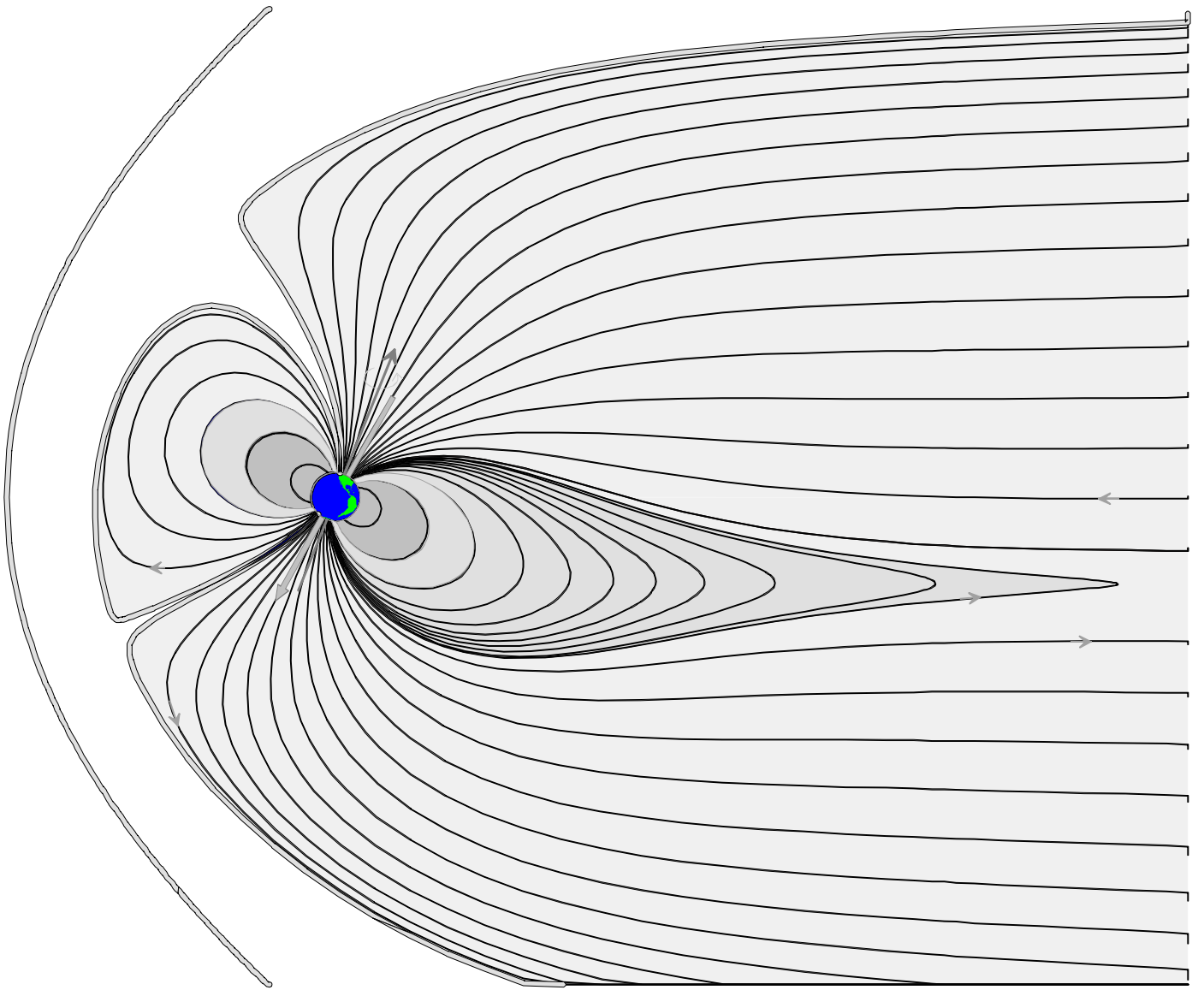
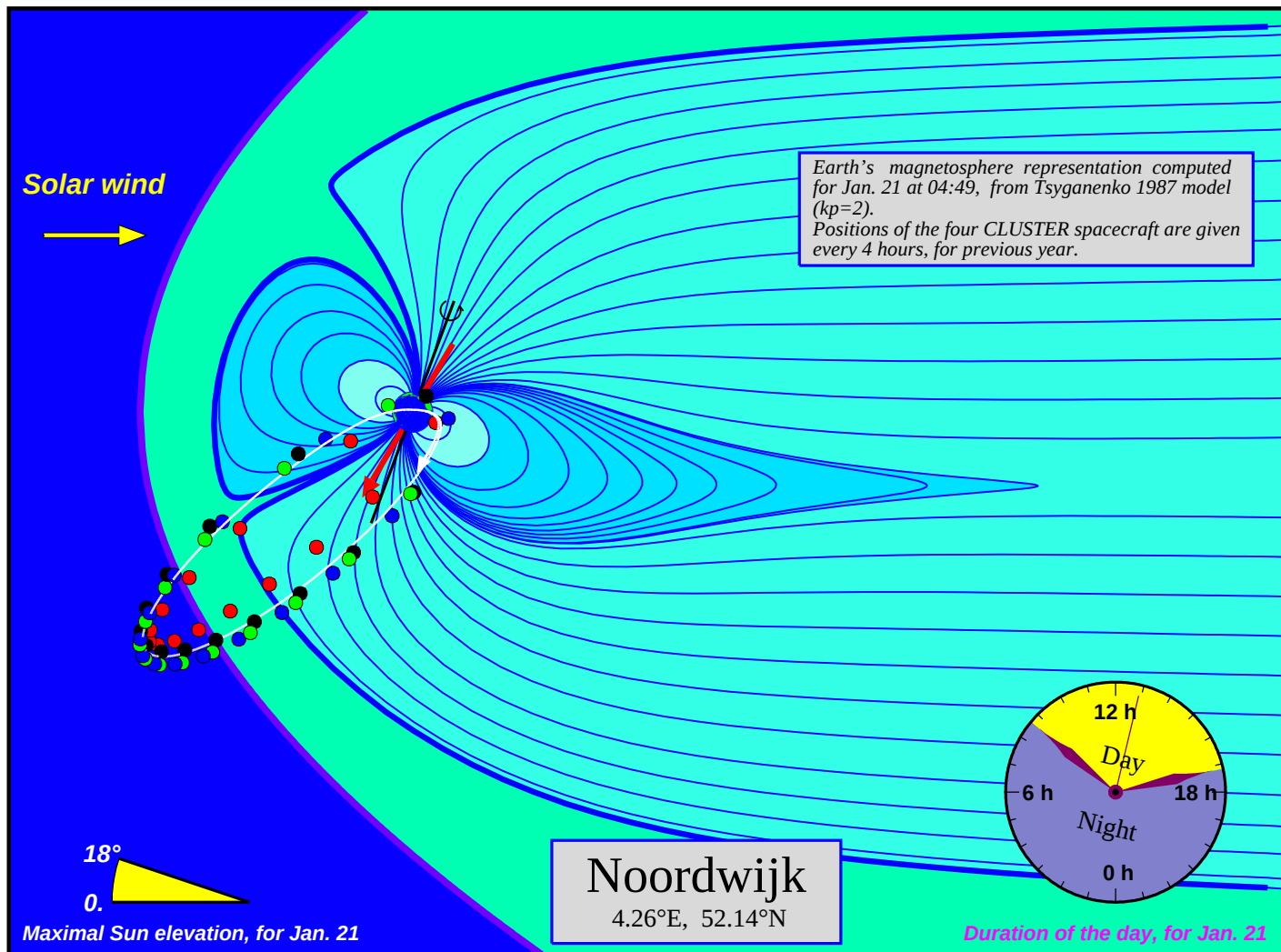




*Here is the classical magnetospheric calendar 2012,  
available for any city across the world,  
English or French version*

*Happy new year for everybody  
Patrick*



# January 2012

Sunrise and Sunset at Noordwijk (TL  $\pm 1$  mn)

Duration of the day - Variation - Sun maximal elevation (°)

