

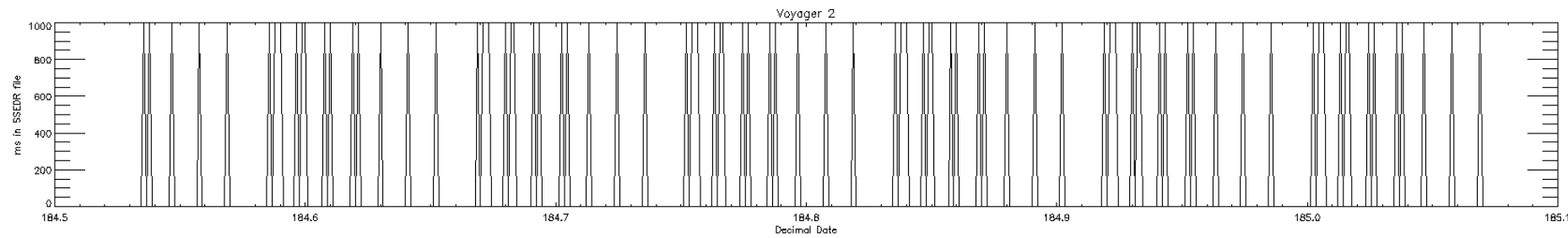
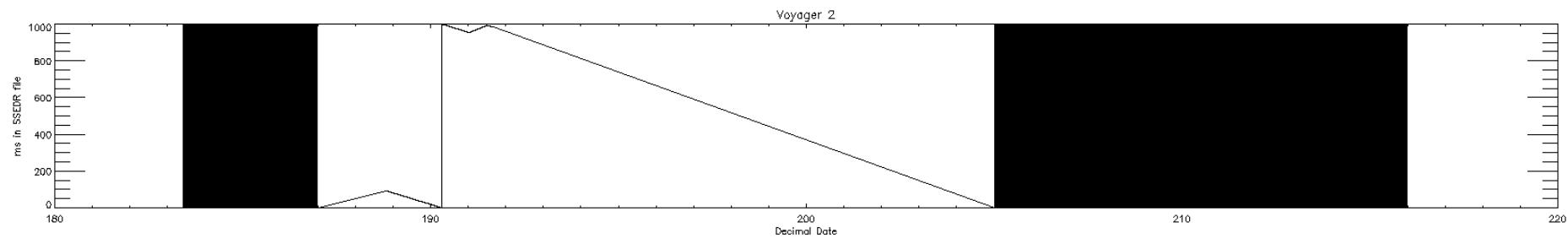
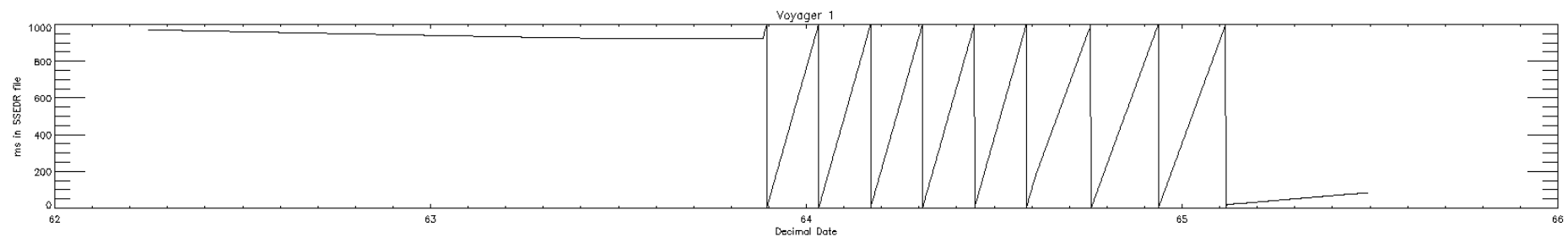
From Logan Dougherty – June 9, 2015 – Re: messed up milliseconds.

Next is a plot of data from the Voyager 1 and Voyager 2 SSEDR files. The y axis is the Decimal date, and the x axis is the number of milliseconds in the measurement. In the Voyager 1 data, it all makes sense and the data ranges from 0 milliseconds to 999 milliseconds.

