FOUNDATION FOR ENVIRONMENT CLIMATE AND TECHNOLOGY

Progress for 2014

Summary

Projects: The work on projects for the Agricultural Systems Modeling (AgMIP) and PEER (phase 1) continued vigorously. Our focus had been on completing the AgMIP project. Final Reports for AgMIP took much of our time. The work on the PEER project proceeded well. Our contributions on the Masters in Development Practice at the University of Peradeniya progressed modestly. We also contributed to the RAWI project coordinated by University of Notre Dame. The CCAFS South Asia project went on with minimal FECT involvement.

Services: We continued to provide Climate Services for the Mahaweli Authority and the Maldives. We operated two automated weather stations and made data available online.

Training: Our staffs have had training at Local and International workshops. Internship opportunities were provided to students in the Faculty of Agriculture and Science at the University of Peradeniya.

Proposals and Grants: Concept notes were submitted to APN program by our collaborator from Japan. We were awarded a grant to investigate climate change and water resources in Sri Lanka and Maldives under climate change under the third phase of the PEER program of the National Academy of Sciences.

IT and Dissemination: Major enhancements were made to our websites. We have added several new blogs, social media and twitter accounts and improved our mail management.

Collaboration: Collaboration with the Center for Atmospheric and Oceanic Sciences at the Indian Institute of Science, Columbia University, the Bureau of Meteorology, Australia, University of Notre Dame, IUPUI, Indianapolis were renewed through visits.

Maldives: The work in the Maldives was reinvigorated through two visits, and through work towards registering FECT in the Maldives and research collaboration.

Comoros: Work in Comoros was initiated in collaboration with Hairu Fisheries (Comoros) a website was developed and an institution was registered as FECT-Africa.

Publications: We are lagging behind in publishing this year in comparison with work completed. Several abstracts have been accepted.

Awards: Zeenas Yahiya was awarded a Presidential Award for international research publications during 2007 - 2009 along with our alumni Manjula Siriwardhana, Vidhura Ralapanawe and Janaki Chandimala.

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Technical Reports

- Foundation for Environment Climate and Technology (2014). Intra-Seasonal Climate Predictions for Sri Lanka and Maldives for Water Resources Management: Annual Technical Report: 2014. Foundation for Environment Climate and Technology, Digana, FECT Technical Report 2014-01: April 2014.
- Lareef Zubair, Sarath P. Nissanka, W.M.W.Weerakoon, Dumindu I. Herath, Asha S. Karunaratne, A. S. M. Prabodha, M. B. Agalawatte, Rasnayaka M. Herath, S. ZeenasYahiya, B. V. R. Punyawardhene, Janan Vishwanathan, Punya Delpitiya, A. Erandika N.Wijekoon, Janaka Gunaratna, Sewwandhi S. K.Chandrasekara, P.Wickramagamage, K. D. N.Weerasinghe, Champa M. Navaratne, Ruchika S. Perera, Asela I. Gunesekara, G. M. Pradeep Kumara, Daniel Wallach, Roberto O. Valdivia, and Sonali McDermid. Modeling the impacts of a variable and changing climate on rice agricultural systems in Sri Lanka for AgMIP. Final report to AgMIP, FECT Technical Report 2014-02: May 2014.
- Zubair, L., P. Wickramagamage, A.P. Keerithipala, P. Agalawatte, S.C. Chandrasekera, D.I. Herath, S. Ratnayake, K. Sanmuganathan, J. Vishwanathan, E. Wijekoon, Z. Yahiya, D.N. Wijesinghe, A.L.C. DeSilva, S. Ariyawansa, and M.P. Samarasinghe. Modeling the impacts of a variable and changing climate on sugarcane agricultural systems in Sri Lanka for AgMIP. FECT Technical Report 2014-03: 2014.
- Zubair, L., P. Agalawatte, S.C. Chandrasekera, D.I. Herath, E. Wijekoon, Z. Yahiya (2014). Climate change projections for the Mid-21st Century: A study in Batalagoda and Meegalewa based on CMIP5 GCMs. Foundation for Environment Climate and Technology, Digana, FECT Technical Report 2014-04: May 2014.
- Foundation for Environment Climate and Technology (2014). AgMIP Agro-Climatic Atlas for Sri Lanka. Foundation for Environment Climate and Technology, Digana, FECT Technical Report 2014-05: June 2014.
- Foundation for Environment Climate and Technology (2014). FECT Poster Book on Programs and Projects (January 2000 onwards). Foundation for Environment Climate and Technology, Digana, FECT Technical Report 2014-06: June 2014.
- Herath, D.I., A.E.N. De Alwis, A.S.M.P.M.B. Agalawatte, Y. G. Harischandra, S.S.K. Chandrasekara, Z. Yahiya, L. Zubair, and P.A. Samaratunga. Simulating Socio Economic Impacts of Climate Change on Rice Farming Systems: Trialing a Novel Integrated Methodology for Kadawaramulla, Kurunegala (2014). Foundation for Environment Climate and Technology, Digana, FECT Technical Report 2014-07: 2014
- Foundation for Environment Climate and Technology (2014). FECT Brochure on Climate Adaptation on the Ground. Foundation for Environment Climate and Technology, Digana, FECT Technical Report 2014-08: June 2014.

