

## AMARTYA K. SAHA

Ecohydrologist and Instrumentation Specialist

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[https://www.researchgate.net/profile/Amartya\\_Saha?ev=hdr\\_xprf](https://www.researchgate.net/profile/Amartya_Saha?ev=hdr_xprf)

**Objectives:** applying ecohydrological principles towards water resources management and ecosystem conservation; designing environmental monitoring instrumentation systems and networks.

### Overall areas of interest

Ecohydrology; Integrated Water Resources Management (IWRM); Conservation of Riparian, Aquatic and Coastal Ecosystems; Environmental Monitoring Instrumentation solutions

28 years of international experience working with sustainable development NGOs, universities, government departments and the corporate financial sector as a scientist, technical expert, project manager and program coordinator.

### Education

March, 2009

**UNIVERSITY OF MIAMI**, Department of Biology, Coral Gables, Florida, USA

**Doctorate in Biology**

Areas of concentration: Ecohydrology, Plant Ecophysiology, Stable Isotopes, Ecological Modeling.

August, 1997

**INDIANA UNIVERSITY**, School of Public and Environmental Affairs, Bloomington, Indiana, USA **Master of Science, Environmental Science.**

Areas of concentration: Aquatic Ecology, Groundwater and Surface Water Hydrology, Soil Science, Hazardous Waste Management, Aquatic Chemistry and Water Quality

November, 1992

**INDIAN INSTITUTE OF TECHNOLOGY**, Bombay, India

**Bachelor of Technology**, Metallurgical Engineering, Materials Science and Computer Programming

### Work Experience

June 2016 - present

**Ecohydrologist and Instrumentation Specialist, Archbold Biological Station, Lake Placid, Florida, USA**

- Installation, maintenance and troubleshooting of environmental monitoring instrumentation (water level/flow, water quality, weather stations, eddy flux towers, phenocams, solar power systems, lake buoy and communication equipment), data QA/QC, analysis and reporting for the Northern Everglades Payment for Ecosystem Services Project (SFWMD), GLEON, Phenocam Network and NOAA.
- Trained generations of research assistants and interns in environmental monitoring instrumentation and basic electrical safety
- Water Quality - Nutrient Removal Project, evaluating irrigation of abandoned citrus groves using

Phosphorus-rich canal water to grow flood-tolerant grass as forage, thereby reduce P inputs into

Lake Okeechobee and Everglades National Park; nutrient budgets and associated chemical analysis. • Water balance analysis, water use efficiency and vulnerability of agro-ecosystems to climate change; representing Archbold/UF in hydrology, water quality, phenology groups in the USDA-

LTAR network

August 2012 – • Developed two kinds of low-cost lysimeters to estimate evapotranspiration across grassland and wetland vegetation ( Saha et al Ecohydrology 2022) August 2016

**Associate Scientist, Global Waters and Sustainability Program, Department of Earth and**

**Environment, Florida International University, Miami, USA and USAID**

- Technical lead for a critical zone process sediment fingerprinting study to ascertain sources of severe soil erosion in Nyabarongo catchment, Rwanda
  - Led environmental flows study and rapid ecohydrological assessments of the Wami and Ruvu River Estuaries, Tanzania (2013-2015)
  - Developing/implementing Community Water Monitoring Program in 8 villages of Mkindo River catchment, Wami River Basin, Tanzania
  - **Developed and deployed open source instrumentation for measuring water level and quality in Saadani National Park, Tanzania**
  - Developed a Digital Water Resources Atlas of the Wami and Ruvu river basins, Tanzania and Tru Nord basin, Haiti that allows the user to zoom in, combine layers to make thematic maps. Also an Atlas in book format.
    - Conducting Vulnerability Assessment of water resources to climate change for Wami and Ruvu river basins, Tanzania at basin, catchment and community scales.
    - **Introduced the low cost Hydrogen sulfide test for bacterial contamination of drinking water in Tanzania**
    - In charge of technical publications for all GLOWS projects (2005-2015) including adding Section 506 compliance for access to readers with visual disabilities.
    - **Capacity building of Tanzanian and Rwandan hydrologists in hydrology, stream ecosystem biomonitoring for water quality, database programming, data management and GIS.**
    - Professional Interaction with USAID personnel and various government ministries in East Africa, India and South America
- March 2009  
February 2013

