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 MY26<sup>5</sup> and MY30. Those observational data are downloaded from the PDS<sup>6</sup>.

<sup>&</sup>lt;sup>1</sup>Mars Global Surveyor

<sup>&</sup>lt;sup>2</sup>Thermal Emission Spectrometer

<sup>&</sup>lt;sup>3</sup>Mars Reconnaissance Orbiter

 $<sup>^4\</sup>mathrm{Mars}$  Climate Sounder

 $<sup>^5\</sup>mathrm{MY}$  stands for Mars Year

 $<sup>^6\</sup>mathrm{Planetary}$  Data System

dust optical depth at 0.67 micron meter at the surface (degree\_north)

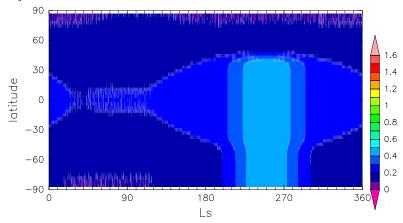


Figure 1: Daily mean dust optical depth prescribed in dcpam

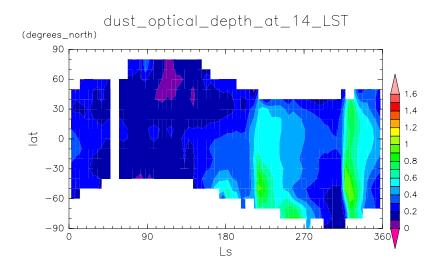


Figure 2: Double of dust optical depth observed by MGS-TES in MY26  $\,$ 

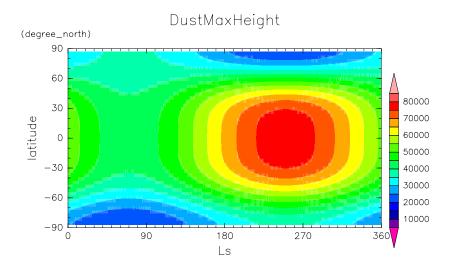
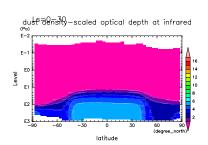
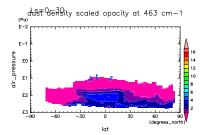


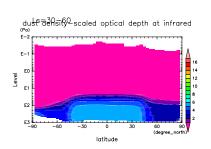
Figure 3: Daily mean maximum height of dust distribution prescribed in dcpam

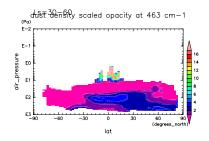




03 LST and Ls=0°-30° by dcpam

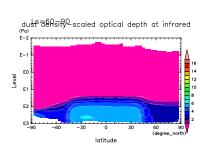
 $Figure \ 4: \ DustDensScledOptDep \ at \ \ Figure \ 7: \ DustDensScledOptDep \ at$ 03 LST and  $Ls=0^{\circ}-30^{\circ}$  by MRO

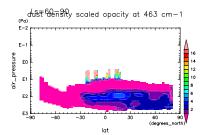




03 LST and  $\text{Ls}=30^{\circ}\text{-}60^{\circ}$  by dcpam

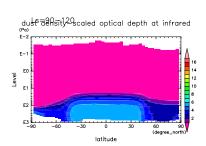
Figure 5: DustDensScledOptDep at Figure 8: DustDensScledOptDep at 03 LST and Ls=30°-60° by MRO

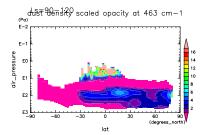




03 LST and Ls=60°-90° by dcpam

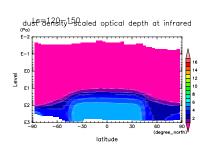
Figure 6: DustDensScledOptDep at Figure 9: DustDensScledOptDep at 03 LST and  $Ls=60^{\circ}-90^{\circ}$  by MRO

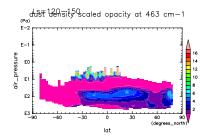




03 LST and Ls=90°-120° by dcpam

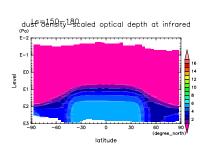
Figure~10:~DustDensScledOptDep~at~~Figure~13:~DustDensScledOptDep~at~~03 LST and Ls= $90^{\circ}$ - $120^{\circ}$  by MRO