Abstracts/Meetings

- Climate Change Projections for Sri Lanka for 2040-2070 from CMIP5 Simulations under a High Emissions Scenario. Post Graduate Institute of Science Research Congress 2014. Post Graduate Institute of science, University of Peradeniya. 11 October, 2014.
- Climate Change Impacts on Rice Farming Systems in North-West Sri Lanka. L. Zubair, S.P. Nissanka, W.M.W. Weerakoon, D.I. Herath A. Karunaratne, A.S.M.P.M.B. Agalawatte, R.M. Herath, A. E. N. Wijekoon, B.V.R. Punyawardhene, S. Z. Yahiya, P.Delpitiya, S.S.K. Chandrasekara, J. Gunaratna, J. Vishwanathan P. Wickramagamage, K.D.N.Weerasinghe, C.M. Navaratne, T.M.R.S. Perera, A.A.I. Gunesekara, P. Gajanayake, and D. Wallach. ASA, CSSA, & SSSA International Annual Meeting. Long Beach, CA. 2-4 November, 2014.
- Agricultural Pathways and Scenariois for Regional Integrated Assessment of Climate Change Impact, Vulnerability and Adaptation. Roberto O Valdivia, John M Antle, Cynthia E. Rosenzweig, Alex C Ruane, Joost Vervoort, Muhammad Ashfaq, Ibrahima Hathie, Sabine Homann-Kee Tui, Richard Mulwa, C. Nhemachena, Paramasivam Ponnusamy, Dumindu Herath and Harbir Singh ASA, CSSA, & SSSA International Annual Meeting. Long Beach, CA. 2-4 November, 2014.
- ENSO, IOD, EQUINOO and MJO Influences over the Equatorial Indian Ocean Clmate. Lareef Zubair, Prabodha Agalawatte, and Zeenas Yahiya (USA, Sri Lanka). 2nd ANCST Workshop on At-

mosphere-ocean interactions in the Indo-Pacific basin and their impact on Asian climate, Indian Institute of Science, Bengalaru, India, 23-24 November, 2014.

• Climate Change Projections for Sri Lanka for the mid-twentieth Century from CMIP5 Simulations under a High Emissions Scenario. Lareef Zubair and Prabodha Agalawatte, Foundation for Environment, Climate and Technology, Digana Village, Sri Lanka. AGU Fall Meeting, San Francisco 1, 15-19 December, 2014.

Workshops / Conferences

- Jan Feb 2014 Lareef Zubair, Prabodha Agalawatte, Dumindu Herath and Zeenas Yahiya participated at the *Finish line workshop* in Arusha, Tanzania, from 28 January 4 February, 2014.
- October 2014 Prabodha Agalawatte, and Zeenas Yahiya participated at the Water Professional's *day* symposium at the R.R. Appadurai auditorium, Faculty of Agriculture, University of Peradeniya, on 1st October, 2014.
- November 2014 Lareef Zubair, and Prabodha Agalawatte participated at the 2nd ANCST Workshop on "Atmosphere-ocean interactions in the Indo-Pacific basin and their impact on Asian climate" organized by the Indian Institute of Science, Bengalaru, India, on 23-24th November, 2014.
- December 2014 Lareef Zubair participated at the 5th International Conference on Sustainable Build Environment at Earl's Regency Hotel, Kandy, on 12th December, 2014.