**Research Associate and Monitoring Team Coordinator, Southeastern Environmental Research Center, Florida International University, Miami, FL, USA**

- Developed hydrological budget and nutrient residence times for Shark River Slough, Everglades National Park. Funded by the National Science Foundation and LTER network.
- Coordinated Ecological Monitoring Program in N.E. Shark Slough to observe effects of changes in water flow and nutrient delivery by Modified Water Delivery and CERP projects on water quality, soil nutrients, periphyton, vegetation and aquatic consumers. Funded by US Department of the Interior.
- **Led the construction of six large metal field enclosures and RFID antenna system design for an ongoing fish habitat/movement use with seasonal hydrology study at the LILA experimental wetland at the Loxahatchee Wildlife Refuge, Florida. Funded by South Florida Water Management District.**
- Facilitator and scientist in the Everglades National Park – Pantanal (Universidade do Mato Grosso) Wetland Ecosystem Research Initiative.

August 2004 – **Laboratory of Stable Isotopes in Tropical Ecosystems, Department of Biology, University of Miami, Coral Gables, FL**  
February 2009

- Research Assistant: fieldwork and laboratory analyses of stable isotopes, nutrients and plant ecophysiology in the Everglades and in Brazil. **Soil microbial respiration field study in the Colorado Rockies in partnership with the University of Boulder**

September 2003 to **Department of Organismic and Evolutionary Biology, Harvard University, Cambridge, MA**  
January 2004

- Program coordinator and webmaster for the interdisciplinary NSF-IGERT program in Biomechanics.
- Database programming for a land-use and watershed study in Valdivia, Chile.

October, 1997 to May, **Morningstar, Chicago, IL**  
2003

- Database programmer analyst: developed databases and programs to perform statistical and mathematical analysis on financial data (equities, bonds, variable annuities, ETFs) for clients in the financial and media industry.
- Project manager: managed programming and data delivery projects for clients.

May 1996 to **Department of Biology, Indiana University, Bloomington, IN**  
September, 1996

- Field Research technician in a study examining reproductive success of Neotropical Migrant Songbirds under different Forest Management Practices in Hoosier National Forest/Yellowood State Forest, Indiana.

- June, 1993 to July, 1995      **Academy of Development Science (ADS), PO Kashele, Karjat, Raigad, Maharashtra, India.**
- **Research fellow**, Integrated Watershed Restoration Program. Surveyed watershed for small dam siting, illustrated manual for identification of local rice varieties, agricultural entomology study, documentation of bamboo uses by Katkari tribal communities in the Western Ghats hills, India.

### Teaching Experience

- April-July 2015      **GLOWS, FIU:** Developed and taught Open Source QGIS and Atlas software to the Ministry of Water, Morogoro and Dar es Salaam, Tanzania.
- July 2014      Developed and taught “Capacity building in freshwater ecosystem conservation for Northeastern India”, **Shillong College, India**  
<https://sites.google.com/site/tropicalecohydrology/home>
- Jan – May 2013      **Associate Instructor, Florida International University**  
Co-teaching EVR 5332, a graduate-level course on Water, Environment and Development.
- Jan-Feb 2013      **GLOWS, FIU.** Held workshop on Community Water Resource Monitoring, teaching hydrology concepts, construction of rain gages and staff gages, collection and analysis of hydrological data, biomonitoring to village communities, primary schools in Mkindo catchment, Tanzania
- June 2012      **GLOWS, FIU.** Developed and taught course on hydrological data management and analysis to Ministry of Water employees from all 9 river basins of Tanzania at Usa River, Arusha, Tanzania.
- 2012-2013      **Touro College South, Miami Beach.** Developing/teaching Organic Chemistry undergraduate course.
- Summer 2006      **University of Miami/Universidade do Brasilia.** Ecohydrology field/lab course in Everglades/Cerrado, Brazil.
- Spring (2000 - 2002)      **Lake Forest College, Lake Forest, Illinois, USA.** Guest Lecturer - undergraduate class (Environmental Worldviews – Dr Lynn Westley)
- January, 1997 to May, 1997      **School of Public and Environmental Affairs, Indiana University, Bloomington, Indiana, USA.**  
**Associate Instructor** – taught laboratory section for a graduate level course (Applied Mathematics in Environmental Science) that used calculus for modeling ecological systems and environmental processes.