Monday

Tuesday

Wednesday

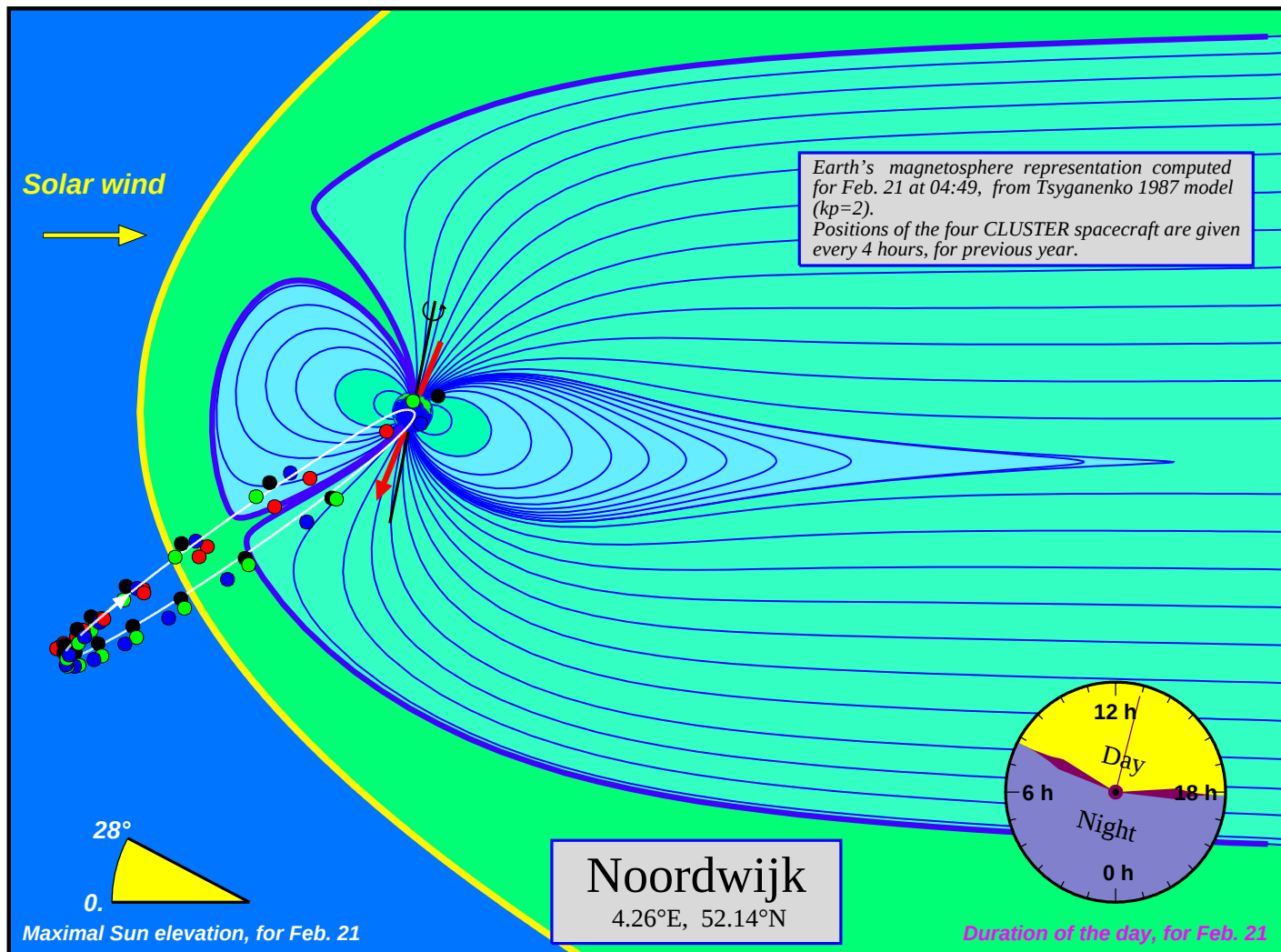
Thursday

Friday

Saturday

Sunday

|          |                                                       |                                                       |                                                       |                                                       |                                                       |                                                       |                                                       |
|----------|-------------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------|
|          |                                                       |                                                       |                                                       |                                                       |                                                       |                                                       | <b>1</b> 1 - 364<br>08:52 - 16:41<br>7:49 +2 m. 15°   |
| <b>1</b> | <b>2</b> 2 - 364<br>08:52 - 16:42<br>7:50 +1 m. 15°   | <b>3</b> 3 - 363<br>08:52 - 16:43<br>7:51 +1 m. 16°   | <b>4</b> 4 - 362<br>08:52 - 16:44<br>7:52 +1 m. 16°   | <b>5</b> 5 - 361<br>08:51 - 16:46<br>7:54 +2 m. 16°   | <b>6</b> 6 - 360<br>08:51 - 16:47<br>7:55 +1 m. 16°   | <b>7</b> 7 - 359<br>08:51 - 16:48<br>7:57 +2 m. 16°   | <b>8</b> 8 - 358<br>08:50 - 16:49<br>7:59 +2 m. 16°   |
| <b>2</b> | <b>9</b> 9 - 357<br>08:50 - 16:51<br>8:01 +2 m. 16°   | <b>10</b> 10 - 356<br>08:49 - 16:52<br>8:03 +2 m. 16° | <b>11</b> 11 - 355<br>08:48 - 16:54<br>8:05 +2 m. 17° | <b>12</b> 12 - 354<br>08:48 - 16:55<br>8:07 +2 m. 17° | <b>13</b> 13 - 353<br>08:47 - 16:57<br>8:09 +2 m. 17° | <b>14</b> 14 - 352<br>08:46 - 16:58<br>8:11 +2 m. 17° | <b>15</b> 15 - 351<br>08:45 - 17:00<br>8:14 +3 m. 17° |
| <b>3</b> | <b>16</b> 16 - 350<br>08:45 - 17:01<br>8:16 +2 m. 17° | <b>17</b> 17 - 349<br>08:44 - 17:03<br>8:19 +3 m. 18° | <b>18</b> 18 - 348<br>08:43 - 17:05<br>8:22 +3 m. 18° | <b>19</b> 19 - 347<br>08:42 - 17:06<br>8:24 +2 m. 18° | <b>20</b> 20 - 346<br>08:41 - 17:08<br>8:27 +3 m. 18° | <b>21</b> 21 - 345<br>08:39 - 17:10<br>8:30 +3 m. 18° | <b>22</b> 22 - 344<br>08:38 - 17:11<br>8:33 +3 m. 19° |
| <b>4</b> | <b>23</b> 23 - 343<br>08:37 - 17:13<br>8:36 +3 m. 19° | <b>24</b> 24 - 342<br>08:36 - 17:15<br>8:38 +2 m. 19° | <b>25</b> 25 - 341<br>08:35 - 17:17<br>8:42 +4 m. 19° | <b>26</b> 26 - 340<br>08:33 - 17:18<br>8:45 +3 m. 20° | <b>27</b> 27 - 339<br>08:32 - 17:20<br>8:48 +3 m. 20° | <b>28</b> 28 - 338<br>08:31 - 17:22<br>8:51 +3 m. 20° | <b>29</b> 29 - 337<br>08:29 - 17:24<br>8:54 +3 m. 20° |
| <b>5</b> | <b>30</b> 30 - 336<br>08:28 - 17:26<br>8:58 +4 m. 21° | <b>31</b> 31 - 335<br>08:26 - 17:28<br>9:01 +3 m. 21° | <b>1</b> 32 - 334<br>08:25 - 17:29<br>9:04 +3 m. 21°  | <b>2</b> 33 - 333<br>08:23 - 17:31<br>9:08 +4 m. 22°  | <b>3</b> 34 - 332<br>08:21 - 17:33<br>9:11 +3 m. 22°  | <b>4</b> 35 - 331<br>08:20 - 17:35<br>9:15 +4 m. 22°  | <b>5</b> 36 - 330<br>08:18 - 17:37<br>9:18 +3 m. 22°  |

