
Subject: Re: Time-Series problem

Posted by [stl](#) on Wed, 01 Jun 1994 12:45:17 GMT

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In article <Cqo30t.5p2@festival.ed.ac.uk> esc@met.ed.ac.uk (E Carr) writes:

```
>
> OK, I'm running a time-series program
> e.g.
> -----
> Pro test
>
> X=[1,2,3,6,7,8,12,13,14]
> Y=[2.3,2.7,3.6,3.2,3.05,3.24,3.132,2.1,3.4]
>
> plot,X,Y
> end
> -----
>
> Ideally I would like three seperate lines so
> as to make clear the missing values at X=4,5,9,10,11.
> I know I can use "oplot" in the example above
>
> i.e.
> X1=[1,2,3]
> Y1=[2.3,2.7,3.6]
>
> plot,X1,Y1
> oplot.....
> olpot.....
>
>
> but my time-series is much bigger than this.
> I also don't want to use the "psym= n" keyword.
> I'D LIKE CONTINUOUS LINES JOINING ADJACENT POINTS
> AND GAPS IN BETWEEN.
>
> Any ideas would be much appreciated
>
> Ewan
```

Hello,

I just got some old programs off old news postings that solve your problem. These are `plot_drop`, and `oplot_drop`. They handle missing values nicely. There may be newer versions of these two programs around, but I will include them now anyways. They were originall write by Bill Thompson. I haven't used them much, but they seem to work great.

hope these help.

-stephen
(share and share alike. Promotes good code!)

-----they start here -----

```

      PRO PLOT_DROP,X_ARRAY,Y_ARRAY,DROP_VALUE,TITLE=TITLE,XTITLE=XTITLE,$
      YTITLE=YTITLE,XTYPE=XTYPE,YTYPE=YTYPE,PSYM=PSYM,COLOR=COLOR,$
      LINESTYLE=LINESTYLE,XRANGE=XRANGE,YRANGE=YRANGE
;+
; NAME:
;   PLOT_DROP
; PURPOSE:
;   Plots arrays where some points have data dropout. Only those segments
;   with data are plotted. If !PSYM is not positive, then lines will
;   connect the data points only within complete segments and will not
;   cross over segments with data dropout.
; CATEGORY:
; CALLING SEQUENCE:
;   PLOT_DROP, [ X_ARRAY, ] Y_ARRAY [, DROP_VALUE ]
; INPUTS:
;   Y_ARRAY      - Array of y values, including data dropouts.
; OPTIONAL INPUT PARAMETERS:
;   X_ARRAY      - Array of x values, defaults to indices of Y_ARRAY.
;   DROP_VALUE   - Values of Y_ARRAY equal to DROP_VALUE signal the
;                  data dropout. Defaults to 32000.
; OPTIONAL KEYWORD PARAMETERS:
;   TITLE       = Main plot title, default is !P.TITLE.
;   XTITLE      = X axis title, default is !X.TITLE.
;   YTITLE      = Y axis title, default is !Y.TITLE.
;   XTYPE       = If set, then X axis is logarithmic.
;   YTYPE       = If set, then Y axis is logarithmic.
;   PSYM        = Plotting symbol.
;   COLOR       = Plotting color. Used only for the data itself. The axes
;                  and titles are plotted using !COLOR.
;   LINESTYLE   = Line style to be used for plotting.
;   XRANGE      = Range of data values in the X direction.
;   YRANGE      = Range of data values in the Y direction.
; COMMON BLOCKS:
;   None.
; SIDE EFFECTS:
;   None.
; RESTRICTIONS:
;   None.
```

```

; PROCEDURE:
;   PLOT is called using the /NODATA keyword to draw the axes and titles,
;   and then OPLOT_DROP is called to overplot the data.
;
;   The normal system variables, such as !XMIN, etc., can be used to
;   control the plot, or one can allow the plot to autoscale in the usual
;   manner. In the latter case all of X_ARRAY is used to scale the plot
;   in the X direction, even the parts which have data dropout.
;
; MODIFICATION HISTORY:
;   William Thompson      Applied Research Corporation
;   September, 1987      8201 Corporate Drive
;                       Landover, MD 20785
;
;   William Thompson, December 1991, added keywords XTYPE, YTYPE, PSYM,
;                       COLOR, and LINESSTYLE.
;   William Thompson, May 1992, added keywords X RANGE and Y RANGE.
;-
;
;   ON_ERROR,2
;
; Parse the input parameters.
;
;   IF N_PARAMS(0) EQ 1 THEN BEGIN                ;Only Y_ARRAY passed.
;       Y = X_ARRAY
;       X = FINDGEN(N_ELEMENTS(Y))
;       DROP = 32000
;   END ELSE IF N_PARAMS(0) EQ 2 THEN BEGIN
;       N = N_ELEMENTS(Y_ARRAY)
;       IF N EQ 1 THEN BEGIN                ;Y_ARRAY and DROP_VALUE passed.
;           Y = X_ARRAY
;           X = FINDGEN(N_ELEMENTS(Y))
;           DROP = Y_ARRAY
;       END ELSE BEGIN                ;X_ARRAY and Y_ARRAY passed.
;           X = X_ARRAY
;           Y = Y_ARRAY
;           DROP = 32000
;       ENDELSE
;   END ELSE IF N_PARAMS(0) EQ 3 THEN BEGIN        ;All variables passed.
;       X = X_ARRAY
;       Y = Y_ARRAY
;       DROP = DROP_VALUE
;   END ELSE BEGIN
;       PRINT, ' This procedure must be called with 1-3 parameters:'
;       PRINT, '   [ X_ARRAY ,] Y_ARRAY [, DROP_VALUE ]'
;       RETURN
;   ENDELSE
;
;