Course modules that I have developed for ecohydrology are available for [download](#) via ResearchGate and/or at and are being used by teachers in several countries.

### Service

- February 2004 – July 2004      **Parque Nacional de las Cataratas, Puerto Iguazu, Misiones, Argentina**  
Assisting in study of effect of nutrient additions on plant species growth and composition in the subtropical Atlantic forest led by Dr Guillermo Goldstein. Laboratorio de Ecologia Funcional, Universidad de Buenos Aires
- August 2003 to January 2004      **New England Aquarium, Boston, Massachusetts, USA**  
Assistant aquarist, Cold Marine gallery, maintenance of filters and circulation systems, feeding duties.
- June 2003 to July 2003      **Fairchild Tropical Garden, Coral Gables, Florida, USA**  
Creating data entry screens for entering plant species collection data into herbarium databases
- April 1998 to November 2000      **Morton Arboretum, Lisle, Illinois and the University of Illinois, Chicago, USA**  
Assisted with ecological study on roles of fire and nutrients in prairie plant species composition.

### Scientific Publications

**Saha, AK,** LSL Sternberg, F Miralles-Wilhelm (2009). Linking water sources with foliar nutrient status in upland plant communities in the Everglades National Park, USA. *Ecohydrology*, 2: 42-54.

**Saha, AK,** LSL Sternberg, MS Ross, F Miralles-Wilhelm (2010). Water source utilization and foliar nutrient status differs between upland and flooded plant communities in wetland tree islands. *Wetlands Ecology and Management* 18(3): 343-355

**Saha, AK**, Saha S, Sadle J, Jiang J, Ross MS, Price RM, Sternberg LS, Wendelberger KS. (2011) Sea Level Rise and South Florida's coastal forests. *Journal of Climatic Change*. DOI 10.1007/s10584-011-0082-0

**Saha, AK**, Moses C, Price R, Engel V, Smith TJ, Anderson, G. (2012) A hydrological budget (2002-2008) for a large subtropical wetland indicates seawater intrusion accompanies diminished freshwater flow. *Journal of Estuaries & Coasts* 35(2): 459. DOI 10.1007/s12237-011-9454-y.

**Saha, AK**, Carvalho, KS, Moutinho, P and Sternberg, LSL (2012). Effect of leaf-cutting ant nests on plant growth in an oligotrophic Amazon rainforest. *Journal of Tropical Ecology* 28:263-270. doi:10.1017/S0266467412000107

Sullivan P, Price R, Schedlbauer J, **Saha A** and Gaiser E. (2013). The influence of hydrologic restoration on groundwater-surface water interactions in a karst wetland, the Everglades. *Wetlands* DOI 10.1007/s13157-013-0451-8

J S Rehage, R E Boucek, E A Cline, M I Cook, R M Kobza, **A K Saha**.(2013). Turning passive detection systems into field experiments: an application using wetland fishes and enclosures to track fine-scale movement and habitat choice. *Acta Ethologica* 06/2013; DOI:10.1007/s10211-013-0154-4

I.F. Creed I, A.T. Spargo, J. Jones, J. Buttle., M. Adams, F. Beall, E. Booth, J. Campbell, D. Clow, A. Covich, K. Elder, C. Ford, N. Grimm, T. Harms, R. Pike, P. Ramlal, **A. Saha**, S. Sebestyen, S. Sterling, M. Williams, R. Winkler, H. Yao. (2014). Changing forest water yields in response to climate warming: results from long-term experimental watershed sites across North America. *Global Change Biology* DOI: 10.1111/gcb.12615

Saha, S., L.M. Jyrwa, M.B. Lynser, D. Kharchandi, B. Dohling, S. Khongwir, B. Massar, **A. Saha**, P. Rynjah, B. Kharbyngar, B. Kharjana, J. Kharbuddon, I. Pariong, S. Syngkli, R. Shabong, and A. Kharkongor. (2016). Filling in the gaps for aquatic ecosystem conservation - Biomonitoring for baseline information and capacity building in Meghalaya, India. *Journal of Ecological Society* 29:9-26.

Carvalho K, Carneiro M, Nascimento I, **Saha A** and Bruna E. (2017). Lower Ant Diversity in earth mounds in a semi-arid ecosystem: natural variation or sign of degradation? *Sociobiology* 63:1022-1030.