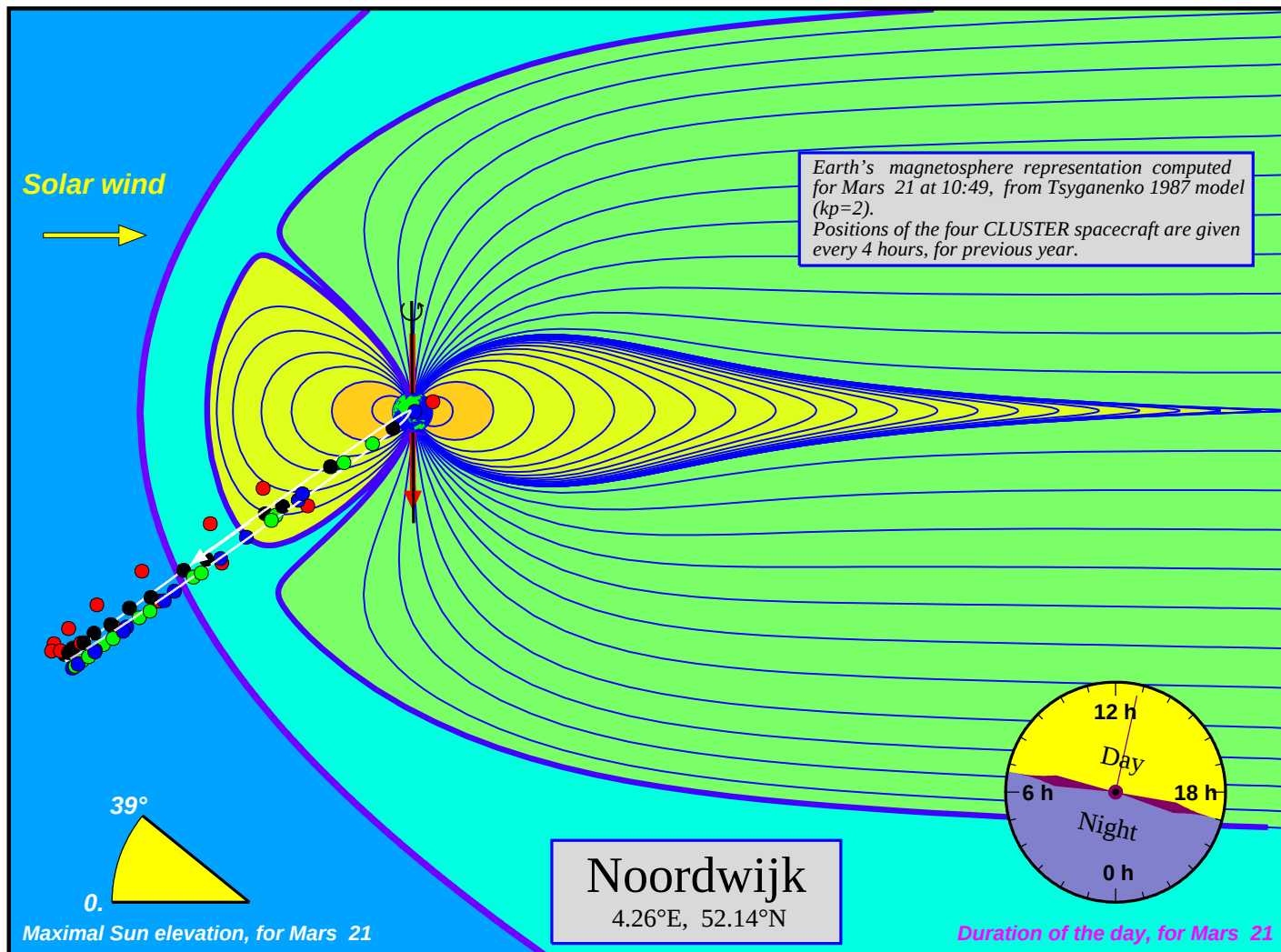


# February 2012

Sunrise and Sunset at Noordwijk (TL  $\pm 1$  mn)

Duration of the day - Variation - Sun maximal elevation (°)

|   | Monday                                                 | Tuesday                                                | Wednesday                                              | Thursday                                               | Friday                                                 | Saturday                                               | Sunday                                                 |
|---|--------------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------|
| 5 | <b>30</b> 30 - 336<br>08:28 - 17:26<br>8:58 +4 m. 21°  | <b>31</b> 31 - 335<br>08:26 - 17:28<br>9:01 +3 m. 21°  | <b>1</b> 32 - 334<br>08:25 - 17:29<br>9:04 +3 m. 21°   | <b>2</b> 33 - 333<br>08:23 - 17:31<br>9:08 +4 m. 22°   | <b>3</b> 34 - 332<br>08:21 - 17:33<br>9:11 +3 m. 22°   | <b>4</b> 35 - 331<br>08:20 - 17:35<br>9:15 +4 m. 22°   | <b>5</b> 36 - 330<br>08:18 - 17:37<br>9:18 +3 m. 22°   |
| 6 | <b>6</b> 37 - 329<br>08:16 - 17:39<br>9:22 +4 m. 23°   | <b>7</b> 38 - 328<br>08:15 - 17:41<br>9:26 +4 m. 23°   | <b>8</b> 39 - 327<br>08:13 - 17:42<br>9:29 +3 m. 23°   | <b>9</b> 40 - 326<br>08:11 - 17:44<br>9:33 +4 m. 24°   | <b>10</b> 41 - 325<br>08:09 - 17:46<br>9:37 +4 m. 24°  | <b>11</b> 42 - 324<br>08:07 - 17:48<br>9:40 +3 m. 24°  | <b>12</b> 43 - 323<br>08:06 - 17:50<br>9:44 +4 m. 25°  |
| 7 | <b>13</b> 44 - 322<br>08:04 - 17:52<br>9:48 +4 m. 25°  | <b>14</b> 45 - 321<br>08:02 - 17:54<br>9:52 +4 m. 25°  | <b>15</b> 46 - 320<br>08:00 - 17:56<br>9:55 +3 m. 26°  | <b>16</b> 47 - 319<br>07:58 - 17:57<br>9:59 +4 m. 26°  | <b>17</b> 48 - 318<br>07:56 - 17:59<br>10:04 +5 m. 26° | <b>18</b> 49 - 317<br>07:54 - 18:01<br>10:08 +4 m. 27° | <b>19</b> 50 - 316<br>07:52 - 18:03<br>10:11 +3 m. 27° |
| 8 | <b>20</b> 51 - 315<br>07:50 - 18:05<br>10:15 +4 m. 27° | <b>21</b> 52 - 314<br>07:48 - 18:07<br>10:19 +4 m. 28° | <b>22</b> 53 - 313<br>07:46 - 18:09<br>10:23 +4 m. 28° | <b>23</b> 54 - 312<br>07:44 - 18:10<br>10:27 +4 m. 28° | <b>24</b> 55 - 311<br>07:41 - 18:12<br>10:31 +4 m. 29° | <b>25</b> 56 - 310<br>07:39 - 18:14<br>10:35 +4 m. 29° | <b>26</b> 57 - 309<br>07:37 - 18:16<br>10:39 +4 m. 30° |
| 9 | <b>27</b> 58 - 308<br>07:35 - 18:18<br>10:43 +4 m. 30° | <b>28</b> 59 - 307<br>07:33 - 18:20<br>10:47 +4 m. 30° | <b>29</b> 60 - 306<br>07:31 - 18:21<br>10:51 +4 m. 31° | <b>1</b> 61 - 305<br>07:28 - 18:23<br>10:55 +4 m. 31°  | <b>2</b> 62 - 304<br>07:26 - 18:25<br>10:59 +4 m. 31°  | <b>3</b> 63 - 303<br>07:24 - 18:27<br>11:03 +4 m. 32°  | <b>4</b> 64 - 302<br>07:22 - 18:29<br>11:07 +4 m. 32°  |



