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/* #####
/* #####          APDISPLAY.AML          #####
/* #####

/* =====
/* PURPOSE:
/* Displays different thematic map series in AP.  Legends are
/* displayed, with the key files being generated automatically if
/* they are not created yet.
/* Titles for each thematic series can be shown.  Time is also
/* displayed.  This time is computed from the elapsed time between
/* CASC2D maps, and the map number in the series.
/*
/* =====
/* ARGUMENTS:
/*   None
/*
/* =====
/* VARIABLES:
/*   Passed from the main program (DS.aml) as global
/*   variables.
/*
/* =====
/* CALLS:
/*   TakeScreenShot.aml
/*
/* =====
/* ROUTINES:
/*   Legend      -- Creates key files and displays map legends
/*                 according to the given remap table and shadeset
/*   TitleText  -- Writes map titles (specified in the Parameter file)
/*   TimeText   -- Writes the event simulation time
/*   SetLayoutVariables -- Specifies position of legend, title, sub-
/*                 title, simulation time and maps in a given layout
/*
/* =====
/* HISTORY:
/*   August 18, 2001: This part of the code is taken from the main
/*   program (DisplaySeries.aml) and becomes a stand alone aml.
/*   November 16, 2001: Display2.aml, Display3.aml...Display6.aml
/*   are re-written more generically in only one AML (Display.aml).
/*
/* =====

/* Displays a red line around the AP window
LINECOLOR 2
LINESIZE 0.05

/* I want a white background.  Instead of changing the canvas color
/* I will just put a white patch as background
SHADETYPE COLOR
SHADECOLOR 1
&SV CanvasColor = [SHOW CANVASCOLOR]
&TYPE Canvas Color is %CanvasColor%

/* SPECIFY ARC PLOT DISPLAY CONFIGURATION
&IF %.MapsPerFrame% EQ 1 OR %.MapsPerFrame% EQ 4 &THEN
&DO
    DISPLAY 9999 SIZE CANVAS 720 600    /* Landscape

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    PAGESIZE 11 8.5                                /* Landscape
    /* &IF %CanvasColor% EQ BLACK &THEN PATCH 0 0 11 8.5
    BOX 0 0 11 8.5                                  /* Landscape
&END
&ELSE
&DO
    DISPLAY 9999 SIZE CANVAS 530 720              /* Portrait
    PAGESIZE 8.5 11                                /* Portrait
    /*&IF %CanvasColor% EQ BLACK &THEN PATCH 0 0 8.5 11
    BOX 0 0 8.5 11                                  /* Portrait
&END

/* LEGEND AND TITLES WILL NOT CHANGE ALONG THE SIMULATION SO THEY ARE
/* DISPLAYED ONLY ONCE AT THE BEGINING (they won't flicker every time
/* the display is refreshed and the display will be faster)

/* Set variables depending on the number of maps per frame
&CALL SetLayoutVariables

/* Creates Legends and Titles in layout
&CALL Legend
&CALL TitleText

/* DISPLAY THEMATIC MAP SERIES

&DO FrameNumber = %.StartFrame% &TO %.EndFrame% &BY %.FrameStep%

    GNDS TRANSPARENT /* NODATA cells will be displayed transparently.
                       /* that I can see the map legend

    &SV timesec [calc %FrameNumber% * %.ElapsedTime%]
    &SV timemin [calc %timesec% / 60]
    &CALL TimeText

    &TYPE Displaying frame Number: %FrameNumber%

    &DO n = 1 &TO %.MapsPerFrame%
        MAPLIMITS [UNQUOTE[VALUE Mlimits%n%]]
        MAPEXTENT %.wPath%[VALUE .Name%n%]%FrameNumber%
        MAPPOSITION LR LR
        SHADEDELETE ALL
        SHADESET [VALUE .ShdSet%n%]
        GRIDSHADES ~
                    %.wPath%[VALUE .Name%n%]%FrameNumber% VALUE [VALUE .RMT%n%]
        LINECOLOR 2
        LINESIZE 0.04
        /*ARCS h:\gismaps\3hydromodel\30\drainagedata\basins_polys
    &END

    &PAUSE &SECONDS %.SecsPause%

    &IF %.CreateMovie% = 1 &THEN &DO
        &RUN TakeScreenShot
        &TYPE Done: Screen shot of frame Number: %FrameNumber%
    &END

&END

&RETURN

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/* #####
/* #####          ROUTINE LEGEND          #####
/* #####

/* CREATES FILES TO STORE THE KEY FILES.
/* KEY FILES ARE DERIVED FROM REMAP TABLES

&ROUTINE Legend

&DO k = 1 &TO %.MapsPerFrame%

  &SV fileunit%k% [OPEN %.wPath%[value .Name%k%].key openstat -write]

  &IF %openstat% <> 0 &THEN
    &DO
      &SV str Could not create key_file ...; &CALL bailout
    &END

    /* DATA WILL BE TAKEN FROM THE REMAP TABLE (DEFINED BY THE USER)
    /* AND WRITEN TO THE TEMPORAL KEY FILE WITH THE CORRESPONDING
    /* KEY FILE FORMAT (see "Drawing Key Legend" help)