**Saha, A.**, and M.C. Donoso. (2017). Digital atlas - an open access solution to spatial information analysis for water resources management in Haiti. *Journal of the International Hydrological Programme for Latin America and Caribbean (Aqua-LAC)* 9:15-24.

Baffaut C, Baker J, Joel A, Biederman, David D, Bosch, Erin S, Brooks, Anthony R, Buda, Eleonora M, Demaria, Emile H, Elias, Gerald N, Flerchinger, David C, Goodrich, Stephen K, Hamilton, Stuart P, Hardegree, R, Daren Harmel, David L, Hoover, Kevin W, King, Peter J, Kleinman, Mark A, Liebig, Gregory W, McCarty, Glenn E, Moglen, Thomas B, Moorman, Fred B, Pierson, Eric S, Russell, Nicanor Z, Saliendra, **Amartya K. Saha**, Douglas R, Smith, Lindsey M, W, Yasarer. (2020) Comparative analysis of water budgets across the U.S. long-term agroecosystem research network. *Journal of Hydrology*. Volume 588, September 2020, 125021.

Bouchard, E., Sonnier, G., Pierre, S., **Saha, A.**, Sclater, V., & Boughton, E. (2020). Landscape factors driving the spread of the invasive grass, *Hymenachne amplexicaulis*, among wetlands in a Florida subtropical grazing land. *Invasive Plant Science and Management*, 13(3), 155-162. doi:10.1017/inp.2020.16

Batista, T., Nascimento C, Carneiro, M, Bernardo S, **Saha A**, Carvalho K. (2021). Association of giant ant *Dinoponera quadriceps* nests with termite mounds and landscape variables in a Caatinga dry forest, Brazil. *Insectes Sociaux*. <https://doi.org/10.1007/s00040-020-00806-0>. January 6, 2021 published online.

Kohmann, M. M., **Saha, A.**, Silveira, M. L., Boughton, E. H., Swain, H., & Brandani, C. B. (2021). Farm-scale phosphorus budgets of beef cow-calf operations. *Nutrient Cycling in Agroecosystems*, 119(3), 389-403.

Jacot, J., Kiniry, J.R., Williams, A.S., Coronel, A., Su, J., Miller, G.R., Mohanty, B., **Saha, A.**, Gomez-Casanovas, N., Johnson, J.M. and Browning, D.M., (2021). Use of PhenoCam Measurements and Image Analysis to Inform the ALMANAC Process-based Simulation Model. *Journal of Experimental Agriculture International*, 43(4), pp.120-144.

Browning, D. M., Russell, E. S., Ponce-Campos, G. E., Kaplan, N., Richardson, A. D., Seyednasrollah, B., ... **Saha A.**, & Taylor, S. D. (2021). Monitoring agroecosystem productivity and phenology at a national scale: A metric assessment framework. *Ecological Indicators*, 131, 108147.

Williams, M. R., Welikhe, P., Bos, J., King, K., Akland, M., Augustine, D., **Saha, A** ... & Yasarer, L. (2022). P-FLUX: A phosphorus budget dataset spanning diverse agricultural production systems in the United States and Canada. *Journal of Environmental Quality*, 51(3), 451-461.

**Saha, A.**, Boughton, E. H., Li, H., Sonniér, G., Gomez-Casanovas, N., McMillan, N., & Zhang, X. (2022). Evapotranspiration in a Subtropical wetland savanna using low-cost Lysimeter, Eddy Covariance and Modeling approaches. *Ecohydrology*, e2475.

Hoover, D. L., Abendroth, L. J., Browning, D. M., **Saha, A.**, Snyder, K., Wagle, P., ... & Scott, R. L. (2022). Indicators of water use efficiency across diverse agroecosystems and spatiotemporal scales. *Science of The Total Environment*, 160992.

**Saha, A. K.**, Kashaigili, J., Mashingia, F., Kiwango, H., Mohamed, M. A., Kimaro, M., ... & Donoso, M. C. (2023). Determination of Environmental Flows in Data-Poor Estuaries—Wami River Estuary in Saadani National Park, Tanzania. *Hydrology*, 10(2), 33.

