

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

- Affiliated Research Professor, Department of Geography, UC Santa Barbara
- Lead Scientist: USAID FEWS NET climate change adaptation program
- Oversee research activities at UCSB CHG (chg.geog.ucsb.edu)
- Coordinate with UCSB PIs to manage USGS/UCSB cooperative research
- PI grants from NOAA and NASA
- Oversee the development of new famine early warning science
- Pioneer new innovations in climate prediction and attribution
- Develop new geospatial algorithms and tool sets
- Occasional lecturer for the UCSB Geography department

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 5 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

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

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

Oct 2012 USGS Fact Sheet on Senegal trends and climate adaptation: [FS 2012/3123](#)

Aug 2012 USGS Fact Sheet on Mali trends and climate adaptation: [FS 2012/3105](#)

Jul 2012 USGS Fact Sheet on Burkina Faso trends and climate adaptation: [FS 2012/3084](#)

Jul 2012 USGS Fact Sheet on Niger trends and climate adaptation: [FS 2012/3080](#)

June 2012 USGS topline [story](#) on American and African drought.

Jun 2012 USGS Fact Sheet on Chad trends and climate adaptation: [FS 2012/3070](#)

Jun 2012 USGS Fact Sheet on Uganda trends and climate adaptation: [FS 2012/3062](#)

May 2012 USGS science [pick](#) - Evapotranspiration studies could help keep Africa's Sahel green

Apr 2012 USGS Fact Sheet on Ethiopia trends and climate adaptation: [FS 2012/3053](#)

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 USGS Fact Sheet on Mozambique temperature impacts on corn: [FS 2011/3110](#)

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

Jul 2011 USGS Fact Sheet on Sudan trends and climate adaptation: [FS 2011/3072](#)

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

Sep 2010 USGS Openfile report on the westward extension of the warm pool [OFR 2010/1199](#)

Aug 2010 USGS Fact Sheet on Kenya trends and climate adaptation: [FS 2010/3074](#)

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](#)

Pending Grants and Awards

Current Grants and Awards

Co-I, NASA, *Predicting Middle Eastern and African Seasonal Water Deficits using NASA Data and Models*, \$1.8 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-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.

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

PI, NASA NNX13AQ95A, *Leveraging CMIPS and NASA/GMAO Coupled Modeling Capacity for SERVIR East Africa Climate Projections*, \$50K 8/2013-8/2016. Co-PI Husak.

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

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, 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.

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

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.

BIBLIOGRAPHY

- P1. Raskin R., Funk C., Willmott, C. (1996): Interpolation over large distances using SphereKit. *GeoComputation* 96. 1996, pp. 713-714.
- P2. Willmott, C., Raskin, R., Funk, C., Webber, S. (1997), Spherekit, National Center for Geographic Information and Analysis. <http://www.ncgia.ucsb.edu/pubs/spherekit/> Software Package
- P3. Funk, C., Curtin, K., Goodchild M.F., Montello D., and Noronha, V.T. (1998): Formulation and test of a model of positional distortion fields. In K. Lowell and A. Jaton editors, *Spatial Accuracy Assessment: Land Information Uncertainty in Natural Resources*. Chelsea, Michigan: Ann Arbor Press, pp. 131-138.
<ftp://hollywood.geog.ucsb.edu/pub/pubs/FormulationAndTestOfPositionalDistortion.pdf>
- P4. Church, R.L., Curtin, K.M., Fohl, P., Funk, C., Goodchild, M.F., Noronha, V.T. and Kyriakidis, P. (1998): Positional distortion in geographic data sets as a barrier to interoperation. *Technical Papers, ACSM Annual Conference*. Bethesda, MD.
- P5. Raskin, R., Funk, C., Webber, S., Willmott, C. (1998) Spherekit, the spherical interpolation toolkit. NCGIA technical report 97.4.
- P6. Verdin, J., Funk, C., Klaver, J., Roberts, D. (1999): Exploring the correlation between Southern African NDVI and ENSO sea surface temperatures: results for the 1998 growing season. *Int. J. Rem. Sens.* V20.10, p.2117-2124. Awarded best letter of the year
ftp://hollywood.geog.ucsb.edu/pub/pubs/VerdinFunkRobertsKlaver_NDVI_ElNino.pdf
- P7. Collins, E.F., Roberts, D., Sutton, P., Funk, C., Borel, C.: (1999): Temperature estimation and compositional mapping using spectral mixture analysis of thermal imaging spectrometer data. *Imaging Spectrometry V.*, eds. Descour, M., Shen S., SPIE Proceedings V3753, p. 247-257.
<ftp://hollywood.geog.ucsb.edu/pub/pubs/CollinsTemperatureEst.pdf>
- P8. Roberts, D., Funk, C., Sutton P., Alagona, P., Waller, E., (1999), *Physical Geography: A Laboratory Manual*, Kendall/Hunt Publishing (ISBN 0-7872-6484-9).
- P9. Funk, C., Theiler J., Roberts, D., Borel C. (2001): Clustering to Improve Matched Filter Detection of Weak Gas Plumes, in *Hyperspectral Thermal Imagery*, *IEEE Trans. Geo. and R. Sensing* (39.7): 1410-1420.
ftp://hollywood.geog.ucsb.edu/pub/pubs/ClusteringToImproveMatchedFiltering_2001.pdf
- P10. Funk, C., Husak, G., and Magadzire, T. (2002) The FEWS NET AgroClimatology Toolkit, USGS Software Package
- P11. Husak, G., Funk, C., Rowland, J., Michaelsen, J., Verdin, J. (2002) Observations between October and Late-season Rainfall for Southern Africa, FEWS NET Special Report.
ftp://hollywood.geog.ucsb.edu/pub/pubs/EarlyAndLateRainsInSouthernAfrica_2002.pdf
- P12. Funk, C., T. Magadzire, G. Senay, J. Rowland, J. Verdin, and J. Michaelsen (2002) Historical El Niño/crop production relationships in Southern Africa. FEWS NET Special Report.
<ftp://hollywood.geog.ucsb.edu/pub/pubs/HistoricalElNinoCropProductionRelationshipsInSouthernAfrica.pdf>
- P13. Funk, C., T. Magadzire, G. Husak, J. Verdin, J. Michaelsen, and J. Rowland, 2003: Forecasts of 2002/2003 Southern Africa Maize Growing Conditions Based on October 2002 Sea Surface Temperature and Climate Fields, FEWS NET Special Report.
ftp://hollywood.geog.ucsb.edu/pub/pubs/WRSIForecastsForSouthernAfrica_2003.pdf
- P14. Funk, C., J. Michaelsen, J. Verdin, G. Artan, G. Husak, G. Senay, H. Gadain, and T. Magadzire, 2003: The Collaborative Historical African Rainfall Model: Description and Evaluation. *Int. J. of Clim.*, (23)47-66. ftp://hollywood.geog.ucsb.edu/pub/pubs/CHARM_IJOC_article.pdf
- P15. Funk, C. and J. Verdin, 2003: Comparing Satellite Rainfall Estimates and Reanalysis Precipitation Fields with Station Data for Western Kenya. Nairobi, JRC – FAO. Nairobi, Jan 2003.
ftp://hollywood.geog.ucsb.edu/pub/pubs/CRAM_2003_fullproceedings.pdf

