This annual report covers COCONet project (EAR-1042906/EAR-1042909) activities for the time period from September 1, 2013 to May 31, 2014. COCONet is a Collaborative Research project between UNAVCO (EAR-1042906) and University Corporation for Atmospheric Research (UCAR) (EAR-1042909) awarded on September 14, 2010. The project is under the direction of M. Meghan Miller, as PI, with Co-PIs Guoquan Wang, Glen Mattioli, and Karl Feaux. Glen Mattioli is acting as Project Director in his role as Director of Geodetic Infrastructure at UNAVCO and John Braun is the UCAR PI.

Figure 1. The current COCONet siting plan. Yellow dots represent the 60 completed COCONet stations (new and refurbished) and red dots represent the 17 remaining planned stations (new and refurbished). The white stars represent the proposed tide gauge locations (with 2 additional GPS sites per location). The existing “contributing” GPS stations (n=61+), which either already or are soon to be delivering data to the COCONet archive, are not shown in this map.
This document is a roll-up of the quarterly reports previously submitted by email on October 14, 2013, December 17, 2013, March 18, 2014 and June 13, 2014 to the COCONet NSF-EAR-IF Program Officer, Mr. Russ Kelz.

Figure 2. COCONet Installations: Plan (blue line) vs. Actual (green line).

<table>
<thead>
<tr>
<th></th>
<th>Cumulative</th>
<th>Since Previous Quarter</th>
<th>Details From Current Quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Station Recons</td>
<td>79</td>
<td>9</td>
<td>Remaining: (6) two Gulf of Mexico stations, plus two tide gauge locations (two GPS at each tide station)</td>
</tr>
<tr>
<td>Permits Submitted</td>
<td>75</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Permits Accepted</td>
<td>73</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Stations Installed</td>
<td>41 new</td>
<td>4 new</td>
<td>New: CN46 (Carriacou), CN16 (Cuba) CN21(Honduras), TTUW (Trinidad) Refurbished: 6 Guatemala stations (GUAT, TAXI, CHIS, ELEN, NARA, POPT), 2 Cayman Island stations</td>
</tr>
<tr>
<td>New / Refurbished</td>
<td>19 refurbished</td>
<td>7 refurbished</td>
<td></td>
</tr>
<tr>
<td>Maintenance Visits</td>
<td>33</td>
<td>9</td>
<td>Nine stations visited in the Dominican Republic and Honduras.</td>
</tr>
</tbody>
</table>
COCONet EAR 1042906/9 Annual Report

September 2013 - May 2014 (FY2013 Q1 through FY2014 Q3)

COCONet Related Publications for FY2014

The following publications and associated presentations at national and international meetings were completed (presenters in bold; student authors are underlined) were completed in FY2013-Q4 through FY2014-Q3:


Journal Articles published:


^Uses data from cGPS sites that are now supported in part by COCONet award

COCONet PIs shown in **bold italics**
COCONet related publications for FY2013 (previously reported)

The following publications and associated presentations at national and international meetings were completed:


Braun, J. J., T. Van Hove, The Application of COCONet to Determine Water Vapor Variability in the Caribbean; Poster, 93 Annual AMS Meeting, Austin, TX, AMS, Jan 8, 2013.


The following publications, presentations, and/or meetings were either completed, submitted, or accepted for publication in FY2013-Q1:


Third Quarter Report

The following student presentations (with student authors underlined below) at the AGU Meeting of the Americas in May 2013 were supported in part by COCONet resources in FY2013-Q3:

A model of short-term surface deformation of Soufriere Hills Volcano, Montserrat, constrained by GPS geodesy, Erin E. McPherson; Glen S. Mattioli

Updated velocity field for the Caribbean plate from COCONet GPS observations, Jamie A. Miller; Glen S. Mattioli; Pamela E. Jansma

On the motion of the Caribbean relative to South-America: New results from GPS geodesy 1999-2012, Roberto De La Rosa; Julio Marquez; Mizael Bravo; Yuleika Madriz; David Mencin; Steven G. Wesnousky; Peter H. Molnar; Roger Bilham; Omar J. Perez

Asymmetrical and heterogeneous elasto-static deformation along the El Pilar Fault in Northeastern Venezuela, Carlos Reinoza; Francois Jouanne; Franck A. Audemard; Christian Beck

Coseismic Coastal Uplift from the 2012 Mw7.6 Nicoya Earthquake, Costa Rica: Implications of Megathrust Rupture for Fore Arc Morphotectonics, Jeffrey Marshall; Shawn Morrish; Andrew V. Newman; Marino Protti

Geomorphologic Features and Age Estimation of Submarine Landslides in the Southwestern Colombian Caribbean, Javier Idarraga Garcia; Carlos A. Vargas-Jimenez

Flexural Thickness Variations of the Maracaibo Block, Mariano S. Arnaiz-Rodriguez; Franck A. Audemard