    &SV eof 0
    &SV RemapFile%k% [open [value .RMT%k%] openstat -read]
    &SV line [UNQUOTE [READ [value RemapFile%k%] eof]]

    /* I ASSUME THAT THE USER DOESN'T HAVE MORE THAN 100 CLASSES!!!
    /* I WILL ONLY WRITE THE UPPER LIMIT AS THE TEXT CLOSE TO THE KEY
    /* IF YOU WANT TO WRITE THE WHOLE INTERVAL --> CHANGE NEXT LINES
    /* OF CODE TO READ AND WRITE THE 1st AND 2nd ARGUMENT OF %line%

    &DO i = 1 &TO 100 &WHILE %eof% NE 102
      /* 102 is returned value for EOF
      &SV NULL [WRITE [VALUE fileunit%k%] .%i% ]
        &SV key%i% := [QUOTE < [EXTRACT 2 %line%]]
      &SV NULL [WRITE [VALUE fileunit%k%] [value key%i%]]
      &SV line [UNQUOTE [READ [value RemapFile%k%] eof]]
    &END

    &SV NULL [CLOSE [VALUE fileunit%k%]]

    &SV closestat = [CLOSE [VALUE RemapFile%k%]]
  &END

/* TODO:CHANGE THE NEXT LINES WITH THE FONTS AND SIZES OF YOUR LIKING
/* NEXT SPECIFICATIONS WILL BE COMMON FOR ALL LEGENDS

/* Standandard hardware device color index:
/* 1:white; 2:red; 3:green; 4:blue; 5:cyan; 6:magenta; 7:yellow

SHADETYPE COLOR
TEXTCOLOR 1          /* Legend text color: black
TEXTFONT 'Times Bold' /* Legend Font:smooth panel
TEXTSIZE 0.23 0.23  /* Legend text size: .2 inches
TEXTSPACING 0
TEXTQUALITY PROPORTIONAL
LINESIZE 0.01        /* Line width around key box

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LINECOLOR 0          /* Line color (black) around key box
KEYBOX .25 .18      /* Key box width and height (inches)
KEYSEPARATION 0.05 0.03 /* Key dist. to text and between keys

&DO j = 1 &TO %.MapsPerFrame%
  /*BOX [UNQUOTE[VALUE Area%j%]]
  SHADEDELETE ALL
  KEYAREA [UNQUOTE [value Area%j%]]
  SHADESET [value .ShdSet%j%]
  KEYSHADE %.wPath%[value .Name%j%].key
  &SV NULL [DELETE %.wPath%[value .Name%j%].key] /* Delete key file
&END

&RETURN

/* #####
/* #####          ROUTINE TITLE_TEXT          #####
/* #####

/* CREATES THE TITLES AND SUBTITLES CORRESPONDING TO EACH OF THE
/* THEMATIC SERIES -- TITLES ARE USER DEFINED IN THE PARAMETER FILE

&ROUTINE TitleText

TEXTCOLOR 2          /* Title in red
TEXTSIZE 0.4 0.4    /* Title font height & width: 0.4 inches
TEXTFONT 'Courier bold' /*
TEXTSPACING 0
TEXTQUALITY PROPORTIONAL

/* MOVE: specifies a coordinate point used to position the cursor and
/* to position text drawn with TEXT and TEXTFILE. Specify only the
/* lower left corner of the title and subtitle block.

&DO m = 1 &TO %.MapsPerFrame%
  MOVE [VALUE xTitlePos%m%] [VALUE yTitlePos%m% ]
  TEXT [value .MapTitle%m%]
  MOVE [VALUE xTitlePos%m%] [CALC [VALUE yTitlePos%m%] - 0.4]
  TEXT [value .MapSubTitle%m%]
&END

&RETURN

/* #####
/* #####          ROUTINE TIME_TEXT          #####
/* #####

/* CALCULATES SIMULATION TIME AND DISPLAYS IT ON THE LAYOUT

&ROUTINE TimeText

/* Needed to put a black box on top of the time so that the last
/* time is not shown (the display window is not being refreshed )

SHADETYPE COLOR
SHADECOLOR 0

/* (xmin, ymin) has been specified in the SetVariables routine
&SV xmax = [CALC %xmin% + 2]

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&SV ymax = [CALC %ymin% + 0.55]

PATCH %xmin% %ymin% %xmax% %ymax%

MOVE [CALC %xmin% + 0.25] [CALC %ymin% + 0.25]

TEXTSIZE 0.40 0.40
TEXTSPACING 0
TEXTQUALITY PROPORTIONAL
TEXTFONT 'omega bold'
TEXT 't = '
TEXT [QUOTE [format '%1%' %timemin%]]
MOVE [CALC %xmin% + 1.8] [CALC %ymin% + 0.25]
TEXTFONT 'times' /* ??????????????????????????????????
TEXT ' min.' /* How to write the whole thing
/* with only one TEXT command ?