### **Recent Reports, Books, Book Chapters and Software Applications**

GLOWS-FIU 2015 A rapid ecohydrological assessment of the Wami River Estuary, Tanzania. 110 p. Report for USAID and the Ministry of Water, Tanzania. In prep

**Saha, A** and Setegn, S. 2015. Ecohydrology for Sustainability of IWRM: A Tropical/Subtropical Perspective. Book Chapter in Sustainability of Integrated Water Resources Management: Water Governance, Climate and Ecohydrology, Edited by Shimelis Gebriye Setegn, Maria Concepcion Donoso, 09/2015: chapter 10: pages pp 163-178; Springer International Publishing., ISBN: 978-3-319-12194-9

**Saha, A** and Setegn, S. 2015. Ecohydrology: Understanding and Maintaining Ecosystem Services for IRWM. Book Chapter in Sustainability of Integrated Water Resources Management: Water Governance, Climate and Ecohydrology, Edited by Shimelis Gebriye Setegn, Maria Concepcion Donoso, 09/2015: chapter 8: pages pp 121-145; Springer International Publishing., ISBN: 9783-319-12194-9

GLOWS-FIU 2014. Vulnerability of water resources to climate change and forest loss in Wami/Ruvu Basin, Tanzania. 110 p. Report for USAID and the Ministry of Water, Tanzania.

GLOWS-FIU 2014. Vulnerability of water resources to climate change and forest loss at catchment and community levels: Mkindo catchment, Wami/Ruvu Basin, Tanzania. 56 p. Report for USAID and the Ministry of Water, Tanzania.

GLOWS-FIU 2014. Community Water Monitoring Program in the Mkindo catchment, Wami/Ruvu Basin, Tanzania. 66 p. Report for USAID and the Ministry of Water, Tanzania.

GLOWS-FIU 2014. A rapid ecohydrological assessment of the Ruvu River Estuary, Tanzania. 110 p. Report for USAID and the Ministry of Water, Tanzania.

GLOWS-FIU 2014. Water Atlas of the Wami/Ruvu Basin, Tanzania. 117 p. ISBN [978-1-941993-01-9](#)

GLOWS-FIU. 2014. A Digital Atlas of Water Resources for the Wami/Ruvu Basin, Tanzania. Report for USAID and the Ministry of Water, Tanzania.

GLOWS-FIU 2016. Freshwater inflows for the Wami River Estuary, Tanzania. 108p. Report for USAID and the Ministry of Water, Tanzania.

GLOWS-FIU. 2017. Sediment Fingerprinting in the Nile Nyabarongo Upper Catchment, Rwanda. Report for USAID and the Ministry of Natural Resources, Rwanda.

Price R, Schwartz K, Anderson B, **Saha A** et al. Chapter 3: Water, Sustainability, and Survival, in Childers, D.L., E.E. Gaiser and L.A. Ogden (eds.) The Coastal Everglades: The Dynamics of Social-Ecological Transformation in the South Florida Landscape. Oxford University Press : New York, New York. March 2020.

Troxler, T., G. Starr, J.N. Boyer, J.D. Fuentes, R. Jaffe, S.L. Malone, J.G. Barr, S.E. Davis, L. Collado-Vides, J.L. Breithaupt, **A.K. Saha**, R.M. Chambers, C.J. Madden, J.M. Smoak, J.W. Fourqurean, G. Koch, J. Kominoski, L.J. Scinto, S. Oberbauer, V.H. RiveraMonroy, E. Castañeda-Moya, N.O. Schulte, S.P. Charles, J.H. Richards, D.T. Rudnick, and K.R.T. Whelan. (2019). Chapter 6: Carbon Cycles in the Florida Coastal Everglades Social-Ecological System across Scales, in Childers, D.L., E.E. Gaiser and L.A. Ogden (eds.) The Coastal Everglades: The Dynamics of Social-Ecological Transformation in the South Florida Landscape. Oxford University Press : New York, New York.