Grants Ongoing

- *MDP:* Launching a Masters in Sustainable Development Practice at the University of Peradeniya, MacArthur Foundation, FECT component - FECT shall develop curricula for the course on Climate and Society; support teaching; and work with government, non-governmental, development, and private sector organizations in support of placement of students and graduates. Investigators – Lareef Zubair, Zeenas Yahiya, (2010-2015).
- **PEER:** "Intra-seasonal climate predictions for Sri Lanka and Maldives for water resources management" from the US National Academy of Sciences. Investigators Lareef Zubair (PI), (2012 -2015).
- **RAWI**: "*Remote Sensing of Atmospheric Waves and Instabilities (RAWI)*". This examines the oceanatmosphere linkages over the tropical Indian Ocean region. Project conducted by the Office of Naval Research, administered by University of Notre Dame. L. Zubair (Co-PI), (2014-2017).
- **PEER Phase 3:** "Drought Monitoring and Climate Change Assessment for Sri Lanka and Maldives" from the US National Academy of Sciences. Investigators Zeenas Yahiya (PI) and Lareef Zubair, (2014 -2017).

Grants Completed

- AgMIP: Project on "Modeling the impacts of a variable and changing climate on rice and sugarcane agricultural systems in Sri Lanka". An activity under "The Agricultural Modeling Intercomparison and Improvement Project in Sub-Saharan Africa and South Asia". Investigators in 2014 Lareef Zubair, Prabodha Agalawatte, Dumindu Herath, Erandika Wijekoon, Zeenas Yahiya, Janan Vishwanathan and Sewwandhi Chandrasekera with others from the University of Peradeniya, University of Ruhuna, Rajarata University (2012 2014).
- CCAFS: "Development, evaluation and application of a toolkit for regional crop yield forecasting and climate change impact assessment for Sri Lanka", Investigators, Lareef Zubair. Contribution to the Department of Agriculture (NRMC) CCAFS (Climate Change, Agriculture and Food Security) project. (2012 2015). FECT contribution was minimal.

Discussions / Meetings

- 7th February 2014 Lareef Zubair had discussions with Hairu Fisheries/ Ministry of Fisheries, at Moroni, Comoros.
- May 15-17 2014 Lareef Zubair visit to University of Notre Dame, South Bend Indiana for initiation of RAWI project with Prof. Harindra Fernando and Mr. Udaya Jinadasa of NARA.

- May 17-19 Lareef Zubair visit to IUPUI, Indianopolis for discussion with Neil Devadasan regards FECT. Start of automatic data management programs.
 - 18th to 22nd of August 2014 Maldives visit of Zeenas Yahiya and Rimza Muhlees.
 - o Ms. Hudha Ahmed of Renewable energy Maldives, Meeting with
 - Sri Lanka High Commissioner in Maldives (Mr. W.G.N.H. Dias)
 - Ms. Mizna Mohamed Maldivian National University.
- 8th December, 2014 Lareef Zubair visited Maldives and had discussions with
 - Ms. Mizna Mohamed of Maldivian National University,
 - Mr. Rasheed of Male Water and Sewerage Company,
 - Mr. Ali Shareef the Deputy Director, Mr. Rasheed Director Meteorology,
 - Mr. Zahid Director Climate of Maldives Meteorological Service.
 - Ms. Hudha Ahmed and Dr. Nashid Mohamed of Renewable Energy Maldives.
 - Mr. Aslam and Mr. Hussain of LaMER groups.
- Hairu Engineering Group, BioEnergy Solutions, Nintavur
- Hydrodynamics Consultancy, Kandy.
- Farmer organizations in Kadawaramulla and Migalawa.

Dissemination

- Final report was submitted to AgMIP on "Climate Change Impacts on Rice Farming Systems on North-Western Sri Lanka".
- Annual Technical Report was submitted to Partnerships for Enhanced Engagement in Research Science.