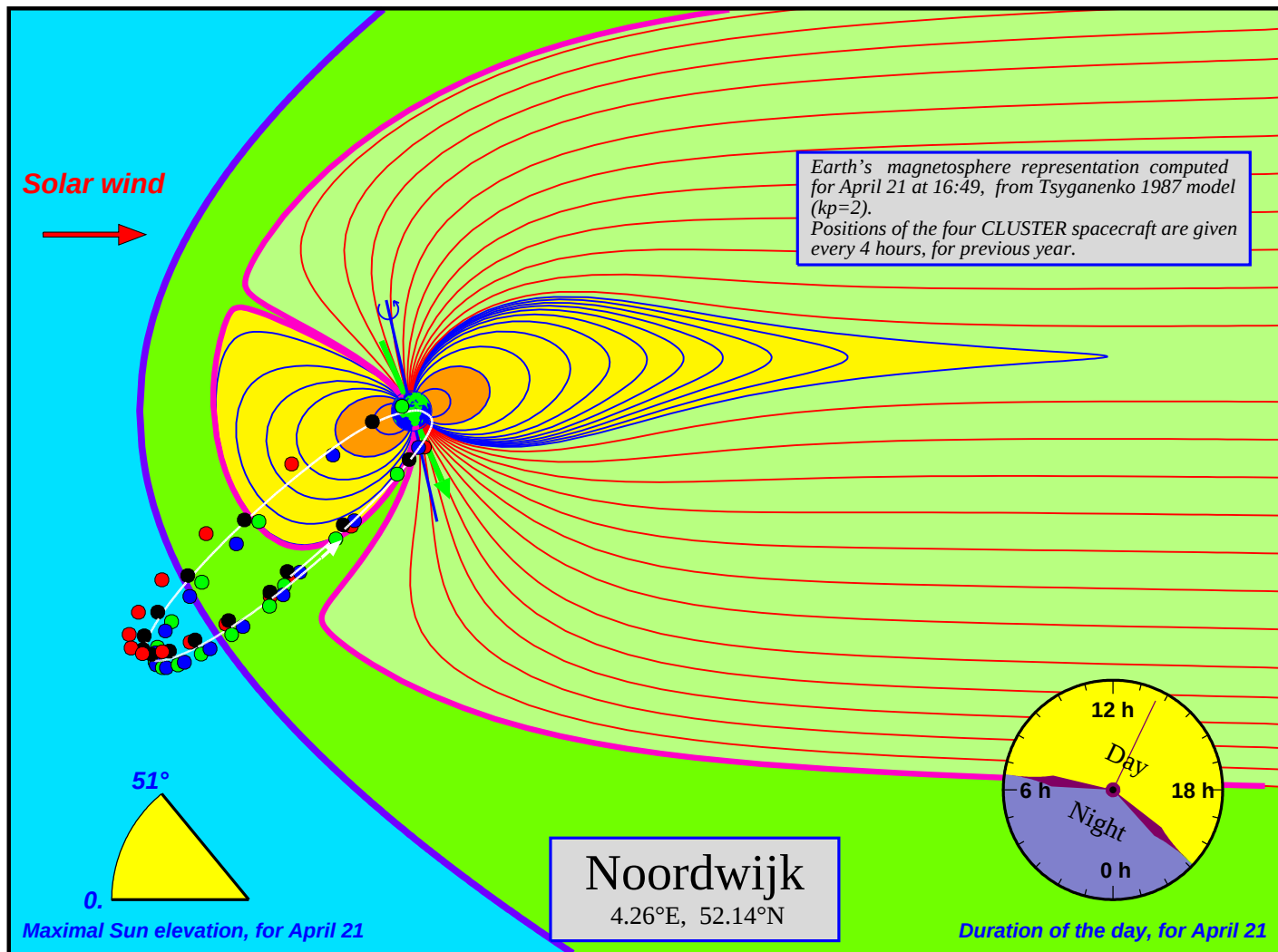
# Mars 2012

heure d'été  
le 25 à 02:00

Sunrise and Sunset at Noordwijk (TL  $\pm 1$  mn)

Duration of the day - Variation - Sun maximal elevation (°)

|    | Monday                                                 | Tuesday                                                | Wednesday                                              | Thursday                                               | Friday                                                 | Saturday                                               | Sunday                                                 |
|----|--------------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------|
| 9  | <b>27</b> 58 - 308<br>07:35 - 18:18<br>10:43 +4 m. 30° | <b>28</b> 59 - 307<br>07:33 - 18:20<br>10:47 +4 m. 30° | <b>29</b> 60 - 306<br>07:31 - 18:21<br>10:51 +4 m. 31° | <b>1</b> 61 - 305<br>07:28 - 18:23<br>10:55 +4 m. 31°  | <b>2</b> 62 - 304<br>07:26 - 18:25<br>10:59 +4 m. 31°  | <b>3</b> 63 - 303<br>07:24 - 18:27<br>11:03 +4 m. 32°  | <b>4</b> 64 - 302<br>07:22 - 18:29<br>11:07 +4 m. 32°  |
| 10 | <b>5</b> 65 - 301<br>07:20 - 18:30<br>11:11 +4 m. 33°  | <b>6</b> 66 - 300<br>07:17 - 18:32<br>11:15 +4 m. 33°  | <b>7</b> 67 - 299<br>07:15 - 18:34<br>11:19 +4 m. 33°  | <b>8</b> 68 - 298<br>07:13 - 18:36<br>11:23 +4 m. 34°  | <b>9</b> 69 - 297<br>07:10 - 18:38<br>11:27 +4 m. 34°  | <b>10</b> 70 - 296<br>07:08 - 18:39<br>11:31 +4 m. 35° | <b>11</b> 71 - 295<br>07:06 - 18:41<br>11:35 +4 m. 35° |
| 11 | <b>12</b> 72 - 294<br>07:04 - 18:43<br>11:39 +4 m. 35° | <b>13</b> 73 - 293<br>07:01 - 18:45<br>11:44 +5 m. 36° | <b>14</b> 74 - 292<br>06:59 - 18:46<br>11:48 +4 m. 36° | <b>15</b> 75 - 291<br>06:57 - 18:48<br>11:52 +4 m. 37° | <b>16</b> 76 - 290<br>06:54 - 18:50<br>11:56 +4 m. 37° | <b>17</b> 77 - 289<br>06:52 - 18:52<br>12:00 +4 m. 37° | <b>18</b> 78 - 288<br>06:50 - 18:53<br>12:04 +4 m. 38° |
| 12 | <b>19</b> 79 - 287<br>06:47 - 18:55<br>12:08 +4 m. 38° | <b>20</b> 80 - 286<br>06:45 - 18:57<br>12:12 +4 m. 39° | <b>21</b> 81 - 285<br>06:43 - 18:59<br>12:16 +4 m. 39° | <b>22</b> 82 - 284<br>06:40 - 19:00<br>12:20 +4 m. 39° | <b>23</b> 83 - 283<br>06:38 - 19:02<br>12:24 +4 m. 40° | <b>24</b> 84 - 282<br>06:36 - 19:04<br>12:28 +4 m. 40° | <b>25</b> 85 - 281<br>07:33 - 20:06<br>12:32 +4 m. 41° |
| 13 | <b>26</b> 86 - 280<br>07:31 - 20:07<br>12:36 +4 m. 41° | <b>27</b> 87 - 279<br>07:29 - 20:09<br>12:40 +4 m. 41° | <b>28</b> 88 - 278<br>07:26 - 20:11<br>12:44 +4 m. 42° | <b>29</b> 89 - 277<br>07:24 - 20:12<br>12:48 +4 m. 42° | <b>30</b> 90 - 276<br>07:22 - 20:14<br>12:53 +5 m. 42° | <b>31</b> 91 - 275<br>07:20 - 20:16<br>12:56 +3 m. 43° | <b>1</b> 92 - 274<br>07:17 - 20:18<br>13:00 +4 m. 43°  |

