LAMPIRAN

Lampiran 1 Tabel Hasil Data Lapangan Komponen Pasang Surut

Tide	freq	Amp	Amp_err	Pha	Pha_err	Snr
*MSF	0.00282	0.062	0.031	280.82	28.46	4.1
*O1	0.03873	0.1532	0.031	104.65	11.92	25
*P1	0.04155	0.127	0.031	166.66	13.88	17
*K1	0.04178	0.3839	0.031	159.59	4.68	1.60E+02
*M2	0.08051	0.0882	0.02	296.91	12.72	20
*S2	0.08333	0.0816	0.02	286.12	13.91	17
*K2	0.08356	0.0222	0.02	308.52	54.54	1.3
*M3	0.12077	0.0274	0.008	260.62	16.6	12
*SK3	0.12511	0.0097	0.008	207.37	48.69	1.4
M4	0.16102	0.0034	0.008	56.04	124.48	0.2
MS4	0.16384	0.0059	0.008	146.25	73.26	0.6
*S4	0.16667	0.0148	0.008	207.76	29.57	3.8
*2MK5	0.2028	0.0105	0.004	270.99	21.83	6.8
*2SK5	0.20845	0.0199	0.004	119.78	11.77	25
M6	0.24153	0.0004	0.005	228.71	662.08	0.007
*2MS6	0.24436	0.0127	0.005	330.56	22.12	6.4
2SM6	0.24718	0.0042	0.005	288.53	67.68	0.7
3MK7	0.28331	0.003	0.007	50.2	134.57	0.18
M8	0.32205	0.004	0.006	38.25	86.45	0.4
M10	0.40256	0.0051	0.006	104.13	67.18	0.65

Lampiran 2 Tabel Data Lapangan Pasang Surut

Tahun	Bulan	Tanggal	Jam	Menit	Detik	Pasut
2019	8	7	0	0	0	NaN
2019	8	7	1	0	0	NaN
2019	8	7	2	0	0	NaN
2019	8	7	3	0	0	NaN
2019	8	7	4	0	0	NaN
2019	8	7	5	0	0	NaN
2019	8	7	6	0	0	0.62
2019	8	7	7	0	0	0.57
2019	8	7	8	0	0	0.44
2019	8	7	9	0	0	0.39
2019	8	7	10	0	0	0.42
2019	8	7	11	0	0	0.44
2019	8	7	12	0	0	0.47
2019	8	7	13	0	0	0.56
2019	8	7	14	0	0	0.63
2019	8	7	15	0	0	0.68
2019	8	7	16	0	0	0.73
2019	8	7	17	0	0	0.81
2019	8	7	18	0	0	0.73
2019	8	7	19	0	0	0.7
2019	8	7	20	0	0	0.62
2019	8	7	21	0	0	0.55
2019	8	7	22	0	0	0.5
2019	8	7	23	0	0	0.53
2019	8	8	0	0	0	0.55
2019	8	8	1	0	0	0.51
2019	8	8	2	0	0	0.53
2019	8	8	3	0	0	0.58
2019	8	8	4	0	0	0.61
2019	8	8	5	0	0	0.65
2019	8	8	6	0	0	0.63
2019	8	8	7	0	0	0.56
2019	8	8	8	0	0	0.51
2019	8	8	9	0	0	0.46
2019	8	8	10	0	0	0.47

2019	8	8	11	0	0	0.48
2019	8	8	12	0	0	0.51
2019	8	8	13	0	0	0.6
2019	8	8	14	0	0	0.66
2019	8	8	15	0	0	0.74
2019	8	8	16	0	0	0.81
2019	8	8	17	0	0	0.87
2019	8	8	18	0	0	0.92
2019	8	8	19	0	0	0.85
2019	8	8	20	0	0	0.8
2019	8	8	21	0	0	0.67
2019	8	8	22	0	0	0.52
2019	8	8	23	0	0	0.49
2019	8	9	0	0	0	0.45
2019	8	9	1	0	0	0.4
2019	8	9	2	0	0	0.32
2019	8	9	3	0	0	0.3
2019	8	9	4	0	0	0.33
2019	8	9	5	0	0	0.35
2019	8	9	6	0	0	0.34
2019	8	9	7	0	0	0.36
2019	8	9	8	0	0	0.37
2019	8	9	9	0	0	0.42
2019	8	9	10	0	0	0.43
2019	8	9	11	0	0	0.42
2019	8	9	12	0	0	0.43
2019	8	9	13	0	0	0.58
2019	8	9	14	0	0	0.65
2019	8	9	15	0	0	0.72
2019	8	9	16	0	0	0.91
2019	8	9	17	0	0	0.99
2019	8	9	18	0	0	1
2019	8	9	19	0	0	0.94
2019	8	9	20	0	0	0.86
2019	8	9	21	0	0	0.81
2019	8	9	22	0	0	0.75

