS 2016 Climate Extremes Issue, AGU Annual Meeting, New Orleans, December 13, 2017.
- Funk C, Pomposi C, Brown M, Davenport F, Observed and Projected Climate Change Impacts on Water Resources and Agriculture IV, **Session Chair**, AGU Annual Meeting, New Orleans, December 13, 2017.
- Funk C, Hoo Jinho, Pomposi C, Climate Extremes: Patterns, Mechanisms and Attribution I, **Session Chair**, AGU Annual Meeting, New Orleans, December 15 2017.
- Husak G., Turner W, McNally A, Funk C, Talk, Comparison of Agricultural Drought Indicators over West Africa, AGU Annual Meeting, New Orleans, December 11, 2017.
- Harrison L, Blakeley SL, Hobbins M, Dewes C, Funk CC, Shukla S, Husak GJ, GC33B-1069: Drivers of atmospheric evaporative demand during African droughts, AGU Annual Meeting, New Orleans, December 11, 2017.
- Nobre G, Davenport F, Veldkamp T, Jongman B, Funk CC, Husak GJ, Ward P, Aerts J. GC34B-01: A triangular climate-based decision model to forecast crop anomalies in Kenya, AGU Annual Meeting, New Orleans, December 11, 2017.
- Arsenault KR, Shukla S, Getirana A, Peters-Lidard CD, Kumar S, McNally A, Zaitchik BF, Badr H, Funk CC, Koster RD, H22F-05: Using Satellite Data and Land Surface Models to Monitor and Forecast Drought Conditions in Africa and Middle East, AGU Annual Meeting, New Orleans, December 11, 2017.
- Dinku T, Funk CC, Tadesse T, Ceccato P, Validation of the CHIRPS Satellite Rainfall Estimates over Eastern of Africa, AGU Annual Meeting, Poster, New Orleans, December 11, 2017.
- Peters-Lidard CD, Arsenault KR, Shukla S, Getirana A, McNally A, Koster RD, Zaitchik BF, Badr SH, Roningen S, Kumar S, Funk CC, Seasonal scale water deficit forecasting in Africa and the Middle East

using NASA's Land Information System (LIS), Poster, AGU Annual Meeting, New Orleans, December 11, 2017.

Funk CC, Verdin J, Thiaw WM, Hoell A, Korecha D, McNally A, Shukla S, Arsenault KR, Magadzire T, Novella N, Peters-Lidard CD, Robjohn M, Pomposi C, Galu G, Rowland J, Budde ME, Landsfeld MF, Harrison L, Davenport F, Husak GJ, Endalkachew E, IN54A-01: Enhancing Famine Early Warning Systems with Improved Forecasts, Satellite Observations and Hydrologic Simulations (**Invited Talk**), , AGU Annual Meeting, New Orleans, December 11, 2017.

Funk C., Monitoring and Predicting Hydroclimatic Extremes (**Invited Presenter and Panelist**) Earth Observations for Food Security and Agriculture Consortium: Identifying Opportunities to Advance the Application of Earth Observations in USAID Programs, 19 December 2017, 9:00am-4:30pm, 555 12th St NW, Washington, DC.

Funk and co-chairs, GC11B: Climate Extremes: Patterns, Mechanisms, and Attribution I-III,

Funk et al. and co-authors, Consistent with recent observations, a climate change meta-ensemble robustly projects 2020-2039 climate hazards associated with El Nino and La-Nina related sea surface temperature extremes (Invited), GC31A: Climate-Hydrology-Human Interactions and Their Implications on Hydroclimate Extremes in a Changing Environment I, AGU, Washington DC, Wednesday Dec 12, 8:15-8:30.

Funk and co-chairs, GC54A Observed and Projected Climate Change Impacts on Water Resources, Agriculture, and Health I, AGU Dec 14th, Salon B, 4:00-6:00, (posters 8:00-12:00), Hall A-C.

RENDERING SCIENTIFIC JUDGMENT

Recent Review Activities:

2015-2016: Editor Nature Scientific Data, Chair USGS Research Grade Evaluation panel – led review of 14 USGS scientists, Nature (x3), Nature Communications (x2), Science Advances (x2), PNAS, J. Climate (x3), Climate Dynamics (x3), Int. J of Climate (x3), GRL (x4), J. of Hydro-Meteorology, BAMS (x2), Nature Climate Change, BAMS (x3), IRI case review Helen Greatrex, Geografiska Annaler: Series A, Physical Geography, ERL.

USGS Representative: Federal Working Group on Climate Resilient Development

USGS Representative: Federal Food Security working group.

