Great Smoky Mountain Rain Gauge Network Field Report 20 May 2011

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Status

Table 1: Gauge visits during the spring 2011. Comments: DD=gauge data download, MN=general gauge maintenance (cleaning, bounce sheet, re-level), CV= clear vegetation, VG = vegetation growth, and AI = animal interaction.

Date	Gauges Visited	Technicians/volunteers	Comments
26 Mar 2011	1, 3	W. Groetsema, C. Zarzar	DD, MN, CV
25 Mar 2011	2, 5, 8, 106	D. Martin, M. Goldsbury	DD, MN, CV
2 Apr 2011	4, 10, 104	D. Martin, M. Goldsbury	DD, MN, CV
3 Apr 2011	111, 112	D. Miller, A. Felts, & Co.	DD, MN, CV
9 Apr 2011	305, 309, 310	D. Martin, M. Goldsbury	DD, MN, CV
16 Apr 2011	100, 105, 107, 109	M. Goldsbury, A. Felts	DD, MN, CV
23 Apr 2011	300, 301, 302, 308	D. Miller, D. Martin, M. Goldsbury	DD, MN, CV
26 Apr 2011	4	D. Miller, T. Winesett	DD, MN, CV
30 Apr 2011	101, 102, 103, 108, 110	D. Martin, T. Winesett	DD, MN, CV
1 May 2011	303, 306, 311	M. Goldsbury, M. Talley	DD, MN, CV
4 May 2011	304, 307	W. Groetsema, C. Zarzar	DD, MN, CV
16 May 2011	304, 307	D. Miller, G. Cutrell	DD, MN, CV

Gauge visitation in support of the Great Smoky Mountain Rain Gauge Network (GSMRGN) during the spring 2011 occurred over 12 days spanning a period of nearly eight weeks in the March – May 2011 period. The primary purpose of the visits was [1] to perform maintenance after a cold and snowy first-half of the winter season followed by a moderate and rainy late winter/ early spring season and [2] to download gauge observations that were made since the previous gauge visits in October and November 2010. Thirteen technicians and volunteers (listed on the front page) made the visits and performed the required work. It is important to note that the volunteers were NOT directly involved in any of the gauge visit tasks, but were volunteering to assist with personal safety should someone get injured during a particular series of gauge visits.

The general tasks completed at every gauge visit consisted of (1) gauge data download from the data loggers [DD in Table 1], (2) general gauge maintenance [MN in Table 1], and (3) clearing of vegetation from the gauge site [CV in Table 1]. Task (1) merely required a serial port link between the field study laptop and the gauge data logger and consisted of pulling the data (often in files having two different formats) onto a desktop folder on the laptop, checking for completeness of the data, and comparing the data logger time to the actual time, making corrections to the data logger clock if necessary. The standard that has been chosen for this study is to maintain the clocks on Eastern Daylight Time, since most of the "warm" precipitation will be occurring during the season when EDT is in effect. Task (2) required the cleaning of debris from the funnel filter, cleaning the tipping buckets of debris (if necessary), cleaning the gauge drain ports, fixing a fresh "Bounce" fabric softener sheet inside the case of the gauge (throwing out the old sheet), and re-leveling the gauge if it has come unleveled. A final MN task during the spring 2011 visits consisted of replacing the 3V batteries in the HOBO data loggers that are being used as back-up loggers for the "old" gauges that were installed in the summer 2007. Task (3) is required to insure that none of the surrounding vegetation overgrows the funnel top during the growing season, thereby reducing the catchment of the gauge.

The challenges encountered during some of the gauge visits in the spring 2011 were related to weather and seasonal disruptions; road closures in response to icing conditions and downed trees caused delays in reaching some of the rain gauges. The visit to gauge #4 was delayed to April 26, 2011 due to the closure of the Blue Ridge Parkway which experienced icing conditions near the tunnels on April 2, 2011. The visit to gauges # 304 and 307 was delayed to May 16, 2011 due to the closure of the Balsam Mntn Ridge Trail Road which had fallen trees across it on May 4, 2011 which were not cleared until May 13, 2011.

All 32 gauges of the GSMRGN were in generally good condition coming out of the 2010, 2011 winter season. No gauges had been tipped over, none had shown signs of tampering by humans or animals, and all had complete data records. The software patch installed during the fall 2010 gauge visits was able to overcome the voltage drop problem in the data loggers that had been noted during the spring 2010 gauge visits.