2019	8	9	23	0	0	0.71
2019	8	10	0	0	0	0.67
2019	8	10	1	0	0	0.63
2019	8	10	2	0	0	0.51
2019	8	10	3	0	0	0.44
2019	8	10	4	0	0	0.34
2019	8	10	5	0	0	0.34
2019	8	10	6	0	0	0.31
2019	8	10	7	0	0	0.34
2019	8	10	8	0	0	0.4
2019	8	10	9	0	0	0.41
2019	8	10	10	0	0	0.4
2019	8	10	11	0	0	0.43
2019	8	10	12	0	0	0.49
2019	8	10	13	0	0	0.59
2019	8	10	14	0	0	0.68
2019	8	10	15	0	0	0.76
2019	8	10	16	0	0	0.85
2019	8	10	17	0	0	0.91
2019	8	10	18	0	0	1.02
2019	8	10	19	0	0	0.95
2019	8	10	20	0	0	0.88
2019	8	10	21	0	0	0.82
2019	8	10	22	0	0	0.78
2019	8	10	23	0	0	0.73
2019	8	11	0	0	0	NaN
2019	8	11	1	0	0	NaN
2019	8	11	2	0	0	NaN
2019	8	11	3	0	0	NaN
2019	8	11	4	0	0	NaN
2019	8	11	5	0	0	NaN
2019	8	11	6	0	0	NaN
2019	8	11	7	0	0	NaN
2019	8	11	8	0	0	NaN
2019	8	11	9	0	0	NaN
2019	8	11	10	0	0	NaN

2019	8	11	11	0	0	NaN
2019	8	11	12	0	0	NaN
2019	8	11	13	0	0	NaN
2019	8	11	14	0	0	NaN
2019	8	11	15	0	0	NaN
2019	8	11	16	0	0	NaN
2019	8	11	17	0	0	NaN
2019	8	11	18	0	0	NaN
2019	8	11	19	0	0	NaN
2019	8	11	20	0	0	NaN
2019	8	11	21	0	0	NaN
2019	8	11	22	0	0	NaN
2019	8	11	23	0	0	NaN
2019	8	12	0	0	0	NaN
2019	8	12	1	0	0	NaN
2019	8	12	2	0	0	NaN
2019	8	12	3	0	0	NaN
2019	8	12	4	0	0	NaN
2019	8	12	5	0	0	NaN
2019	8	12	6	0	0	NaN
2019	8	12	7	0	0	NaN
2019	8	12	8	0	0	NaN
2019	8	12	9	0	0	NaN
2019	8	12	10	0	0	NaN
2019	8	12	11	0	0	NaN
2019	8	12	12	0	0	NaN
2019	8	12	13	0	0	NaN
2019	8	12	14	0	0	NaN
2019	8	12	15	0	0	NaN
2019	8	12	16	0	0	NaN
2019	8	12	17	0	0	NaN
2019	8	12	18	0	0	NaN
2019	8	12	19	0	0	NaN
2019	8	12	20	0	0	NaN
2019	8	12	21	0	0	NaN
2019	8	12	22	0	0	NaN

2019	8	12	23	0	0	NaN
2019	8	13	0	0	0	0.68
2019	8	13	1	0	0	0.63
2019	8	13	2	0	0	0.57
2019	8	13	3	0	0	0.5
2019	8	13	4	0	0	0.41
2019	8	13	5	0	0	0.37
2019	8	13	6	0	0	0.29
2019	8	13	7	0	0	0.35
2019	8	13	8	0	0	0.41
2019	8	13	9	0	0	0.3
2019	8	13	10	0	0	0.51
2019	8	13	11	0	0	0.34
2019	8	13	12	0	0	0.33
2019	8	13	13	0	0	0.51
2019	8	13	14	0	0	0.58
2019	8	13	15	0	0	0.64
2019	8	13	16	0	0	0.73
2019	8	13	17	0	0	1.1
2019	8	13	18	0	0	1.15
2019	8	13	19	0	0	1.35
2019	8	13	20	0	0	1.41
2019	8	13	21	0	0	1.41
2019	8	13	22	0	0	1.25
2019	8	13	23	0	0	1.25
2019	8	14	0	0	0	0.87
2019	8	14	1	0	0	0.6
2019	8	14	2	0	0	0.5
2019	8	14	3	0	0	0.25
2019	8	14	4	0	0	0.2
2019	8	14	5	0	0	0.15
2019	8	14	6	0	0	0.1
2019	8	14	7	0	0	0.2
2019	8	14	8	0	0	0.15
2019	8	14	9	0	0	0.21
2019	8	14	10	0	0	0.18