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



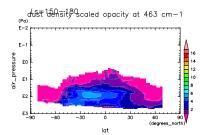
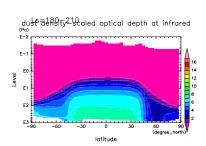


Figure 12: DustDensScledOptDep at Figure 15: DustDensScledOptDep at

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



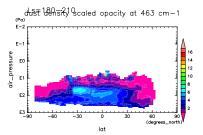
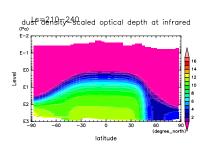
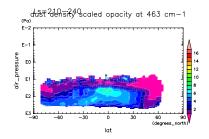


Figure 16: DustDensScledOptDep at 03 LST and Ls=180°-210° by dcpam

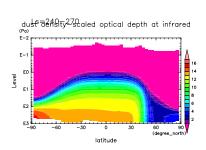
Figure 19: DustDensScledOptDep at 03 LST and Ls=180°-210° by MRO





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



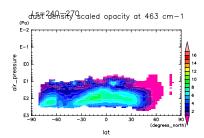
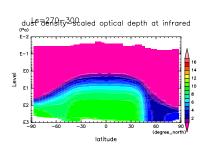


Figure 18: DustDensScledOptDep at Figure 21: DustDensScledOptDep at

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



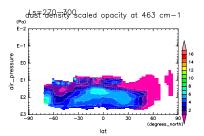
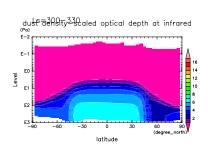
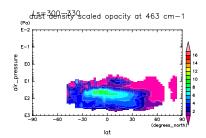


Figure 22: DustDensScledOptDep at 03 LST and Ls=270°-300° by dcpam

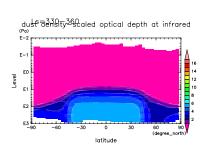
Figure 25: DustDensScledOptDep at 03 LST and Ls=270°-300° by MRO





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



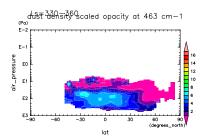
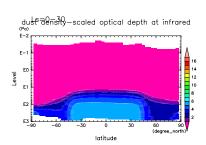
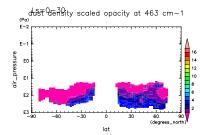


Figure 24: DustDensScledOptDep at Figure 27: DustDensScledOptDep at

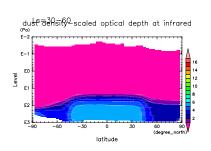
03 LST and Ls=330°-360° by dcpam 03 LST and Ls=330°-360° by MRO

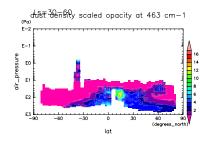




15 LST and Ls=0°-30° by dcpam

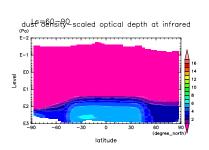
Figure~28:~DustDensScledOptDep~at~~Figure~31:~DustDensScledOptDep~at15 LST and Ls= $0^{\circ}$ - $30^{\circ}$  by MRO





15 LST and Ls=30°-60° by dcpam

Figure 29: DustDensScledOptDep at Figure 32: DustDensScledOptDep at 15 LST and Ls= $30^{\circ}$ - $60^{\circ}$  by MRO



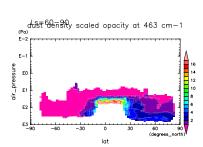
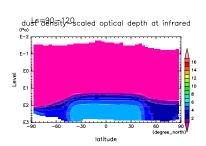
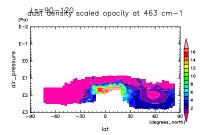


Figure 30: DustDensScledOptDep at Figure 33: DustDensScledOptDep at 15 LST and Ls= $60^{\circ}$ - $90^{\circ}$  by dcpam

