Mirror SmugMug Statistics

December 1, 2022

0.1 Mirror SmugMug Statistics

This notebook runs queries against the `sqlite` database `mirror.db` that holds consolidated Smug-Mug online image metadata.

Images are here: https://conceptcontrol.smugmug.com/.

```
[1]: NB. J version - notebook runtime
     smoutput 9!:14''
     smoutput timestamp 6!:0 ''
```

```
j903/j64avx2/windows/release-a/commercial/www.jsoftware.com/2021-12-16T15:15:09/
clang-13-0-0/SLEEF=1
01 Dec 2022 09:47:34
```

0.1.1 Load `mirrorstats` script

The `mirrorstats.ijs` script must be made available to the J `load` utility. The `JOD` `mls` verb does this automatically.

Alternatively you can edit the J start up script `~config/startup.ijs` and add lines like:

```
 buildpublic_j_ 0 : 0
 mirrorstats  ~temp/mirrorstats.ijs
 )
```

```
[2]: load 'mirrorstats'
```

```
NB. (mirrorstats) interface word(s): 20221130j114020
NB. ------------------------------
NB. NotDivisible        NB. albums with image counts that are not divisible by 3
and 5
NB. albdist             NB. all mean album distances km from position (x)
NB. fsd                 NB. fetch sqlite dictionary array
NB. fst                 NB. fetch sqlite reads table
NB. gpsextremesgallery  NB. list images with gps extremes
NB. meanalbdist         NB. mean km distance of geotagged album images from (x)
```

0.1.2 Set `mirror.db` database file location

Note: a test `mirror.db` is available on GitHub.

```
[3]: NB. set sqlite db file
     (3 : 0)''
     ALTMIRRORDBPATH_mirrorstats_=:''
     if.    IFWIN  do. ALTMIRRORDBPATH_mirrorstats_=:'c:/SmugMirror/Documents/
      ↪XrefDb/'
     elseif. IFUNIX do. ALTMIRRORDBPATH_mirrorstats_=:'~/jupyter_notebooks/dbs/'
     end.
     if. fexist dbf=: ALTMIRRORDBPATH,MIRRORDB do. dbf else. 'db not set' end.
     )
     smoutput dbf
```

c:/SmugMirror/Documents/XrefDb/mirror.db

0.1.3 Set various utils

```
[4]: NB. set portable box characters for LaTeX
     0 0$portchars ''

     NB. cell clip format
     ccf=: [ {."1 [: ": ]
```

0.1.4 Set homebase coordinates

The home coordinates are set in this fashion to avoid embedding location data in code.

`homebase.txt` is a simple text file with a single line like:

109.375956 -33.852775

Longitude and Latitude are in decimal degrees and use the sign conventions of Jean Meeus's book *Astronomical Algorithms*.

```
[5]: NB. longitude and latitude of home decimal degrees
     NB. western longitudes +, northern latitudes +
     (3 : 0)''
     if. fexist  ALTMIRRORDBPATH,'homebase.txt' do.
       MeeusHomeLonLat_mirrorstats_=: _999&".read ALTMIRRORDBPATH,'homebase.txt'
     else.
       MeeusHomeLonLat_mirrorstats_=: 0 0
     end.
     )
     smoutput (;:'Longitude Latitude') ,: <"0 MeeusHomeLonLat_mirrorstats_
```

```
+---------+--------+
|Longitude|Latitude|
+---------+--------+
```

```
|0        |0      |
+---------+-------+
```

0.1.5 Load SQLITE data

```
[6]: NB. image columns
     ({."1 r)=: {:"1 r=: 'select * from OnlineImage order by UpLoadDate desc' fsd dbf

     NB. album columns
     ({."1 r)=: {:"1 r=: 'select * from Album order by OnlineImageCount desc' fsd dbf
```

0.1.6 Total online image count

```
[7]: 'select count(*) as OnlineCount from OnlineImage' fst dbf
```

```
+-----------+
|OnlineCount|
+-----------+
|5468       |
+-----------+
```

