Results of dcpam are compared with $\rm MGS^1\text{-}TES^2$ and $\rm MRO^3\text{-}MCS^4$ data. MGS-TES and MRO-MCS data used for comparison are those in MY26⁵ and MY30. Those observational data are downloaded from the PDS⁶.

¹Mars Global Surveyor

²Thermal Emission Spectrometer

³Mars Reconnaissance Orbiter

 $^{^4\}mathrm{Mars}$ Climate Sounder

 $^{^5\}mathrm{MY}$ stands for Mars Year

 $^{^6\}mathrm{Planetary~Data~System}$

dust optical depth at 0.67 micron meter at the surface (degree_north)

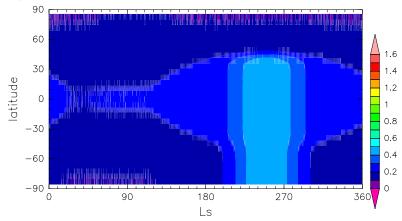


Figure 1: Daily mean dust optical depth prescribed in dcpam

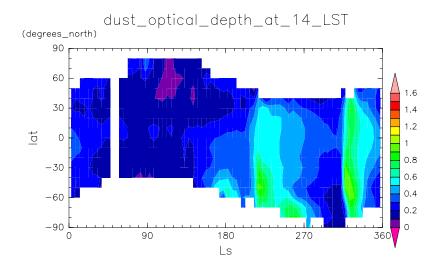


Figure 2: Double of dust optical depth observed by MGS-TES in MY26 $\,$

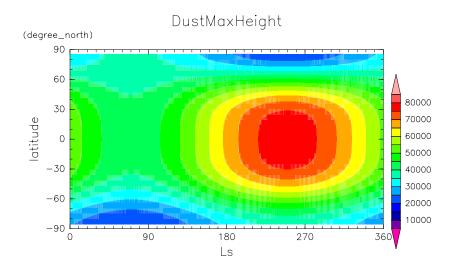
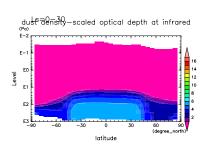


Figure 3: Daily mean maximum height of dust distribution prescribed in dcpam



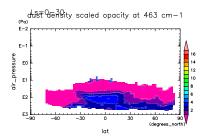
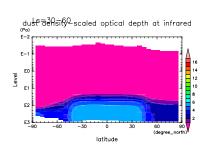


Figure 4: DustDensScledOptDep at 03 LST and Ls=0°-30° by dcpam

Figure 7: DustDensScledOptDep at 03 LST and $Ls=0^{\circ}-30^{\circ}$ by MRO



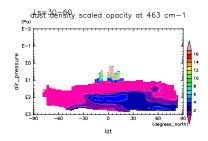
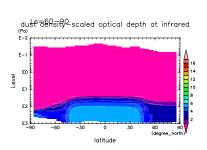


Figure 5: DustDensScledOptDep at Figure 8: DustDensScledOptDep at 03 LST and $\text{Ls}=30^{\circ}\text{-}60^{\circ}$ by dcpam

03 LST and $Ls=30^{\circ}-60^{\circ}$ by MRO



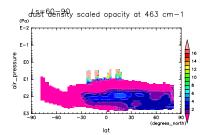
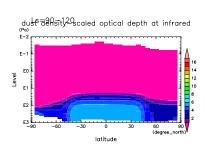
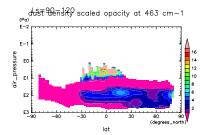


Figure 6: DustDensScledOptDep at Figure 9: DustDensScledOptDep at 03 LST and Ls=60°-90° by dcpam

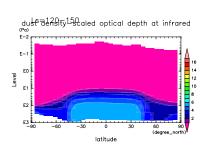
03 LST and $Ls=60^{\circ}-90^{\circ}$ by MRO

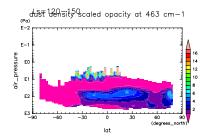




03 LST and Ls=90°-120° by dcpam

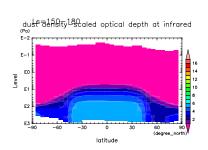
Figure~10:~DustDensScledOptDep~at~~Figure~13:~DustDensScledOptDep~at~~03 LST and Ls= 90° - 120° by MRO





03 LST and $\text{Ls}=120^{\circ}\text{-}150^{\circ}$ by dcpam

Figure 11: DustDensScledOptDep at Figure 14: DustDensScledOptDep at 03 LST and Ls=120°-150° by MRO