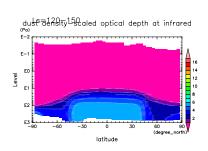
15 LST and Ls= $60^{\circ}$ - $90^{\circ}$  by MRO

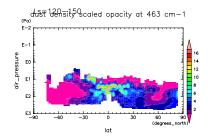




15 LST and Ls=90°-120° by dcpam

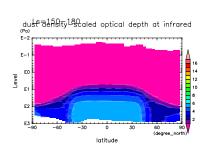
 $Figure \ 34: \ DustDensScledOptDep \ at \quad Figure \ 37: \ DustDensScledOptDep \ at$ 15 LST and Ls=90°-120° by MRO

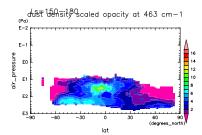




15 LST and Ls= $120^{\circ}$ - $150^{\circ}$  by dcpam

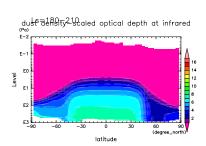
Figure 35: DustDensScledOptDep at Figure 38: DustDensScledOptDep at 15 LST and Ls= $120^{\circ}$ - $150^{\circ}$  by MRO

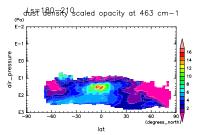




 $\label{prop:school} \mbox{Figure 36: DustDensScledOptDep at} \quad \mbox{Figure 39: DustDensScledOptDep at} \\$ 

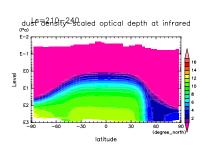
15 LST and Ls=150°-180° by dcpam  $\,$  15 LST and Ls=150°-180° by MRO

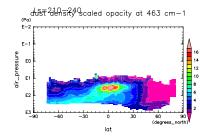




15 LST and Ls=180°-210° by dcpam

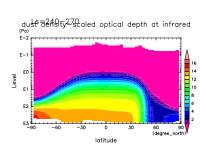
 $\label{eq:Figure 40: DustDensScledOptDep at Figure 43: DustDensScledOptDep at } Figure \ 43: \ DustDensScledOptDep \ at$ 15 LST and Ls=180°-210° by MRO

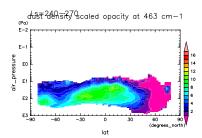




15 LST and Ls= $210^{\circ}$ - $240^{\circ}$  by dcpam

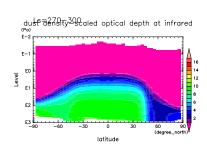
Figure 41: DustDensScledOptDep at Figure 44: DustDensScledOptDep at 15 LST and Ls=210°-240° by MRO

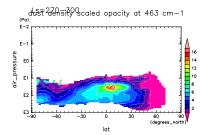




 $\label{prop:prop:scholor} \mbox{Figure 42: DustDensScledOptDep at} \quad \mbox{Figure 45: DustDensScledOptDep at} \\$ 

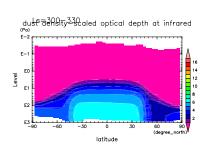
15 LST and Ls=240°-270° by dcpam  $\,$  15 LST and Ls=240°-270° by MRO





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= $270^{\circ}$ - $300^{\circ}$  by MRO



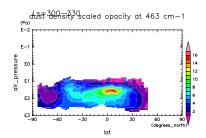
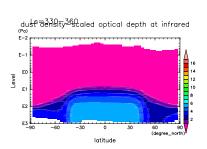
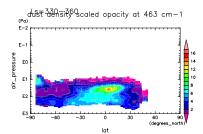


Figure 47: DustDensScledOptDep at Figure 50: DustDensScledOptDep at 15 LST and Ls= $300^{\circ}$ - $330^{\circ}$  by dcpam

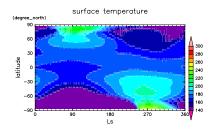
15 LST and Ls=300°-330° by MRO





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

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



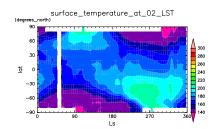


Figure 52:  $T_s$  at 02 LST by dcpam

surface temperature

Figure 54:  $T_s$  at 02 LST by MGS

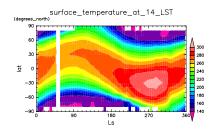
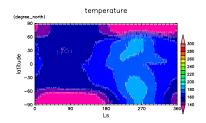