2013-2014

NSF Belmont Water Security Proposals, Regional Environmental Change, International Journal of Climate, Climate Dynamics (x2), Population and Environment, Water Resources Research (x2), US Government review lead on IPCC WGII Chapters 22 and 27, Nature (x2), ERL, Netherlands Organization for Scientific Research proposals, Nature Climate Change, USGS Internal Review, Journal of Hydrometeorology, US DOE review panelist for Climate and Earth System Modeling: SciDAC and Climate Variability and Change.

2011-2012

Climatic Change, J. Hydrology, JSTARS, Journal of Env. MAS, Theoretical and Applied Climatology, International Journal of R. P. Health, US WCRP – US Southwestern Climate Assessment, UNEP report, World Bank report, IRI report, GRL (x2), CGIAR proposals, USGS RGE panel

2001-2010

EOS Book Review, Springer Book Chapter, USGS Climate Change Research Strategy, JGR Indian Monsoon paper, NASA PMM Proposals, GEC, Climatic Change, PNAS, Taylor Publishing, GRL, GEC, RSE (x3), International J. of Climate, J. Climate, NOAA/OGP proposals, J. Hydrology, NOAA/OGP proposals

Leadership and Advisory Activities:

UCSB Geography department - Full Affiliated Research Professor

2008-present

As an affiliated full professor in the UCSB Geography department, I mentor MA/PhD students and post-doctoral researchers, assist in and lead research proposals and projects and teach advanced classes in graduate level statistics and geo-statistics. Since 2009, I have been reviewed by UCSB two times. The first review in 2012 was equivalent to a full external tenure review, and I was advanced to a full researcher position with an accelerated 1-step advance. During the last review in 2015 I was also advanced at an accelerated rate, advancing 2 steps. I have acted as an advisor on nine Ph. D committees and three masters committees. I have acted as advisor for eight post-doctoral researchers. I advise seven early warning scientists in Africa and Central America. Climate Hazard Group doctoral and post-doctoral researchers have gone on to excellent positions with top notch universities and government institutions.

USGS PREPARED lead climate change scientist

2011-2018

Work with EROS EWEM to develop a technology and science strategy supporting the \$40 million dollar PREPARED Project.

USGS EROS/Land Change Science - Principal Investigator, Drivers of Drought Project

2015 to present

In collaboration with Jim Rowland (USGS EROS), I lead the Land Change Science 'Drivers of Drought' program. This project uses climate models to perform basic research into the similar Indo-Pacific climate patterns that produce drought in Eastern Africa and the United States, identifies targets for prediction and evaluates the likelihood of climate change impacts. Regional and global data sets, analyses and mapping tools are developed and deployed within the EROS earlywarning.usgs.gov/fews/ portal. Since 2011, this work has produced 10 USGS Fact Sheets and reports, a widely-used global precipitation [data set](#), and a web-based environmental monitoring tool – the Early Warning eXplorer ([EWX](#)). The USGS reports describe trends in African climate and food security for adaptation decision makers. The 0.05° daily 1981-present precipitation data set has been especially designed to support drought early warning. Journal articles have explored the interaction of ENSO with global warming and identified enhanced risks for the US and Africa during La Niña conditions. Invited articles have also quantified the potential climate change contributions to recent droughts in California and the Greater Horn of Africa.

USGS EROS/Land Change Science – Contributing Scientist, African Capacity Building

2011 to present

Under the leadership of Jim Verdin and Jim Rowland (USGS EROS) and as Co-PI on several NASA and NOAA grants, I work as a contributing scientist on projects focused on building early warning and climate service capacities in Africa and Latin America. These service-oriented activities work to empower African and Central American scientists to support effective disaster risk reduction and climate smart adaptation policies. Most notable on this front has been the EROS EWEM group's participation (~\$3 million dollars) in the five year, \$40 million dollar USAID project for 'Planning for Resilience in East Africa through Policy, Adaptation, Research and Economic Development' in East Africa. Techniques developed for crop modeling and trend analyses have been encapsulated in two USGS [tools](#) originally conceived by me (the GeoWRSI and GeoClim,) and CHG staff have held many training sessions over the past three years using these tools. Capacity building efforts have also supported the NASA [SERVIR](#) project. My expertise in food security has led to my acting as government reviewer on the AR5 IPCC WGII Report Africa and Central America chapters, and as a co-author on the forthcoming USDA report on climate change and global food security.

Workshop organizer: IMAAFS

2014

Work with European counterparts from JRC to organize a large week-long conference in Addis Ababa -- Information for Meeting Africa's Agricultural Transformation and Food Security Goals (IMAAFS).