2019	8	14	11	0	0	0.25
2019	8	14	12	0	0	0.3
2019	8	14	13	0	0	0.37
2019	8	14	14	0	0	0.4
2019	8	14	15	0	0	0.46
2019	8	14	16	0	0	0.63
2019	8	14	17	0	0	0.76
2019	8	14	18	0	0	0.9
2019	8	14	19	0	0	1.14
2019	8	14	20	0	0	1.2
2019	8	14	21	0	0	1.37
2019	8	14	22	0	0	1.36
2019	8	14	23	0	0	1.4
2019	8	15	0	0	0	1.4
2019	8	15	1	0	0	0.85
2019	8	15	2	0	0	0.56
2019	8	15	3	0	0	0.45
2019	8	15	4	0	0	0.33
2019	8	15	5	0	0	0.27
2019	8	15	6	0	0	0.16
2019	8	15	7	0	0	0.2
2019	8	15	8	0	0	0.22
2019	8	15	9	0	0	0.21
2019	8	15	10	0	0	0.25
2019	8	15	11	0	0	0.29
2019	8	15	12	0	0	0.33
2019	8	15	13	0	0	0.38
2019	8	15	14	0	0	0.43
2019	8	15	15	0	0	0.52
2019	8	15	16	0	0	0.52
2019	8	15	17	0	0	0.52
2019	8	15	18	0	0	0.75
2019	8	15	19	0	0	1
2019	8	15	20	0	0	1.35
2019	8	15	21	0	0	1.37
2019	8	15	22	0	0	1.4

2019	8	15	23	0	0	1.4
2019	8	16	0	0	0	0.89
2019	8	16	1	0	0	0.72
2019	8	16	2	0	0	0.63
2019	8	16	3	0	0	0.51
2019	8	16	4	0	0	0.37
2019	8	16	5	0	0	0.25
2019	8	16	6	0	0	0.14
2019	8	16	7	0	0	0.2
2019	8	16	8	0	0	0.15
2019	8	16	9	0	0	0.23
2019	8	16	10	0	0	0.24
2019	8	16	11	0	0	0.19
2019	8	16	12	0	0	0.29
2019	8	16	13	0	0	0.2
2019	8	16	14	0	0	0.28
2019	8	16	15	0	0	0.38
2019	8	16	16	0	0	0.5
2019	8	16	17	0	0	0.57
2019	8	16	18	0	0	0.65
2019	8	16	19	0	0	0.75
2019	8	16	20	0	0	0.8
2019	8	16	21	0	0	0.85
2019	8	16	22	0	0	0.85
2019	8	16	23	0	0	0.93
2019	8	17	0	0	0	0.9
2019	8	17	1	0	0	0.84
2019	8	17	2	0	0	0.71
2019	8	17	3	0	0	0.6
2019	8	17	4	0	0	0.51
2019	8	17	5	0	0	0.25
2019	8	17	6	0	0	0.15
2019	8	17	7	0	0	0.2
2019	8	17	8	0	0	0.17
2019	8	17	9	0	0	0.25
2019	8	17	10	0	0	0.21