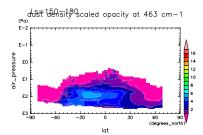
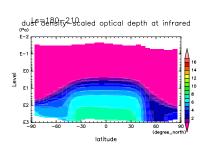


Figure 12: DustDensScledOptDep at Figure 15: DustDensScledOptDep at

03 LST and Ls=150°-180° by dcpam 03 LST and Ls=150°-180° by MRO



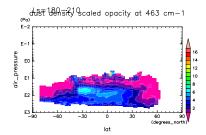
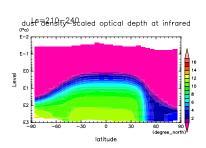
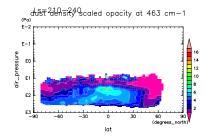


Figure 16: DustDensScledOptDep at 03 LST and Ls=180°-210° by dcpam

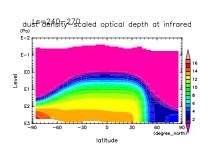
Figure 19: DustDensScledOptDep at 03 LST and Ls=180°-210° by MRO





03 LST and $Ls=210^{\circ}-240^{\circ}$ by dcpam

Figure 17: DustDensScledOptDep at Figure 20: DustDensScledOptDep at 03 LST and Ls=210°-240° by MRO



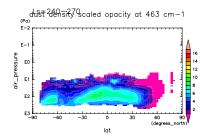
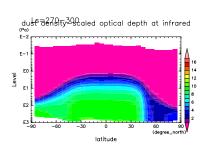


Figure 18: DustDensScledOptDep at Figure 21: DustDensScledOptDep at

03 LST and Ls=240°-270° by dcpam 03 LST and Ls=240°-270° by MRO



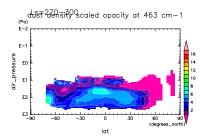
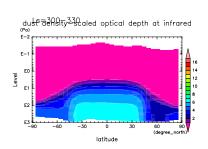
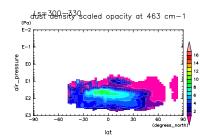


Figure 22: DustDensScledOptDep at 03 LST and Ls=270°-300° by dcpam

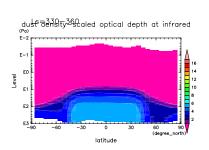
Figure 25: DustDensScledOptDep at 03 LST and Ls=270°-300° by MRO





03 LST and $Ls=300^{\circ}-330^{\circ}$ by dcpam

Figure 23: DustDensScledOptDep at Figure 26: DustDensScledOptDep at 03 LST and Ls=300°-330° by MRO



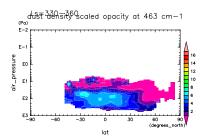
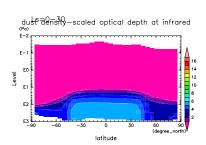
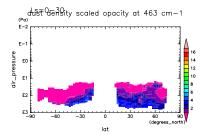


Figure 24: DustDensScledOptDep at Figure 27: DustDensScledOptDep at

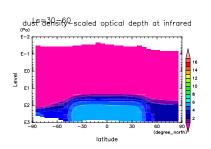
03 LST and Ls=330°-360° by dcpam 03 LST and Ls=330°-360° by MRO

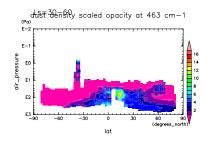




15 LST and Ls=0°-30° by dcpam

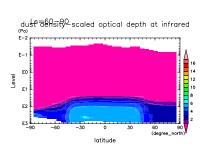
Figure~28:~DustDensScledOptDep~at~~Figure~31:~DustDensScledOptDep~at15 LST and Ls= 0° - 30° by MRO





15 LST and Ls=30°-60° by dcpam

Figure 29: DustDensScledOptDep at Figure 32: DustDensScledOptDep at 15 LST and Ls= 30° - 60° by MRO



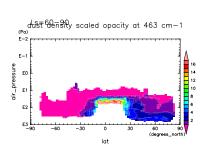
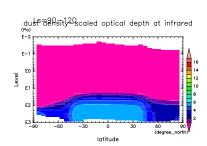
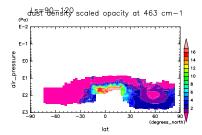


Figure 30: DustDensScledOptDep at Figure 33: DustDensScledOptDep at 15 LST and Ls=60°-90° by dcpam