0.1.7 Recent album adjustments

```
[8]: NB. most recently "updated" albums
     r=: 'select ImagesLastUpdated, AlbumName from Album order by LastUpdated desc␣
      ↪limit 5' fsd dbf

     NB. display with album "centroid" distance
     NB. 0 distance means no geotagged images
     (>&.> {:"1 r) , < ,. meanalbdist&> ;1{1{ r
```

```
+-------------------------+------------------------+-------+
|2022-11-30T19:47:07+00:00|GPS Extremes            |  12849|
|2022-11-30T17:00:12+00:00|Australia New Zealand 2022|15106.6|
|2022-11-30T17:08:07+00:00|Panoramas               |11817.4|
|2022-11-27T20:46:36+00:00|Image Hacking           |  11622|
|2022-11-26T21:44:04+00:00|Alpha Layered           |      0|
+-------------------------+------------------------+-------+
```

0.1.8 Recent image additions

```
[9]: NB. last 15 images loaded
     ;"1 ] 15 {. (10 {.&.> RealDate) ,. (<' - ') ,. OnlineImageFile
```

```
2022-10-20 - walpa gorge rock trail.jpg
2022-10-20 - kata tjuta morning.jpg
2022-10-20 - conglomerate tjuta boulder.jpg
```

```
2022-10-29 - old cars ship dock.jpg
2022-10-19 - me uluru sunset.jpg
2022-11-06 - color pipe dream.jpg
2022-11-27 - receding.jpg
2022-11-27 - circle bin chicken saint.png
2022-10-27 - mali christchurch bridge of rembrance.jpg
2022-11-06 - bondi beach swim club.jpg
2022-10-31 - victoria albert park auckland.jpg
2022-10-31 - auckland downtown dock.jpg
2022-11-06 - bondi mirror ball.jpg
2022-10-22 - mali cruise ship opera house.jpg
2022-10-22 - ok quay cruise ship.jpg
```

0.1.9 Album statistics

[10]:
```
NB. 10 largest albumns
10 {. (>AlbumName) ,. ": ,. >OnlineImageCount
```

```
Idaho Instants               487
The Way We Were              430
Cell Phoning It In           354
Weekenders                   336
Missouri Moments             315
California Captures          303
My Kids                      198
Australia New Zealand 2022   185
Image Hacking                178
Panoramas                    170
```

[11]:
```
NB. album image counts
dstat OnlineImageCount
```

```
sample size:            85
minimum:                 0
maximum:               487
1st quartile:           16
2nd quartile:           48
3rd quartile:          109
first mode:              0
first antimode:        487
mean:              78.3176
std devn:          97.0931
skewness:           2.2279
kurtosis:           8.2003
```

0.1.10 Images per year

My image dates are a mixture of EXIF dates and manually assigned dates. The manually assigned dates are rarely accurate and reflect my best guess as to when a picture was taken. Many images do not have dates. They show up in year 0.

```
[12]: NB. images per year - year 0 means no date
      70 list ',' ,.~  ": rf=: \:~ |: yic=: > freq 0 {"1 rdt=: itYMDhms RealDate
```

```
2022 508, 2021 164, 2020  98, 2019 446, 2018 294, 2017 227, 2016 298,
2015 207, 2014  98, 2013 172, 2012 178, 2011 217, 2010 152, 2009 144,
2008 180, 2007 284, 2006 166, 2005 120, 2004 110, 2003  79, 2002 118,
2001 136, 2000  34, 1999   6, 1996   1, 1995  19, 1994   8, 1993   8,
1992  18, 1991  13, 1990   4, 1989  14, 1988   6, 1987  10, 1986   6,
1985   4, 1984   2, 1983  42, 1982   4, 1981  37, 1980  17, 1979  90,
1978  27, 1977  10, 1976  20, 1975   8, 1974  22, 1973   4, 1972   5,
1971  23, 1970  33, 1969  22, 1968  45, 1967  32, 1966  24, 1965   5,
1964  13, 1963   9, 1962  21, 1961   6, 1960   7, 1959  17, 1958  14,
1957   7, 1956   6, 1955  11, 1954  10, 1953   4, 1952   7, 1951   3,
1950   9, 1949  18, 1948  10, 1947   3, 1946   5, 1945   2, 1944   2,
1943   1, 1942   1, 1941   7, 1940   6, 1939   2, 1938   3, 1937   2,
1936   5, 1935   4, 1934   3, 1933   1, 1932   1, 1931   5, 1930   1,
1929   1, 1928   1, 1927   2, 1925   2, 1924   1, 1920   2, 1919   2,
1917   2, 1916   2, 1914   1, 1912   1, 1910   4, 1908   3, 1907   1,
1906   2, 1905   3, 1902   2, 1901   1, 1900   1, 1897   1, 1894   1,
1888   2, 1880   2, 1870   1, 1864   1,    0 181,
```

```
[13]: NB. compare current year image count to prior years
      NB. show no more than 5 greater counts
      gyc=: rf #~ (1 {"1 rf) > cyc=: (<0;1){rf
      (5 <. #gyc) {. gyc ,. (1 {"1 gyc) - cyc
```

