**Proposal Number:** 1546686

**Panel Summary:**   
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Long-Term Ecological Research Program   
Spring 2016 Renewal Panel   
  
Results of Prior LTER Support:   
  
Previous results are summarized in a synthetic way and clearly presented in the proposal. The conceptual framework and the new proposed experiments follow nicely from previous work. LUQ clearly has a long and extensive history of research. Its proposed research nicely builds on this historical work. Recent products include a synthetic book and a breadth of publications across a range of disciplines; continued development of publications in solid journals will demonstrate the success and productivity of the research. The proposal successfully chosen important projects to build on with new work.   
  
Intellectual Merit:   
  
This project will focus primarily on understanding the responses of forest and stream ecosystems to two key disturbances, droughts and hurricanes. This focus emerges naturally and convincingly from the previous long-term research. These are important drivers of tropical forest ecosystem change and are an important focus for a tropical forest LTER project. The two key disturbances the proposal focuses on (drought, hurricanes) come out of long-term monitoring and research; the new work - including drought experiments in forests & streams - nicely builds on this monitoring. The experimental design to impose hurricane treatments on various stages of forest succession nicely examines landscape impacts of hurricanes. The new hypotheses target important issues of these disturbances. They provide integration of terrestrial and aquatic responses to these disturbances, and effectively integrate land-use history. The modeling with SORTIE nicely links and projects successional changes and impacts of disturbances. The climate down-scaling was not as well integrated into the proposal as the rest of the work.   
  
The conceptual framework centers on novel impacts of separate and interactive effects of key disturbances (drought & hurricanes). The proposed measurements and new experiments are well-structured for this site and its disturbances, and should yield important results. The PIs should seek to extend the applicability of the work toward greater generality for a broader conceptual framework. Building on existing cross-site projects (e.g., LINX, LIDET, CloudNet, DroughtNet, tree demography network) could further demonstrate project leadership in building the field's intellectual framework.   
  
The proposal nicely addresses the LTER core areas. The biogeochemistry redox work leads the field. Hypotheses from drought responses nicely focus on vegetation responses; some specific hypotheses on responses along the elevation gradient or metals biogeochemistry would be interesting. Productivity and species-change work might benefit from additional attention to plant physiology and response thresholds. Another issue is that the drought experiments are more on the pilot or small-scale. There should be a clear plan for scaling these experiments to clearly encompass whole-tree responses in the future.   
  
Comparisons with drought responses in other kinds of tropical evergreen forests and the controls of these responses (e.g., deep rooting) and how they compare with LUQ would help to advance a more general ecological understanding of tropical forest response to this major emerging new disturbance.   
  
The current proposal effectively addresses critiques of the last LUQ proposal. The proposal includes novel experiments well-grounded in the long-term data. The research team is strong and productive, with a good balance of expertise in soil and aquatic biogeochemistry and forest and stream community dynamics. Cultivation and inclusion of some associate scientists within the leadership team will help maintain the long-term project management.   
  
Broader Impacts:   
The proposal presents a rich mosaic of broader impacts, including the Schoolyard program with devoted staffing and resources for assessment. The program has been productive in training a large number of students. It has demonstrated landmark leadership in fields of biogeochemistry and forms a cornerstone fieldsite for tropical ecology. No weaknesses were noted.   
  
Information management and technology:   
  
The data management and availability appear to be working very well. The website works well, and there are many appropriate data sets available through PASTA. Project PIs have been good sharers of data in networked projects.   
  
Project management   
The current project management and personnel are very strong. The new hire for an additional co-PI at UPR will be an essential step for the long-term success of the project. The team should continue to advance its project management plans, and should cultivate the next cohort of leadership. Future proposals might further explain how new projects or personnel can be managed and encouraged within the project.   
  
Additional Comments or Areas of Special Concern:   
  
None.   
  
Synthesis and Recommendation: The panel's advice to NSF is: Renewal / Probationary Renewal / Do Not Renew   
  
The panel recommends renewal.   
  
  
This summary was read by the assigned panelists and they concurred that the summary accurately reflects the panel discussion.  
  
  
**Panel Recommendation:**Fund