&RETURN

/* #####
/* ##### ROUTINE SET_VARIABLES #####
/* #####

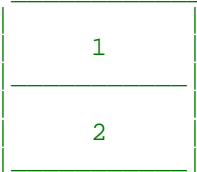
&ROUTINE SetLayoutVariables

&IF %MapsPerFrame% EQ 1 &THEN
&DO
&SV MLimits1 = ' 0 0 11 8.5 '
&SV Area1 = '0.2 5.0 4.3 8.4'
&SV xTitlePos1 = 3.5
&SV yTitlePos1 = 7.35
&SV xmin = 6.75
&SV ymin = 0.75
&END

&IF %MapsPerFrame% EQ 2 &THEN /*
&DO /*
&SV MLimits1 = '0.1 5.4 8.4 10.9' /*
&SV MLimits2 = '0.1 0.1 8.4 5.5' /*
&SV Area1 = '0.1 8.9 2.85 10.65' /*
&SV Area2 = '0.1 3.6 2.85 5.35' /*
&SV xTitlePos1 = 2.4 /*
&SV yTitlePos1 = 10.6
&SV xTitlePos2 = %xTitlePos1%
&SV yTitlePos2 = [CALC %yTitlePos1% - 5.3 ]
&SV xmin = 4.20
&SV ymin = 0.1
&END

/* this one needs more work. Check values
&IF %MapsPerFrame% EQ 3 &THEN
&DO
&SV MLimits1 = '0.0 7.4 8.5 11.0'
&SV MLimits2 = '0.0 3.7 8.5 7.3'
&SV MLimits3 = '0.0 0.0 8.5 3.6'
&SV Area1 = '0.1 8.9 2.85 10.65'
&SV Area2 = '0.1 3.6 2.85 5.35'
&SV Area3 = '0.1 3.6 2.85 5.35'
&SV xTitlePos1 = 5.75 /*
&SV yTitlePos1 = 0.9 /*

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&SV xTitlePos2 = 5.75 /*
&SV yTitlePos2 = 6.3 /*
&SV xTitlePos3 = 6.3 /*
&SV yTitlePos3 = 5 /*
&SV xmin = 2.20 /*
&SV ymin = 0.1 /*
&END /*

```

1
2
3

```

&IF %.MapsPerFrame% EQ 4 &THEN
&DO
&SV MLimits1 = '0 4.25 5.5 8.5'
&SV MLimits2 = '5.5 4.25 11 8.5'
&SV MLimits3 = '0 0 5.5 4.25'
&SV MLimits4 = '5.5 0 11 4.25'
&SV Area1 = '0.05 6.95 2.05 8.45'
&SV Area2 = '5.40 6.95 7.40 8.45'
&SV Area3 = '0.05 2.75 2.05 4.25'
&SV Area4 = '5.40 2.75 7.40 4.25'
&SV xTitlePos1 = 2.70
&SV yTitlePos1 = 8.05 /*
&SV xTitlePos2 = 8.10 /*
&SV yTitlePos2 = 8.05 /*
&SV xTitlePos3 = 2.70 /*
&SV yTitlePos3 = 3.85 /*
&SV xTitlePos4 = 8.10 /*
&SV yTitlePos4 = 3.85 /*
&SV xmin = 3.0
&SV ymin = 0.05
&END

```

1	2
3	4

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&IF %.MapsPerFrame% EQ 6 &THEN
&DO
&SV MLimits1 = '0.0 7.2 4.2 10.8' /*Landscape: 0 4.2 3.6 8.4
&SV MLimits2 = '4.2 7.2 8.4 10.8' /*Landscape: 3.6 4.2 7.2 8.4
&SV MLimits3 = '0.0 3.6 4.2 7.2' /*Landscape: 7.2 4.2 10.8 8.4
&SV MLimits4 = '4.2 3.6 8.4 7.2' /*Landscape: 0 0 3.6 4.2
&SV MLimits5 = '0.0 0.0 4.2 3.6' /*Landscape: 3.6 0 7.2 4.2
&SV MLimits6 = '4.2 0.0 8.4 3.6' /*Landscape: 7.2 0 10.8 4.2
&SV Area1 = '0.05 9.15 1.65 10.85'
&SV Area2 = '4.2 9.15 5.8 10.85'
&SV Area3 = '0.05 5.55 1.65 7.25'
&SV Area4 = '4.2 5.55 5.8 7.25'
&SV Area5 = '0.05 1.95 1.65 3.65'
&SV Area6 = '4.2 1.95 5.8 3.65'
&SV xTitlePos1 = 2 /*
&SV yTitlePos1 = 10.2 /*
&SV xTitlePos2 = 6.15 /*
&SV yTitlePos2 = 10.2 /*
&SV xTitlePos3 = 2 /*
&SV yTitlePos3 = 6.6 /*
&SV xTitlePos4 = 6.15 /*
&SV yTitlePos4 = 6.6 /*
&SV xTitlePos5 = 2 /*
&SV yTitlePos5 = 3.0 /*
&SV xTitlePos6 = 6.15 /*
&SV yTitlePos6 = 3.0 /*
&SV xmin = 2.20
&SV ymin = 0.05
&END

```

1	2
3	4
5	6

&RETURN