Figure 53:  $T_{\rm s}$  at 14 LST by dcpam

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

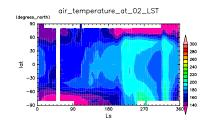


Figure 57: T at 50 Pa and at 02 LST by dcpam

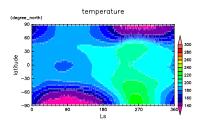


Figure 61: T at 50 Pa and at 02 LST by MGS

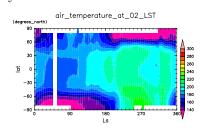


Figure 58: T at 136 Pa and at 02 LST by dcpam

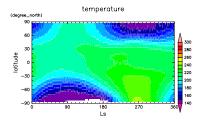


Figure 62: T at 136 Pa and at 02 LST by MGS

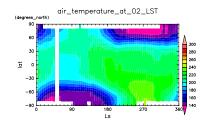
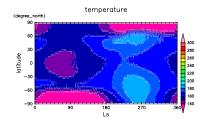


Figure 59: T at 370 Pa and at 02 LST by dcpam

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

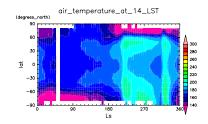


Figure 65: T at 50 Pa and at 14 LST by dcpam

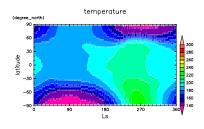


Figure 69: T at 50 Pa and at 14 LST by MGS

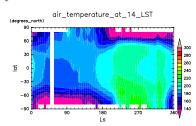


Figure 66: T at 136 Pa and at 14 LST by dcpam

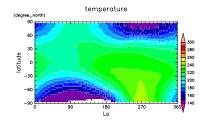
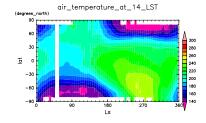


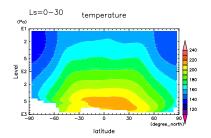
Figure 70: T at 136 Pa and at 14 LST by MGS

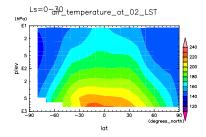


14

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

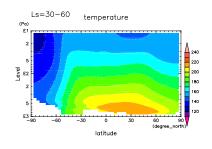
Figure 71: T at 370 Pa and at 14 LST by MGS

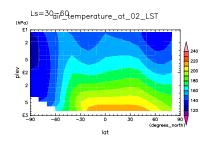




Ls= $0^{\circ}$ - $30^{\circ}$  by dcpam

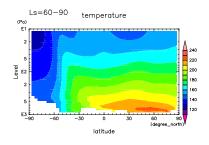
Figure 72: Temp at 02 LST and Figure 75: Temp at 02 LST and Ls= $0^{\circ}$ - $30^{\circ}$  by MGS





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

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



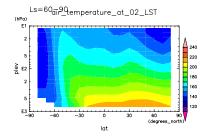
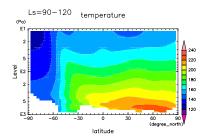
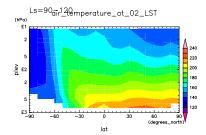


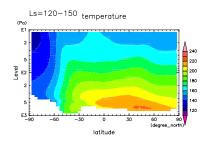
Figure 74: Temp at 02 LST and Figure 77: Temp at 02 LST and Ls=60°-90° by dcpam Ls=60°-90° by MGS

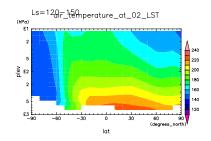




Ls=90°-120° by dcpam

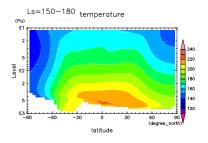
Figure 78: Temp at 02 LST and Figure 81: Temp at 02 LST and Ls=90°-120° by MGS





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

Figure 79: Temp at 02 LST and Figure 82: Temp at 02 LST and Ls= $120^{\circ}$ - $150^{\circ}$  by MGS



