Form #7
Prepared By: Kasey Aderhold

Status: ☒ In progress ☐ Completed

Question from the Community

Name	Doug Wiens		
Date of Contact	11/14/16		
Date of Response	11/14/16	Completion date	
Experiment	Mariana 2012		
IIC Affected & Contact	SIO		
Stations Affected	All SIO Stations		
Contact Information	Doug Wiens, doug@wustl.edu Chen Cai, caichenixt@gmail.com		

Summary:

PI Doug Wiens e-mailed with a question about a possible incorrect or missing leap second correction in the SIO stations for the Mariana 2012-2013 experiment. There was a possibility of difference between the PI copy of the data and the data at the DMC, but the issue was confirmed to be in the DMC copy at least. Problem was identified when doing noise cross correlations between SIO/LDEO stations and SIO/land stations, with a sudden change between June and July.

Steps Taken:

Date	Action
11/14/16	Doug contacts SIO, LDEO, DMC, OMO.
11/14/16	Kasey responds, clarification questions answered by Doug.
11/15/16	Juan and Kasey look at miniSEED data on the SIO server together, confirm the leap second correction was not done in the same way as it is now, time_correction flag not set.
12/2/16	E-mail sent to Juan about open issue.
12/19/16	E-mail sent to Juan about open issue.
1/27/17	E-mail sent to Juan about open issue.
2/6/17	E-mail sent to Juan about open issue.
2/23/17	E-mail sent to Juan about open issue.
3/23/17	E-mail from Doug after discussion with Jeff at meeting; email sent to Doug, Jeff, Juan, Chen, Brent, Melody, and Bob W summarizing status.
5/2/17	E-mail sent to Juan about open issue.

Figure 1. SeismQuery plot showing available data around the leap second for a SIO station (B01), LDEO station (B04), and a land station (GUGU).