2019	8	17	11	0	0	0.23
2019	8	17	12	0	0	0.29
2019	8	17	13	0	0	0.35
2019	8	17	14	0	0	0.4
2019	8	17	15	0	0	0.41
2019	8	17	16	0	0	0.49
2019	8	17	17	0	0	0.55
2019	8	17	18	0	0	0.63
2019	8	17	19	0	0	0.68
2019	8	17	20	0	0	0.87
2019	8	17	21	0	0	1.1
2019	8	17	22	0	0	1.25
2019	8	17	23	0	0	1.13
2019	8	18	0	0	0	0.92
2019	8	18	1	0	0	0.86
2019	8	18	2	0	0	0.72
2019	8	18	3	0	0	0.6
2019	8	18	4	0	0	0.41
2019	8	18	5	0	0	0.27
2019	8	18	6	0	0	0.13
2019	8	18	7	0	0	0.2
2019	8	18	8	0	0	0.24
2019	8	18	9	0	0	0.21
2019	8	18	10	0	0	0.23
2019	8	18	11	0	0	0.2
2019	8	18	12	0	0	0.29
2019	8	18	13	0	0	0.27
2019	8	18	14	0	0	0.35
2019	8	18	15	0	0	0.4
2019	8	18	16	0	0	0.45
2019	8	18	17	0	0	0.51
2019	8	18	18	0	0	0.52
2019	8	18	19	0	0	0.55
2019	8	18	20	0	0	0.63
2019	8	18	21	0	0	0.84
2019	8	18	22	0	0	1.01

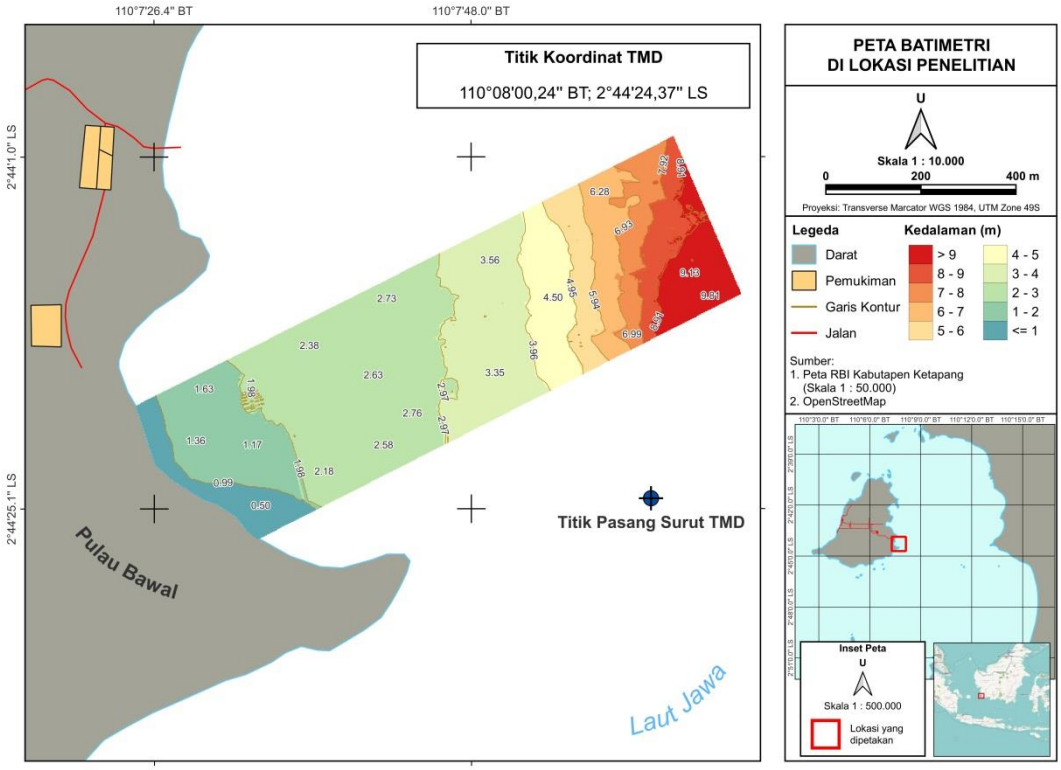
2019	8	18	23	0	0	1
2019	8	19	0	0	0	1
2019	8	19	1	0	0	0.93
2019	8	19	2	0	0	0.82
2019	8	19	3	0	0	0.73
2019	8	19	4	0	0	0.5
2019	8	19	5	0	0	0.3
2019	8	19	6	0	0	0.15
2019	8	19	7	0	0	NaN
2019	8	19	8	0	0	NaN
2019	8	19	9	0	0	NaN
2019	8	19	10	0	0	NaN
2019	8	19	11	0	0	NaN
2019	8	19	12	0	0	NaN
2019	8	19	13	0	0	NaN
2019	8	19	14	0	0	NaN
2019	8	19	15	0	0	NaN
2019	8	19	16	0	0	NaN
2019	8	19	17	0	0	NaN
2019	8	19	18	0	0	NaN
2019	8	19	19	0	0	NaN
2019	8	19	20	0	0	NaN
2019	8	19	21	0	0	NaN
2019	8	19	22	0	0	NaN
2019	8	19	23	0	0	NaN
2019	8	20	0	0	0	0.91
2019	8	20	1	0	0	0.86
2019	8	20	2	0	0	0.73
2019	8	20	3	0	0	0.67
2019	8	20	4	0	0	0.43
2019	8	20	5	0	0	0.29
2019	8	20	6	0	0	0.15
2019	8	20	7	0	0	0.21
2019	8	20	8	0	0	0.24
2019	8	20	9	0	0	0.26
2019	8	20	10	0	0	0.27

