

## Hillslope tensiometers

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15/03/04	Between around 1200 and 1300 hours, some of the tensiometers in the hillslope study area were degassed. This may have resulted in abnormal reading around this time.
12/04/05	At 13:30, Tensiometer located at the 50 cm depth at transect point 3.3 was changed because of the apparent problem as shown in the figures of the readings up until this point. For this, a new hole was dug and a new tensiometer was inserted at this time.
May/04	Missing data from 11/05 – 02/06.
02/06/04	Cut grass in cages.
14/06/05	Tensiometers were degassed.
25/07/05	Cut grass
26/07/05	Degassed tensios. Reinstalled tensios at 10 cm depth – not all but those that could be easily lifted from the ground as a result of it becoming too dry and coming away from the tensios. Two cages were off at transect 1 (above the shelterbelt). Need to degass and re-install 10cm depth at point 1.2. Hillslope logger again was on standby and therefore no data was collected. This has happened before. Not sure if it was operator error or not.
03/10/05	Tensiometer 1.1.50 was removed some time in October 2005 for recalibration because of the very high values.  There are other tensiometers in the hillslope study that require examination. T2.2.10, and T3.3.50.
10/11/05	Tensiometers 2.2.10 and 3.3.50 removed for testing.
16/11/05	Because T1.3.50 in the bowl study area was giving high positive readings. All vents were checked by lifting the guttering that protected them. It was found that some of the events had become buried as a result of earthworm activity. Any vents found to be buried were exposed.
19/12/05.	Tensios. 1.1.50, 2.2.10, and 3.3.50 reinstalled at ~1300 GMT
10/01/06	Degassed tensios 3.1.50, 3.3.50. T2.1.30 degassed significant amount of air present T2.3.10 requires reinstalling.

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02/03/06	Hillslope stopped logging. Discovered 20/03/06
04/04/06	Hillslope tensios – all vents checked; vents uncovered T3.2.50 & T3.3.30 @ ~ 1430GMT
11/04/06	Delta-T downloaded
21/04/06	Degassed tensios and checked vents. T2.1 30cm had lots of air in it.
04/05/06	Some data missing from 13 – 15 <sup>th</sup> April for the tensiometers. The reason being that the download time was missed and the logger set to auto-wrap resulting in the loss of data from the start of the sampling time rather than at the end.
16/05/06	Battery failed on Delta-T
29/06/06	Degassed and cut grass.
07/07/06	degassed tensiometers. Mole hills inside middle cage below shelter belt.
14/07/06	Degassed tensios ~0930. Downloaded and reset clock although not much difference in times.
25/07/06	Degassed
02/08/06	Degassed.
	<p>Roger: the streams are drier now than in 76. some pools were still there then, whilst now they're completely dry. He's had to run water down from the pond for the stock. In '76 he found a hole where water was coming up in the marsh weeds and dug down to find water had pushed up through blue clay and if you put your arm in, there was white sand coming up with the water. He built 2 wells on the site.</p> <p>Downloaded delta t in shelter belt at 1310GMT. T2.1 nad 2.2 showing negative readings whilst all others are dry 600-800. cleaned gutters of olf of litter and soil. Black plastiv needs attention on olf traps. OLF bucket RH upslope 103mm1330GMT and LH upslope 88mm1335GMT. Bucket standing a bit dodgy, ground uneven.</p>
08/08/06	Degassed tensios
10/08/06	Hole for weir boxes being dug at hillslope shelter belt by digger.
16/08/06	Downloaded 12:55 GMT battery OK. Degassed cage 3 below

	shelter belt
17/08/06	Degassed rest of hillslope
21/08/06	T2 Pipe connecting to barrel found disconnected. Downloaded.T2.2.30 to be removed others require further monitoring.
30/08/06	Permeameter done below shelter belt
31/08/06	Permeameter done inside shelter belt but not the 40cm one. Tensios degassed.
21/09/06	Downloaded tensios. Changed battery – logging.
27/09/06	Degassed all tensios and cut grass (also see treeplanted_olf)
26/10/06	Grass in cages cut
06/12/06	Reinstalled 2.2.30. Removed 3.1.30 as data was dodgy and replaced it with another.
29/01/07	Discovered that a mole hill had appeared around the tensiometers in cage 1.1
20/02/07	Because of the mole hole that had appeared in tension cage 1.1. All 3 tensios were reinstalled. Because of the odd readings of tensios in 3.1. all 3 tensios. Were reinstalled.
29/03/07	30cm tensio in right hand cage above shelterbelt was giving strange readings. Delta T was re-wired and this was corrected. Or so we thought but data from 29/03/07 to 01/04/07 is obviously not correct.
18/04/07	It was discovered that the fuse had gone connecting the logger to the power. From looking at the data it appears that this may have occurred on the 29/03/07 just following the previous download. NO DATA FOR PERIOD 01/04/07 to 01/05/07.
23/04/07	Degassed hillslope pm. Cut grass in the hillslope in grazed areas
01/05/07	Data OK from 11:00GMT for the first time since 29/03/07 14:50. BUT T3.1.50 giving bad data.
12/06/07	Re-installed 1.2.10 because loose. Removed 2.1.30 because jumping around. Also removed 3.1.50 and 3.2.10 because reading outside limit until disconnected then reading were jumping around.
15/06/07	Re-inserted removed tensios with ones that are working correctly.