Details of every gauge visit along with each gauge precipitation data record can be found in folder "GAUGE-DATA-PMM" which contains sub-folders for each gauge that consists of the individual data files (often having at least two different formats) and a "history" MS Word document that mirrors exactly the notes made in the field journal during each gauge visit. The "history" files for each gauge were last updated by Ashley Felts and Doug Miller in May 2011.

Plans for the summer and fall months of 2011

Table 2: Planned gauge visits during the summer and fall 2011. Comments: DD=gauge data download, MN=general gauge maintenance (cleaning, bounce sheet, re-level), and CV= clear vegetation.

Date	Gauges Visited	Technicians/volunteers	Comments
16 Jul 2011	1, 3	TBD	DD, MN, CV
17 Jul 2011	2, 5, 8, 106	TBD	DD, MN, CV
23 Jul 2011	4, 10, 104	TBD	DD, MN, CV
24 Jul 2011	111, 112	TBD	DD, MN, CV
30 Jul 2011	101, 102, 103, 108, 110	TBD	DD, MN, CV
31 Jul 2011	305, 309, 310	TBD	DD, MN, CV
6 Aug 2011	100, 105, 107, 109	TBD	DD, MN, CV
7 Aug 2011	303, 306, 311	TBD	DD, MN, CV
13 Aug 2011	300, 301, 302, 308	TBD	DD, MN, CV
14 Aug 2011	304, 307	TBD	DD, MN, CV

Date	Gauges Visited	Technicians	Comments
13 Nov 2011	1, 3	TBD	DD, MN, CV
12 Nov 2011	2, 5, 8, 106	TBD	DD, MN, CV
5 Nov 2011	4, 10, 104	TBD	DD, MN, CV
6 Nov 2011	111, 112	TBD	DD, MN, CV
30 Oct 2011	101, 102, 103, 108, 110	TBD	DD, MN, CV
23 Oct 2011	305, 309, 310	TBD	DD, MN, CV
29 Oct 2011	100, 105, 107, 109	TBD	DD, MN, CV
16 Oct 2011	303, 306, 311	TBD	DD, MN, CV
15 Oct 2011	300, 301, 302, 308	TBD	DD, MN, CV
22 Oct 2011	304, 307	TBD	DD, MN, CV

Gauge visitation in support of the GSMRGN during the summer and fall 2011 will occur over at least 10 days spanning a period of nearly six weeks in July/August and October/November 2011. The primary purpose of the visits will be to perform maintenance during another potentially warm and humid growing season and to download precipitation observations that were made since the previous gauge visits in March - May 2011. A primary maintenance issue will be to clear each gauge funnel of typical spring debris (pollen pods) and to keep the "field-of-view" of the gauges clear of vegetation overgrowth. The higher elevation gauges during the October/November period will be visited last as the leaves on high elevation trees drop later in the autumn season. The gauge visits in July/August 2011 will serve to prepare the gauges for a potentially active tropical cyclone season which tends to peak in the month of September.

It was discovered during the fall 2010 gauge visits that several gauges (Gauges# 1, 4, 302, 305, and 309) had enhanced briar-patch growing seasons over the summer 2010, perhaps due to the warmer- and more-humid-than-normal weather that may have resulted in under-catch since the spring 2010 visits. This is a key reason for an additional round of gauge visits during July and August 2011.

The general tasks completed at every gauge visit will consist of (1) gauge data download from the data loggers [DD in Table 2], (2) general gauge maintenance [MN in Table 2], and (3) clearing of vegetation from the gauge site [CV in Table 2].

Details of every gauge visit along with each gauge precipitation data record will be updated in folder "GAUGE-DATA-PMM" which contains sub-folders for each gauge that consists of the individual data files (often having at least two different formats) and a "history" MS Word document that mirrors exactly the notes made in the field journal during each gauge visit.

It is anticipated that a new undergraduate research student at UNC Asheville will be added to the technician team in time for the autumn 2011 gauge visits to eventually help replace senior student Melissa Talley. Michael Goldsbury (Thomas Winesett), a junior (sophomore), at UNCA, joined the GSMRGN technician team in the fall 2010 (spring 2011) and was involved in six (two) different days of gauge visits during the recent springtime treks. These students replace Wes Groetsema and Aaron Woodward who graduated from UNCA on 7 May 2011. We wish Wes and Aaron good luck in their future endeavors!