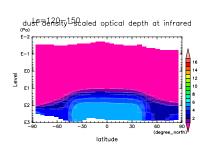
15 LST and Ls= 60° - 90° by MRO

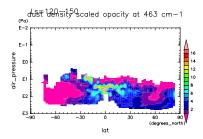




15 LST and Ls=90°-120° by dcpam

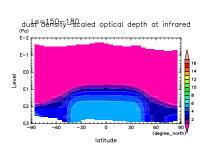
 $Figure \ 34: \ DustDensScledOptDep \ at \quad Figure \ 37: \ DustDensScledOptDep \ at$ 15 LST and Ls=90°-120° by MRO

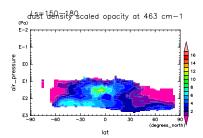




15 LST and Ls= 120° - 150° by dcpam

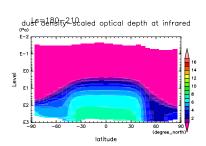
Figure 35: DustDensScledOptDep at Figure 38: DustDensScledOptDep at 15 LST and Ls= 120° - 150° by MRO

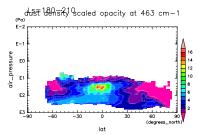




 $\label{prop:school} \mbox{Figure 36: DustDensScledOptDep at} \quad \mbox{Figure 39: DustDensScledOptDep at} \\$

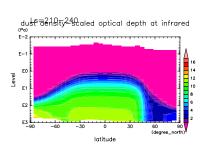
15 LST and Ls=150°-180° by dcpam $\,$ 15 LST and Ls=150°-180° by MRO

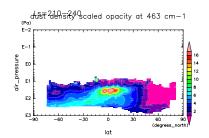




15 LST and Ls=180°-210° by dcpam

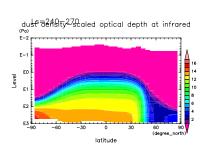
 $\label{eq:Figure 40: DustDensScledOptDep at Figure 43: DustDensScledOptDep at } Figure \ 43: \ DustDensScledOptDep \ at$ 15 LST and Ls=180°-210° by MRO

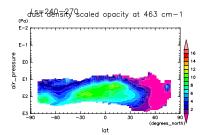




15 LST and Ls= 210° - 240° by dcpam

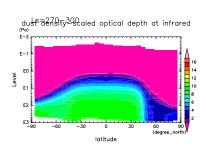
Figure 41: DustDensScledOptDep at Figure 44: DustDensScledOptDep at 15 LST and Ls= 210° - 240° by MRO

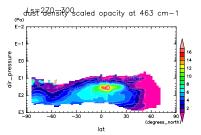




 $\label{prop:prop:scholor} \mbox{Figure 42: DustDensScledOptDep at} \quad \mbox{Figure 45: DustDensScledOptDep at} \\$

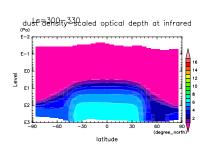
15 LST and Ls=240°-270° by dcpam $\,$ 15 LST and Ls=240°-270° by MRO

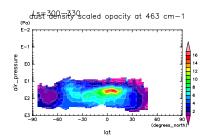




15 LST and Ls=270°-300° by dcpam

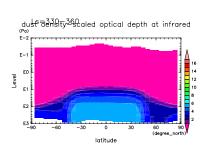
 $\label{eq:Figure 46: DustDensScledOptDep at Figure 49: DustDensScledOptDep at } Figure \ 49: \ DustDensScledOptDep \ at$ 15 LST and Ls= 270° - 300° by MRO

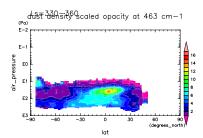




15 LST and Ls= 300° - 330° by dcpam

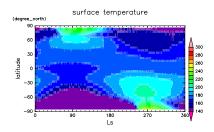
Figure 47: DustDensScledOptDep at Figure 50: DustDensScledOptDep at 15 LST and Ls=300°-330° by MRO





Figure~48:~DustDensScledOptDep~at~~Figure~51:~DustDensScledOptDep~at

15 LST and Ls=330°-360° by dcpam $\,$ 15 LST and Ls=330°-360° by MRO



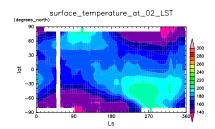


Figure 52: T_s at 02 LST by dcpam

surface temperature

90

90

90

90

180

270

360

Figure 54: T_s at 02 LST by MGS

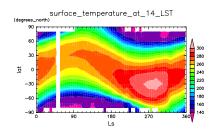
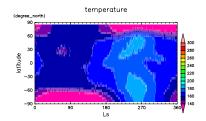