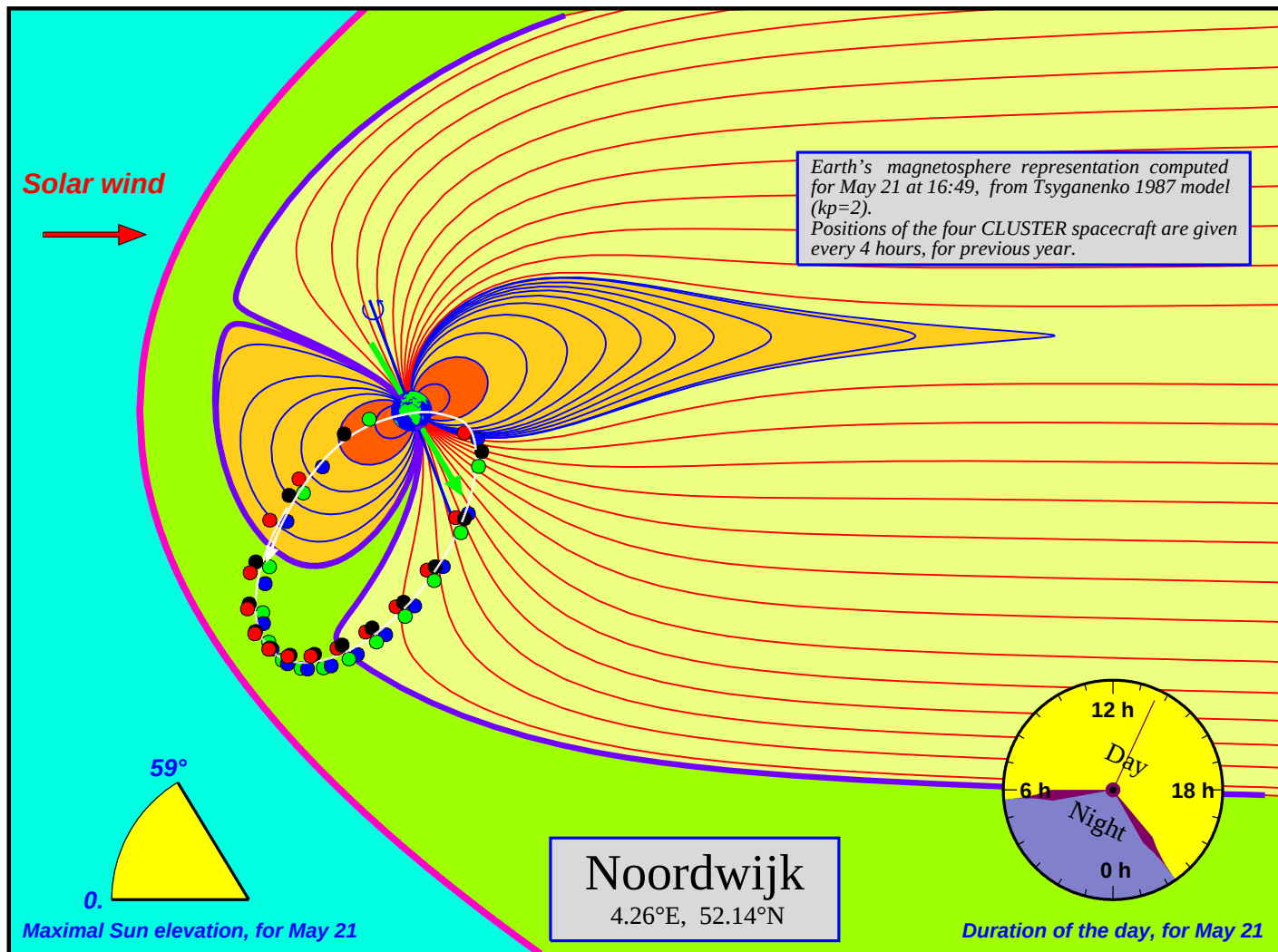


# April 2012

Sunrise and Sunset at Noordwijk (TL  $\pm 1$  mn)

Duration of the day - Variation - Sun maximal elevation (°)

|    | Monday                                                  | Tuesday                                                 | Wednesday                                               | Thursday                                                | Friday                                                  | Saturday                                                | Sunday                                                  |
|----|---------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|
| 13 | <b>26</b> 86 - 280<br>07:31 - 20:07<br>12:36 +4 m. 41°  | <b>27</b> 87 - 279<br>07:29 - 20:09<br>12:40 +4 m. 41°  | <b>28</b> 88 - 278<br>07:26 - 20:11<br>12:44 +4 m. 42°  | <b>29</b> 89 - 277<br>07:24 - 20:12<br>12:48 +4 m. 42°  | <b>30</b> 90 - 276<br>07:22 - 20:14<br>12:53 +5 m. 42°  | <b>31</b> 91 - 275<br>07:20 - 20:16<br>12:56 +3 m. 43°  | <b>1</b> 92 - 274<br>07:17 - 20:18<br>13:00 +4 m. 43°   |
| 14 | <b>2</b> 93 - 273<br>07:15 - 20:19<br>13:05 +5 m. 44°   | <b>3</b> 94 - 272<br>07:13 - 20:21<br>13:09 +4 m. 44°   | <b>4</b> 95 - 271<br>07:10 - 20:23<br>13:13 +4 m. 44°   | <b>5</b> 96 - 270<br>07:08 - 20:25<br>13:17 +4 m. 45°   | <b>6</b> 97 - 269<br>07:06 - 20:26<br>13:21 +4 m. 45°   | <b>7</b> 98 - 268<br>07:03 - 20:28<br>13:25 +4 m. 46°   | <b>8</b> 99 - 267<br>07:01 - 20:30<br>13:29 +4 m. 46°   |
| 15 | <b>9</b> 100 - 266<br>06:59 - 20:31<br>13:33 +4 m. 46°  | <b>10</b> 101 - 265<br>06:57 - 20:33<br>13:37 +4 m. 47° | <b>11</b> 102 - 264<br>06:54 - 20:35<br>13:41 +4 m. 47° | <b>12</b> 103 - 263<br>06:52 - 20:37<br>13:44 +3 m. 47° | <b>13</b> 104 - 262<br>06:50 - 20:38<br>13:48 +4 m. 48° | <b>14</b> 105 - 261<br>06:48 - 20:40<br>13:52 +4 m. 48° | <b>15</b> 106 - 260<br>06:46 - 20:42<br>13:56 +4 m. 48° |
| 16 | <b>16</b> 107 - 259<br>06:43 - 20:43<br>14:00 +4 m. 49° | <b>17</b> 108 - 258<br>06:41 - 20:45<br>14:04 +4 m. 49° | <b>18</b> 109 - 257<br>06:39 - 20:47<br>14:08 +4 m. 49° | <b>19</b> 110 - 256<br>06:37 - 20:49<br>14:12 +4 m. 50° | <b>20</b> 111 - 255<br>06:35 - 20:50<br>14:16 +4 m. 50° | <b>21</b> 112 - 254<br>06:33 - 20:52<br>14:20 +4 m. 51° | <b>22</b> 113 - 253<br>06:31 - 20:54<br>14:23 +3 m. 51° |
| 17 | <b>23</b> 114 - 252<br>06:28 - 20:55<br>14:27 +4 m. 51° | <b>24</b> 115 - 251<br>06:26 - 20:57<br>14:31 +4 m. 52° | <b>25</b> 116 - 250<br>06:24 - 20:59<br>14:35 +4 m. 52° | <b>26</b> 117 - 249<br>06:22 - 21:01<br>14:38 +3 m. 52° | <b>27</b> 118 - 248<br>06:20 - 21:02<br>14:42 +4 m. 52° | <b>28</b> 119 - 247<br>06:18 - 21:04<br>14:46 +4 m. 53° | <b>29</b> 120 - 246<br>06:16 - 21:06<br>14:50 +4 m. 53° |
| 18 | <b>30</b> 121 - 245<br>06:14 - 21:07<br>14:53 +3 m. 53° | <b>1</b> 122 - 244<br>06:12 - 21:09<br>14:57 +4 m. 54°  | <b>2</b> 123 - 243<br>06:11 - 21:11<br>15:00 +3 m. 54°  | <b>3</b> 124 - 242<br>06:09 - 21:12<br>15:04 +4 m. 54°  | <b>4</b> 125 - 241<br>06:07 - 21:14<br>15:07 +3 m. 55°  | <b>5</b> 126 - 240<br>06:05 - 21:16<br>15:11 +4 m. 55°  | <b>6</b> 127 - 239<br>06:03 - 21:17<br>15:14 +3 m. 55°  |