Advisory Board Member – UNEP CLIMWARN project

2012-2014

Advise CLIMWARN project on best practices for African early warning and drought identification.

Member NASA Precipitation Monitoring Mission team

2007 to 2011

Promote and advance satellite precipitation science

Co-Lead - Validation, Crop and Rangeland Monitoring Working Group

2009-2011

Provide guidance and leadership on international rainfall validation effort with the Joint Research Centre, Ispra Italy.

Expert Advisor: European Union Research Committee on drought vulnerability and warning

Sit on an advisory board of 5-6 leading experts in the field of drought warning and climate research. Provide scientific knowledge and experience guiding climate adaptation and mitigation activities for and international 19-partner EU Seventh Framework project.

2010-2014.

Team Member – International Precipitation Working Group 2015-present
Provide guidance on applied drought early warning science

Expert Advisor: USAID Mission Nairobi, consultant on climate 2010-present
Provide USAID mission and Feed the Future initiative detailed climate projections.

Expert Advisor: India Drought Monitoring exchange 2009
Act as US/USGS representative in extensive exchange of drought monitoring expertise.

Task Lead for Rainfall Validation Working Group 2006-present
Coordinate discussions and research pertaining to the accuracy of various satellite rainfall estimation techniques in eastern Africa. Part of an international consortium on Crop and Rangeland Management.

Team member – Rift Valley Fever Project 2002-2004
Work with IRI and African institutions to create and coordinate improved Rift Valley Fever forecasting systems

Expert consultant: African Agro-climate 2003-present
On a semi-routine basis (~once per month), advise food security specialists on the African climate conditions and likely food security impacts. This information then feeds into food security alerts and special reports.

Review panel member: IRI CSP 2011-present
Provide expert editorial guidance on International Research Institute for Climate and Society's Climate and Society Publication.

Expert consultant: Contributions of Remote Sensing for Decisions about Human Welfare
Provided inputs for NRC report, representing food security and remote sensing views at this National Research Council meeting, January 30-31, 2006.
http://www.nap.edu/catalog.php?record_id=11759

Expert Advisor: Workshop on Re-establishing the Caribbean Climate Outlook Forum
Together with NOAA partners, supported Caribbean scientists in setting up a regular climate outlook forum procedure and process. 2010

Expert Consultant: NAS Workshop on US Priorities for the Climate Change Science
Represented international food security and climate change science and concerns at the NAS CCSP meeting and breakout groups. 2007

Task Lead for Rainfall Validation Working Group 2006-2010
Coordinate discussions and research pertaining to the accuracy of various satellite rainfall estimation techniques in eastern Africa. Part of an international consortium on Crop and Rangeland Management

LECTURESHIPS AND OTHER ACADEMIC SERVICE

Courses Taught

- UCSB 210C, Analytical Methods in Geography, Spring 2015.
- UCSB 210B, Analytical Methods in Geography, Winter 2015.

- UCSB 280, Seminar in Climate Change, Spring 2013.
- UCSB Geography 210C, Analytical Methods in Geography III. Graduate course in geostatistics and spatial analysis. Spring 2011.
- UCSB Geography 210C, Analytical Methods in Geography III. Graduate course in geostatistics and spatial analysis. Spring 2010.
- UCSB Geography 133, Tropical Meteorology. Advanced undergraduate course. Spring 2003
- UCSB Geography 166, Physical Climatology. Advanced undergraduate course. Spring 2004.
- UCSB Geography 103, Geographic Computing. Fall 2002, Fall 2003.
- UCSB Geography 3B, Physical Geography. Summer 2002.
- Santa Monica College, Physical Geography. Fall 2000, Spring 2001.

Current Mentoring activities:

Doctoral Advisor, Natasha Krell, UCSB Geography, 2017 -present

- Kenya agriculture and hydrology

Doctoral Advisor, Tamuka Magadzire, University of Kwazulu-Natal, South Africa, 2015-present