2019	8	20	11	0	0	0.23
2019	8	20	12	0	0	0.29
2019	8	20	13	0	0	0.32
2019	8	20	14	0	0	0.39
2019	8	20	15	0	0	0.42
2019	8	20	16	0	0	0.51
2019	8	20	17	0	0	0.56
2019	8	20	18	0	0	0.64
2019	8	20	19	0	0	0.75
2019	8	20	20	0	0	0.78
2019	8	20	21	0	0	0.87
2019	8	20	22	0	0	1.05
2019	8	20	23	0	0	1.03
2019	8	21	0	0	0	0.93
2019	8	21	1	0	0	0.88
2019	8	21	2	0	0	0.75
2019	8	21	3	0	0	0.62
2019	8	21	4	0	0	0.47
2019	8	21	5	0	0	0.26
2019	8	21	6	0	0	0.15
2019	8	21	7	0	0	0.21
2019	8	21	8	0	0	0.17
2019	8	21	9	0	0	0.23
2019	8	21	10	0	0	0.26
2019	8	21	11	0	0	0.29
2019	8	21	12	0	0	0.34
2019	8	21	13	0	0	0.32
2019	8	21	14	0	0	0.4
2019	8	21	15	0	0	0.48
2019	8	21	16	0	0	0.54
2019	8	21	17	0	0	0.6
2019	8	21	18	0	0	0.76
2019	8	21	19	0	0	0.82
2019	8	21	20	0	0	0.88
2019	8	21	21	0	0	0.92
2019	8	21	22	0	0	1.02

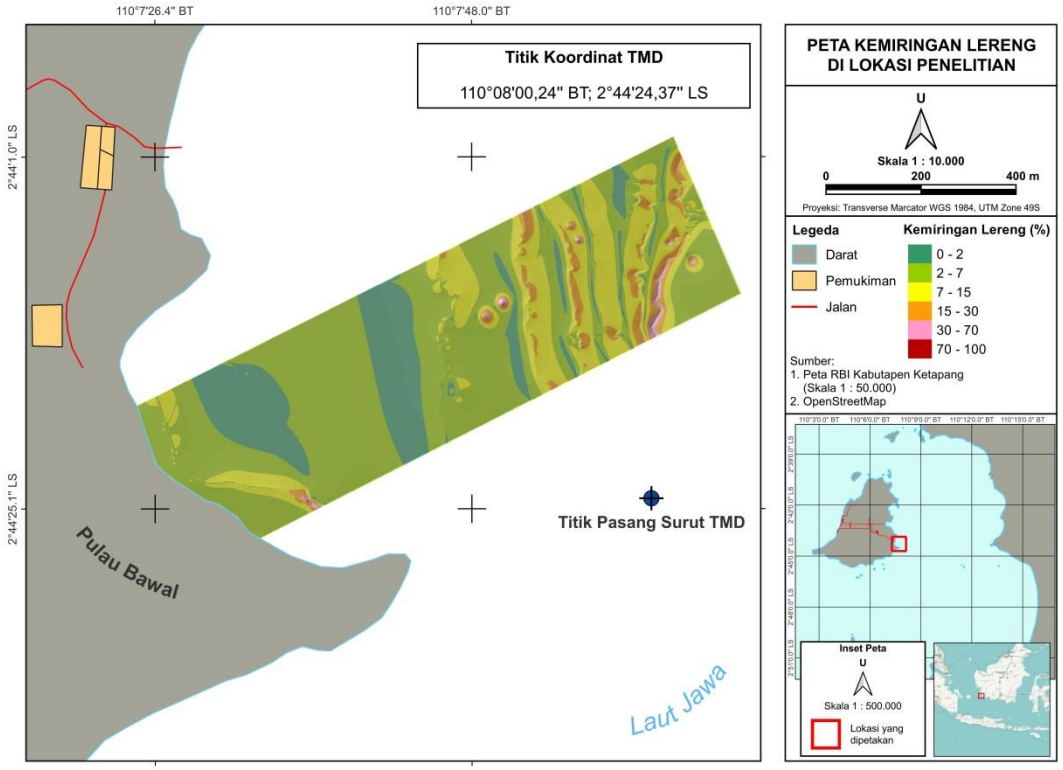
2019	8	21	23	0	0	1
2019	8	22	0	0	0	0.87
2019	8	22	1	0	0	0.83
2019	8	22	2	0	0	0.72
2019	8	22	3	0	0	0.63
2019	8	22	4	0	0	0.52
2019	8	22	5	0	0	0.25
2019	8	22	6	0	0	0.16
2019	8	22	7	0	0	0.22
2019	8	22	8	0	0	0.24
2019	8	22	9	0	0	0.27
2019	8	22	10	0	0	0.29
2019	8	22	11	0	0	0.32
2019	8	22	12	0	0	0.28
2019	8	22	13	0	0	0.35
2019	8	22	14	0	0	0.42
2019	8	22	15	0	0	0.47
2019	8	22	16	0	0	0.53
2019	8	22	17	0	0	0.57
2019	8	22	18	0	0	0.64
2019	8	22	19	0	0	0.76
2019	8	22	20	0	0	0.85
2019	8	22	21	0	0	0.89
2019	8	22	22	0	0	1
2019	8	22	23	0	0	1.03
2019	8	23	0	0	0	0.92
2019	8	23	1	0	0	0.85
2019	8	23	2	0	0	0.74
2019	8	23	3	0	0	0.67
2019	8	23	4	0	0	0.58
2019	8	23	5	0	0	0.32
2019	8	23	6	0	0	0.19
2019	8	23	7	0	0	0.22
2019	8	23	8	0	0	0.24
2019	8	23	9	0	0	0.26
2019	8	23	10	0	0	0.28