Images per year statistics since the year 2000. It was around 2000 that I started saving digital image files.

```
[14]: NB. images per year statistics for years after 1999
      dstat (1 {"1 rf) #~ 1999 < 0 {"1 rf
```

```
sample size:          23
minimum:              34
maximum:             508
1st quartile:        118
2nd quartile:        166
3rd quartile:        227
first mode:           98
first antimode:      508
mean:            192.609
std devn:        112.527
skewness:         1.3617
```

```
kurtosis:         4.5651
```

0.1.11 Uploads per year

I often upload old images that get counted in prior years. These counts reflect actual database inserts. Note the count of 724 in 2019. I did not insert that many images in 2019. The upload count probably reflects reorganizing existing images. The count of 1531 in 2009 marks the year I transferred my online images to SmugMug.

```
[15]: 70 list ',' ,.~  ": uf=: \:~ |: upc=: > freq 0 {"1 udt=: itYMDhms UploadDate

2022  529, 2021  203, 2020  109, 2019  724, 2018  352, 2017  319,
2016  362, 2015  222, 2014  102, 2013  256, 2012  233, 2011  314,
2010  212, 2009 1531,
```

```
[16]: NB. uploads per year statistics - less outliers > 600
      dstat (1 {"1 uf) #~ 600 > 1 {"1 uf

sample size:          12
minimum:             102
maximum:             529
1st quartile:      207.5
2nd quartile:      244.5
3rd quartile:      335.5
first mode:          529
first antimode:      529
mean:             267.75
std devn:         117.71
skewness:         0.6032
kurtosis:         3.2142
```

0.1.12 *Flarp* rate

The *flarp rate* gives a rough indication of how much image rework and reloading I do. It shows up as a discrepancy between year counts and upload counts.

```
[17]: smoutput flc=: (0{upc) ,: (1{upc) - 1{(\:~)&.|: yic #"1~ (0{yic) e. 0{upc

2022 2021 2020 2019 2018 2017 2016 2015 2014 2013 2012 2011 2010 2009
  21   39   11  278   58   92   64   15    4   84   55   97   60 1387
```

Flarp statistics excluding the first upload year.

```
[18]: dstat }: 1{flc

sample size:          13
minimum:               4
maximum:             278
1st quartile:         18
2nd quartile:         58
```

```
3rd quartile:           88
first mode:             21
first antimode:         21
mean:              67.5385
std devn:          70.3108
skewness:           2.1603
kurtosis:           7.3978
```

0.1.13 NotDivisible counts

NotDivisible counts how many images must be added to a gallery so that the total number of gallery images is evenly divisible by 3 and 5. The iPhone SmugMug app displays images in rows of 3 (portrait) or 5 (landscape) and I like completely filled rows. When the total is evenly divisible by 15 = 3 * 5 both portrait and landscape rows are filled.