- P16. Funk, C., Magadzire, T., Senay, G., and Jones, D. (2003) Geospatial Water Requirement Satisfaction Index software package, version 1.0, November 2005. Distributed Software Application. USGS EROS International Program. Software Package
- P17. Funk, C., Magadzire, T., Verdin, J., Rowland, J., Michaelsen, J. (2003) Outlook for Crop Growing Conditions in Southern Africa for 2004. FEWS NET Special Report.
ftp://hollywood.geog.ucsb.edu/pub/pubs/SADC_CropProductionOutlook_2004.pdf
- P18. Funk, C., Asfaw, A., Steffen, P., Senay, G., Rowland, J., Verdin, J. (2003) Estimating Meher Crop Production Using Rainfall in the 'Long Cycle' Region of Ethiopia. FEWS NET Special Report.
<ftp://hollywood.geog.ucsb.edu/pub/pubs/EthLongCycleReport.pdf>
- P19. Funk, C., Pedreros, D.; Husak, G.; Eilerts, G., Verdin, J., Rowland, J. (2003) June-July-August 2003 Rainfall Forecast Interpretation for Central America. FEWS NET Special Report.
<ftp://hollywood.geog.ucsb.edu/pub/pubs/CenAmForecastInterpLaPrimera2003eng.pdf>
- P20. Funk, C. and J. Michaelsen, 2004: A simplified diagnostic model of orographic rainfall for enhancing satellite-based rainfall estimates in data poor regions, J. of Appl. Met., (43): 1366-1378.
<ftp://hollywood.geog.ucsb.edu/pub/pubs/VDELB.pdf>
- P21. Funk, C., Magadzire, T., Masundire, T. (2004) Special Agromet Update, Follow-up analysis of Drought Situation in Southern Africa 2003/04 Growing Season, SADC Special Agromet Report.
<ftp://hollywood.geog.ucsb.edu/pub/pubs/AgupSpecialFeb2004D.pdf>
- P22. Funk, C., Michaelsen, J.; (2004) SADC 2004 Downscaled Forecasts: Technical Description. FEWS NET technical report.
ftp://hollywood.geog.ucsb.edu/pub/pubs/SADC_2004_Downscale_TechnicalDescription.pdf
- P23. Funk, C., Senay, G., Asfaw, A., Verdin, J., Rowland, J., Michaelsen, J., Eilerts, G., Korecha, D., Choularton, R. (2005) Recent Drought Tendencies in Ethiopia and equatorial-subtropical eastern Africa, FEWS NET Special Report.
<ftp://hollywood.geog.ucsb.edu/pub/pubs/RecentDroughtTendenciesInEthiopia.pdf>
- P24. Verdin J., Funk C., Senay, G., Choularton, R. (2005) Climate Science and Famine Early Warning, Phil. Trans. Roy. Soc. B (360): 2155-2168.
<ftp://hollywood.geog.ucsb.edu/pub/pubs/ClimateScienceAndEarlyWarning.pdf>
- P25. Funk, C. and Brown, M., 2005, Intra-seasonal NDVI change projections in semi-arid Africa, Rem. Sens. Env (101): 249-256.
ftp://hollywood.geog.ucsb.edu/pub/pubs/RSE_NDVI_projections_2005.pdf
- P26. Funk, C., Husak G., Pedreros, D., and Michaelsen, J., (2005), GeoFUSE - A rainfall monitoring toolkit for Southeast Asia, USAID Office of Disaster Assistance, October 2005. Software Package
- P27. Funk, C., Verdin, J., and Husak, G., 2006, Integrating observation and statistical forecasts over sub-Saharan Africa to support Famine Early Warning, AMS meeting, Nov. 2006, Extended Abstract.
ftp://hollywood.geog.ucsb.edu/pub/pubs/AMSAbstract2006_119819.pdf
- P28. Verdin, K.L., Godt, J.W., Funk, C., Pedreros, D., Worstell, B., Verdin, J., 2007, Development of a global slope dataset USGS Open-File Report 2007-1188, 25 p.
ftp://hollywood.geog.ucsb.edu/pub/pubs/pager_openfile_report.pdf
- P29. Funk, C., Schmitt, C. and LeComte, D., (2006) El Niño and Indian Ocean Dipole conditions likely into early 2007, with drought and flooding implications for Southern and Eastern Africa. FEWS NET Special Report.
ftp://hollywood.geog.ucsb.edu/pub/pubs/ElNino_IOD_Impacts_2006.pdf
- P30. Funk, C., Freund, J., Budde, M., Mukhala, E., Magadzire, T., (2006) Analysis of MODIS NDVI for 2000 through 2006, FEWS NET Special Report.