- Crop modeling

Doctoral Advisor, Sari Blakely, UCSB Geography, 2015-present

- Climate and micro-insurance

Doctoral Advisor, Dami Oyelade, UCSB Geography, 2017-present

- Nigerian hydrology, precipitation extremes, urban planning

Doctoral Advisor, Cascade Tuholske, UCSB Geography, 2017-present

- Urban Food Security

Doctoral Advisor, Alana Ayasse, UCSB Geography, 2017-present

- Hyperspectral remote sensing, methane detection

Doctoral Advisor, Emily Williams, UCSB Geography, 2016-present

- Modeling climate change impacts
- NSF Fellow

Post-Doctoral Advisor, Frank Davenport, UCSB Geography, 2014-present

- Spatial econometrics and adaptation

Post-Doctoral advisor: Laura Harrison, UCSB Geography, 2009-2014

- Global adaptation

Post-Doctoral advisor: Catherine Pomposi, UCSB Geography, 2009-2014

- PACE Fellow, African Climate Variability

Science Advisor: USGS EROS Field Scientists, 2003-present

- Tamuka Magadzire; Gaborone Botswana.
- Alkhalil Adoum, Niamey, Niger.
- Gideon Galu, Nairobi, Kenya.
- Mario Rodriguez, Guatemala City, Guatemala
- Diriba Korecha, Addis Ababa, Ethiopia
- Chris Shitote, Nairobi, Kenya

Past Mentoring Activities

Doctoral Advisor, Haline Heidinger Abadia, UCSB Geography, 2015-present

- Climate variability in Peru

Doctoral advisor: Andrew Verdin, Colorado University, 2011-2016

- Spatial Analysis, hydrology and agro-climatology

Post-Doctoral Advisor, Colin Kelley, UCSB Geography, 2014-2016

- UCAR PACE Fellow
 - Climate change and predictability in Yemen and the Middle East
- Doctoral advisor: Laura Harrison, UCSB Geography, 2009-2014
- Global temperature-PET relationships, and 2030 PET projections
 - Climate adaptation strategies and re-greening the Sahel
- Post-doctoral advisor: Andrew Hoell, UCSB Geography, 2012-2014
- African climate change and climate modeling
 - Changes in ENSO and ENSO teleconnections
- Post-doctoral advisor: Shrad Shukla, UCSB Geography, 2013-2014
- Hydrologic modeling and prediction for Africa
- Post-doctoral advisor: Kathryn Grace, UCSB Geography, 2010- 2012
- Climate change and health impacts in Kenya
- Post-doctoral advisor: Harikishan Jayanthi, UCSB Geography, 2010- 2012
- FEWS NET LDAS, WRSI and yield reduction modeling
 - Long term trends in WRSI and associated yield impacts
- Post-Doctoral Advisor, Park Williams, 2009-2012
- East African climate trend analysis
 - Long term changes in the Walker circulation
- Ph.D Thesis advisor: Andrew Thorpe, UCSB Geography, 2011-2013
- Clutter matched filter detection of methane
- M.S Thesis advisor: Burke Greer, UCSB Geography, 2011-2013
- Climate Change impacts on Aspen
- Ph.D Thesis advisor: Amy McNally, UCSB Geography, 2009-2013
- FEWS NET LDAS calibration and rainfall unbiassing
 - Integrating LDAS with NDVI, LST, and PAMW soil moisture retrievals
- Ph.D Thesis advisor: Frank Davenport, UCSB Geography 2010-2013
- Panel models for predicting national maize production
 - Spatial transmission of maize price information
- Ph.D Thesis advisor: Roop Saini, U. Mass. Dept. of Atmospheric Science, 2009-2013
- Regional Influence of monsoons in the Current and a Warming Climate
- P.h.D. Thesis advisor: Michael Marshall 2007-2010
- Modeling Evapotranspiration in sub-Saharan Africa: a Tool for Food Security Analysis granted 12/2010
- M.S Thesis advisor: Diego Pedreros, UCSB Geography, 2005-2007
- Trends and ENSO influences in Central American rainfall.

Information Dissemination

August 2016 – KCSB [Interview](#) on new SERVIR project

August 2016- KCLU [Interview](#) “UCSB Researchers Help African Scientists Prevent Starvation”

July 2016 – UCSB The Current [story](#) on Advance Warning

July 2016 – Interviewed by Voice of America regarding [potential La Niña drought](#)

June 2016 – Article in The Conversation discusses helping [Africa cope with Natural Disasters](#)

April 2016 – CHIRPS data featured as a tool [revolutionize climate adaptation](#)

February 2016 – Ethiopia Analyses [featured](#) in Washington Post

November 2015 – The Current [story](#) on Anthropogenic contributions to East African drought

May 2015 – USGS News Release [Heat Accelerates Dry in California Drought](#)

May, 2014 – CHIRPS data featured by UCSB, USGS, Environmental Monitor

<http://www.news.ucsb.edu/2014/014153/state-rain>

http://www.usgs.gov/blogs/features/usgs_top_story/the-state-of-rain/?from=image

<http://www.fondriest.com/news/chirps-earliest-drought-warnings-need.htm>

April 2014 – GEC paper featured in Human Dimensions of Global Change newsletter
<https://sites.google.com/site/aaghdgc/newsletter/>