Figure 53: $T_{\rm s}$ at 14 LST by dcpam

Figure 55: $T_{\rm s}$ at 14 LST by MGS



air_temperature_at_02_LST

Figure 56: T at 18 Pa and at 02 LST by dcpam

Figure 60: T at 18 Pa and at 02 LST by MGS

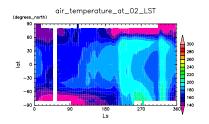


Figure 57: T at 50 Pa and at 02 LST by dcpam

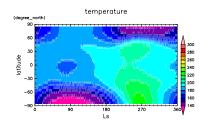


Figure 61: T at 50 Pa and at 02 LST by MGS

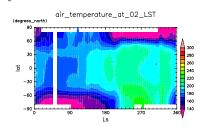


Figure 58: T at 136 Pa and at 02 LST by dcpam

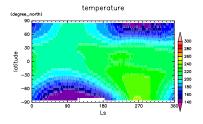


Figure 62: T at 136 Pa and at 02 LST by MGS

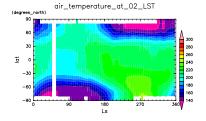
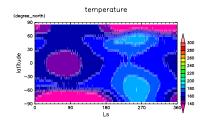


Figure 59: T at 370 Pa and at 02 LST by dcpam

Figure 63: T at 370 Pa and at 02 LST by MGS



air_temperature_at_14_LST

Figure 64: T at 18 Pa and at 14 LST by dcpam

Figure 68: T at 18 Pa and at 14 LST by MGS

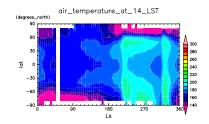


Figure 65: T at 50 Pa and at 14 LST by dcpam

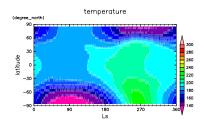


Figure 69: T at 50 Pa and at 14 LST by MGS

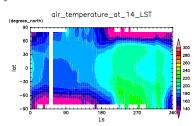


Figure 66: T at 136 Pa and at 14 LST by dcpam

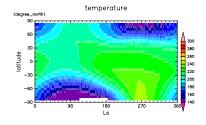
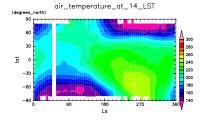


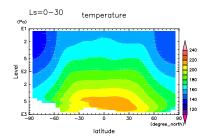
Figure 70: T at 136 Pa and at 14 LST by MGS

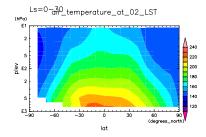


14

Figure 67: T at 370 Pa and at 14 LST by dcpam

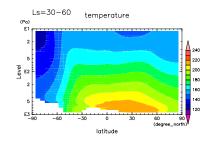
Figure 71: T at 370 Pa and at 14 LST by MGS

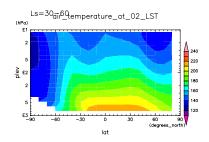




Ls= 0° - 30° by dcpam

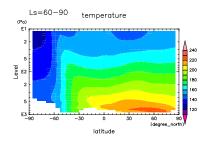
Figure 72: Temp at 02 LST and Figure 75: Temp at 02 LST and Ls= 0° - 30° by MGS





Ls= 30° - 60° by dcpam

Figure 73: Temp at 02 LST and Figure 76: Temp at 02 LST and $Ls=30^{\circ}-60^{\circ}$ by MGS



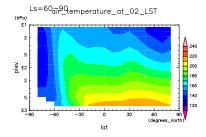
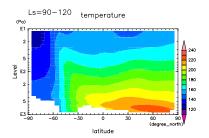
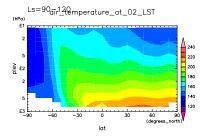


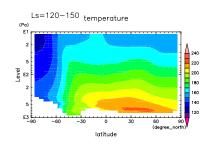
Figure 74: Temp at 02 LST and Figure 77: Temp at 02 LST and Ls=60°-90° by dcpam Ls=60°-90° by MGS

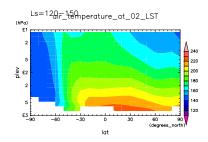




Ls=90°-120° by dcpam

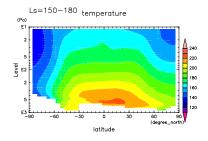
Figure 78: Temp at 02 LST and Figure 81: Temp at 02 LST and $Ls=90^{\circ}-120^{\circ}$ by MGS