```

```

; Save the variables !C and !XMIN, !XMAX, !YMIN, !YMAX to be restored at the
; end of the procedure. If not already defined, set the scaling in X.
;
    BANG_C = !C
    XMIN = !XMIN & XMAX = !XMAX & X1 = XMIN & X2 = XMAX
    YMIN = !YMIN & YMAX = !YMAX & Y1 = YMIN & Y2 = YMAX
    IF X1 EQ X2 THEN BEGIN
        X1 = MIN(X)
        X2 = MAX(X)
    ENDIF
;
; Find all the points not equal to DROP_VALUE.
;
    W = WHERE(Y NE DROP)
    IF W(0) EQ -1 THEN BEGIN
        PRINT,' All points equal to ',DROP
        GOTO,DONE
    ENDIF
;
; If not already defined, set the scaling in Y. Ignore any data dropouts.
;
    IF Y1 EQ Y2 THEN BEGIN
        Y1 = MIN(Y(W))
        Y2 = MAX(Y(W))
    ENDIF
    SET_XY,X1,X2,Y1,Y2
;
; First create the axes without plotting any data points.
;
    COMMAND = "PLOT,X,Y,/NODATA"
    IF N_ELEMENTS(XTITLE) EQ 1 THEN COMMAND = COMMAND + ",XTITLE=XTITLE"
    IF N_ELEMENTS(YTITLE) EQ 1 THEN COMMAND = COMMAND + ",YTITLE=YTITLE"
    IF N_ELEMENTS(TITLE) EQ 1 THEN COMMAND = COMMAND + ",TITLE=TITLE"
    IF N_ELEMENTS(XTYPE) EQ 1 THEN COMMAND = COMMAND + ",XTYPE=XTYPE"
    IF N_ELEMENTS(YTYPE) EQ 1 THEN COMMAND = COMMAND + ",YTYPE=YTYPE"
    IF N_ELEMENTS(XRANGE) EQ 2 THEN COMMAND = COMMAND +
,XRANGE=XRANGE"
    IF N_ELEMENTS(YRANGE) EQ 2 THEN COMMAND = COMMAND +
,YRANGE=YRANGE"
    TEST = EXECUTE(COMMAND)
;
; Call OPLOT_DROP to plot the data.
;
    OPLOT_DROP,X,Y,DROP,PSYM=PSYM,COLOR=COLOR,LINESTYLE=LINESTYL E
;
; Exit point; restore system variables.
;
DONE:

```

```

!C = BANG_C
!XMIN = XMIN & !XMAX = XMAX & !YMIN = YMIN & !YMAX = YMAX
RETURN
END

```

-----start the next one here -----

```

PRO
OPLOT_DROP,X_ARRAY,Y_ARRAY,DROP_VALUE,PSYM=PSYM,COLOR=COLOR,$
    LINESTYLE=LINESTYLE

```

```

;+
; NAME:
;   OPLOT_DROP
; PURPOSE:
;   Overplots arrays where some points have data dropout. Only those
;   segments with data are plotted. If !PSYM is not positive, then lines
;   will connect the data points only within complete segments and will
;   not cross over segments with data dropout.
; CATEGORY:
; CALLING SEQUENCE:
;   OPLOT_DROP, [ X_ARRAY, ] Y_ARRAY [, DROP_VALUE ]
; INPUTS:
;   Y_ARRAY      - Array of y values, including data dropouts.
; OPTIONAL INPUT PARAMETERS:
;   X_ARRAY      - Array of x values, defaults to indices of Y_ARRAY.
;   DROP_VALUE   - Values of Y_ARRAY equal to DROP_VALUE signal the
;                  data dropout. Defaults to 32000.
; OPTIONAL KEYWORD PARAMETERS:
;   PSYM        = Plotting symbol.
;   COLOR       = Plotting color.
;   LINESTYLE   = Line style to be used for plotting.
; COMMON BLOCKS:
;   None.
; SIDE EFFECTS:
;   None.
; RESTRICTIONS:
;   None.
; PROCEDURE:
;   A series of overplots is done for each segment.
; MODIFICATION HISTORY:
;   William Thompson      Applied Research Corporation
;   September, 1987      8201 Corporate Drive
;                        Landover, MD 20785
;
;   William Thompson, December 1991, added keywords XTYPE, YTYPE, PSYM,
;   COLOR, and LINESTYLE.
;-