[19]: `10 {. NotDivisible dbf`

```
+-------+-+-+--+-------------------+
|[Count]|3|5|15|[Album Name]       |
+-------+-+-+--+-------------------+
|148    |2|2|2 |Simply Signs       |
+-------+-+-+--+-------------------+
|178    |2|2|2 |Image Hacking      |
+-------+-+-+--+-------------------+
|28     |2|2|2 |Alpha Layered      |
+-------+-+-+--+-------------------+
|133    |2|2|2 |Been There Done That|
+-------+-+-+--+-------------------+
|146    |1|4|4 |Caught My Eye      |
+-------+-+-+--+-------------------+
|7      |2|3|8 |Does Not Fit       |
+-------+-+-+--+-------------------+
|7      |2|3|8 |Test Patterns      |
+-------+-+-+--+-------------------+
|7      |2|3|8 |Partial Restorations|
+-------+-+-+--+-------------------+
|22     |2|3|8 |To Much Information |
+-------+-+-+--+-------------------+
```

0.1.14 Dominant color keywords

Keywords starting with 0_ are dominant color keys assigned by the Python SmugPyter program.

[20]: `NB. keyword columns`
`({."1 r)=: {:"1 r=: 'select * from ImageKeywordXr' fsd dbf`

[21]: `topbotk=: 4 : 0`
`NB. topbotk v-- (x) top and bottom (y) keys`
`kf=: ofreq y`

7

```
kf=: (' ' ,. >;0{kf) ,.~ ":>,.;1{kf
(x {. kf) ,. |. (-x) {. kf
)
```

Note: the abundance of neutral, (grey and near grey), colors. Well exposed color balanced images tend, on average, to be neutral. This is why photographers use grey cards and color balancing software picks neutrals.

```
[22]: NB. top/bottom 20 color keywords
      ColorKeys=: Keyword #~ ('0_'&-:)@(2&{.)&> Keyword
      20 topbotk ColorKeys
```

```
542 0_darkslategrey      1 0_forestgreen
382 0_black              1 0_aquamarine
283 0_darkolivegreen     1 0_purple
250 0_steelblue          1 0_mediumslateblue
238 0_dimgrey            1 0_magenta
216 0_darkgrey           1 0_lightyellow
206 0_rosybrown          1 0_lawngreen
197 0_cornflowerblue     1 0_lavenderblush
189 0_lightsteelblue     1 0_indigo
182 0_gainsboro          1 0_springgreen
182 0_tan                1 0_cyan
176 0_lightgrey          1 0_darkmagenta
173 0_grey               1 0_mediumspringgreen
123 0_silver             1 0_floralwhite
120 0_lavender           1 0_cornsilk
 99 0_peru               1 0_mediumorchid
 96 0_lightslategrey     2 0_greenyellow
 96 0_sienna             2 0_lime
 88 0_saddlebrown        2 0_lightgreen
 88 0_skyblue            2 0_hotpink
```

0.1.15 Print size keywords

Print size assumes a resolution of 360 DPI (Dot (pixels) per Inch). This is slightly higher than the frequent default of 300 DPI and was chosen because twice the resolution, 720 DPI, is a common setting for fine art prints. Online prints from SmugMug and elsewhere that use the print sizes computed here will render well.

```
[23]: NB. top/bottom 20 print size keywords
      SizeKeys=: ColorKeys -.~ Keyword #~ ({.&> Keyword) e.&> <'0123456789'
      NB. remove odd keys that do not follow name conventions
      NssKeys=: <;._1 ' 0z0 0z1'
      SizeKeys=: SizeKeys -. (<;._1 ' 50th'),NssKeys
      20 topbotk SizeKeys
```

```
995 5x7         1 2.25x4
951 4x6         1 10x16
575 8x12        1 8x40
347 10x15       1 12x30
298 6x8         1 16x24
274 5x6.7       1 3x3
199 3x4         1 5x8
154 2.5x3.5     1 5.5x14
139 4x5         1 9x21
 94 5x5         1 4x5.3
 67 6x10        1 2x2.5
 63 8x10        2 10x40
 61 3x5         2 16x20
 52 2x3         2 12x24
 41 10x14       2 10x13
 28 4x4         2 11x28
 28 8x8         2 11x16
 25 3.5x5       2 9x16
 18 6x6         2 3.5x3.5
 18 4.5x8       3 6x24
```

[24]: *NB. size keys that indicate not enough pixels or nonstandard aspect ratio*
       `NssKeys ,. <"0 +/"1 NssKeys =/ Keyword`

```
+---+---+
|0z0|267|
+---+---+
|0z1|489|
+---+---+
```

0.1.16 Descriptive keywords

All keywords that are not color or size keys.