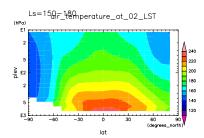
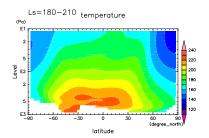
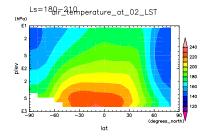


Figure 80: Temp at 02 LST and Figure 83: Temp at 02 LST and Ls= $150^{\circ}$ - $180^{\circ}$  by dcpam

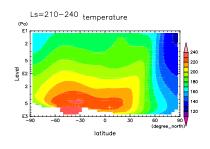
Ls=150°-180° by MGS

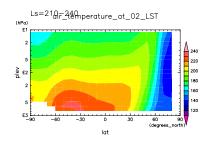




Ls= $180^{\circ}$ - $210^{\circ}$  by dcpam

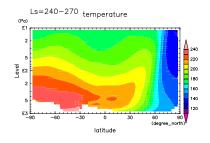
Figure 84: Temp at 02 LST and Figure 87: Temp at 02 LST and  $Ls=180^{\circ}-210^{\circ}$  by MGS





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

Figure 85: Temp at 02 LST and Figure 88: Temp at 02 LST and Ls= $210^{\circ}$ - $240^{\circ}$  by MGS



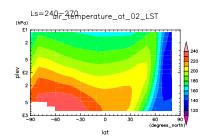
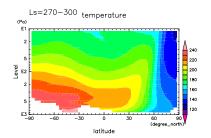
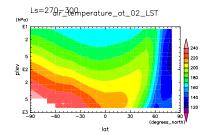


Figure 86: Temp at 02 LST and Figure 89: Temp at 02 LST and Ls= $240^{\circ}$ - $270^{\circ}$  by dcpam

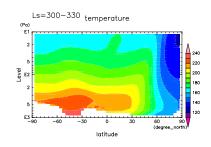
Ls=240°-270° by MGS

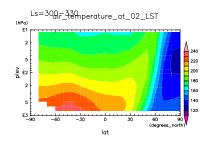




Ls= $270^{\circ}$ - $300^{\circ}$  by dcpam

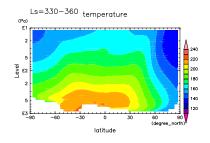
Figure 90: Temp at 02 LST and Figure 93: Temp at 02 LST and  $Ls=270^{\circ}-300^{\circ}$  by MGS





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

Figure 91: Temp at 02 LST and Figure 94: Temp at 02 LST and Ls= $300^{\circ}$ - $330^{\circ}$  by MGS



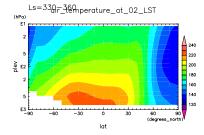
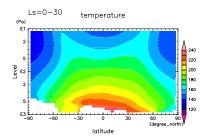
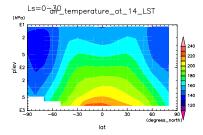


Figure 92: Temp at 02 LST and Figure 95: Temp at 02 LST and Ls=330°-360° by dcpam

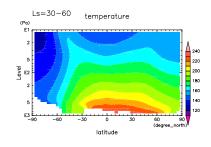
Ls=330°-360° by MGS

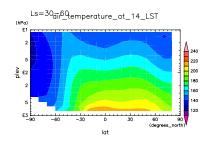




Ls= $0^{\circ}$ - $30^{\circ}$  by dcpam

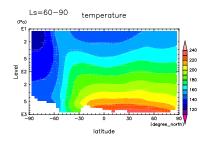
Figure 96: Temp at 14 LST and Figure 99: Temp at 14 LST and  $Ls=0^{\circ}-30^{\circ}$  by MGS





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

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



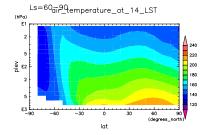
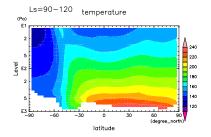
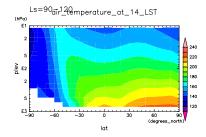


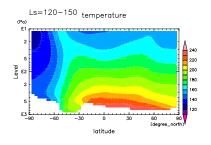
Figure 98: Temp at 14 LST and Figure 101: Temp at 14 LST and Ls=60°-90° by dcpam Ls=60°-90° by MGS