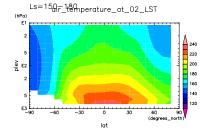




 $Ls=120^{\circ}-150^{\circ}$ by dcpam

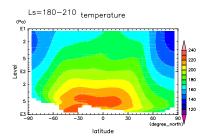
Figure 79: Temp at 02 LST and Figure 82: Temp at 02 LST and Ls= 120° - 150° by MGS

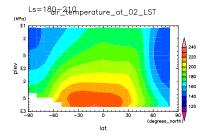




Ls= 150° - 180° by dcpam

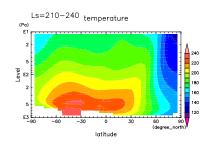
Figure 80: Temp at 02 LST and Figure 83: Temp at 02 LST and Ls=150°-180° by MGS

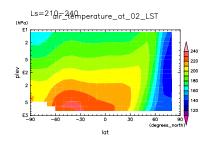




Ls= 180° - 210° by dcpam

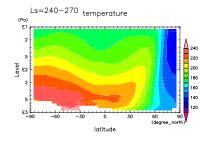
Figure 84: Temp at 02 LST and Figure 87: Temp at 02 LST and $Ls=180^{\circ}-210^{\circ}$ by MGS





 $Ls=210^{\circ}-240^{\circ}$ by dcpam

Figure 85: Temp at 02 LST and Figure 88: Temp at 02 LST and Ls= 210° - 240° by MGS



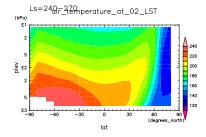
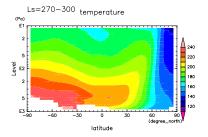
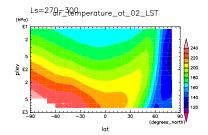


Figure 86: Temp at 02 LST and Figure 89: Temp at 02 LST and Ls= 240° - 270° by dcpam

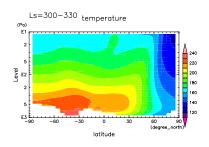
Ls=240°-270° by MGS

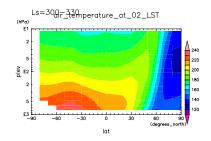




Ls= 270° - 300° by dcpam

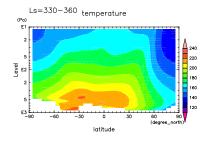
Figure 90: Temp at 02 LST and Figure 93: Temp at 02 LST and $Ls=270^{\circ}-300^{\circ}$ by MGS

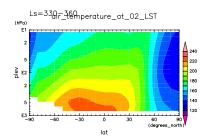




 $Ls=300^{\circ}-330^{\circ}$ by dcpam

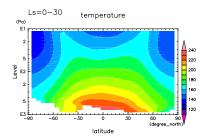
Figure 91: Temp at 02 LST and Figure 94: Temp at 02 LST and Ls= 300° - 330° by MGS

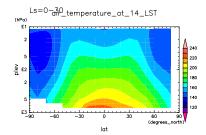




Ls=330°-360° by dcpam

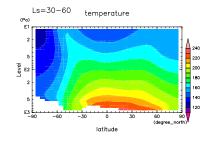
Figure 92: Temp at 02 LST and Figure 95: Temp at 02 LST and Ls=330°-360° by MGS

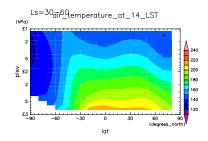




Ls= 0° - 30° by dcpam

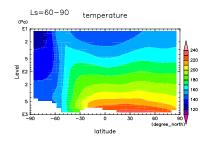
Figure 96: Temp at 14 LST and Figure 99: Temp at 14 LST and $Ls=0^{\circ}-30^{\circ}$ by MGS





Ls= 30° - 60° by dcpam

Figure 97: Temp at 14 LST and Figure 100: Temp at 14 LST and $Ls=30^{\circ}-60^{\circ}$ by MGS



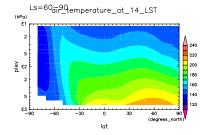
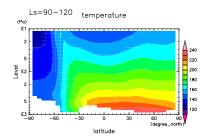
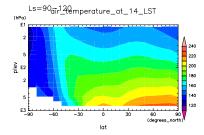


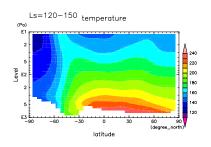
Figure 98: Temp at 14 LST and Figure 101: Temp at 14 LST and Ls=60°-90° by dcpam Ls=60°-90° by MGS