- P31. Brown, M.E., Funk, C.C., Galu, G. and Choularton, R. (2007). Earlier Famine Warning Possible Using Remote Sensing and Models. *EOS, Trans. Am. Geo. Union*, 88(39): 381–382. ftp://hollywood.geog.ucsb.edu/pub/pubs/EOS_2007EO390001.pdf
- P32. Husak, G., Michaelsen, J., Funk, C., (2007) Use of the Gamma Distribution to Represent Monthly Rainfall in Africa for Drought Monitoring Applications, *Int. J. of Clim.* 27(7): 935-944. ftp://hollywood.geog.ucsb.edu/pub/pubs/Husak_IJOC_2007.pdf
- P33. Funk C. & M. Budde, (2007) National MODIS NDVI-based production anomaly estimates for Zimbabwe, Crop and Rangeland Monitoring Workshop, Nairobi, March 2007. Extended Abstract. ftp://hollywood.geog.ucsb.edu/pub/pubs/CRAM_2007_MODIS_NDVI_zimbabwe.pdf
- P34. 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 Workshop, Nairobi, March 2007, Extended Abstract. ftp://hollywood.geog.ucsb.edu/pub/pubs/CRAM_2007_thirdgen_rainfall.pdf
- P35. Funk, C., M.D. Dettinger, J.C. Michaelsen, J.P. Verdin, M.E. Brown, M. Barlow, and A. Hoell (2008) Warming of the Indian Ocean threatens eastern and southern African food security but could be mitigated by agricultural development, *Proc. of the Nat. Academy of Sci.* 105, 11081–11086. <http://earlywarning.usgs.gov/adds/pubs/WarmingInTheIndianOceanThreatensEasternAndSouthernAfrica.pdf>
- P36. Husak, G., M.T. Marshall, J. Michaelsen, D. Pedreros, D., C. Funk, G. Galu, (2008) Crop area estimation using high and medium resolution satellite imagery in areas with complex topography. *J. of Geo. Res.*, 113, D14112, doi:10.1029/2007JD009175. ftp://hollywood.geog.ucsb.edu/pub/pubs/CropAreaEstimationUsingSatellites_GRL_2008.pdf
- P37. Funk, C., Ederer, G., Pedreros, D. (2008) The Tropical Rainfall Monitoring Mission, NIDIS Knowledge Assessment Workshop: Contributions of Satellite Remote Sensing to Drought Monitoring, Feb 6-7, Boulder, CO, Extended Abstract. ftp://hollywood.geog.ucsb.edu/pub/pubs/trmm_and_drought_monitotring_nidis_workshop_ext_abs_2008.pdf
- P38. Brown, M and Funk, C., (2008) Food security under climate change, *Science*, (319): 580-581. http://earlywarning.usgs.gov/adds/pubs/PerspectivesPiece_and_Letter.pdf
- P39. Funk C. and Brown, M. (2009) Declining Global Per Capita Agricultural Production and Warming Oceans Threaten Food Security. (2009) *Food Security*. DOI 10.1007/s12571-009-0026-y. <http://www.springerlink.com/content/fw645377u3587404/fulltext.pdf>
Invited Paper.
- P40. Funk C. (2009) New satellite observations and rainfall forecasts help provide earlier warning of drought in Africa. *The Earth Observer*. http://earlywarning.usgs.gov/adds/pubs/Funk_EarthObserver_Jan_Feb09.pdf.
- P41. Peters-Lidard CD, JD Bolten, ME Brown, C Funk, M Rodell, DL Toll, JP Verdin (2009) Satellite-Based Assessment of Water Resources and Agricultural Productivity, Conference Proceedings, Water and Agriculture | Implications for Development and Growth, Johns Hopkins School of Advanced International Studies, March 30, 2009, Washington DC, http://www.sais-jhu.edu/water/conference/proceedings/gems/20090330_WA_Tech_4.pdf
- P42. Funk C. and M. Budde (2009) Phenologically-tuned MODIS NDVI-based production anomaly estimates for Zimbabwe. *Remote Sensing of Environment*. 113:115-125. <ftp://hollywood.geog.ucsb.edu/pub/pubs/NDVIbasedProductionEstimatesForZimbabwe.pdf>
- P43. Funk C, Verdin J.P. (2010) Real-Time Decision Support Systems: The Famine Early Warning System Network. *in* Gebremichael M, Hossain F, eds., 2010, *Satellite Rainfall Applications for*

Surface Hydrology: Springer, Netherlands, pp. 295-320.