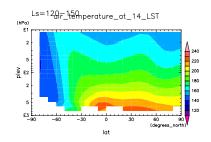




Ls= $90^{\circ}$ - $120^{\circ}$  by dcpam

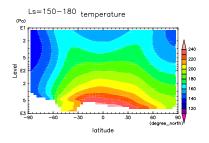
Figure 102: Temp at 14 LST and Figure 105: Temp at 14 LST and  $Ls=90^{\circ}-120^{\circ}$  by MGS





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

Figure 103: Temp at 14 LST and Figure 106: Temp at 14 LST and Ls= $120^{\circ}$ - $150^{\circ}$  by MGS



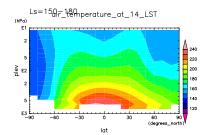
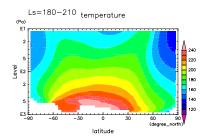
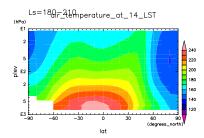


Figure 104: Temp at 14 LST and Figure 107: Temp at 14 LST and Ls=150°-180° by dcpam

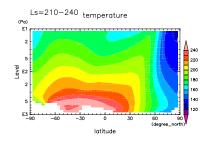
Ls=150°-180° by MGS

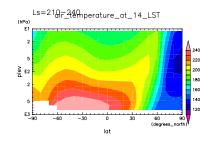




Ls= $180^{\circ}$ - $210^{\circ}$  by dcpam

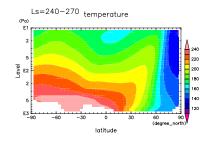
Figure 108: Temp at 14 LST and Figure 111: Temp at 14 LST and  $Ls=180^{\circ}-210^{\circ}$  by MGS





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

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



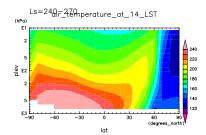
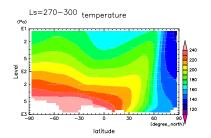
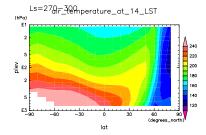


Figure 110: Temp at 14 LST and Figure 113: Temp at 14 LST and Ls= $240^{\circ}$ - $270^{\circ}$  by dcpam

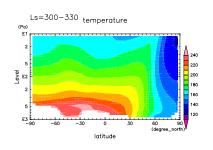
Ls=240°-270° by MGS

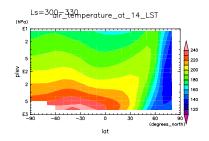




Ls= $270^{\circ}$ - $300^{\circ}$  by dcpam

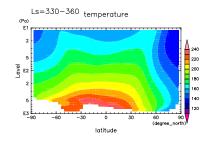
Figure 114: Temp at 14 LST and Figure 117: Temp at 14 LST and  $Ls=270^{\circ}-300^{\circ}$  by MGS





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

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



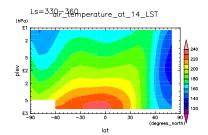
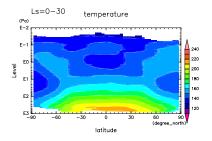
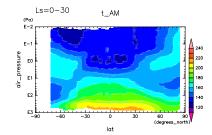


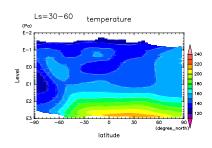
Figure 116: Temp at 14 LST and Figure 119: Temp at 14 LST and Ls=330°-360° by dcpam Ls=330°-360° by MGS

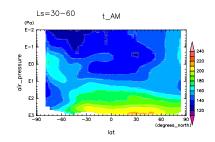




Ls= $0^{\circ}$ - $30^{\circ}$  by dcpam

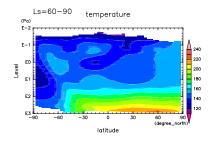
Figure 120: Temp at 03 LST and Figure 123: Temp at 03 LST and  $Ls=0^{\circ}-30^{\circ}$  by MRO





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

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



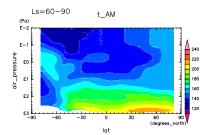
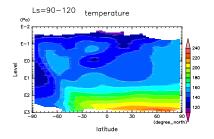
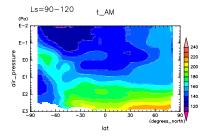