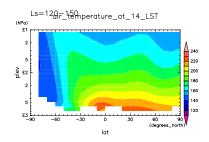




Ls= 90° - 120° by dcpam

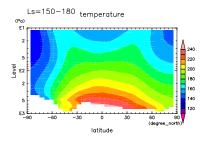
Figure 102: Temp at 14 LST and Figure 105: Temp at 14 LST and $Ls=90^{\circ}-120^{\circ}$ by MGS





 $Ls=120^{\circ}-150^{\circ}$ by dcpam

Figure 103: Temp at 14 LST and Figure 106: Temp at 14 LST and Ls= 120° - 150° by MGS



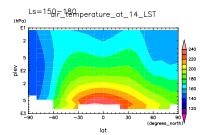
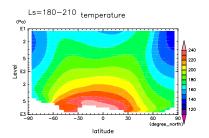
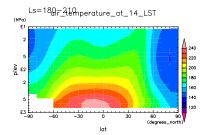


Figure 104: Temp at 14 LST and Figure 107: Temp at 14 LST and Ls=150°-180° by dcpam

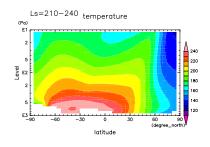
Ls=150°-180° by MGS

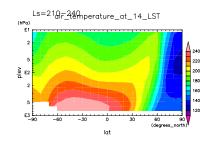




Ls= 180° - 210° by dcpam

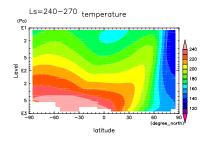
Figure 108: Temp at 14 LST and Figure 111: Temp at 14 LST and $Ls=180^{\circ}-210^{\circ}$ by MGS





 $Ls=210^{\circ}-240^{\circ}$ by dcpam

Figure 109: Temp at 14 LST and Figure 112: Temp at 14 LST and $Ls=210^{\circ}-240^{\circ}$ by MGS



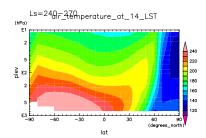
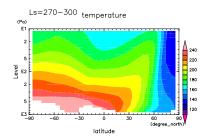
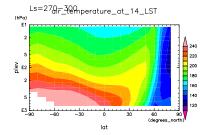


Figure 110: Temp at 14 LST and Figure 113: Temp at 14 LST and Ls=240°-270° by dcpam

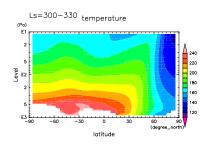
Ls=240°-270° by MGS

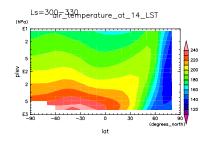




Ls= 270° - 300° by dcpam

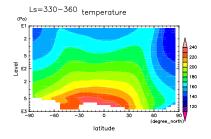
Figure 114: Temp at 14 LST and Figure 117: Temp at 14 LST and $Ls=270^{\circ}-300^{\circ}$ by MGS





 $Ls=300^{\circ}-330^{\circ}$ by dcpam

Figure 115: Temp at 14 LST and Figure 118: Temp at 14 LST and $Ls=300^{\circ}-330^{\circ}$ by MGS



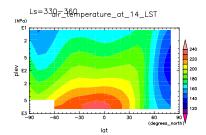
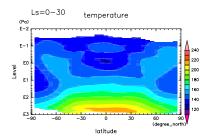
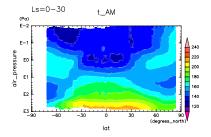


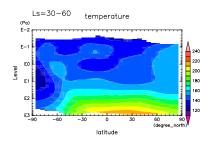
Figure 116: Temp at 14 LST and Figure 119: Temp at 14 LST and Ls=330°-360° by dcpam Ls=330°-360° by MGS

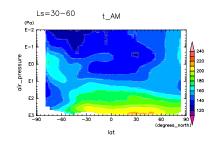




Ls= 0° - 30° by dcpam

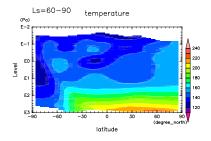
Figure 120: Temp at 03 LST and Figure 123: Temp at 03 LST and $Ls=0^{\circ}-30^{\circ}$ by MRO





Ls= 30° - 60° by dcpam

Figure 121: Temp at 03 LST and Figure 124: Temp at 03 LST and $Ls=30^{\circ}-60^{\circ}$ by MRO