Farm Surveys

Feb 28th 2014 - Conducted follow up to Farm Survey in Kadawaramulla

Presentations

- Zubair, L. (2014). Potential for Using Climate, Oceanic and Environmental Information for Fisheries Hazard Risk Management and Fisheries Prospecting in Comoros, for Master Fishermen and Officials, Ministry of Fisheries Hairu Engineering Company. Moroni, February 7, 2014.
- Zubair, L. (2014). Climate Change Impacts On Rice Farming Systems in North Western Sri Lanka, Concluding Workshop of the Agriculture Model Inter-comparison Program, Arusha, Tanzania. January 30-February 4, 2014.
- Prabodha Agalawatte (2014). Presented a poster on *Meteorology and Predictability of Tropical Storm ARB-04 in the Indian Ocean during November 2011* at the 2nd ANCST Workshop on "Atmosphereocean interactions in the Indo-Pacific basin and their impact on Asian climate" organized by the Indian Institute of Scence, Bengalaru, India, on 23-24th November, 2014
- Lareef Zubair (2014). *The Impact of Climate Change on Agricultural Productivity in South Asia*, at the 2nd Annual South Asia Biosafety Conference, at Taj Samudra Hotel, Colombo, from September 15-16, 2014.
- Lareef Zubair (2014). Generating Climate Information for Climate Adaptation for Indian Ocean Islands, at the CAWCR Seminar. Bureau of Meteorology, Melbourne, Australia, on 28th October, 2014.
- Zubair, L. (2014). Presented on 'ENSO, IOD, EQUINOO and MJO Influences over the Equatorial Indian Ocean Climate' at the 2nd ANCST Workshop on "Atmosphere-ocean interactions in the Indo-Pacific basin and their impact on Asian climate" organized by the Indian Institute of Science, Bengalaru, India, on 23-24th November, 2014.
- Prabodha Agalawatte (2014). Presented a poster on Intra-seasonal Climate predictions for Sri Lanka and Maldives for Water resources management *at the 2nd ANCST Workshop on "Atmosphere-ocean interactions in the Indo-Pacific basin and their impact on Asian climate*" organized by the Indian Institute of Scence, Bengalaru, India, on 23-24th November, 2014

Proposals and concept notes

- January 2014 Developing Monitoring Tools for Managing Drought Risk and addressing the riddle of Increased Drought Tendency amidst the Wetter Climate Change Projections in Sri Lanka and Maldives. US National Academy of Sciences (PI Zeenas Yahiya; Co-PI Lareef Zubair).
- March 2014 ASIRI: Remote Sensing of Atmospheric Waves and Instabilities (RAWI) by the University of Notre Dame. To Ocean, Atmosphere and Space Research Division Office of Naval Research. (PI -H.J.S. Fernando; Co-PI Lareef Zubair)
- August 2014 Assessing the Predictability of Extreme Climate Events over Sri Lanka and its influence on Water Resources Management. To Asia Pacific Network (PI Behera, S, Frontier Research System with Co-PI L. Zubair, P.Wickramagamage and Z. Yahiya).
- October 2014: Proposal for Supplementary Funding for Communication, Project: Intra-Seasonal Climate Predictions for Sri Lanka and Maldives for Water Resources Management. US National Academy of Sciences (PI: Lareef Zubair)

Grants Awarded

- January 2014 Developing Monitoring Tools for Managing Drought Risk and addressing the riddle of Increased Drought Tendency amidst the Wetter Climate Change Projections in Sri Lanka and Maldives. US National Academy of Sciences (PI Zeenas Yahiya; Co-PI Lareef Zubair).
- March 2014 ASIRI: Remote Sensing of Atmospheric Waves and Instabilities (RAWI) by the University of Notre Dame. To Ocean, Atmosphere and Space Research Division Office of Naval Research. (PI -H.J.S. Fernando; Co-PI Lareef Zubair). Sub-contract to FECT.

Partnership Services

- Weekly Hydro-meteorological Assessment for the WMS, Mahaweli Authority in Sri Lanka was undertaken throughout the year.
- The WMS reports were made available via <u>http://.fectsl.blogspot.com</u> and <u>http://www.climate.lk/</u> and <u>http://fectsl.wordpress.com/</u>
- Maldives Collaboration
 - Monthly Hydro-meteorological Advisory services to Maldives
 - Made Available via <u>http://fectmv.blogspot.com</u>

Web Development

Overall website <u>http://www.tropicalclimate.org</u> was revamped and work is ongoing. **Sri Lanka website** <u>http://www.climate.lk</u> was updated linking the blogs /websites

- <u>http://fectsl.wordpress.com/</u>,
- <u>www.peersl.wordpress.com</u> ,
- www.agmipsl.wordpress.comhttp://srilankaclimate.wordpress.com, http://www.tropicalclimate.org/mdp/
- https://srilankaclimate.wordpress.com/

Weather instrument dissemination for Digana and Akurana were developed

- http://tropicalclimate.org/digana_weather/index.htm
- http://tropicalclimate.org/akurana_weather/index.htm

along with a twitter account for the Digana weather station. The uploads are being operated manually at present.

Twitter Accounts: We started a twitter account for FECT – <u>https://twitter.com/fectlk</u> **Facebook accounts**: were started for our Sri Lanka operations but these are still to be developed properly.

Maldives website - <u>http://www.tropicalclimate.org/maldives</u> was developed further.