2019	8	23	11	0	0	0.25
2019	8	23	12	0	0	0.32
2019	8	23	13	0	0	0.35
2019	8	23	14	0	0	0.38
2019	8	23	15	0	0	0.46
2019	8	23	16	0	0	0.51
2019	8	23	17	0	0	0.54
2019	8	23	18	0	0	0.58
2019	8	23	19	0	0	0.69
2019	8	23	20	0	0	0.83
2019	8	23	21	0	0	0.89
2019	8	23	22	0	0	1.05
2019	8	23	23	0	0	1.14

Lampiran 3 Peta Hasil Kontur Interpolasi Metode *Kriging*



Lampiran 4 Peta Hasil Intepolasi Kelerengan Metode *Kriging*



Lampiran 5 *Script* Pasang Surut

```
% T_DEMO - demonstration of capabilities.
% Short example of capabilities of tidal analysis toolbox.
%
% In this example, we
%        a) do nodal corrections for satellites,
%        b) use inference for P1 and K2, and
%        c) force a fit to a shallow-water constituent.

% Version 1.0

% Sept/2014 - it was pointed out that the elevations are in feet, not meters.
%             plot labels changed. Also added a note about time zones.

echo on
    echo on
    % Load the example.
    tuk_elev= load ('data_lapangan2.txt');
    it=0;
    for i=1:17
       for j=1:24
          it=it+1;
          tuk_time(it)= datenum([2019,8,6+i,j-1,0,0]);
       end
    end

    % Define inference parameters.
    infername=['P1';'K2'];
    inferfrom=['K1';'S2'];
    infamp=[.33093;.27215];
    infphase=[-7.07;-22.40];

    % The call (see t_demo code for details).
    [tidestruc,pout]=t_tide(tuk_elev,...
    'interval',1, ...                  % hourly data
    'start',tuk_time(1),...              % start time is datestr(tuk_time(1))
    'latitude',69+27/60,...              % Latitude of obs
    'inference',infername,inferfrom,infamp,infphase,...
    'shallow','M10',...                  % Add a shallow-water constituent
    'error','linear',...                 % coloured boostrap CI
    'synthesis',1);                      % Use SNR=1 for synthesis.

   % Note - in the demo I use tuk_time which is MST. Strictly speaking,
   % in order to get Greenwich phase one should use Greenwich TIME as well,
   % which means adding 6 hours.
```

```
    % However, I stuck with doing things the sloppy not-quite-correct way so that
    % results would comparable to those published in Mike Foreman's data report
on the Fortran code.

     echo off

   %   pout=t_predic(tuk_time,tidestruc,,...
   %               'latitude',69+27/60,...
   %               'synthesis',1);

clf;orient tall;
subplot(211);
plot(tuk_time-datenum(2019,1,0),[tuk_elev pout]);
line(tuk_time-datenum(2019,1,0),tuk_elev-pout,'linewi',2,'color','r');
xlabel('Days in 2019');
ylabel('Elevation (ft)');