However, with the Voyager 2 data, it appears that for a large portion of the text file the value for milliseconds is either 0 or 1000 (which is just 1 second) and is a trivial output. In my program I have rounded it and adjusted the seconds. The error can then propagate through if it is 59 seconds and 1000 milliseconds, so the code currently accounts for that and adjusts the values to propagate through that error. The middle plot is all of the Voyager 2 data, about 15,653 data points. It looks like a black chunk because they alternate between 0 and 1000 frequently. I zoomed in one one range in the 3rd plot to show that it is either 0 or 1000.

From this, it would appear that there is an error in the calculation of the milliseconds, and hopefully not seconds or minutes, from the original code from MIT. I'll attach the two data files as well. Timestamps for milliseconds can be found in both the 6th column (trajectory timestamps) and the 39th column (pointing timestamps).

- Logan



# v1jup.ssedr.rob

1979 62 6 0 35 970 -2.24571E+06 2.22237E+06 109583. 398.241 383.075 -0.781218 1.23683E+06 -2.90926E+06 24721.7 -2.38935 13.7913 -0.327090 -420814. -14762.9 60.3238 -574900. 356376. -4574.32  
-790897. -723218. -4183.84 995241. -1.60692E+06 -3067.89 -313632. 1.86304E+06 58492.5 1979 62 5 59 47 984 -0.682896 -0.538747 -0.493359 -0.380669 -0.313975 0.869775 -0.623492 0.781774  
9.32826E-03  
1979 62 6 2 11 970 -2.20718E+06 2.25882E+06 109508. 404.450 376.175 -0.781261 1.23660E+06 -2.90793E+06 24690.3 -2.38983 13.7925 -0.327100 -420976. -9323.86 59.3147 -569504. 364926. -4581.07  
-802303. -710546. -4184.62 968649. -1.62310E+06 -3066.16 -314406. 1.86292E+06 58478.2 1979 62 6 1 23 984 -0.682913 -0.538530 -0.493573 -0.381075 -0.313814 0.869656 -0.623226 0.781989  
9.08700E-03  
1979 62 6 3 47 970 -2.16806E+06 2.29459E+06 109433. 410.540 369.174 -0.781303 1.23637E+06 -2.90661E+06 24658.9 -2.39031 13.7936 -0.327109 -421068. -3883.07 58.3046 -563981. 373394. -4587.80  
-813505. -697694. -4185.39 941794. -1.63883E+06 -3064.43 -315180. 1.86279E+06 58463.8 1979 62 6 2 59 984 -0.682903 -0.537982 -0.494185 -0.382186 -0.313404 0.869316 -0.622556 0.782529  
8.41529E-03  
1979 62 6 5 23 970 -2.12836E+06 2.32969E+06 109358. 416.508 362.075 -0.781345 1.23614E+06 -2.90528E+06 24627.5 -2.39080 13.7947 -0.327119 -421089. 1558.59 57.2936 -558332. 381778. -4594.53  
-824502. -684665. -4186.16 914683. -1.65412E+06 -3062.70 -315954. 1.86266E+06 58449.5 1979 62 6 4 35 984 -0.682345 -0.539026 -0.493817 -0.380974 -0.314320 0.869518 -0.623910 0.781443  
9.12038E-03  
1979 62 6 6 59 970 -2.08809E+06 2.36411E+06 109283. 422.354 354.879 -0.781387 1.23592E+06 -2.90396E+06 24596.1 -2.39128 13.7958 -0.327128 -421040. 7000.20 56.2818 -552558. 390076. -4601.23  
-835290. -671463. -4186.92 887325. -1.66896E+06 -3060.97 -316728. 1.86254E+06 58435.2 1979 62 6 6 11 984 -0.682867 -0.538610 -0.493549 -0.380779 -0.314145 0.869667 -0.623457 0.781800  
9.42779E-03  
