;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

 begin

;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

 f = addfile("/home1/omid/Marjani/DATA/CMIP5/CanESM2\_gaus/hisCanESM2/tas\_Amon\_CanESM2\_historical\_r1i1p1\_185001-200512.nc","r")

 SST = f->tas

 lat=f->lat

 lon=f->lon

;\*\*\*\*\*\*\*\*\*PART 1==🡺

 SST2 = SST(1211:1559:12,:,:)

 meanClimatology=dim\_avg\_n\_Wrap(SST2,0) ;mean of DECEMBER in period of 1950\_1979

 exel=SST(1583,:,:) ;extreme elnino 1981

 anomexel=exel - meanClimatology

;........................................................................................

 el=SST(1583,:,:) ;elnino1982

 anomel=el - meanClimatology

;....................................................................................

 exla=SST(1643,:,:) ;extreme lanina 1986

 anomexla=exla-meanClimatology

;+++++++++++++++++++++++++++++++++++++++++++++++

;\*\*\*\*\*\*\*\*\*\*\*\*PART2=======🡺

 anomSST = dim\_rmvmean\_n\_Wrap(SST(1211:1811:12,:,:),0) ;DECEMBER of 1950-2000

 meanSST=dim\_avg\_n\_Wrap(SST(1211:1811:12,:,:),0)

;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

; plot parameters

;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

 wks = gsn\_open\_wks("x11","Plot\_SST\_according to Trenbeth index")

 plot = new(2,graphic)

 res = True

 res@gsnFrame = False

 res@gsnDraw = False

 res@gsnAddCyclic = False

 ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

 res@cnFillOn = True ; color plot

 res@cnLevelSelectionMode = "ManualLevels"; manual set levels so lb consistent

 res@cnLinesOn = False ; turn of contour lines

 res@cnFillPalette = "BlGrYeOrReVi200" ; set color map

 res@lbLabelBarOn = False ; turn off individual cb's

 res@lbLabelPosition = "Center" ; label position

 res@lbLabelAlignment = "BoxCenters" ; label orientation

;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

 res@mpMinLonF = 0

 res@mpMaxLonF = 360

 res@mpCenterLonF = 180 ; This is necessary to get the correct map

;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

 res@gsnCenterString = "" ; add center title

;plot(0)=gsn\_csm\_contour\_map(wks,anomexel,res) ;related to part1

 plot(0)=gsn\_csm\_contour\_map(wks,meanSST,res) ;related to part2

;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

 delete(res@gsnCenterString)

 res@gsnCenterString = ""

;\*\*\*\*\*\*\*\*\*\*\*:\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

;plot(1)=gsn\_csm\_contour\_map(wks,anomel,res) ;related to part1

plot(1)=gsn\_csm\_contour\_map(wks,anomSST(31,:,:),res) ;EXTREM1E EL 1981( related to part2)

;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

; panel first two plots

;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

 pres1 = True

 pres1@gsnPanelLabelBar = True ; common label bar

 pres1@gsnFrame = False ; don't advance frame yet

 pres1@lbOrientation = "vertical" ; vertical label bar

;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

 pres1@gsnPanelBottom = 0.4 ; move bottom up from 0.0 to 0.4

 gsn\_panel(wks,plot,(/2,1/),pres1)

;&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&

 delete(res@gsnCenterString)

 delete(res@cnFillPalette)

 ;cmap = read\_colormap\_file("BlGrYeOrReVi200") ; read color data

 cmap = read\_colormap\_file("temp\_19lev") ; read color data

 ;ncolors = dimsizes(cmap(:,0)) ; get number of colors

;print(ncolors)

 res@cnFillPalette = cmap(:,:) ; set color map

 ; res@cnFillPalette = cmap(0:150:5,:) ; set color map

; res@gsnCenterString = ""

;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

; plot2=gsn\_csm\_contour\_map(wks,anomexla,res) ;related to part1

 plot2=gsn\_csm\_contour\_map(wks,anomSST(36,:,:),res) ;EXTREME lanina 1986(related to part2)

;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

 pres2 = True

 pres2@gsnPanelLabelBar = True ; common label bar

 pres2@gsnPanelTop = 0.4 ; draw up to the bdry of upper plot

 pres2@gsnPanelBottom = 0.1 ; move bottom up so size is 0.3

 pres2@gsnFrame = False ; don't advance frame yet

 pres2@lbOrientation = "vertical" ; vertical label bar

 gsn\_panel(wks,plot2,(/1,1/),pres2)

; now advance frame for all plots

 frame(wks)

;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

;gsn\_panel(wks,plot,(/3,1/),False)

;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

end