Figure 122: Temp at 03 LST and Figure 125: Temp at 03 LST and Ls=60°-90° by dcpam

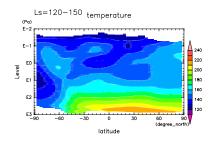
Ls=60°-90° by MRO

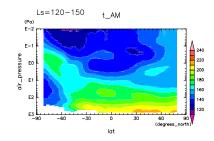




Ls=90°-120° by dcpam

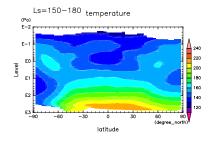
Figure 126: Temp at 03 LST and Figure 129: Temp at 03 LST and  $Ls=90^{\circ}-120^{\circ}$  by MRO

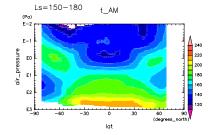




 $Ls=120^{\circ}-150^{\circ}$  by dcpam

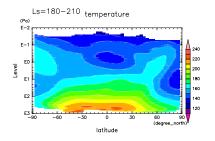
Figure 127: Temp at 03 LST and Figure 130: Temp at 03 LST and  $Ls=120^{\circ}-150^{\circ}$  by MRO

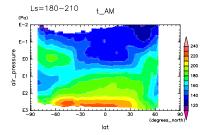




Ls=150°-180° by dcpam

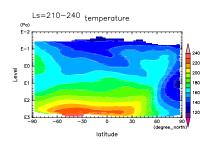
Figure 128: Temp at 03 LST and Figure 131: Temp at 03 LST and Ls=150°-180° by MRO

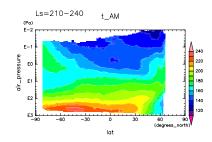




Ls= $180^{\circ}$ - $210^{\circ}$  by dcpam

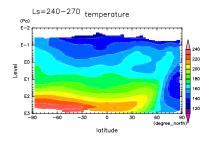
Figure 132: Temp at 03 LST and Figure 135: Temp at 03 LST and  $Ls=180^{\circ}-210^{\circ}$  by MRO





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

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



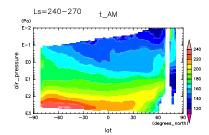
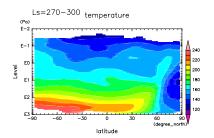
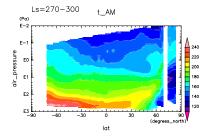


Figure 134: Temp at 03 LST and Figure 137: Temp at 03 LST and Ls= $240^{\circ}$ - $270^{\circ}$  by dcpam

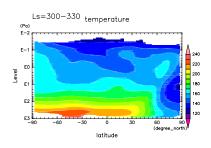
Ls=240°-270° by MRO

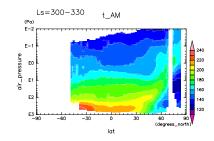




Ls= $270^{\circ}$ - $300^{\circ}$  by dcpam

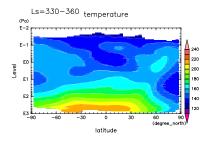
Figure 138: Temp at 03 LST and Figure 141: Temp at 03 LST and  $Ls=270^{\circ}-300^{\circ}$  by MRO





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

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



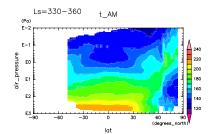
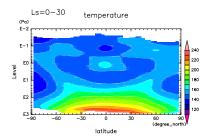
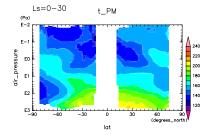


Figure 140: Temp at 03 LST and Figure 143: Temp at 03 LST and Ls=330°-360° by dcpam

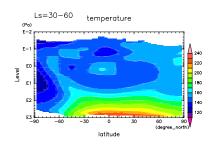
Ls=330°-360° by MRO

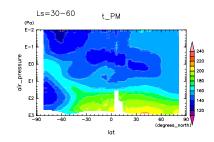




Ls=0°-30° by dcpam

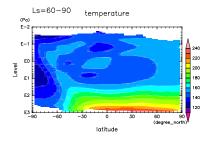
Figure 144: Temp at 15 LST and Figure 147: Temp at 15 LST and  $Ls=0^{\circ}-30^{\circ}$  by MRO