1979 62 6 8 35 970 -2.04727E+06 2.39783E+06 109208. 428.075 347.590 -0.781430 1.23569E+06 -2.90264E+06 24564.7 -2.39176 13.7970 -0.327138 -420921. 12440.9 55.2690 -546661. 398288. -4607.91  
-845866. -658091. -4187.68 859726. -1.68335E+06 -3059.24 -317503. 1.86241E+06 58420.8 1979 62 6 7 47 984 -0.683073 -0.538165 -0.493749 -0.381198 -0.313947 0.869554 -0.622976 0.782186  
9.30134E-03  
1979 62 6 10 11 970 -2.00591E+06 2.43084E+06 109133. 433.671 340.208 -0.781472 1.23546E+06 -2.90131E+06 24533.3 -2.39224 13.7981 -0.327147 -420732. 17879.7 54.2554 -540642. 406410. -4614.58  
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9.11742E-03  
1979 62 6 11 47 970 -1.96401E+06 2.46314E+06 109058. 439.140 332.737 -0.781514 1.23523E+06 -2.89999E+06 24501.9 -2.39273 13.7992 -0.327157 -420472. 23315.7 53.2410 -534502. 414441. -4621.23  
-866375. -630851. -4189.18 803835. -1.71076E+06 -3055.77 -319051. 1.86216E+06 58392.1 1979 62 6 10 59 984 -0.683073 -0.537783 -0.494166 -0.381852 -0.313797 0.869321 -0.622574 0.782508  
8.99253E-03  
1979 62 6 13 23 970 -1.92160E+06 2.49472E+06 108982. 444.480 325.178 -0.781557 1.23500E+06 -2.89866E+06 24470.5 -2.39321 13.8003 -0.327166 -420142. 28748.1 52.2256 -528243. 422379. -4627.86  
-876301. -616990. -4189.93 775558. -1.72376E+06 -3054.04 -319825. 1.86203E+06 58377.7 1979 62 6 12 35 984 -0.682903 -0.537868 -0.494310 -0.381984 -0.313861 0.869240 -0.622681 0.782425  
8.87955E-03  
1979 62 6 14 59 970 -1.87868E+06 2.52558E+06 108908. 449.690 317.533 -0.781599 1.23477E+06 -2.89734E+06 24439.1 -2.39369 13.8015 -0.327176 -419742. 34175.8 51.2095 -521866. 430223. -4634.48  
-886006. -602973. -4190.67 747071. -1.73631E+06 -3052.31 -320598. 1.86191E+06 58363.3 1979 62 6 14 11 984 -0.682569 -0.538056 -0.494565 -0.382194 -0.314003 0.869097 -0.622918 0.782239  
8.68692E-03  
1979 62 6 16 35 970 -1.83526E+06 2.55569E+06 108832. 454.768 309.806 -0.781641 1.23454E+06 -2.89601E+06 24407.7 -2.39418 13.8026 -0.327185 -419271. 39598.1 50.1926 -515373. 437971. -4641.08  
-895487. -588803. -4191.41 718382. -1.74838E+06 -3050.57 -321372. 1.86178E+06 58348.9 1979 62 6 15 47 984 -0.682401 -0.538139 -0.494706 -0.382387 -0.313984 0.869018 -0.622983 0.782189  
8.48616E-03  
1979 62 6 18 11 969 -1.79136E+06 2.58506E+06 108757. 459.714 301.997 -0.781684 1.23431E+06 -2.89469E+06 24376.3 -2.39467 13.8037 -0.327195 -418731. 45014.0 49.1749 -508764. 445620. -4647.66  
-904741. -574484. -4192.15 689497. -1.75997E+06 -3048.84 -322146. 1.86165E+06 58334.5 1979 62 6 17 23 984 -0.682781 -0.538267 -0.494043 -0.381442 -0.314108 0.869389 -0.623147 0.782051  
9.14884E-03

# v2jup.ssedr.rob

1979 183 10 0 0 0 -4.56300E+06 5.59688E+06 797743. 988.597 793.901 -1.26886 2.04836E+06 -6.94611E+06 581669. -0.738550 9.58248 -0.939611 419884. -16817.0 22.5903 -650326. -139418. -5587.66  
-1009485. -359542. -3567.46 1.55846E+06 1.07664E+06 4353.43 -1.85246E+06 -393646. -37437.8 1979 183 10 0 0 0 -0.571912 -0.493317 -0.655404 -0.483444 -0.442780 0.755135 -0.662721 0.748722  
1.47402E-02