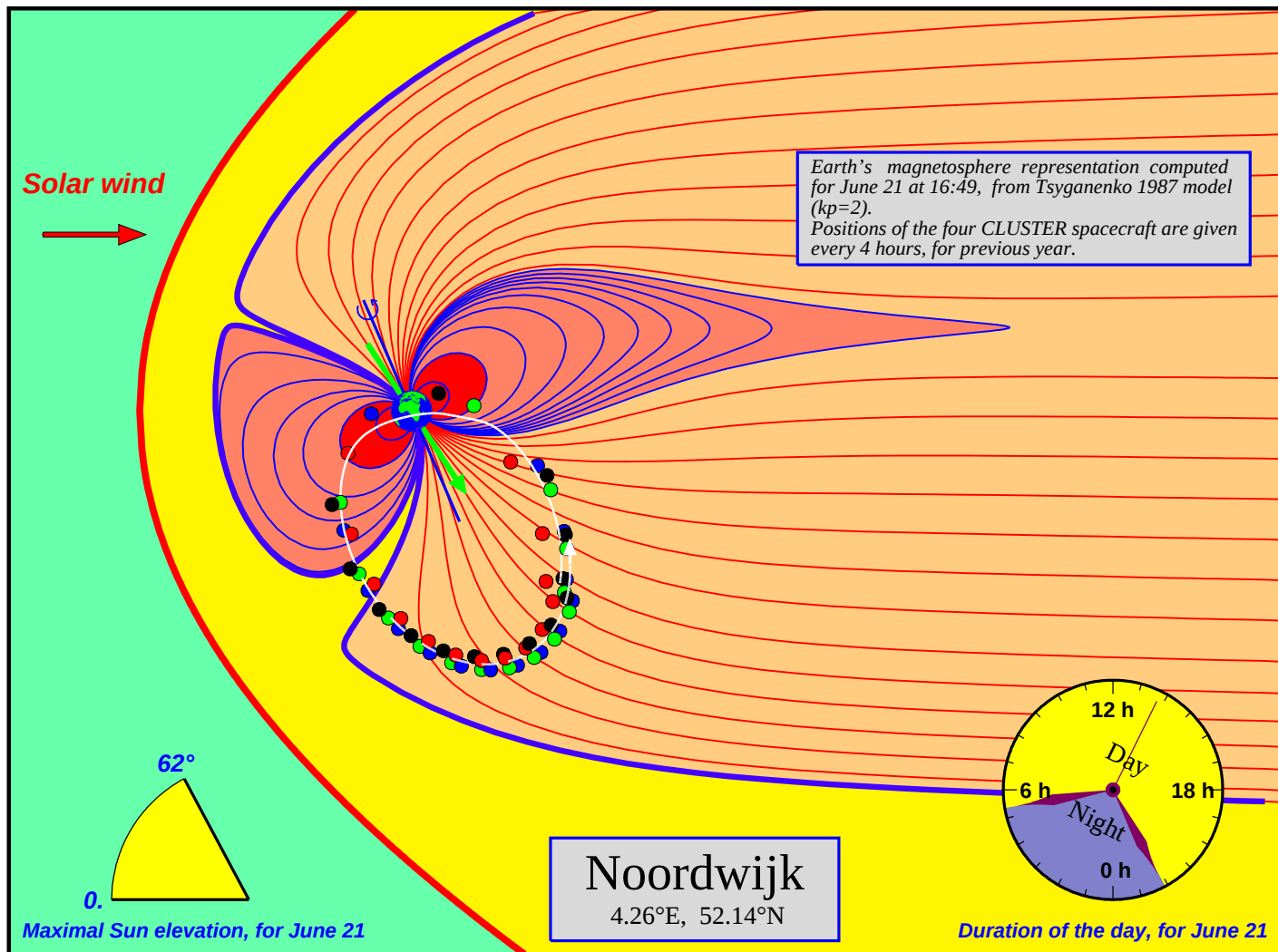


# May 2012

Sunrise and Sunset at Noordwijk (TL  $\pm 1$  mn)

Duration of the day - Variation - Sun maximal elevation (°)

|    | Monday                                                  | Tuesday                                                 | Wednesday                                               | Thursday                                                | Friday                                                  | Saturday                                                | Sunday                                                  |
|----|---------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|
| 18 | <b>30</b> 121 - 245<br>06:14 - 21:07<br>14:53 +3 m. 53° | <b>1</b> 122 - 244<br>06:12 - 21:09<br>14:57 +4 m. 54°  | <b>2</b> 123 - 243<br>06:11 - 21:11<br>15:00 +3 m. 54°  | <b>3</b> 124 - 242<br>06:09 - 21:12<br>15:04 +4 m. 54°  | <b>4</b> 125 - 241<br>06:07 - 21:14<br>15:07 +3 m. 55°  | <b>5</b> 126 - 240<br>06:05 - 21:16<br>15:11 +4 m. 55°  | <b>6</b> 127 - 239<br>06:03 - 21:17<br>15:14 +3 m. 55°  |
| 19 | <b>7</b> 128 - 238<br>06:01 - 21:19<br>15:18 +4 m. 55°  | <b>8</b> 129 - 237<br>06:00 - 21:21<br>15:21 +3 m. 56°  | <b>9</b> 130 - 236<br>05:58 - 21:22<br>15:24 +3 m. 56°  | <b>10</b> 131 - 235<br>05:56 - 21:24<br>15:28 +4 m. 56° | <b>11</b> 132 - 234<br>05:55 - 21:25<br>15:31 +3 m. 56° | <b>12</b> 133 - 233<br>05:53 - 21:27<br>15:34 +3 m. 57° | <b>13</b> 134 - 232<br>05:51 - 21:29<br>15:37 +3 m. 57° |
| 20 | <b>14</b> 135 - 231<br>05:50 - 21:30<br>15:41 +4 m. 57° | <b>15</b> 136 - 230<br>05:48 - 21:32<br>15:44 +3 m. 57° | <b>16</b> 137 - 229<br>05:47 - 21:33<br>15:47 +3 m. 58° | <b>17</b> 138 - 228<br>05:45 - 21:35<br>15:50 +3 m. 58° | <b>18</b> 139 - 227<br>05:44 - 21:36<br>15:53 +3 m. 58° | <b>19</b> 140 - 226<br>05:42 - 21:38<br>15:55 +2 m. 58° | <b>20</b> 141 - 225<br>05:41 - 21:39<br>15:58 +3 m. 59° |
| 21 | <b>21</b> 142 - 224<br>05:40 - 21:41<br>16:01 +3 m. 59° | <b>22</b> 143 - 223<br>05:38 - 21:42<br>16:04 +3 m. 59° | <b>23</b> 144 - 222<br>05:37 - 21:43<br>16:06 +2 m. 59° | <b>24</b> 145 - 221<br>05:36 - 21:45<br>16:09 +3 m. 59° | <b>25</b> 146 - 220<br>05:35 - 21:46<br>16:11 +2 m. 60° | <b>26</b> 147 - 219<br>05:34 - 21:47<br>16:14 +3 m. 60° | <b>27</b> 148 - 218<br>05:33 - 21:49<br>16:16 +2 m. 60° |
| 22 | <b>28</b> 149 - 217<br>05:32 - 21:50<br>16:18 +2 m. 60° | <b>29</b> 150 - 216<br>05:31 - 21:51<br>16:21 +3 m. 60° | <b>30</b> 151 - 215<br>05:30 - 21:52<br>16:23 +2 m. 60° | <b>31</b> 152 - 214<br>05:29 - 21:53<br>16:25 +2 m. 60° | <b>1</b> 153 - 213<br>05:28 - 21:55<br>16:27 +2 m. 61°  | <b>2</b> 154 - 212<br>05:27 - 21:56<br>16:29 +2 m. 61°  | <b>3</b> 155 - 211<br>05:27 - 21:57<br>16:30 +1 m. 61°  |