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

Figure 145: Temp at 15 LST and Figure 148: Temp at 15 LST and  $Ls=30^{\circ}-60^{\circ}$  by MRO



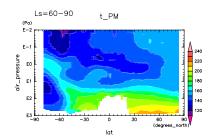
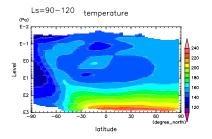
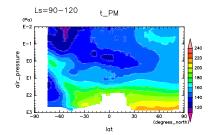


Figure 146: Temp at 15 LST and Figure 149: Temp at 15 LST and Ls=60°-90° by dcpam

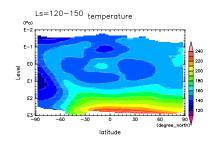
Ls=60°-90° by MRO

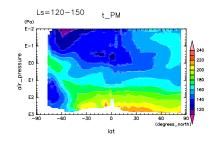




Ls=90°-120° by dcpam

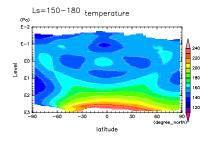
Figure 150: Temp at 15 LST and Figure 153: Temp at 15 LST and  $Ls=90^{\circ}-120^{\circ}$  by MRO





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

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



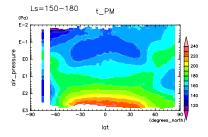
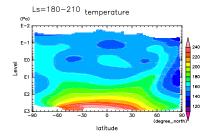
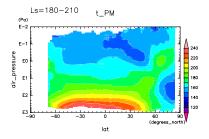


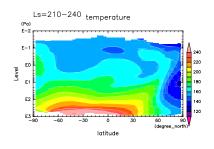
Figure 152: Temp at 15 LST and Figure 155: Temp at 15 LST and Ls=150°-180° by dcpam Ls=150°-180° by MRO

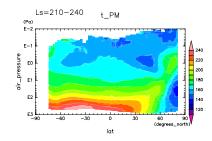




Ls= $180^{\circ}$ - $210^{\circ}$  by dcpam

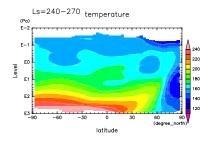
Figure 156: Temp at 15 LST and Figure 159: Temp at 15 LST and  $Ls=180^{\circ}-210^{\circ}$  by MRO

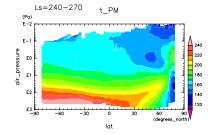




 $Ls=210^{\circ}-240^{\circ}$  by dcpam

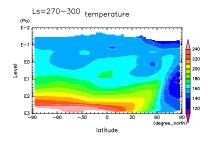
Figure 157: Temp at 15 LST and Figure 160: Temp at 15 LST and  $Ls=210^{\circ}-240^{\circ}$  by MRO

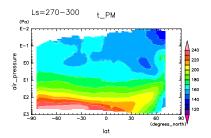




Ls= $240^{\circ}$ - $270^{\circ}$  by dcpam

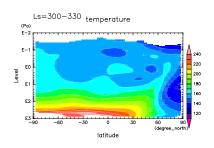
Figure 158: Temp at 15 LST and Figure 161: Temp at 15 LST and Ls=240°-270° by MRO

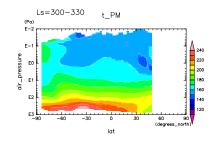




Ls= $270^{\circ}$ - $300^{\circ}$  by dcpam

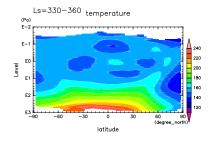
Figure 162: Temp at 15 LST and Figure 165: Temp at 15 LST and  $Ls=270^{\circ}-300^{\circ}$  by MRO





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

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



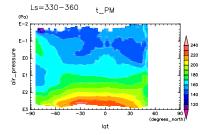


Figure 164: Temp at 15 LST and Figure 167: Temp at 15 LST and Ls=330°-360° by dcpam

Ls=330°-360° by MRO