ftp://hollywood.geog.ucsb.edu/pub/pubs/RealtimeDSS_for_FEWS_NET_final.pdf

- P44. Brown M. and C. Funk (2010) Early Warning of Food Security Crises in Urban areas: the Case of Harare, Zimbabwe, 2007, Geospatial Techniques in Urban Hazard and Disaster Analysis (Geotechnologies and the Environment). Ch. 11. p. 229-244. ISBN 978-90-481-2237-0.
- P45. Funk C., Ederer, G., Petersen P. (2010) The Early Warning Explorer (EWX), An extensible Geoserver/openmaps data archive and display system.
<http://igskmncngs600.cr.usgs.gov:8080/EWX/index.html> **Software Package**
- P46. Williams P. and Funk C. (2010) A Westward Extension of the Tropical Pacific Warm Pool Leads to March through June Drying in Kenya and Ethiopia, USGS Openfile Report 1199,
<http://pubs.usgs.gov/of/2010/1199/pdf/ofr2010-1199.pdf>
- P47. Budde, M., Rowland, J., and Funk, C., (2010) Remote Sensing of Agriculture for Food Security Monitoring in the Developing World, Earthzine, Feb, 2010.
<http://www.earthzine.org/2010/02/08/agriculture-and-food-availabilityremote-sensing-of-agriculture-for-food-security-monitoring-in-the-developing-world/>
- P48. Funk, C., Eilerts, G., Davenport, F., and Michaelsen, J., (2010) A Climate Trend Analysis of Kenya-August 2010, USGS Fact Sheet 2010-3074:
<http://pubs.usgs.gov/fs/2010/3074/pdf/fs2010-3074.pdf>
- 2011 -----
- P49. Funk, C., Eilerts, G., Verdin, J., and Rowland, J., (2011) A Climate Trend Analysis of Sudan-July 2011, USGS Fact Sheet 2011-3072.
<http://pubs.usgs.gov/fs/2011/3072/pdf/FS2011-3072.pdf>
- P50. Funk, C. (2011) We thought trouble was coming, Nature Worldview, 476.7.
<http://www.nature.com/news/2011/110803/full/476007a.html>
- P51. Williams P. and C. Funk (2011) A westward extension of the warm pool leads to a westward extension of the Walker circulation, drying eastern Africa, Climate Dynamics, V37.11-12, p. 2417-2435. <http://www.springerlink.com/content/u0352236x6n868n2/fulltext.pdf>
- P52. Harrison L., J. Michaelsen, C. Funk, G. Husak (2011) Effects of temperature changes on maize production in Mozambique, Climate Research, V46: 211-222, doi: 10.3354/cr0097946.211-222.
http://www.int-res.com/articles/cr_oa/c046p211.pdf
- P53. Knapp, K.R. , S. Ansari, C., L. Bain , M. A. Bourassa , M. J. Dickinson , C. Funk , C. N. Helms , C. C. Hennon, C. Holmes , G. J. Huffman , J. P. Kossin, H-Tien Lee , A. Loew, G. Magnusdottir (2011) Globally gridded satellite (GriSat) observations for climate studies, Bulletin of the American Meteorological Society (2011) V92.7: 893-907.
<http://journals.ametsoc.org/doi/pdf/10.1175/2011BAMS3039.1>
- P54. Galu, G., J. Kere, C. Funk, and G. Husak (2011) Case study on understanding food security trends and development of decision-support tools and their impact on a vulnerable livelihood in East Africa. Global Assessment Report on Disaster Risk Reduction 2011, United Nations, International Strategy for Disaster Risk Reduction, Geneva, Switzerland.
http://www.preventionweb.net/english/hyogo/gar/2011/en/bgdocs/Galu_Kere_Funk_&_Husak_2010.pdf
- P55. Husak, G. J., Michaelsen, J., Kyriakidis, P., Verdin, J. P., Funk, C. and Galu, G. (2011), The Forecast Interpretation Tool—a Monte Carlo technique for blending climatic distributions with probabilistic forecasts. International Journal of Climatology, 31: 461-467. doi: 10.1002/joc.2074
- P56. Harrison, L., Funk, C and Eilerts, G (2011) Using Observed Warming to Identify Hazards to Mozambique Maize Production, USGS Fact Sheet 2011-3011.
<http://pubs.usgs.gov/fs/2011/3110/pdf/fs2011-3110.pdf>
- P57. Marshall, M.T., Husak G.J., Michaelsen J. , Funk C., Pedreros D. & Adoum A. (2011) Testing a high-resolution satellite interpretation technique for crop area monitoring in developing countries, International Journal of Remote Sensing, DOI:10.1080/01431161.2010.532168
<http://dx.doi.org/10.1080/01431161.2010.532168>

- P58. Williams AP, Funk C, Michaelsen J, Rauscher SA, Robertson I, Wils THG, Koprowski M, Eshetu Z, Loader NJ (2011) Recent summer precipitation trends in the Greater Horn of Africa and the emerging role of Indian Ocean sea surface temperature, *Climate Dynamics*, <http://www.springerlink.com/content/d3h8738018410q74/fulltext.pdf>
- 2012 -----
- P59. Jankowska, MM; D. Lopez-Carr; C. Funk; GJ Husak; ZA Chafe (2012) Climate Change and Human Health: Spatial Modeling of Water Availability, Malnutrition, and Livelihoods in Mali, Africa, *J. of Applied Geography*, 33 (2012) 4-15. <http://dx.doi.org/10.1016/j.apgeog.2011.08.009>
- P60. Marshall, M, C. Funk, J. Michaelsen (2012) Examining Evapotranspiration Trends in Africa, *Climatic Dynamics*, <http://www.springerlink.com/content/6txt083362502744/fulltext.pdf>
- P61. Marshall, M, C. Funk, J. Michaelsen (2012) Agricultural Drought Monitoring in Kenya Using Evapotranspiration Derived from Remote Sensing and Reanalysis Data, in "Remote Sensing of Drought: Innovative Monitoring Approaches", edited by B. Wardlow, M. Anderson and J. Verdin.
- P62. Liebmann, B., Bladé I., Kiladis G. N. , Carvalho L. M. V., Senay, G., Allured D., Leroux S., Funk C (2011) African Precipitation Seasonality Based on Daily Satellite Data from 1996-2009, *J. of Climate*, *Journal of Climate* 25, no. 12 (2012): 4304-4322.
- P63. Funk C, J. Michaelsen and M. Marshall (2012) Mapping recent decadal climate variations in precipitation and temperature across Eastern Africa and the Sahel, Chapter 14 in "Remote Sensing of Drought: Innovative Monitoring Approaches", edited by B. Wardlow, M. Anderson and J. Verdin, Taylor and Francis, 25 pages.
- P64. Funk, C., Rowland, J., Eilerts, G., Kebebe, E., Biru, N., White, L., and Galu, G., 2012, A Climate Trend Analysis of Ethiopia, U.S. Geological Survey Fact Sheet 2012–3053, 6 p. http://pubs.usgs.gov/fs/2012/3053/FS12-3053_ethiopia.pdf
- P65. Funk, C., Rowland, J., Eilerts, G. and White, L., 2012, A Climate Trend Analysis of Uganda, U.S. Geological Survey Fact Sheet 2012–3062, 4 p. http://pubs.usgs.gov/fs/2012/3062/FS12-3052_uganda.pdf
- P66. Thorpe, Andrew K., Dar A. Roberts, Philip E. Dennison, Eliza S. Bradley, and Christopher C. Funk. (2012) Point source emissions mapping using the Airborne Visible/Infrared Imaging Spectrometer (AVIRIS). In *SPIE Defense, Security, and Sensing*, pp. 839013-839013. International Society for Optics and Photonics.
- P67. Funk, C., Rowland, J., Eilerts, G., Adoum, A. and White, L., 2012, A Climate Trend Analysis of Chad, U.S. Geological Survey Fact Sheet 2012–3070, 4 p. http://pubs.usgs.gov/fs/2012/3070/FS12-3070_chad.pdf
- P68. Funk, C., Rowland, J., Eilerts, G., Adoum, A. and White, L., 2012, A Climate Trend Analysis of Niger, U.S. Geological Survey Fact Sheet 2012–3080, 4 p. http://pubs.usgs.gov/fs/2012/3080/FS12-3080_niger.pdf
- P69. Funk, C., Rowland, J., Eilerts, G., Adoum, A. and White, L., 2012, A Climate Trend Analysis of Burkina Faso, U.S. Geological Survey Fact Sheet 2012–3084, 4 p. http://pubs.usgs.gov/fs/2012/3084/FS12-3084_burkina_faso.pdf
- P70. Funk, C., (2012) Exceptional warming in the western Pacific-Indian Ocean Warm Pool has contributed to more frequent droughts in Eastern Africa, *Bull. Amer. Met. Society*, v7(93) p. 1049-1051. <http://dx.doi.org/10.1175/BAMS-D-12-00021.1>
- P71. Grace, K., Davenport, F., Funk, C.C., and Lerner, A.M., 2012, Child malnutrition and climate in Sub-Saharan Africa—an analysis of recent trends in Kenya: *Applied Geography*, v. 35, no. 1-2, p. 405-413. (Also available online at <http://dx.doi.org/10.1016/j.apgeog.2012.06.017>.)
- P72. Funk, C., Rowland, J., Eilerts, G., Adoum, A. and White, L., 2012, A Climate Trend Analysis of Mali, U.S. Geological Survey Fact Sheet 2012–3105, 4 p. http://pubs.usgs.gov/fs/2012/3105/FS12-3105_mali.pdf