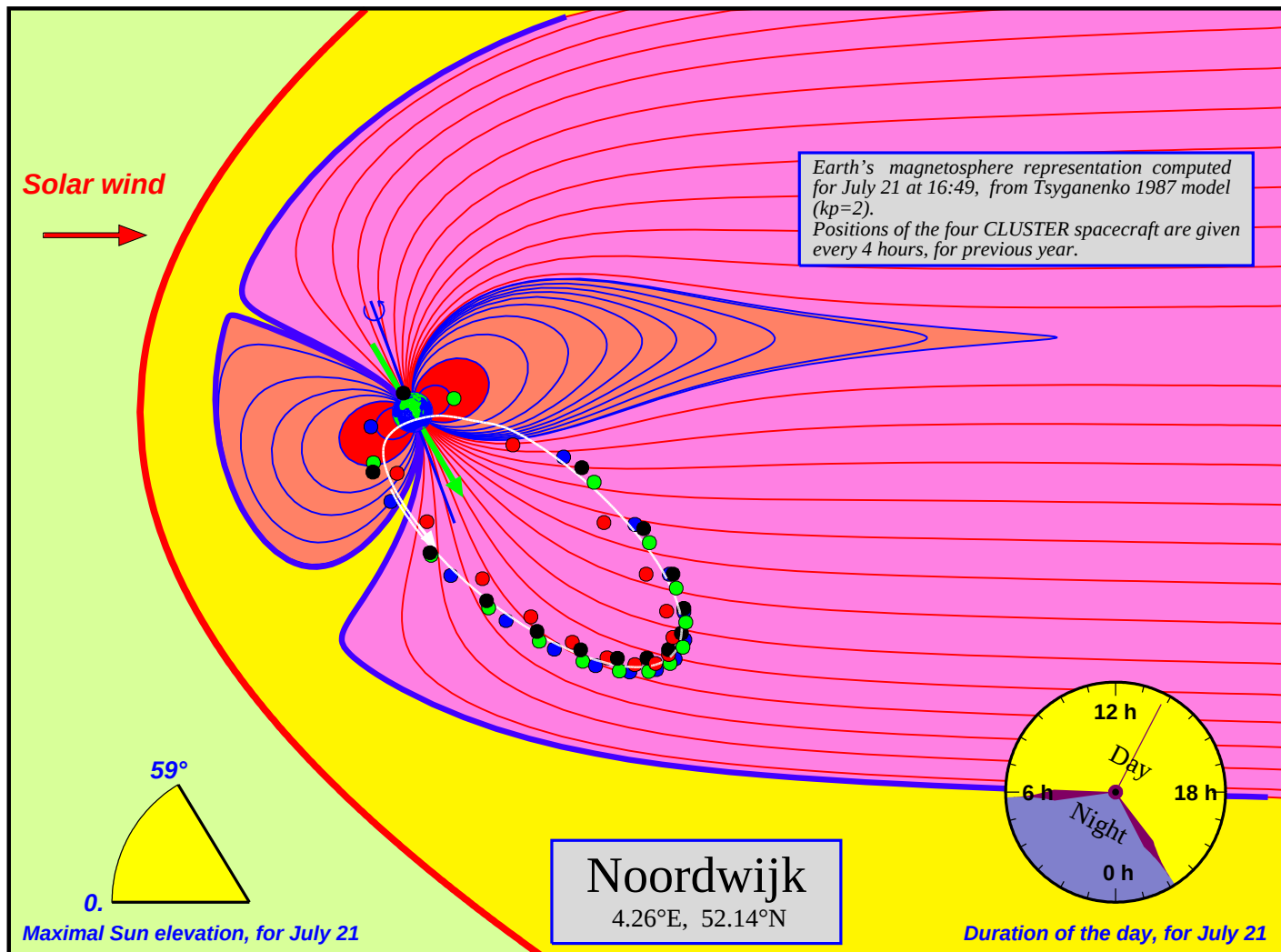


# June 2012

Sunrise and Sunset at Noordwijk (TL  $\pm 1$  mn)

Duration of the day - Variation - Sun maximal elevation (°)

|    | Monday                                                  | Tuesday                                                 | Wednesday                                               | Thursday                                                | Friday                                                  | Saturday                                                | Sunday                                                  |
|----|---------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|
| 22 | <b>28</b> 149 - 217<br>05:32 - 21:50<br>16:18 +2 m. 60° | <b>29</b> 150 - 216<br>05:31 - 21:51<br>16:21 +3 m. 60° | <b>30</b> 151 - 215<br>05:30 - 21:52<br>16:23 +2 m. 60° | <b>31</b> 152 - 214<br>05:29 - 21:53<br>16:25 +2 m. 60° | <b>1</b> 153 - 213<br>05:28 - 21:55<br>16:27 +2 m. 61°  | <b>2</b> 154 - 212<br>05:27 - 21:56<br>16:29 +2 m. 61°  | <b>3</b> 155 - 211<br>05:27 - 21:57<br>16:30 +1 m. 61°  |
| 23 | <b>4</b> 156 - 210<br>05:26 - 21:58<br>16:32 +2 m. 61°  | <b>5</b> 157 - 209<br>05:25 - 21:59<br>16:34 +2 m. 61°  | <b>6</b> 158 - 208<br>05:25 - 22:00<br>16:35 +1 m. 61°  | <b>7</b> 159 - 207<br>05:24 - 22:00<br>16:36 +1 m. 61°  | <b>8</b> 160 - 206<br>05:24 - 22:01<br>16:38 +2 m. 61°  | <b>9</b> 161 - 205<br>05:23 - 22:02<br>16:39 +1 m. 61°  | <b>10</b> 162 - 204<br>05:23 - 22:03<br>16:40 +1 m. 61° |
| 24 | <b>11</b> 163 - 203<br>05:22 - 22:04<br>16:41 +1 m. 62° | <b>12</b> 164 - 202<br>05:22 - 22:04<br>16:42 +1 m. 62° | <b>13</b> 165 - 201<br>05:22 - 22:05<br>16:43 +1 m. 62° | <b>14</b> 166 - 200<br>05:22 - 22:05<br>16:44 +1 m. 62° | <b>15</b> 167 - 199<br>05:22 - 22:06<br>16:44 +0 m. 62° | <b>16</b> 168 - 198<br>05:22 - 22:06<br>16:45 +1 m. 62° | <b>17</b> 169 - 197<br>05:22 - 22:07<br>16:45 +0 m. 62° |
| 25 | <b>18</b> 170 - 196<br>05:22 - 22:07<br>16:45 +0 m. 62° | <b>19</b> 171 - 195<br>05:22 - 22:07<br>16:46 +1 m. 62° | <b>20</b> 172 - 194<br>05:22 - 22:08<br>16:46 +0 m. 62° | <b>21</b> 173 - 193<br>05:22 - 22:08<br>16:46 +0 m. 62° | <b>22</b> 174 - 192<br>05:22 - 22:08<br>16:46 +0 m. 62° | <b>23</b> 175 - 191<br>05:23 - 22:08<br>16:45 -1 m. 62° | <b>24</b> 176 - 190<br>05:23 - 22:08<br>16:45 +0 m. 62° |
| 26 | <b>25</b> 177 - 189<br>05:23 - 22:08<br>16:45 +0 m. 62° | <b>26</b> 178 - 188<br>05:24 - 22:08<br>16:44 -1 m. 62° | <b>27</b> 179 - 187<br>05:24 - 22:08<br>16:44 +0 m. 62° | <b>28</b> 180 - 186<br>05:25 - 22:08<br>16:43 -1 m. 62° | <b>29</b> 181 - 185<br>05:26 - 22:08<br>16:42 -1 m. 62° | <b>30</b> 182 - 184<br>05:26 - 22:07<br>16:41 -1 m. 62° | <b>1</b> 183 - 183<br>05:27 - 22:07<br>16:40 -1 m. 61°  |