October, 2012 -- USGS Fact Sheet on climate trends in Senegal
<http://pubs.er.usgs.gov/publication/fs20123123>

August, 2012 -- USGS Fact Sheet on climate trends in Mali
<http://pubs.er.usgs.gov/publication/fs20123105>

June, 2012 -- USGS Fact Sheet on climate trends in Chad
<http://pubs.er.usgs.gov/publication/fs20123070>

June, 2012 -- USGS Fact Sheet on climate trends in Burkina Faso
<http://pubs.usgs.gov/fs/2012/3084/fs2012-3084.pdf>

June, 2012 -- USGS Fact Sheet on climate trends in Niger
<http://pubs.er.usgs.gov/publication/fs20123080>

June, 2012 -- USGS Fact Sheet on climate trends in Uganda
<http://pubs.usgs.gov/fs/2012/3084/fs2012-3062.pdf>

May, 2012 – UCSB Press Release
<http://www.ia.ucsb.edu/pa/display.aspx?pkey=2710>

April 2012 – State Department Press Release – forecasts motivate \$50 million in food aid.
<http://www.state.gov/r/pa/prs/ps/2012/04/187456.htm>

April, 2012 -- USGS Fact Sheet on climate trends in Ethiopia
http://pubs.usgs.gov/fs/2012/3053/FS12-3053_ethiopia.pdf

April 2012 – USGS Science Feature on predicting African drought
http://www.usgs.gov/blogs/features/usgs_science_pick/poor-spring-rain-projected-in-africa/

November 2011- USGS Top Story and CoreCast interview
http://www.usgs.gov/blogs/features/usgs_top_story/science-helping-to-save-lives-in-africa/

October 2011 - Nature Climate Change Research Highlight
<http://chg.geog.ucsb.edu/news/mali-malnutrition/nclimate1273-1.pdf>

October 2011 – USGS Fact Sheet on temperature effects on phenology
<http://pubs.usgs.gov/fs/2011/3110/pdf/fs2011-3110.pdf>

September 2011 - USGS Fact Sheet on temperature impacts on crop phenology
<http://pubs.usgs.gov/fs/2011/3072/pdf/FS2011-3072.pdf>

June 2011 – USGS Fact Sheet on climate trends in Sudan
<http://pubs.usgs.gov/fs/2011/3072/pdf/FS2011-3072.pdf>

February 2011 – Nature Climate Change Research Highlight
http://www.nature.com/nclimate/2011/110215/full/nclimate1045.html?WT.ec_id=NCLIMATE-TE-20110215

January 2011 – Climate Dynamics press releases
 USGS <http://www.usgs.gov/newsroom/article.asp?ID=2690>
 UCSB <http://www.ia.ucsb.edu/pa/display.aspx?pkey=2409>

September 2010 – USGS Openfile report on the westward extension of the warm pool
<http://pubs.usgs.gov/of/2010/1199/>

August 2010 – USGS Fact Sheet on Kenya trends and climate adaptation:
<http://pubs.usgs.gov/fs/2010/3074/>

November 2009 - Article on "Remote Sensing of Agriculture for Food Security Monitoring in the Developing World": http://nasadaacs.eos.nasa.gov/articles/2009/2009_crops.html

October 2009 – Research presented to the House Foreign Affairs committee

August 2009 - Earthzine article on Reaching the Millennium Development Goals: Eradicating Hunger in Eastern Kenya <http://www.earthzine.org/2009/08/10/reaching-the-millennium-development-goals-eradicating-hunger-in-eastern-kenya/>

February 2009: Earth Observer article on forecasting and earlier early warning
http://earlywarning.usgs.gov/adds/pubs/Funk_EarthObserver_Jan_Feb09.pdf.

December 2008 - Zimbabwe MODIS analysis featured in EARTH magazine

August 2008 – UCSB & NASA Proceedings paper press releases
<http://www.ia.ucsb.edu/pa/display.aspx?pkey=1825>
http://www.nasa.gov/centers/goddard/news/topstory/2008/indian_ocean_warm.html

May 2008: UCSC SciCom Interview
<http://scicom.ucsc.edu/publications/QandA/2008/funk.html>

March 2008 - BBC interview: <http://www.geog.ucsb.edu/events/department-news/410/chris-funk-interviewed-by-bbc/>

February 2008 – Science perspectives piece
<http://www.geog.ucsb.edu/events/department-news/403/funk-coauthors-quot-science-quot-article-on-global-food-security/>

January 2008 – National Geographic News Article
<http://news.nationalgeographic.com/news/2008/01/080131-warming-crops.html>