text(190,5.5,'Original Time series','color','b');
text(190,4.75,'Tidal prediction from Analysis','color',[0 .5 0]);
text(190,4.0,'Original time series minus Prediction','color','r');
title('Demonstration of t\_tide toolbox');

subplot(212);
fsig=tidestruc.tidecon(:,1)>tidestruc.tidecon(:,2); % Significant peaks
semilogy([tidestruc.freq(~fsig),tidestruc.freq(~fsig)]',[.0005*ones(sum(~fsig),1),ti
destruc.tidecon(~fsig,1)]','.-r');
line([tidestruc.freq(fsig),tidestruc.freq(fsig)]',[.0005*ones(sum(fsig),1),tidestruc.ti
decon(fsig,1)]','marker','.','color','b');
line(tidestruc.freq,tidestruc.tidecon(:,2),'linestyle',':','color',[0 .5 0]);
set(gca,'ylim',[.0005 1],'xlim',[0 .5]);
xlabel('frequency (cph)');
text(tidestruc.freq,tidestruc.tidecon(:,1),tidestruc.name,'rotation',45,'vertical','base'
);
ylabel('Amplitude (ft)');
text(.27,.4,'Analyzed lines with 95% significance level');
text(.35,.2,'Significant Constituents','color','b');
text(.35,.1,'Insignificant Constituents','color','r');
text(.35,.05,'95% Significance Level','color',[0 .5 0]);

figure (2)
subplot(211);
errorbar(tidestruc.freq(~fsig),tidestruc.tidecon(~fsig,3),tidestruc.tidecon(~fsig,4),'.
r');
hold on;
errorbar(tidestruc.freq(fsig),tidestruc.tidecon(fsig,3),tidestruc.tidecon(fsig,4),'o');
hold off;
set(gca,'ylim',[-45 360+45],'xlim',[0 .5],'ytick',[0:90:360]);
```

```
xlabel('frequency (cph)');
ylabel('Greenwich Phase (deg)');
text(.27,330,'Analyzed Phase angles with 95% CI');
text(.35,290,'Significant Constituents','color','b');
text(.35,250,'Insignificant Constituents','color','r');

subplot(212);
ysig=tuk_elev;
yerr=tuk_elev-pout;
nfft=389;
bd=isnan(ysig);
gd=find(~bd);
bd([1:(min(gd)-1) (max(gd)+1):end])=0;
ysig(bd)=interp1(gd,ysig(gd),find(bd));
%[Pxs,F]=psd(ysig(isfinite(ysig)),nfft,1,[],ceil(nfft/2));
[Pxs,F]=pwelch(ysig(isfinite(ysig)),hanning(nfft),ceil(nfft/2),nfft,1);
Pxs=Pxs/2;
%%[Pxso,Fo]=psd(ysig(isfinite(ysig)),nfft,1,[],ceil(nfft/2));

%[Pxs,F]=pmtm(ysig(isfinite(ysig)),4,4096,1);
yerr(bd)=interp1(gd,yerr(gd),find(bd));
%[Pxe,F]=psd(yerr(isfinite(ysig)),nfft,1,[],ceil(nfft/2));
[Pxe,F]=pwelch(yerr(isfinite(ysig)),hanning(nfft),ceil(nfft/2),nfft,1);
Pxe=Pxe/2;
%[Pxe,F]=pmtm(yerr(isfinite(ysig)),4,4096,1);

semilogy(F,Pxs);
line(F,Pxe,'color','r');
xlabel('frequency (cph)');
ylabel('m^2/cph');
text(.17,1e4,'Spectral Estimates before and after removal of tidal energy');
text(.35,1e3,'Original (interpolated) series','color','b');
text(.35,1e2,'Analyzed Non-tidal Energy','color','r');
```