- P73. Funk, C., Rowland, J., Adoum, A., Eilerts, G., Verdin, J. and White, L., 2012, A Climate Trend Analysis of Senegal, U.S. Geological Survey Fact Sheet 2012–3123, 4 p.
<http://pubs.usgs.gov/fs/2012/3123/FS12-3123.pdf>
- 2013 -----
- P74. Jury M. R. and C. Funk (2013) Climate change over Ethiopia: regional signals and drivers, *International Journal of Climatology*, v. 33. no. 8, p. 1924-1935.
<http://onlinelibrary.wiley.com/doi/10.1002/joc.3560/pdf> .
- P75. Funk, C., Mahiny A. S., Husak, G., Eilerts, G., Verdin, J. and Rowland, J. (2013) Blending local scale information for developing agricultural resilience in Ethiopia, in “Vulnerability of Food Resources to Climate”, editors Dev Niyogi and Roger Pielke, Elsevier Press. <http://www.sciencedirect.com/science/article/pii/B9780123847034002343>
- P76. Thorpe, Andrew K., Dar A. Roberts, Eliza S. Bradley, Christopher C. Funk, Philip E. Dennison, and Ira Leifer. (2013) High resolution mapping of methane emissions from marine and terrestrial sources using a Cluster-Tuned Matched Filter technique and imaging spectrometry. *Remote Sensing of Environment* 134: 305-318. (Also available online at <http://dx.doi.org/10.1016/j.rse.2013.03.018>.)
- P77. Husak, G.J., Funk, C.C., Michaelsen, J., Magadzire, T., and Goldsberry, K.P. (2013) Developing seasonal rainfall scenarios for food security early warning. *Theoretical and Applied Climatology*, v. 114, no. 1-2, p. 291-302. (Also available online at <http://dx.doi.org/10.1007/s00704-013-0838-8>.)
- P78. Lopez-Carr D., Pricope, N. G., Jankowska, M.M., Funk, C., Husak, G., and Michaelsen, J. (2013) Mapping population vulnerability and climate change in Africa, *International Seminar on Population Dynamics and the Human Dimensions of Climate Change* Canberra, Australia, 27-29 November 2012. Conference proceedings.
- P79. Hoell, A. and C. Funk (2013): The ENSO-related West Pacific Sea Surface Temperature Gradient, *Journal of Climate*. *J. Climate*, **26**, 9545–9562.
doi: <http://dx.doi.org/10.1175/JCLI-D-12-00344.1>
- P80. Funk C., G. Husak, J. Michaelsen, S. Shukla, A. Hoell, B. Lyon, M. P. Hoerling, B. Liebmann, T. Zhang, J. Verdin, G. Galu, G. Eilerts, and J. Rowland, 2013: Attribution of 2012 and 2003-12 rainfall deficits in eastern Kenya and southern Somalia [in "Explaining Extreme Events of 2012 from a Climate Perspective"]. *Bull. Amer. Meteor. Soc.*, 94, S45-S48.
<http://www.ametsoc.org/2012extremeeventsclimate.pdf>
- P81. Pricope, N. G., Husak, G., Lopez-Carr, D., Funk, C., & Michaelsen, J. (2013). The climate-population nexus in the East African Horn: Emerging degradation trends in rangeland and pastoral livelihood zones. *Global Environmental Change*, 23(6), 1525-1541.
<http://www.sciencedirect.com/science/article/pii/S0959378013001738>
- P82. Hoell A. and C. Funk (2013) Indo-Pacific Sea Surface Temperature Influences on Failed Consecutive Rainy Seasons over Eastern Africa, *Climate Dynamics*, DOI: 10.1007/s00382-013-1991-6. p1-16.
- P83. Dennison, P.E., Thorpe, A.K., Pardyjak, E.R., Roberts, D.A., Qi, Y., Green, R.O., Bradley, E.S., and Funk, C.C. (2013) High spatial resolution mapping of elevated atmospheric carbon dioxide using airborne imaging spectroscopy—radiative transfer modeling and power plant plume detection. *Remote Sensing of Environment*, v. 139, p. 116-129. (Also available online at <http://dx.doi.org/10.1016/j.rse.2013.08.001>.)
- P84. Hoell, A., Funk, C., & Barlow, M. (2013). The regional forcing of Northern hemisphere drought during recent warm tropical west Pacific Ocean La Niña events. *Climate Dynamics*, 1-23.
- 2014 -----
- P85. López-Carr, D., Pricope, N. G., Aukema, J. E., Jankowska, M. M., Funk, C., Husak, G., & Michaelsen, J. (2014). A spatial analysis of population dynamics and climate change in Africa: potential vulnerability hot spots emerge where precipitation declines and demographic pressures coincide. *Population and Environment*, 35(3), 323-339.