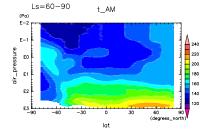
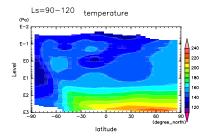
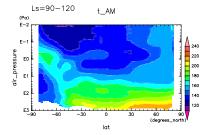


Figure 122: Temp at 03 LST and Figure 125: Temp at 03 LST and Ls=60°-90° by dcpam

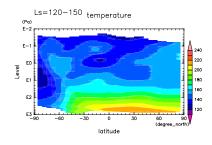
Ls=60°-90° by MRO

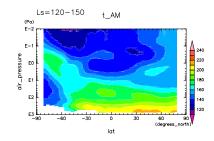




Ls=90°-120° by dcpam

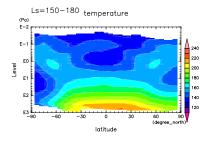
Figure 126: Temp at 03 LST and Figure 129: Temp at 03 LST and $Ls=90^{\circ}-120^{\circ}$ by MRO





 $Ls=120^{\circ}-150^{\circ}$ by dcpam

Figure 127: Temp at 03 LST and Figure 130: Temp at 03 LST and $Ls=120^{\circ}-150^{\circ}$ by MRO



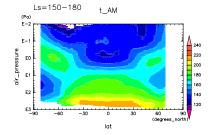
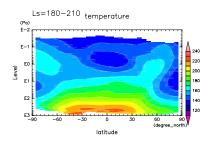
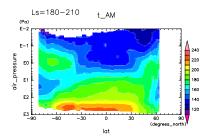


Figure 128: Temp at 03 LST and Figure 131: Temp at 03 LST and Ls=150°-180° by dcpam

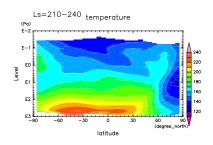
Ls=150°-180° by MRO

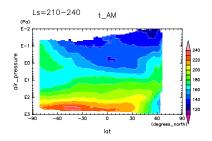




Ls= 180° - 210° by dcpam

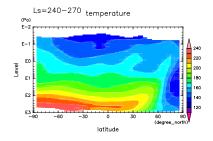
Figure 132: Temp at 03 LST and Figure 135: Temp at 03 LST and Ls= 180° - 210° by MRO

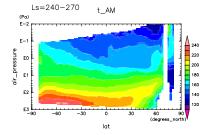




 $Ls=210^{\circ}-240^{\circ}$ by dcpam

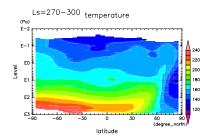
Figure 133: Temp at 03 LST and Figure 136: Temp at 03 LST and $Ls=210^{\circ}-240^{\circ}$ by MRO

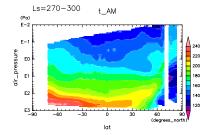




Ls=240°-270° by dcpam

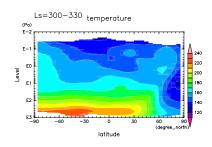
Figure 134: Temp at 03 LST and Figure 137: Temp at 03 LST and Ls=240°-270° by MRO





Ls= 270° - 300° by dcpam

Figure 138: Temp at 03 LST and Figure 141: Temp at 03 LST and $Ls=270^{\circ}-300^{\circ}$ by MRO



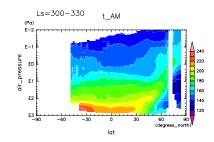
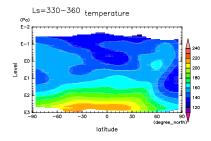


Figure 139: Temp at 03 LST and Figure 142: Temp at 03 LST and $Ls=300^{\circ}-330^{\circ}$ by dcpam

 $Ls=300^{\circ}-330^{\circ}$ by MRO



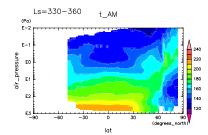
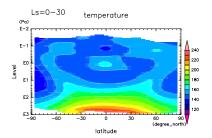
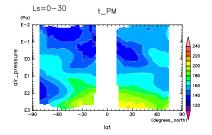


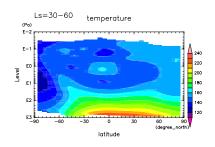
Figure 140: Temp at 03 LST and Figure 143: Temp at 03 LST and Ls=330°-360° by dcpam Ls=330°-360° by MRO





Ls= 0° - 30° by dcpam

Figure 144: Temp at 15 LST and Figure 147: Temp at 15 LST and $Ls=0^{\circ}-30^{\circ}$ by MRO