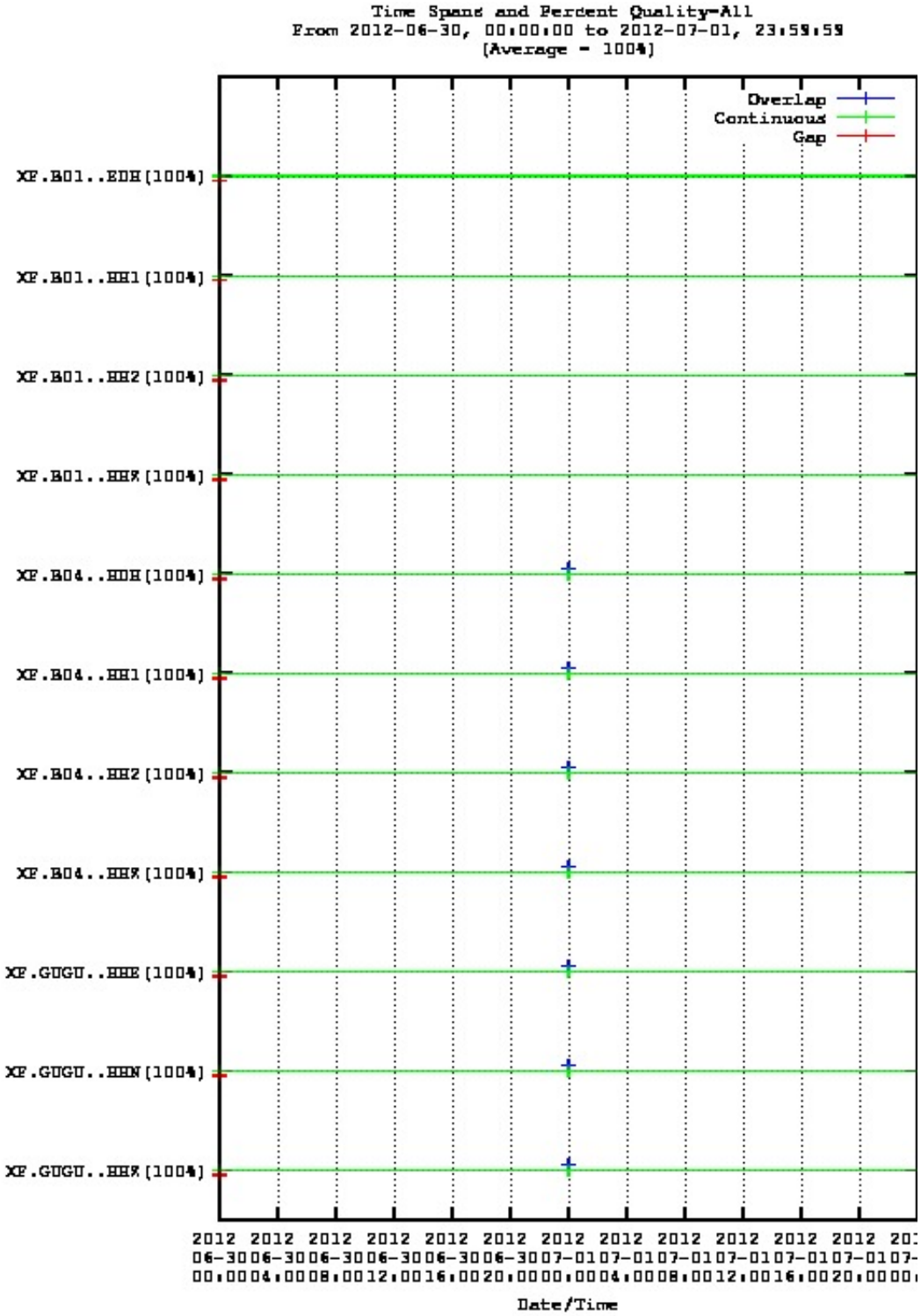

Figure 2. Table showing the gaps and overlaps in the SeismiQuery figure produced for Figure 1. Gaps are only due to the jagged ends of day files and do not represent actual gaps in the continuous data.

NE.STA.LO.CHA	Starttime	Endtime	Duration (days, hh:mm:ss)
XF.B01..EDH	2012-06-30 00:00:00	2012-06-30 00:00:06	0, 00:00:06 g
XF.B01..HH1	2012-06-30 00:00:00	2012-06-30 00:00:06	0, 00:00:06 g
XF.B01..HH2	2012-06-30 00:00:00	2012-06-30 00:00:06	0, 00:00:06 g
XF.B01..HHZ	2012-06-30 00:00:00	2012-06-30 00:00:06	0, 00:00:06 g
XF.B04..HDH	2012-06-30 00:00:00	2012-06-30 00:00:16	0, 00:00:16 g
XF.B04..HDH	2012-06-30 23:59:59	2012-07-01 00:00:00	0, 00:00:01 o
XF.B04..HH1	2012-06-30 00:00:00	2012-06-30 00:00:11	0, 00:00:11 g
XF.B04..HH1	2012-07-01 00:00:00	2012-07-01 00:00:01	0, 00:00:01 o
XF.B04..HH2	2012-06-30 00:00:00	2012-06-30 00:00:01	0, 00:00:01 g
XF.B04..HH2	2012-07-01 00:00:07	2012-07-01 00:00:08	0, 00:00:01 o
XF.B04..HHZ	2012-06-30 00:00:00	2012-06-30 00:00:15	0, 00:00:15 g
XF.B04..HHZ	2012-07-01 00:00:12	2012-07-01 00:00:13	0, 00:00:01 o
XF.GUGU..HHE	2012-06-30 00:00:00	2012-06-30 00:00:19	0, 00:00:19 g
XF.GUGU..HHE	2012-07-01 00:00:01	2012-07-01 00:00:02	0, 00:00:01 o
XF.GUGU..HHN	2012-06-30 00:00:00	2012-06-30 00:00:19	0, 00:00:19 g
XF.GUGU..HHN	2012-07-01 00:00:01	2012-07-01 00:00:02	0, 00:00:01 o
XF.GUGU..HHZ	2012-06-30 00:00:00	2012-06-30 00:00:13	0, 00:00:13 g
XF.GUGU..HHZ	2012-07-01 00:00:01	2012-07-01 00:00:02	0, 00:00:01 o

Figure 3. Output from mSEED files from DMC using msi.

```
bash-3.2$ ~/Downloads/msi-3-1.6/msi -G GUGU.XF.mseed
   Source                Last Sample             Next Sample       Gap  Samples
XF_GUGU__HHE      2012,183,00:00:02.670000 2012,183,00:00:01.680001 -0.99 99.9999
XF_GUGU__HHN      2012,183,00:00:02.670000 2012,183,00:00:01.680001 -0.99 99.9999
XF_GUGU__HHZ      2012,183,00:00:02.670000 2012,183,00:00:01.680001 -0.99 99.9999
Total: 3 gap(s)
bash-3.2$ ~/Downloads/msi-3-1.6/msi -G B04.XF.mseed
   Source                Last Sample             Next Sample       Gap  Samples
Total: 0 gap(s)
bash-3.2$ ~/Downloads/msi-3-1.6/msi -G B01.XF.mseed
   Source                Last Sample             Next Sample       Gap  Samples
Total: 0 gap(s)
bash-3.2$
```