- P86. Yatheendradas, S., Narapusetty, B., Peters-Lidard, C., Funk, C.C., and Verdin, J.P. (2014), Comment on 'Shang S. 2012. Calculating actual crop evapotranspiration under soil water stress conditions with appropriate numerical methods and time step. *Hydrological Processes* 26: 3338-3343. DOI: 10.1002/hyp.8405': (Also available online at <http://dx.doi.org/10.1002/hyp.10138>.)
- P87. Hoell, A., Barlow, M., Wheeler, M. C., & Funk, C. (2014). Disruptions of El Niño–Southern Oscillation Teleconnections by the Madden–Julian Oscillation. *Geophysical Research Letters*, 41(3), 998-1004.
- P88. Hoell, A., Funk, C., & Barlow, M. (2014). La Niña diversity and Northwest Indian Ocean Rim teleconnections. *Climate Dynamics*, 1-18.
- P89. Funk, C., Peterson P., Landsfeld M., Pedreros D., Verdin J., Rowland, J., Romero B., Husak, G., Michaelsen, J., Verdin A. (2014) A Quasi-global Precipitation Time Series for Drought Monitoring. USGS Data Series 832. <http://pubs.usgs.gov/ds/832/pdf/ds832.pdf>
- P90. Liebmann, B., Hoerling M., Funk C., Dole, R. M., Allured A., Pegion, P., Blade I., Eischeid, J.K, (2014) Understanding Eastern Africa Rainfall Variability and Change, *Journal of Climate*.
- P91. Jayanthi, H., Husak, G.J., Funk, C.C., Magadzire, T., Adoum, A., and Verdin, J.P. (2014). A probabilistic approach to assess agricultural drought risk to maize in Southern Africa and millet in Western Sahel using satellite estimated rainfall. *International Journal of Disaster Risk Reduction*, p. 490-502. (Also available online at <http://dx.doi.org/10.1016/j.ijdr.2014.04.002>.)
- P92. Funk C., Hoell, A., and Daithi Stone (2014) Examining the contribution of the observed global warming trend to the California droughts of 2012/13 and 2013/14. *Bull. Of the Am. Met. Society*. 95, no. 9.
- P93. Funk, C., Hoell, A., Shukla, S., Bladé, I., Liebmann, B., Roberts, J. B., and Husak, G. (2014). Predicting East African spring droughts using Pacific and Indian Ocean sea surface temperature indices. *Hydrology and Earth System Sciences Discussions*, 11(3), 3111-3136.
- P94. Shukla, S., McNally, A., Husak, G., & Funk, C. (2014). A seasonal agricultural drought forecast system for food-insecure regions of East Africa. *Hydrology and Earth System Sciences Discussions*, 11(3), 3049-3081.
- P95. McNally A., Husak G. J., Brown M., Carrol M., Funk C., Michaelsen J., Verdin J. P., Peters-Lidard, Calculating crop water requirement satisfaction in the Africa Sahel with remotely sensed rainfall and soil moisture. *J. of Hydrometeorology*. In Press.
- P96. Shukla S., Funk C. and Hoell A. (2014) Using constructed analogs to improve the skill of March-April-May precipitation forecasts in equatorial East Africa , *Env. Res. Letters, Environmental Research Letters* 9.9 (2014): 094009.
- P97. Hoell, A., Funk, C., Husak, G., Magadzire, T., Zinke, J. (2014) El Niño - Southern Oscillation Diversity and Southern Africa Teleconnections During Austral Summer, *Climate Dynamics*, DOI 10.1007/s00382-014-2414-z.
- P98. Funk C. ; A. Salmanmahiny; G. Husak (2014) Large Scale Environmental Assessment and Degradation Management: The Case of Food Insecurity in Ethiopia, 2.2, 147-166, http://ijerr.gau.ac.ir/pdf_2212_b98ba0df19d338d85ee683b62ab3a521.html

2015 -----

- P99. Hoell, A., Funk, C., & Barlow, M. (2015). The Forcing of Southwestern Asia Teleconnections by Low-Frequency Sea Surface Temperature Variability during Boreal Winter. *Journal of Climate*, 28(4), 1511-1526.
- P100. Funk, C., Hoell A., Husak G., Shukla S. and Michaelsen J. (2015) The East African monsoon system: seasonal climatologies and recent variations. Chapter for “The Monsoons and Climate Change”, Leila M. V. Carvalho and Charles Jones (Eds.) In Press.