[25]: `DescKeys=: Keyword -. ColorKeys,SizeKeys,NssKeys`
      `20 topbotk DescKeys`

```
1456 geotagged            1 rafting
1073 usa                  1 prayer
 570 mali                 1 tooth
 420 me                   1 saber
 259 idaho                1 columns
 235 park                 1 remnants
 209 helen                1 pictographs
 202 iphone               1 skeleton
 188 lake                 1 sizes
 177 river                1 rafts
 173 canada               1 dell
```

```
168 missouri                    1 large
151 jacob                       1 josie
148 museum                      1 powers
129 montana                     1 fremont
128 ontario                     1 knife
118 canyon                      1 hazhard
117 sculpture                   1 lectern
112 california                  1 bride
103 evelyn                      1 bedazzled
```

0.1.17   Panorama statistics

I have enjoyed making panoramas for years. I consider any image with an *aspect ratio >: 2* a panorama. Many of my panoramas have nonstandard ratios, i.e. they are not simple 2x1, 3x1, 4x1, 5x1 … ratios and consequently do not get assigned a size key.

```
[26]: NB. rounded image aspect ratios - aspect ratio is always >: 1
      ratios=: 0.005 round %/"1 \:"1~ OriginalHeight ,. OriginalWidth

      NB. aspect ratio counts
      PanAspects=: >: i. >: >. >./ratios
      smoutput RatioCounts=: ;"1 (2 <\ PanAspects) ,. <"0 }. }: PanAspects histogram2␣
       ↪ratios
```

```
1 2 5208
2 3  165
3 4   66
4 5   25
5 6    4
6 7    0
```

0.1.18   Total number of panoramas with *Aspect Ratio >: 2*

Note: this simple criteria of picking images based on aspect ratio misses some panoramas. Some pictures, built from more than one image, have standard aspect ratios.

```
[27]: +/pancnts=: }. 2 {"1 RatioCounts
```

```
260
```

0.1.19   Online panorama ratios

```
[28]: NB. percentage of panoramic images by aspect ratio - last % is overall
      smoutput panper=: (}. 0 2 {"1 RatioCounts) ,. 0.01 round 100 * pancnts % #ratios
      smoutput '-' ,: '%' ,~ ": }. +/panper
```

```
2 165 3.02
3  66 1.21
4  25 0.46
```

```
5    4 0.07
6    0    0
---------
260 4.76%
```

0.1.20 Most extreme panoramas *Aspect Ratio >: 5*

```
[29]: NB. most extreme panoramas, i.e. aspect ratios >: 5
      80 ccf (OnlineImageFile ,. RealDate ,. Keywords) #~ 5 <: ratios
```

```
+----------------------------------+-----------------+-----------------
|pyramid lake panorama.jpg         |2021-05-04T09:37:47|0_dodgerblue; 8x40;
+----------------------------------+-----------------+-----------------
|adndlbanner01.jpg                 |                 |0_gold; 0z0; adndlb
+----------------------------------+-----------------+-----------------
|jodlittlecubebanner.jpg           |                 |0_lightgrey; 0z0; j
+----------------------------------+-----------------+-----------------
|alexandra bridge ottawa [407055261].jpg|2007-02-28T14:10:00|0_gainsboro; 0z1; a
+----------------------------------+-----------------+-----------------
```