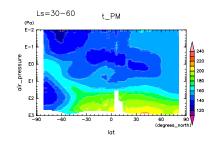
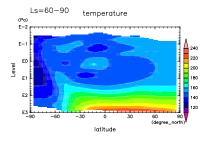


Figure 145: Temp at 15 LST and Figure 148: Temp at 15 LST and Ls= 30° - 60° by dcpam

 $Ls=30^{\circ}-60^{\circ}$ by MRO



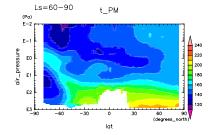
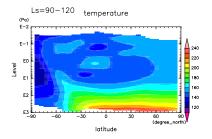
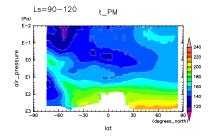


Figure 146: Temp at 15 LST and Figure 149: Temp at 15 LST and Ls=60°-90° by dcpam

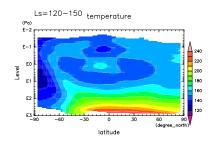
Ls=60°-90° by MRO

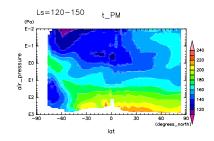




Ls=90°-120° by dcpam

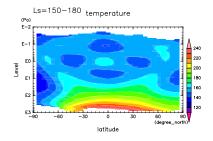
Figure 150: Temp at 15 LST and Figure 153: Temp at 15 LST and $Ls=90^{\circ}-120^{\circ}$ by MRO





 $Ls=120^{\circ}-150^{\circ}$ by dcpam

Figure 151: Temp at 15 LST and Figure 154: Temp at 15 LST and $Ls=120^{\circ}-150^{\circ}$ by MRO



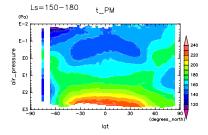
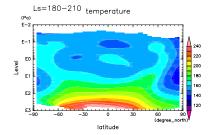
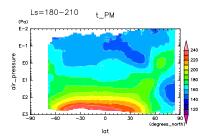


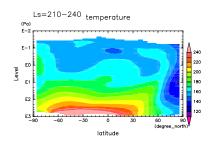
Figure 152: Temp at 15 LST and Figure 155: Temp at 15 LST and Ls=150°-180° by dcpam Ls=150°-180° by MRO

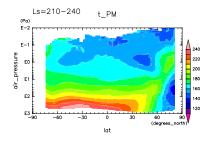




Ls= 180° - 210° by dcpam

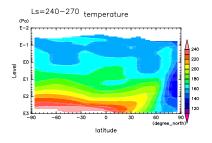
Figure 156: Temp at 15 LST and Figure 159: Temp at 15 LST and Ls= 180° - 210° by MRO





 $Ls=210^{\circ}-240^{\circ}$ by dcpam

Figure 157: Temp at 15 LST and Figure 160: Temp at 15 LST and $Ls=210^{\circ}-240^{\circ}$ by MRO



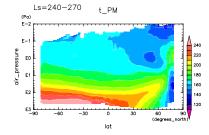
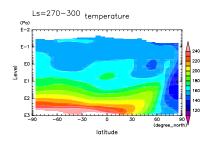
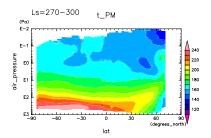


Figure 158: Temp at 15 LST and Figure 161: Temp at 15 LST and Ls=240°-270° by dcpam

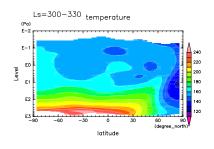
Ls=240°-270° by MRO





Ls= 270° - 300° by dcpam

Figure 162: Temp at 15 LST and Figure 165: Temp at 15 LST and $Ls=270^{\circ}-300^{\circ}$ by MRO



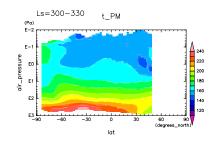
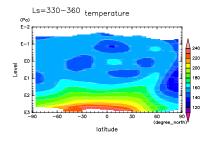


Figure 163: Temp at 15 LST and Figure 166: Temp at 15 LST and $Ls=300^{\circ}-330^{\circ}$ by dcpam

 $Ls=300^{\circ}-330^{\circ}$ by MRO



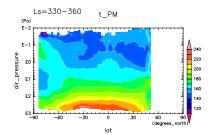


Figure 164: Temp at 15 LST and Figure 167: Temp at 15 LST and Ls=330°-360° by dcpam

Ls=330°-360° by MRO