25/07/07	Cut grass in cages. T3.3.10 air vent chewed by rodent
22/08/07	De-gassed all tensios. Rodent attack on wires of 3.3.10 and 50. Repaired these (hopefully). Noisy response of 3.3.30 tensio. Changed output channel from 26 to 28.
30/08/07	Mole mayhem in third cage RHS looking uphill on above s'belt tensios. Some white stuff in tensio tubes.
04/09/07	Cut grass in cages
01/10/07	Logger had not been logging since last downloaded on 17/09/07. Started logging and downloaded next day (02/10/07) and everything was working OK. Replaced desiccant.
03/10/07	Discovered that data downloaded on the 02/10/07 was not right
11/10/07	Solved problem with logger: relay connector had come loose. De-gassed tensios.
30/10/07	Problems with T1.3.30, T3.1.10 therefore new tensiometers were installed and replaced these ones. It was thought that tensios T2.1.10 and 2.2.10 were too dry. These were removed and others installed instead of.
31/10/07	Logger box failure
06/11/07	On inspection of logger box it was discovered that the battery was about 3.8 V. It was changed at the logger seems to be working fine.
22/11/07	T3.1.10 wire had been chewed through.
27/11/07	Cut grass, replaced clear tensio tubes with white stuff in and put foam covers on tensios that didn't have one with above and below shelter belt tensios. Around 12:45-1:45 GMT. Also replaced T3.1.10 (chewed wire) with new one (30cm shaft) at around 14:00 GMT. (without quartz powder)
29/11/07	Delta T had stopped logging (20/11/07) started again OK and was still logging when checked on 30/11/07.
19/02/08	Removed delta-T.
03/03/08	Put delta T back. All working OK.
29/04/08	Removed all tensios in cages 1 and 3 from above and below shelterbelt transects and changed the delta T program

	accordingly. Whilst doing this the 10cm tensios left above and below the shelterbelt were dislodged and the holes damaged. Didn't have the auger so couldn't re-install.
08/05/08	Reinserted 10cm tensios in above and below shelterbelt cages in new holes. Downloaded delta T onto old laptop to check working OK – it was although battery reading very low. It still read very low even when replaced with a fully charged battery! CHECK THIS
16/05/08	Delta T still logging but still reading low battery when battery fully charged. Data also very strange.
04/06/08	Logger replaced due to the fact that it was not accessing the external battery source
25/07/08	Cut grass in tensio cages.
26/08/08	Replaced tensios with recalibrated tensiometers between 1220 and 1340 GMT. Outside of the tree areas the new tensios were installed in areas adjacent to the former sites. These have all been installed at an angle of 15° relative the ground surface. Within the tree area recalibrated tensios where inserted into the same holes as previous apart from at site 3 within the tree areas where the ground was heavily disturbed by badgers it is believed. At present this site is vacant of tensios.
02/09/08	Tensios. Installed at an angle of 15° will have the offset changed from -5 hPa to -4.8 hPa. This will be applied to those outside of the tree area only as the tensios installed within the tree area were installed in the same (assumed to be vertical) holes. Because this was not imbedded into the logger programme as soon as the new tensios manipulation of the data set (+0.2 hPa) is required to those tensios installed outside the tree area.
16/10/08	Replaced tensio 2.2.10 (serial no 185) with another 10 cm depth tensio (serial no. 171)
24/10/08	Cut grass in tension cages within the pasture
31/10/08	Replaced tension 3.2.10 Serial No. 180 with serial No. 188
03/11/08	Some sort of external battery failure resulted in logger stopping on 29/10/08
02/12/08	Was not logging for the last month for some reason
04/12/08	Between 01/04/07 and 01/05/07 the logger was rewired so that a negative signal meant –ve pressure and visa versa. The programme however was not changed to account for this change

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regarding the offset of -5 cm which should have been reversed and have a +5 offset applied. This is now being applied to all data following from this point as a post collection process. However, as -5 cm has been applied it will be necessary to apply a +10 cm to counter this. See spreadsheets for details.

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25/03/09 Degassed all tensios apart from those at 2.2. cut the grass above and below s'belt

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02/04/09 Replaced tensiometers  
1.2.10 (Below s'belt) 183 out – depth 13 cm 221 in – same hole  
2.2.10 (within s'belt) 171 out – depth 12.5 cm 288 in – same hole  
2.2.30 (within s'belt) 201 out – depth 32.5 cm 291 in – same hole

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06/04/09 After download change the offset on all tensios to 0. where as before it was -5

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20/08/09 One of the tensiometers within the tree shelterbelt at transect location T2.2 had been attacked by something. No rubber tubing and the insulation tubing had been severely chewed.

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