0.1.21 Recently uploaded panoramas

```
[30]: NB. most recent panoramas
      80 ccf ,. 5 {. (OnlineImageFile ,. RealDate ,. Keywords) #~ 2 <: ratios
```

```
+----------------------------------+-----------------+-----------------
|kata tjuta morning.jpg            |2022-10-20T06:10:49|0_lightgreen; 8x3
+----------------------------------+-----------------+-----------------
|color pipe dream.jpg              |2022-11-06T12:23:50|0_chocolate; 0z1;
+----------------------------------+-----------------+-----------------
|auckland downtown dock.jpg        |2022-10-31T15:19:05|0_cornflowerblue;
+----------------------------------+-----------------+-----------------
|sydney darling harbor panorama.jpg|2022-11-03T15:56:30|0_royalblue; 6x24
+----------------------------------+-----------------+-----------------
|canberra national arboretum hill view.jpg|2022-10-15T17:16:55|0_darkgreen; 8x20
+----------------------------------+-----------------+-----------------
```

0.1.22 GPS distances

```
[31]: NB. distances in km from near to far excluding (0,0) lb
      NB. convert to Meeus lb convention for (earthdist)
      plb=: (i. #Longitude) ,. (-Longitude) ,. Latitude
      plb=: |: plb #~ -.0 0 -:"1 ] 1 2 {"1 plb
      plb=: /:~ (0{plb) ,.~ MeeusHomeLonLat earthdist 1 2{plb
```

```
[32]: NB. format image distance
      fmdist=: {{;"1 ":&.> (<"0 ] 0.01 round 0 {"1 y) ,. (<' - ') ,. (1 {"1␣
       ↪y){OnlineImageFile}}
```

11

```
[33]: NB. 10 nearest geotagged images km
      fmdist 10{.plb
```

    1042.84 - ghana secondary school teacher bungalows 1976.jpg
    1042.93 - corn harvest students tamale ghana.jpg
    1043.05 - ghana secondary school [12075167].jpg
    3446.24 - me livingstone airport [47004492].jpg
    3453.59 - mali sprayview hotel [51064919].jpg
    3454.27 - curio market from balloon [49529252].jpg
    3454.37 - vic falls train station [51228396].jpg
    3454.71 - me livingstone statue [19983766].jpg
    3454.82 - victoria falls hotel distance marker [36406766].jpg
    3463.73 - eclipse tour group [2486870].jpg

```
[34]: NB. 10 furthest geotagged images km
      fmdist |. _10{.plb
```

    18358.9 - ruth kwajalein airport sign 1981.jpg
    17705.9 - lab south view 12x4 [5037801].jpg
    17705.9 - mid pacific marine lab from air [254442016].jpg
    17705.9 - me next atoll looking south [5088708].jpg
    17704.7 - enewetak from air [5561415].jpg
    17694.4 - me runit dome [6671846].jpg
    17687.9 - deep diving [7444953].jpg
    16654.9 - me photographing battleship missouri.jpg
    16654.8 - nimitz statue missouri battleship.jpg
    16654.8 - battleship missouri plaque.jpg

```
[35]: NB. image distance statistics
      dstat 0 {"1 plb
```

    sample size: 1458
    minimum: 1042.84
    maximum: 18358.9
    1st quartile: 10065.9
    2nd quartile: 11879.8
    3rd quartile: 12125.1
    first mode: 11909.8
    first antimode: 1042.84
    mean: 11546.2
    std devn: 2187.21
    skewness: _0.511
    kurtosis: 6.0708

```
[36]: NB. 1s mark panoramas
      pbits=: (}.PanAspects) <:"0 1 %/"1 \:"1~ OriginalHeight ,. OriginalWidth

      NB. panorama image distances
```

```
gtp=: plb #~ (1 {"1 plb) e. I. 0{pbits
```

NB. 10 nearest panoramas
```
fmdist 10 {. gtp
```

```
3549.61 - ndeke hotel sign [37985773].jpg
7656.21 - me spittal pond bermuda [278786543].jpg
8879.8 - 132 topham terrace orleans white winter.jpg
8881.84 - petrie island river [98449654].jpg
8897.37 - alexandra bridge ottawa [407055261].jpg
8928.88 - battersea beach dog lake panorama.jpg
8933.55 - kingston from fort henry [2355485].jpg
8934.79 - confederation harbor [12870536].jpg
9429.28 - bed and breakfast view.jpg
9682.96 - artsgarden.jpg
```