- P101. Hoell A., Funk, C., and Shukla S. (2015) Recent and possible future variations in the North American Monsoon. Chapter for "The Monsoons and Climate Change", Leila M. V. Carvalho and Charles Jones (Eds.) In Press
- P102. Funk, C. and Hoell A. (2015) The leading mode of observed and CMIP5 ENSO-residual sea surface temperatures and associated changes in Indo-Pacific climate, *J. Climate*, 28, 4309-4329, <http://journals.ametsoc.org/doi/abs/10.1175/JCLI-D-14-00334.1>
- P103. Verdin, A., Rajagopalan, B. Kleiber, W. and Funk C (2015) A Bayesian Hierarchical Kriging Approach for Blending Satellite and Ground Precipitation Observations. *Water Resources Research*. In Press.
- P104. Toté, C., Patricio D., Boogaard H., van der Wijngaart R., Tarnavsky E. and Funk C., "Evaluation of Satellite Rainfall Estimates for Drought and Flood Monitoring in Mozambique." *Remote Sensing* 7, no. 2 (2015): 1758-1776.
- P105. Shukla S., Safeeq M., Aghakouchak A., Guan K. and Funk C. (2015) Role of Temperature in the Water Year 2014 Drought in California, *Geophysical Research Letters*, 42(11), 4384-4393.
- P106. Funk C., Nicholson S. E., Landsfeld M., Klotter D., Peterson P. and Harrison L. (2015) The Centennial Trends Greater Horn of Africa Precipitation Dataset, *Scientific Data*, 2, 150050. DOI: 10.1038/sdata.2015.50.
- P107. Funk, C., Shukla S., Hoell A. and Livneh B. (2015) Assessing the contributions of East African and west Pacific warming to the 2014 boreal spring East African drought, *BAMS Climate Attribution Issue*. 96.12 (2015): S77-S82.
- P108. Verdin, A., Funk, C., Rajagopalan, B and Kleiber W. (2015) Kriging and Local Polynomial Methods for Blending Satellite-Derived and Gauge Precipitation Estimates, *Trans. on Geosci. and Rem. Sens.*, In Press.
- P109. Brown M.E., Antle J.M., Backlund P., Carr E.G., Easterling W.E., Walsh M.K., Ammann C., Attavanich W., Barrett C. B., Bellemare M.F., Dancheck V., **Funk C.**, Grace K., Ingram J.S.I., Jiang H., Maletta H., Mata T., Murray A., Ngugi M., Ojima D., O'Neill B., and Tebaldi C. (2015) *Climate Change, Global Food Security, and the U.S. Food System*. USDA Technical Document. Washington, D.C. In Press.
- P110. Hoell A., Shukla S., Barlow M., Cannon F., Funk, C., Kelley C. (2015) The Forcing of Monthly Precipitation Variability over Southwest Asia During the Boreal Cold Season, *J. Climate*, In Press. doi: <http://dx.doi.org/10.1175/JCLI-D-14-00757.1>
- P111. Grace K., Davenport F., Hanson H., Funk C. and Shukla S. (2015) Linking climate change and health outcomes: Examining the relationship between temperature, rainfall and low birth weight in Africa, *Global Environmental Change*, 35, 125-137 (2015).
- P112. Davenport F. and Funk C. (2015) Evaluating price dissimilarities using time series structural characteristics: an application to Kenyan maize markets. *Food Security*. In Press.
- P113. Funk C., Verdin A., Michaelsen J., Peterson P., Pedreros D., Husak G. (2015) A Global Satellite Assisted Precipitation Climatology, *Earth System Science Data*, *Earth Syst. Sci. Data Discuss.* 7, 1-13, doi:10.5194/essdd-7-1-2015.
- P114. Funk C., Peterson P., Landsfeld M., Pedreros D., Verdin J., Shukla S., Husak G., Rowland J., Hoell A. and Michaelsen J. (2015) The climate hazards group infrared precipitation with stations - a new environmental record for monitoring extremes, *Scientific Data*, 22, 150066. <http://www.nature.com/articles/sdata201566>
- P115. Funk, C and Hoell A. (2015) Recent Climate Extremes Associated with the West Pacific Warming Mode, *AGU Monograph-Climate Extremes: Patterns and Mechanisms*. Ed. by Simon Wang, Jin-Ho Yoon, Chris Funk and Robert Gillies, published by Wiley Press. In Press.
- P116. Mahowald N., Lo F., Zheng Y., Harrion L., Funk C., Lombardozzi D. (2106) Leaf Area Index in Earth System Models: evaluation and projections, *Earth Systems Science Discussions*, In Press.
- P117. Hoell, A., Funk C., Harrison L., Zinke J (2016) The Modulation of the Southern Africa Precipitation Response to the El Niño Southern Oscillation by the Subtropical Indian Ocean Dipole, *J. Climate*, In Review.

- P118. Dinku, T., Funk, C., Peterson, P., Tadesse, T., and Ceccato, P. (2015) Evaluation of the CHIRPS Satellite-based Rainfall Products over Eastern of Africa, *J. of Hydrometeorology*, In Review
- P119. Shukla S., Roberts, J., Hoell A., Funk C., Robertson F. and Kirtmann, B. (2015) Assessing North American Multimodel Ensemble (NMME) Seasonal Forecast, *J. Climate*. In Review.
- P120. López-Carr, D., Mwenda, K.M., Pricope, N.G., Kyriakidis, P.C., Jankowska, M. M., Weeks, J., Funk, C., Husak, G and Michaelsen J. (2015) A spatial analysis of climate-related child malnutrition in the Lake Victoria Basin, *J. of Selected Topics in Applied Earth Observations and Remote Sensing*, In Review.
- P121. Kelley, C., Funk, C., McNally, A., Shukla, S. (2015) Hydrologic insecurity and climate change in western Yemen, *ERL*, In Review.