```

```

;
; Parse the input parameters.
;
IF N_PARAMS(0) EQ 1 THEN BEGIN      ;Only Y_ARRAY passed.
    Y = X_ARRAY
    X = FINDGEN(N_ELEMENTS(Y))
    DROP_VALUE = 32000
END ELSE IF N_PARAMS(0) EQ 2 THEN BEGIN
    N = N_ELEMENTS(Y_ARRAY)
    IF N EQ 1 THEN BEGIN          ;Y_ARRAY and DROP_VALUE passed.
        Y = X_ARRAY
        X = FINDGEN(N_ELEMENTS(Y))
        DROP_VALUE = Y_ARRAY
    END ELSE BEGIN                ;X_ARRAY and Y_ARRAY passed.
        X = X_ARRAY
        Y = Y_ARRAY
        DROP_VALUE = 32000
    ENDELSE
END ELSE IF N_PARAMS(0) EQ 3 THEN BEGIN      ;All variables passed.
    X = X_ARRAY
    Y = Y_ARRAY
END ELSE BEGIN
    PRINT, ' This procedure must be called with 1-3 parameters:'
    PRINT, '   [ X_ARRAY ,] Y_ARRAY [, DROP_VALUE ]'
    RETURN
ENDELSE
;
; Save !C to be restored at end of routine.
;
    BANG_C = !C
;
; Find all the points not equal to DROP_VALUE.
;
    W = WHERE(Y NE DROP_VALUE)
    IF W(0) EQ -1 THEN BEGIN
        PRINT, ' All points equal to ', DROP_VALUE
        GOTO, DONE
    ENDIF
;
; Set the values of PSYM, COLOR, and LINESTYLE.
;
    IF N_ELEMENTS(PSYM) EQ 0 THEN PSYM = !PSYM
    IF N_ELEMENTS(COLOR) EQ 0 THEN COLOR = !COLOR
    IF N_ELEMENTS(LINESTYLE) EQ 0 THEN LINESTYLE = !LINESTYLE
;
; Define the variables XX and YY to be the remaining data points. I is the
; position of the last point with a dropout.
;

```

```

XX = X
YY = Y
I = -1
;
; Do the next segment.
;
NEXT:
    I = I + 1
    IF I EQ N_ELEMENTS(XX) THEN GOTO,DONE
    XX = XX(I:*)
    YY = YY(I:*)
;
; Find the first point without a dropout.
;
    I = MIN(WHERE(YY NE DROP_VALUE))
    IF I EQ -1 THEN GOTO,DONE
    XX = XX(I:*)
    YY = YY(I:*)
;
; Find the next data dropout, and plot up to that point. If only one point is
; to be plotted, double it to fool the OPLOT procedure.
;
    I = MIN(WHERE(YY EQ DROP_VALUE)) - 1
    !C = 0
    IF I EQ -2 THEN BEGIN
        IF N_ELEMENTS(XX) GT 1 THEN BEGIN
            OPLOT,XX,YY,PSYM=PSYM,COLOR=COLOR,LINestyle=LINestyle
        END ELSE BEGIN
            OPLOT,[XX,XX],[YY,YY],PSYM=PSYM,COLOR=COLOR, $
                LINestyle=LINestyle
        ENDELSE
        GOTO,DONE
    END ELSE IF I GT 0 THEN BEGIN
        OPLOT,XX(0:I),YY(0:I),PSYM=PSYM,COLOR=COLOR,LINestyle=LINestyle
    END ELSE BEGIN
        OPLOT,[XX(0),XX(0)],[YY(0),YY(0)],PSYM=PSYM,COLOR=COLOR, $
            LINestyle=LINestyle
    ENDELSE
    GOTO,NEXT
;
; Exit point; restore !C.
;
DONE:
    !C = BANG_C
    RETURN
END
--

```

Stephen C Strebel / SKI TO DIE
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Swiss Meteorological Institute, Zuerich / LIVE TO TELL ABOUT IT
01 256 93 85 / (and pray for snow)