NB. 10 furthest panoramas
```
fmdist |. _10 {. gtp
```

```
17705.9 - lab south view 12x4 [5037801].jpg
16653.2 - waikiki beach diamond head panorama.jpg
16651.5 - honolulu from diamond head panorama.jpg
16651.3 - diamond head caldera interior.jpg
16564.4 - mauna kea sunset summit panorama.jpg
16055.1 - ship bridge views.jpg
15889.9 - auckland downtown dock.jpg
15830.7 - brisbane river story bridge.jpg
15227.9 - first day at sea.jpg
15212.1 - color pipe dream.jpg
```

NB. mean panorama distance
```
dstat 0 {"1 gtp
```

```
sample size:        128
minimum:         3549.61
maximum:         17705.9
1st quartile:    11651.4
2nd quartile:    11975.9
3rd quartile:    12369.5
first mode:      12101.2
first antimode:  3549.61
mean:            12150.5
std devn:        1926.02
skewness:        _0.0747
kurtosis:         6.216
```

```
[40]: NB. mean album geotagged image distances
      mad=: albdist 0
```

```
[41]: NB. album "centroid" distance statistics
      dstat ;0 {"1 mad
```

```
sample size:            63
minimum:            1042.94
maximum:            17794.8
1st quartile:        9633.19
2nd quartile:        11373.3
3rd quartile:        11935.2
first mode:          12488.9
first antimode:      12488.9
mean:                  10533
std devn:            2719.14
skewness:            _0.8158
kurtosis:              5.426
```

```
[42]: NB.format album distances.
      fmtad=:{{('8.2'&(8!:2) ,. km) ,. ' - ' ,"1 alb [ 'km alb'=. |: x {. y}}
```

```
[43]: NB. 10 nearest albums
      10 fmtad /:~ mad
```

```
1042.94 - Ghana 1970's
3596.33 - Zambia Eclipse Trip
4678.38 - ACS School Trips 1960's
5310.90 - Beirut Lebanon 1960's
6378.44 - Iran 1960's
6735.58 - Barbados Late 1970's
6736.08 - Diving at Bellairs Barbados BW
6884.68 - South America 1979
7657.01 - Briefly Bermuda
8665.71 - New York 2005
```

```
[44]: NB. 10 furthest albums
      10 fmtad \:~ mad
```

```
17794.80 - Enewetak Atoll 1980's
16610.10 - Hawaii 2018
15106.57 - Australia New Zealand 2022
12848.99 - GPS Extremes
12604.47 - 63
12597.30 - California Captures
12488.94 - Oregon Ogling
12362.69 - Seattle Vancouver 2020
12249.74 - Inlaws Outlaws and Friends
```

```
12218.38 - Along the Yukon River
```

0.1.23 GPS Extremes Gallery

A collection of geotagged images that are extreme in the sense of:

1. Near and far the (0,0) origin in km
2. Highest elevations in meters
3. Near and far the equator by latitude
4. Near and far the prime meridian by longitude
5. Most northern and southern latitudes
6. Most eastern and western longitudes