1979 183 10 1 36 0 -4.46747E+06 5.67228E+06 797621. 1001.713 777.028 -1.26889 2.04829E+06 -6.94519E+06 581579. -0.738613 9.58270 -0.939629 419629. -22234.6 23.6466 -652326. -129725.  
-5585.71 -1.01508E+06 -343438. -3569.75 1.57598E+06 1.05083E+06 4354.64 -1.85230E+06 -394411. -37461.3 1979 183 10 1 36 0 -0.572526 -0.493140 -0.655001 -0.483079 -0.442596 0.755476  
-0.662456 0.748947 1.51716E-02

1979 183 10 3 11 1000 -4.37068E+06 5.74606E+06 797499. 1014.54 759.938 -1.26891 2.04822E+06 -6.94427E+06 581489. -0.738676 9.58292 -0.939648 419303. -27648.4 24.7025 -654181. -120004.  
-5583.74 -1.02041E+06 -327247. -3572.04 1.59307E+06 1.02473E+06 4355.84 -1.85213E+06 -395175. -37484.8 1979 183 10 3 11 1000 -0.573049 -0.493020 -0.654634 -0.482632 -0.442558 0.755784  
-0.662330 0.749048 1.56609E-02

1979 183 10 4 48 0 -4.27268E+06 5.81818E+06 797377. 1027.08 742.636 -1.26894 2.04814E+06 -6.94335E+06 581399. -0.738739 9.58314 -0.939666 418908. -33057.4 25.7580 -655892. -110255. -5581.75  
-1.02549E+06 -310974. -3574.32 1.60972E+06 998355. 4357.05 -1.85196E+06 -395940. -37508.3 1979 183 10 4 48 0 -0.572496 -0.492784 -0.655296 -0.483424 -0.442656 0.755220 -0.662231 0.749146  
1.51955E-02

1979 183 10 6 23 1000 -4.17350E+06 5.88864E+06 797256. 1039.32 725.128 -1.26896 2.04807E+06 -6.94243E+06 581308. -0.738802 9.58336 -0.939685 418443. -38460.8 26.8132 -657457. -100483.1  
-5579.73 -1.03031E+06 -294622. -3576.60 1.62594E+06 971709. 4358.25 -1.85180E+06 -396704. -37531.8 1979 183 10 6 23 1000 -0.571879 -0.492940 -0.655717 -0.483707 -0.442960 0.754860 -0.662557  
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1979 183 10 7 59 1000 -4.07314E+06 5.95740E+06 797134. 1051.26 707.418 -1.26899 2.04800E+06 -6.94151E+06 581218. -0.738866 9.58358 -0.939703 417909. -43857.8 27.8679 -658877. -90688.5  
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1979 183 10 9 35 1000 -3.97166E+06 6.02446E+06 797012. 1062.91 689.512 -1.26902 2.04793E+06 -6.94059E+06 581128. -0.738929 9.58380 -0.939722 417305. -49247.2 28.9221 -660151. -80874.0  
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1979 183 10 11 12 0 -3.86908E+06 6.08978E+06 796890. 1074.24 671.414 -1.26904 2.04786E+06 -6.93967E+06 581038. -0.738992 9.58402 -0.939740 416631. -54628.4 29.9759 -661278. -71041.5  
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1979 183 10 12 48 0 -3.76542E+06 6.15336E+06 796768. 1085.27 653.130 -1.26907 2.04779E+06 -6.93875E+06 580948. -0.739055 9.58424 -0.939759 415888. -60000.4 31.0293 -662259. -61193.6  
-5571.44 -1.04696E+06 -228508. -3585.70 1.68637E+06 862565. 4363.05 -1.85112E+06 -399760. -37625.8 1979 183 10 12 48 0 -0.572384 -0.493062 -0.655184 -0.482938 -0.443031 0.755311 -0.662682  
0.748741 1.54658E-02