The blogs <u>http://fectsl.blogspot.com</u> & <u>fectmv.blogspot.com</u> are being updated. We have set up a twitter account https://twitter.com/fectlmv and a facebook account which shall be updated. Mail management system was implemented.

Comoros website - A new website for Comoros was developed http://www.tropicalclimate.org/comoros/

Office and Library:

- Inventory of Library at Digana undertaken
- Developed Computerized Library system for Akurana based on Dewey Decimal
- Library lists uploaded to internal website

Training & Capacity Building

• Internship training was provided for Erandathi Ekanayake from the Faculty of Science, University of Peradeniya and Pradeep Kumara from Faculty of Agriculture, University of Peradeniya

Personnel:

January 2014	 Navoda Mihiraj and Pradeep Gajanayake joins Mr. K. Shanmuganathan and Sanjaya Ratnayake complete assignment under
	the AgMIP project. Navoda leaves to join the Government Sector;
March 2014	- Pradeep Gajanayake leaves to follow his Masters.
April 2014	- Erandika Wijekoon leaves
September 2014	- Erandathi Ekanayake joins as Intern
October 2014	- Madara Dasanayake joins as Intern
	- Shahani Ashraj joins as Intern for two months
December 2014	- Erandathi Ekanayake completes her internship
	- Rushda Ameen joins as Administrative Assistant

Administration: Financial management of bank accounts at Peoples Bank; Hatton National Bank and Commercial Bank have been smooth. Deposits at Ceylinco Group were released up to 90%. Our Auditors, Anzari and Co., has reported on a healthy state of financial management in the last Audit conducted until March 2013.

A mini-retreat was held at the Old Trinitians' Sports Club in Kandy in March to brainstorm on common issues, to identify priorities and draft a strategic plan for FECT.

Collaborations:

We had productive collaborations with personnel attached to Mahaweli Authority of Sri Lanka (MASL), University of Peradeniya (UOP), Open University of Sri Lanka (OUSL), and the Institute of Fundamental Studies (IFS), Kandy. We also had support from personnel attached to

Lanka Transformers (Pvt) Ltd., Sugarcane Research Institute, Uda Walawe, Gemidiriya (Gamanaguma), MAS Intimates, Hydrodynamics (Pvt) Ltd., Anti Malaria Campaign, Kotmale International Training Institute, Rice Research and Development Institute, Batalagoda, Natural Resources Management Centre of the Department of Agriculture.

Internationally, we collaborated with NASA Goddard Space Flight Centre, Columbia University, Indiana University Purdue University, University of Massachusetts, Lowell, International Research Institute for Climate and Society (IRI), State University of New York (Albany), and International Crops Research Institute for the Semi-Arid Tropics (CGIAR), India. Renewable Energy Maldives, Land and Marine Environmental Resource Group Pvt Ltd., Maldives, Bureau of Meteorology, Australia, Indian Institute of Science, Bangalore, Hairu Fisheries (Comoros).

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Agriculture, University of Peradeniya for liasing with us. We thank Mr. Ranjith Senevirathne, and the staff of the HAO&M Unit of the MASL for their support extended.

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We are thankful to Amor Ines of the IRI for his support with the CCAFS and AgMIP programs. We thank Michael Bell, Benno Blumenthal and Remi Cousins of the IRI for their support in numerous ways. At Columbia University, we are grateful to Profs. Adam Sobel, Upmanu Lall, Dr. Bradfield Lyon and Mr. Haibo Liu. We thank Shaky Sherpas for his support. We thank the staff of the AgMIP program at Columbia University – Cynthia Rosenzweig, Carolyn Mutter, Andrew Thibodeau, Alex Ruane, and Sonali McDermid of NASA GISS. We acknowledge the support of Profs. Jim Jones, Cheryl Porter and Ken Boote of the University of Florida; Prof. John Antle and Dr. Roberto Valdivia of University of Oregon State, Dr. Peter Thorburn and Dr. John Hargreaves of CSIRO and Dr. Balwinder Singh of IRRI. Kelly Robbins, Al Mattei, and Dalal Najib of USAID have been supporting us with the PEER project. We are grateful for the interactions of Ms. Jeanette Normand, Ms Nihani Riza and Mr. Paul Richardson of USAID, Sri Lanka/Maldives. In Comoros, we are grateful to Messers Rukshan Malewena, Chamsoudine, and Goulam for their support. We thank Prof. Harindra J. Fernando of University of Notre Dame and Mr. Udaya Jinadasa of NARA for their support with our RAWI project.



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