Note: The altitude data in the SQLite database are all positive numbers. This is usually fine as most images are above sea level but a few rare images are below sea level. Camera metadata indicates this with an above or below sea level flag but this flag is not collected.

```
[45]: NB. GPS extremes
      smoutput #gx=: gpsextremesgallery dbf
      80 ccf ;"1 (' | '&,)@":&.> gx

30
 | qbXqVgC | ghana secondary school teacher bungalows 1976.jpg | 9.39475 _0.8176
 | K7JKbs8 | corn harvest students tamale ghana.jpg | 9.39566 _0.816272 0 | 1049
 | kNRs3X8 | ghana secondary school [12075167].jpg | 9.39672 _0.816726 0 | 1049.
 | vSNN8DC | me livingstone airport [47004492].jpg | _17.8228 25.8186 0 | 3439.0
 | mBXdmNg | me hampton court 1968 [992782789].jpg | 51.4038 _0.339633 0 | 5722.
 | 6fzX7cV | me ruth miraflores locks panama 1979.jpg | 8.99543 _79.5899 0 | 885
 | Nmc5SNX | me mali mount evans sign.jpg | 39.5877 _105.642 4313 | 11341.7
 | 56MR5dM | mount evans western panorama.jpg | 39.5883 _105.644 4358 | 11341.8
 | QBMjK2B | dawson yukon street panorama 2002.jpg | 64.0601 _139.435 0 | 12174.
 | dRXXhPb | yukon at dawson at dusk [163426977].jpg | 64.0561 _139.441 0 | 1217
 | 8gvcsMV | tied canoes [3559560].jpg | 62.8281 _138.507 0 | 12240.3
 | 8bHbZBX | me yukon river sunset canada [124957718].jpg | 62.8277 _138.512 0 |
 | WCSbvvR | mali larnach castle.jpg | _45.8622 170.627 0 | 14849.6
 | FSVf7nw | mali me tower view collage.jpg | _45.8616 170.627 314 | 14849.6
 | kFGTqNw | larnach family photograph.jpg | _45.8617 170.627 291 | 14849.7
 | mnh9FHw | nesting blue penquin.jpg | _45.7913 170.739 11 | 14859.2
 | t3qSQCC | me napier park.jpg | _39.4917 176.92 6 | 15630.1
 | k5SDLrZ | new napier cathedral.jpg | _39.4887 176.918 8 | 15630.4
 | MjSgZfd | napier port.jpg | _39.4759 176.921 5 | 15631.8
 | FWpWKSt | taurangu mall.jpg | _37.6744 176.224 12 | 15825.6
 | dqBvqq9 | mauna kea sunset summit panorama.jpg | 19.8228 _155.47 4209 | 16561
 | gWVLPBM | me mauna kea summit sunset.jpg | 19.824 _155.477 4088 | 16562
 | 5pmBrPs | battleship missouri brass deck plaque.jpg | 21.3622 _157.953 10 | 1
 | s2kmCmT | battleship missouri plaque.jpg | 21.3623 _157.953 5 | 16654.3
 | 2NM8RVD | nimitz statue missouri battleship.jpg | 21.3626 _157.954 0 | 16654.
 | WtpZgQQ | me photographing battleship missouri.jpg | 21.3615 _157.954 6 | 166
 | TRNFWpg | me next atoll looking south [5088708].jpg | 11.3634 162.35 0 | 1769
```

15

```
| F5qPp7d | mid pacific marine lab from air [254442016].jpg | 11.3584 162.347 0
| 6RS9q6W | lab south view 12x4 [5037801].jpg | 11.3582 162.347 0 | 17698
| 4vRnG6S | ruth kwajalein airport sign 1981.jpg | 8.72705 167.741 0 | 18351.4
```

0.1.24 Geotagged Image Waypoints GPX

Compute GPX file for geotagged images. This file can be used to set waypoints in various GPS devices.

[46]:
```
load 'gpxutils'
```

```
NB. (gpxutils) interface word(s): 20220916j141736
NB. ---------------------------
NB. allrecent    NB. all recent images from last waypoint generation
NB. csvfrwpt     NB. poi CSV text from waypoint text file
NB. gpxfrmapkml  NB. gpx from Google maps kml
NB. gpxfrmirror  NB. extracts geotagged images from mirror_db and generates gpx
NB. gpxfrpoicsv  NB. converts poi csv files to gpx
NB. gpxfrrecent  NB. gpx from recent waypoints
```

[47]:
```
NB. waypoints gpx
gpx=: gpxfrmirror dbf

NB. save in working directory - requires configured J folder
smoutput gpxfile=: jpath '~JUPYTER/dbs/geotagged_images.gpx'
(toHOST gpx) write gpxfile
```

```
c:/users/baker/jupyter_notebooks/dbs/geotagged_images.gpx
```

0.1.25 All done - thanks for playing!