### **Presentations** (*Ecological Research, Management and Conservation*)

Oral and poster presentations at **Interagency Conference on Research in Watersheds** (ICRW 2020 Tifton GA), **American Geophysical Union** Fall meeting (San Francisco, 2019), **Society of Freshwater Science Annual Conference** (Raleigh, NC, 2017), **14<sup>th</sup> International Water Information Summit** (WIS, Miami, 2013), **International Ecological Conference on Wetlands** (INTECOL, Orlando, FL, 2012), **Ecological Society of America Annual Meeting** (Austin TX, 2011), **American Geophysical Union Meeting of the Americas** (Foz do Iguassu, Brazil, 2010), **Long Term Ecological Research LTER All Scientists Meeting** (Rocky Mountain National Park, Colorado 2009), **Greater Everglades Ecosystem Restoration** conference (Naples, FL, 2008, 2010), **Ecological Society of America Annual Meeting** (Milwaukee 2008), **South Florida Plant Biologists Meeting** (Kampong, Miami 2008), **American Geophysical Union Fall Meeting** (San Francisco 2007, 2010), **Pine Rockland Conference** (FIU, Miami 2007), **Florida Ecology and Evolution Symposium** (Archbold Biological Station, FL 2006), **Center for Tropical Biology** (FIU, Miami 2006, 2007).

**Invited speaker:** **Conference on Water Resources Management for Northeastern India**, St Anthony's College, Shillong, India (2015), **International Seminar on Science Education**, Shillong College, India (2013); **Greater Everglades Ecological Restoration Conference (Naples, FL, 2010)**; **GeoTopics seminar series**, Rosenstiel School for Marine and Atmospheric Science, University of Miami, Key Biscayne, FL, USA (2010), **Florida Ecology and Evolution Symposium** (Archbold Biological Station, FL, 2009); **Intersection of Local and Global Knowledge for Environmental Conservation** workshop, Shillong College, Shillong, India (2009); **Biocomplexity in the Environment seminar**, Department of Biology, Universidade do Brasilia, Brazil (2007).

**External Reviewer** for Plant and Soil (8), Ecosystems (1), Journal of Environmental Management (1), Global Change Biology (1), Environmental and Experimental Botany (1), Agricultural Review (1), Journal of Himalayan Studies (1), Water (1), Aquatic Biology (1), Ecological Applications (1), Water (3), Wetlands (2), Wetland Ecology and Management (1), PLOS\_One (4), CONICET Argentina Proposal Panel reviewer, Sustainability (4), Hydrology (3). Guest Editor for Special Issue "Aquatic Ecosystems and Water Resources Management" for MDPI Journal of Hydrology.

### **Environmental Monitoring Instrumentation Skills**

1. Sensor selection for hydrology, water quality (lake buoys), soil moisture, soil oxygen, weather stations, eddy covariance, phenocams, etc
2. Datalogger programming and interfacing with sensors and off-grid solar power systems; communication telemetry (cellular, radio)
3. Monitoring station setup, electrostatic grounding.
4. Commercial research grade (Campbell Scientific, LiCor, Onset, InSitu, Apogee, Meter, etc) as well as open source (Arduino platform, MaxBotix, Atlas Scientific, etc)

### **Information Technology Skills**

*Database programming and design* (SQL, Visual FoxPro, SQL Server, MS Access)

*OOP and Structured programming* (Fortran, C#, Matlab, R) applied for hydrological and ecological modeling (fate and transport, flow models, water budgets, evapotranspiration, nutrient uptake and decomposition)

*GIS* (ArcGIS /QGIS), *Remote Sensing image analysis* (ENVI), hydrological modeling (WEAP, MODFLOW, MINEQL), Atlas development and geopublishing, *Graphic Design* (Adobe InDesign). *Campbell Scientific CRBasic programming and Loggernet*

### **Recent Research Grants**

Co-PI: "Capacity building in freshwater ecosystem conservation for northeastern India". Rufford Foundation for Nature Conservation, UK. June 2014 and Shillong College, India. US\$6000

Co-PI: Role of Forest cover and species diversity in watershed services in a protected Nigerian reserve. International Foundation for Science, Sweden. August 2014. US\$15000

Co-PI: Hydrology and habitat use in Everglades fish communities. South Florida Water Management District. September 2012. US\$12000

### **Certifications**

*Federal Interagency Aviation S-271 Helicopter Crew Chief (2012); OSHA (2012) and IACUC laboratory (2013).*

**Language Skills:** Fluent in English; working proficiency in Spanish, Portuguese, Hindi.

### **Media/Outreach:**

Current contributor to Highlands News-Sun, Sebring, Florida on weekly local environment-related articles. Maintain a website to compile information on tropical ecohydrology at <https://sites.google.com/site/tropicalecohydrology/home>