Passive Tomography of the Caribbean Using Surface Waves Extracted from Ambient Noise, Francisco J. Hernandez; Alberto M. Lopez; Eugenio Asencio

The Contributions of Seismogeodesy to Earthquake and Tsunami Early Warning, Diego Melgar; Brendan W. Crowell; Jianghui Geng; Yehuda Bock; Jennifer S. Haase

The following additional presentations (presenters in bold; student authors are underlined) were completed in FY2013-Q3:

Geological Society of America Southeastern Section March 2013


European Geosciences Union Meeting April 2013

UNAVCO GPS High-Rate and Real-Time Products and Services: Building a Next Generation Geodetic Network, David Mencin, Charles Meertens, Glen Mattioli, Karl Feaux, Sara Looney, Charles Sievers, and Ken Austin
AGU Meeting of the Americas May 2013

Co-seismic deformation of the August 27, 2012 Mw 7.3 El Salvador and September 5, 2012 Mw 7.6 Costa Rica earthquakes, **Halldor Geirsson; Peter C. La Femina; Charles DeMets; Glen S. Mattioli; Douglas Antonio Hernández**

A Stable Reference Frame for Landslides Study in the Puerto Rico and Virgin Islands Region, **Guoquan Wang**

COCONet (Continuously Operating Caribbean GPS Observational Network) - A multihazard GPS/Met observatory: Enhancing geodetic infrastructure and the scientific community in the Caribbean, **Karl Feaux; John J. Braun; Eric Calais; Glen S. Mattioli; M Meghan M. Miller; James Normandeau; John Sandru; Guoquan Wang**

Early implications of the COCONet GPS velocity field for studies of plate and microplate motions in the Caribbean, **Charles DeMets**

GPS-derived slip rates of active faults in eastern Venezuela, along the southeastern Caribbean PBZ, **Franck A. Audemard; Christian Beck; Francois Jouanne; Carlos E. Reinoza**

Co- and Post-seismic deformation after the 2012 Mw 7.6 Costa Rica Earthquake from Continuous GPS observations, **Rocco Malservisi; Timothy H. Dixon; Marino Protti; Victor Gonzales; Susan Y. Schwartz; Andrew V. Newman; Stephen R. McNutt**

Isla del Coco, on Cocos Plate, Converges with Isla de San Andrés, on the Caribbean Plate, at 78 mm/yr, **Marino Protti; Victor M. Gonzalez; Jeffrey T. Freymueller; Sarah Doelger**

COCONet Atmospheric Data Products: An Initial Assessment, **John J. Braun; Teresa M. Van Hove; Glen S. Mattioli; Karl Feaux; James Normandeau**

The UNAVCO role in planning, building, and maintaining geodetic infrastructure across the Americas: update on PBO, COCONet, and TLALOCNet, **Glen S. Mattioli; John J. Braun; Enrique Cabral; Eric Calais; Charles DeMets; Karl Feaux; David Mencin; M Meghan M. Miller; James Normandeau; Yolande Serra; Guoquan Wang**

An update on UNAVCO/COCONet High Frequency Real-Time Products: Towards a next generation multi-hazard network, **David Mencin; Glen S. Mattioli; Karl Feaux; Sara Looney; Charles Sievers; Charles M. Meertens**

Seventeen Years of Geodynamic Monitoring of a Seismic Gap that was Partially Filled by the Nicoya, Costa Rica, Mw=7.6 Earthquake of September 5th, 2012, **Marino Protti; Victor M. Gonzalez; Susan Y. Schwartz; Timothy H. Dixon; Andrew V. Newman; Paul Lundgren; Yoshi-Yuki Kaneda; Teruyuki Kato**

Static and Dynamic Rupture-History of the Nicoya (Mw=7.6) Earthquake, Costa Rica: An approach using high frequency rate GPS and seismological recordings in the near field, **Victor Gonzales Salas; Marino Protti; Esteban J. Chaves Sibaja; Floribeth Vega; Walter Jimenez**

Slow Slip Event and Interseismic Strain Accumulation in the Nicoya Peninsula, Costa Rica, **Yan Jiang; Robert McCaffrey; Timothy H. Dixon; Shimon Wdowinski; Marino Protti; Victor M. Gonzalez**
Source rupture process of the 5 September 2012 Costa Rica Mw=7.6 thrust event from joint inversion of high-rate GPS, strong motion, and teleseismic P wave data, *Thorne Lay; Han Yue; Luis A. Rivera; Susan Y. Schwartz; Marino Protti*

Delineating and Defining the Boundaries of an Active Landslide in the Rainforest of Puerto Rico Using a Combination of Airborne and Terrestrial LIDAR Data, *Guoquan Wang; James Joyce; David A. Phillips; Ramesh L. Shrestha; William E. Carter*