# ■ Processing APMP_Cal data from NML Australia

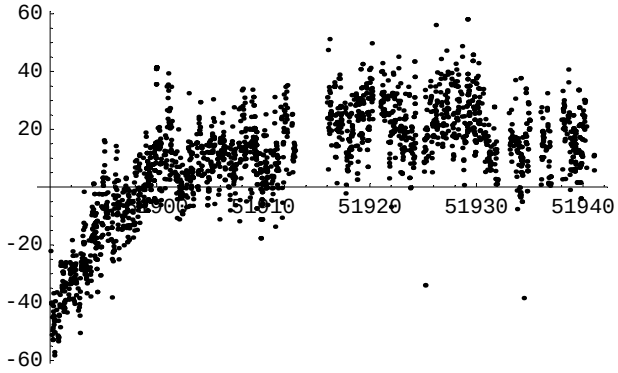
```
In[114]:= Off[General::spell1];

In[115]:= dataPath = "g:\\Trip 2\\NML Jan 2001\\";
```

## ■ Definitions

```
In[138]:= dataHost = ReadCCTF["host.cctf"];
          (*Host  reported values:*)
          RepHostIntDly = 50;
            RepHostRefDly = 79;
           RepHostAntDly = 235;
          RepHostDly = RepHostIntDly + RepHostAntDly - RepHostRefDly;

          (*Host Receiver internal settings:*)
          RxHostIntDly = 68;
            RxHostRefDly = 79;
           RxHostAntDly = 235;
          RxHostDly = RxHostIntDly + RxHostAntDly - RxHostRefDly;
          HostCorrection = RepHostDly - RxHostDly;

          dataTrav = ReadCCTF["trav.cctf"];
          (*Host  reported values:*)
          RepTravIntDly = 68;
            RepTravRefDly = 77.8;
           RepTravAntDly = 235;
          RepTravDly = RepTravIntDly + RepTravAntDly - RepTravRefDly;

          (*Travelling receiver internal settings:*)
          RxTravIntDly = 68;
            RxTravRefDly = 77.8;
           RxTravAntDly = 235;
          RxTravDly = RxTravIntDly + RxTravAntDly - RxTravRefDly;
          TravCorrection = RepTravDly - RxTravDly;
          Null

        > Read 3322 tracks from g:\Trip 2\NML Jan 2001\host.cctf

        > Read 2279 tracks from g:\Trip 2\NML Jan 2001\trav.cctf

In[159]:= << Graphics`Graphics`
```

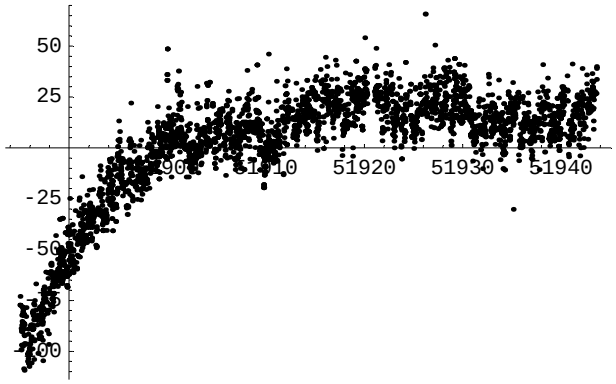
*In[160]:=*
```
ListPlot[MakeXY[Map[DateValue, dataTrav], Map[RefGPS, dataTrav]],
  PlotRange → All];
```

```
(* RAW DATA FROM TRAVELLING RECEIVER *)
```




*In[161]:=*
```
ListPlot[MakeXY[Map[DateValue, dataHost], Map[RefGPS, dataHost]],
  PlotRange → All];
```

```
(* RAW DATA FROM NPL HOST *)
```




*In[162]:=*
```
dMerge = MergeCCTF[dataHost, dataTrav];
```

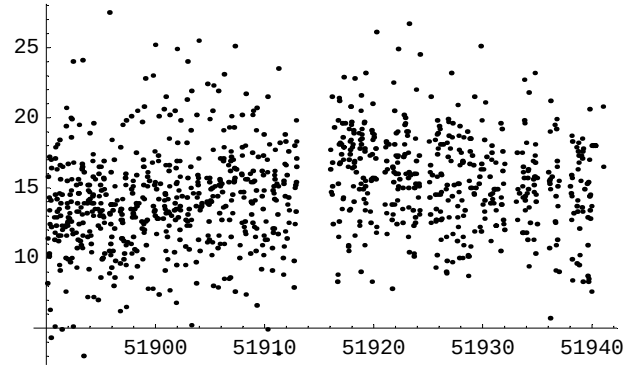
```
> First 3322 tracks, second 2279 tracks, matching 1538 tracks
```

*In[163]:=*
```
diffdataGPS =
  Map[{DateValue[#1], RefSV[#1] - RefSV2[#1] - HostCorrection + TravCorrection,
     TrackLength[#1], TrackLength2[#1]} &, dMerge];
```

*In[164]:=*
```
diffdataGPS = FilterTrackLength[diffdataGPS, 780];
```

```
1338 common tracks out of 1538 were of length greater than or equal to 780 seconds.
```

*In[165]:=*
```
ListPlot[diffdataGPS, PlotRange → All];

(* HOST RECEIVER DATA – TRAVELLING RECEIVER DATA *)
```




*In[166]:=*
```
<< Statistics`LinearRegression`
```

*In[167]:=*
```
regress = Regress[diffdataGPS, {1, x}, x];
rtable = ANOVATable /. regress;
ptable = ParameterTable /. regress;
MJDFirst = First[dMerge][[3]];
MJDLast = Last[dMerge][[3]];
MJDMiddle = MJDFirst + (MJDFirst – MJDLast) / 2;
intercept = ptable[[1, 1, 1]];
SEintercept = ptable[[1, 1, 2]];
slope = ptable[[1, 2, 1]];
SEslope = ptable[[1, 2, 2]];
rms = Sqrt[rtable[[1, 2, 3]]];
MeanOffset = intercept + slope * MJDMiddle;
Print["\!\(\*
StyleBox[\"Summary\",\n\"Output\"]\)"];
Print[Length[dMerge], " common-view tracks were analysed between MJD ",
 MJDFirst, " and MJD ", MJDLast];
Print["The mean offset (Host Rx – Travelling Rx) between the two receivers was ",
 MeanOffset, " ns, with an RMS deviation of ", rms, "  ns."];
Print["The slope of the line of best fit was ", slope * 1000,
  " ps/day, with a standard error of ", SEslope * 1000, " ps/day."];
```

Summary

1538 common-view tracks were analysed between MJD 51890 and MJD 51941

The mean offset (Host Rx – Travelling Rx) between the two receivers was
 12.9816 ns, with an RMS deviation of 3.52207  ns.

The slope of the line of best fit was
 36.9432 ps/day, with a standard error of 6.30229 ps/day.