TECHNICAL PRESENTATIONS

- Funk, C.**, and Willmott, C. W., 1997: A comparison of precipitation interpolation methods. Association of American Geographers Annual Meeting, Fort Worth, Texas.
- 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.
- Funk, C.**, 2001: EPA Science to Achieve Results Workshop. Mechanisms of Interannual Variability in African Rainfall and Vegetation, Silver Springs, Maryland. July 2001.
- Funk, C.**, Michaelsen J., and Verdin, J., 2001: The Collaborative Historical African Rainfall Model: Synopsis and Applications; Vulnerability Assessment and Mapping Workshop for Southern Africa, EROS Data Center, Sioux Falls, South Dakota. November 11th, 2001.
- Funk, C.**; Michaelsen, J.; Verdin, J.; Husak, G.; Magadzire, T., 2002: Maps of the Future: Precipitation Forecasts and the Famine Early Warning System. Utah Geography Department, Feb 17th 2002. **Invited** Seminar.
- Funk, C.**, Husak, G., Verdin, J., Michaelsen, J., 2002: The FEWS-NET Agroclimatology Toolkit; Ninth Greater Horn of Africa Climate Outlook Forum, Eldoret, Kenya. April 10th, 2002.
- Verdin, J., **Funk, C.**, Senay, G., C., Michaelsen, J., 2002: Agrometeorological Drought Scenarios for the Limpopo Basin of Mozambique, Mozambique Drought Atlas Workshop, Maputo, Mozambique, June 19th, 2002.
- Husak, G., **Funk C.**, Michaelsen, J., Verdin, J., 2002: The Forecast Interpretation Tool; The USGS FEWS NET Agroclimatology Training Workshop, Harare, Zimbabwe, September 9th-10th, 2002.
- Husak, G., **Funk C.**, Michaelsen, J., Verdin, J., 2002: Role of the GIS in Forecasting; The Southern African Climate Outlook Forum, Harare, Zimbabwe, September 4th-6th, 2002.
- Funk, C.**, Michaelsen, J., Verdin, J., Rowland, J., Husak, G., Magadzire, T., 2003: What does FEWS NET need from the El Niño Forecast Community? All FEWS NET meeting; Washington D.C. January 16th, 2003.
- Funk, C.**, Michaelsen, J., Verdin, J., Rowland, J., Husak, G., Magadzire, T., Senay, G., Artan, J., 2003: Climatology and Rainfall Estimation to Support Food Security, International Research Institute for Climate Prediction; Lamont Doherty Earth Observatory, Palisades, NY. January 14th, 2003. **Invited Talk.**
- 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, M.E., **Funk, C.C.**, 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
- Pedreiros, 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., Cappelare, 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**.

RENDERING SCIENTIFIC JUDGMENT

Recent Review Activities:

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:

Lead scientist – USGS FEWS NET Climate Adaption Science Team

Lead and coordinate USGS climate adaptation, monitoring, and forecasting activities with partners at UCSB, NOAA ESRL, DOE and USGS.

Lead Government Reviewer – IPCC WGII Chapters on Africa and Latin America

Coordinate review panels for each chapter, synthesize results.

Advisory Board Member – IMAAFS

Work with European and African partners to design and promote workshops and training to provide *Information for Meeting Africa's Agricultural Transformation and Food Security Goals* (IMAAFS).

Lead scientist – USGS PREPARED project

Design and coordinate science activities for the \$2.5 USGS PREPARED activity, which is part of a \$40 million dollar USAID climate adaption program for the East African Community.

Boardmember – UNEP ClimWarn Project

2012-present

Advise United Nations on science and strategies to improve disaster early warning systems

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

2009 to present

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.

Expert Advisor: USAID Mission Nairobi, consultant on climate change adaptation 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

**Expert Advisory Board: EU Research call on drought vulnerability and
warning 2009-present**

Guide research activities of a very large multi-institutional (19 partners) EU-funded effort to reduce drought vulnerability in Africa

**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-climatic
Monitoring 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 2006**

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 2010**

Together with NOAA partners, supported Caribbean scientists in setting up a regular climate outlook forum procedure and process.

**Expert Consultant: NAS Workshop on US Priorities for the Climate Change
Science 2007**

Represented international food security and climate change science and concerns at the NAS CCSP meeting and breakout groups.

LECTURESHIPS AND OTHER ACADEMIC SERVICE

Courses Taught

- 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:

Post-Doctoral Advisor, Colin Kelley, UCSB

Geography 2014-present

- UCAR PACE Fellow
- Climate change and predictability in Yemen and the Middle East

Post-Doctoral Advisor, Frank Davenport, UCSB

Geography 2014-present

- Spatial econometrics and adaptation

Post-Doctoral advisor: Laura Harrison, UCSB

Geography 2009-2014

- Global adaptation

Doctoral advisor: Andrew Verdin, Colorado

University 2011-present

- Spatial Analysis, hydrology and agro-climatology

Science Advisor: USGS EROS Field

Scientists 2003-present

- Tamuka Magadzire; Gabarone Botswana.
- Alkhalil Adoum, Niamey, Niger.
- Gideon Galu, Nairobi, Kenya.
- Mario Rodriguez, Guatemala City, Guatemala

Past Mentoring Activities

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

TECHNOLOGY AND INFORMATION TRANSFER AND DISSEMINATION

Information Dissemination

- 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=NCLIMA-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>

Technology Transfer

- 2014 -- Worked with Tamuka Magadzire to develop and deply GeoCLIM toolkit; a software package enabling African scientists to grid and analyze their own data.
- 2010 -- Initiated FEWS NET Climate Change Adaptation Series
A unique resource for development planning and decision making in Africa.
- 2010 -- Provided FEWS NET Trend Analysis database for eastern Africa and the Sahel
- 2009 -- Developed Early Warning Explorer, transferred to EROS
- 2008 – Provided EROS with gap-filled PAGER elevation data
- 2005 – Provided International Centre for Integrated Mountain Development (ICIMOD) with GeoFUSE rainfall modeling software
- 2004 – Provided EROS with Developed historic rainfall archives for Africa and Asia
- 2002-2006 Provided USAID with twelve USGS Famine Early Warning Special Reports