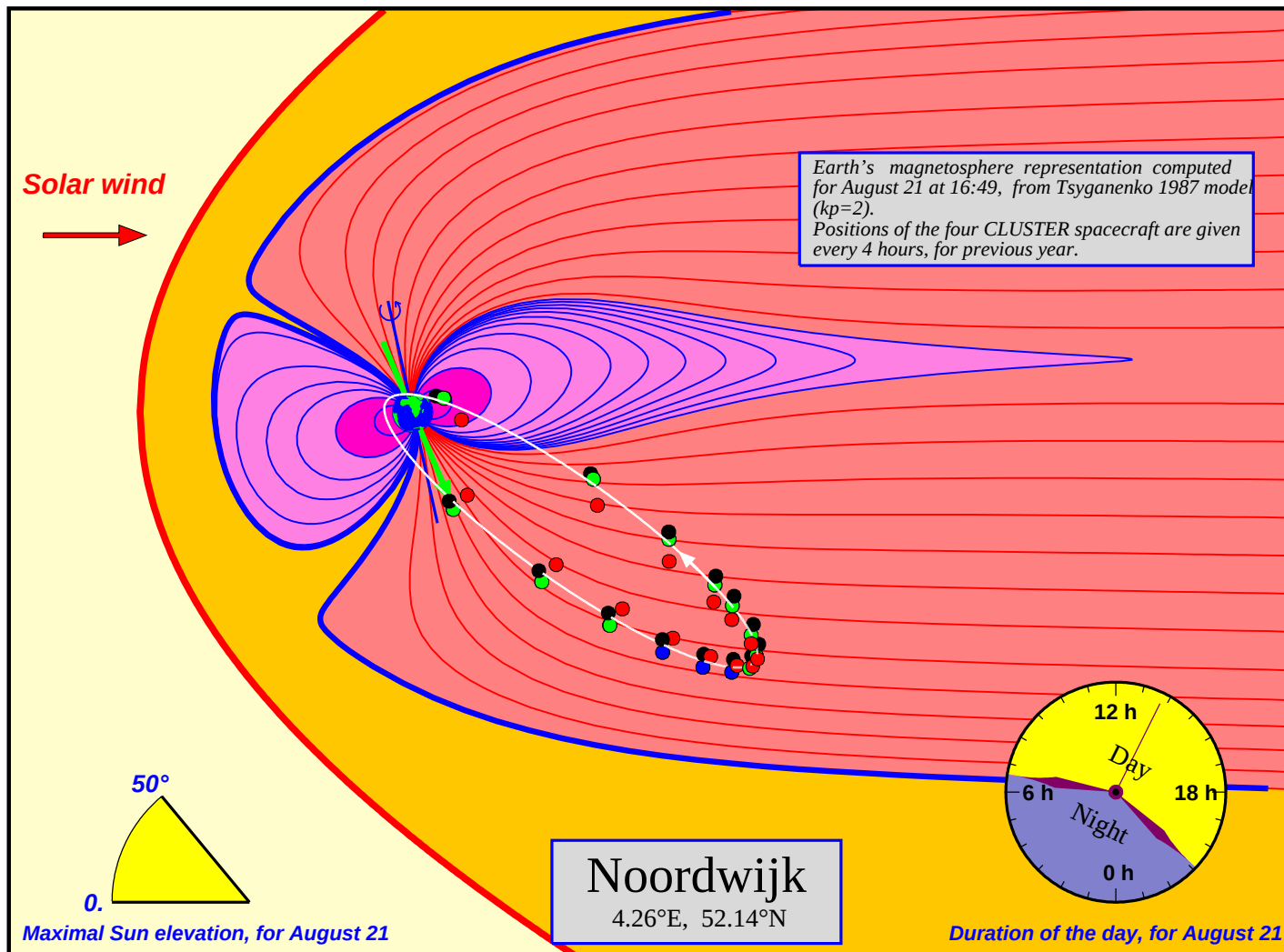


# July 2012

Sunrise and Sunset at Noordwijk (TL  $\pm 1$  mn)

Duration of the day - Variation - Sun maximal elevation (°)

|    | Monday                                           | Tuesday                                          | Wednesday                                        | Thursday                                         | Friday                                           | Saturday                                         | Sunday                                           |
|----|--------------------------------------------------|--------------------------------------------------|--------------------------------------------------|--------------------------------------------------|--------------------------------------------------|--------------------------------------------------|--------------------------------------------------|
| 26 | 25 177 - 189<br>05:23 - 22:08<br>16:45 +0 m. 62° | 26 178 - 188<br>05:24 - 22:08<br>16:44 -1 m. 62° | 27 179 - 187<br>05:24 - 22:08<br>16:44 +0 m. 62° | 28 180 - 186<br>05:25 - 22:08<br>16:43 -1 m. 62° | 29 181 - 185<br>05:26 - 22:08<br>16:42 -1 m. 62° | 30 182 - 184<br>05:26 - 22:07<br>16:41 -1 m. 62° | 1 183 - 183<br>05:27 - 22:07<br>16:40 -1 m. 61°  |
| 27 | 2 184 - 182<br>05:28 - 22:06<br>16:39 -1 m. 61°  | 3 185 - 181<br>05:28 - 22:06<br>16:38 -1 m. 61°  | 4 186 - 180<br>05:29 - 22:06<br>16:36 -2 m. 61°  | 5 187 - 179<br>05:30 - 22:05<br>16:35 -1 m. 61°  | 6 188 - 178<br>05:31 - 22:04<br>16:34 -1 m. 61°  | 7 189 - 177<br>05:32 - 22:04<br>16:32 -2 m. 61°  | 8 190 - 176<br>05:33 - 22:03<br>16:30 -2 m. 61°  |
| 28 | 9 191 - 175<br>05:34 - 22:02<br>16:28 -2 m. 61°  | 10 192 - 174<br>05:35 - 22:02<br>16:27 -1 m. 61° | 11 193 - 173<br>05:36 - 22:01<br>16:25 -2 m. 60° | 12 194 - 172<br>05:37 - 22:00<br>16:23 -2 m. 60° | 13 195 - 171<br>05:38 - 21:59<br>16:20 -3 m. 60° | 14 196 - 170<br>05:40 - 21:58<br>16:18 -2 m. 60° | 15 197 - 169<br>05:41 - 21:57<br>16:16 -2 m. 60° |
| 29 | 16 198 - 168<br>05:42 - 21:56<br>16:14 -2 m. 60° | 17 199 - 167<br>05:43 - 21:55<br>16:11 -3 m. 60° | 18 200 - 166<br>05:45 - 21:53<br>16:09 -2 m. 59° | 19 201 - 165<br>05:46 - 21:52<br>16:06 -3 m. 59° | 20 202 - 164<br>05:47 - 21:51<br>16:04 -2 m. 59° | 21 203 - 163<br>05:49 - 21:50<br>16:01 -3 m. 59° | 22 204 - 162<br>05:50 - 21:48<br>15:59 -2 m. 59° |
| 30 | 23 205 - 161<br>05:51 - 21:47<br>15:56 -3 m. 58° | 24 206 - 160<br>05:53 - 21:46<br>15:53 -3 m. 58° | 25 207 - 159<br>05:54 - 21:44<br>15:50 -3 m. 58° | 26 208 - 158<br>05:56 - 21:43<br>15:47 -3 m. 58° | 27 209 - 157<br>05:57 - 21:41<br>15:44 -3 m. 57° | 28 210 - 156<br>05:59 - 21:40<br>15:41 -3 m. 57° | 29 211 - 155<br>06:00 - 21:38<br>15:38 -3 m. 57° |
| 31 | 30 212 - 154<br>06:02 - 21:36<br>15:35 -3 m. 57° | 31 213 - 153<br>06:03 - 21:35<br>15:32 -3 m. 57° | 1 214 - 152<br>06:05 - 21:33<br>15:28 -4 m. 56°  | 2 215 - 151<br>06:06 - 21:31<br>15:25 -3 m. 56°  | 3 216 - 150<br>06:08 - 21:30<br>15:22 -3 m. 56°  | 4 217 - 149<br>06:09 - 21:28<br>15:18 -4 m. 55°  | 5 218 - 148<br>06:11 - 21:26<br>15:15 -3 m. 55°  |

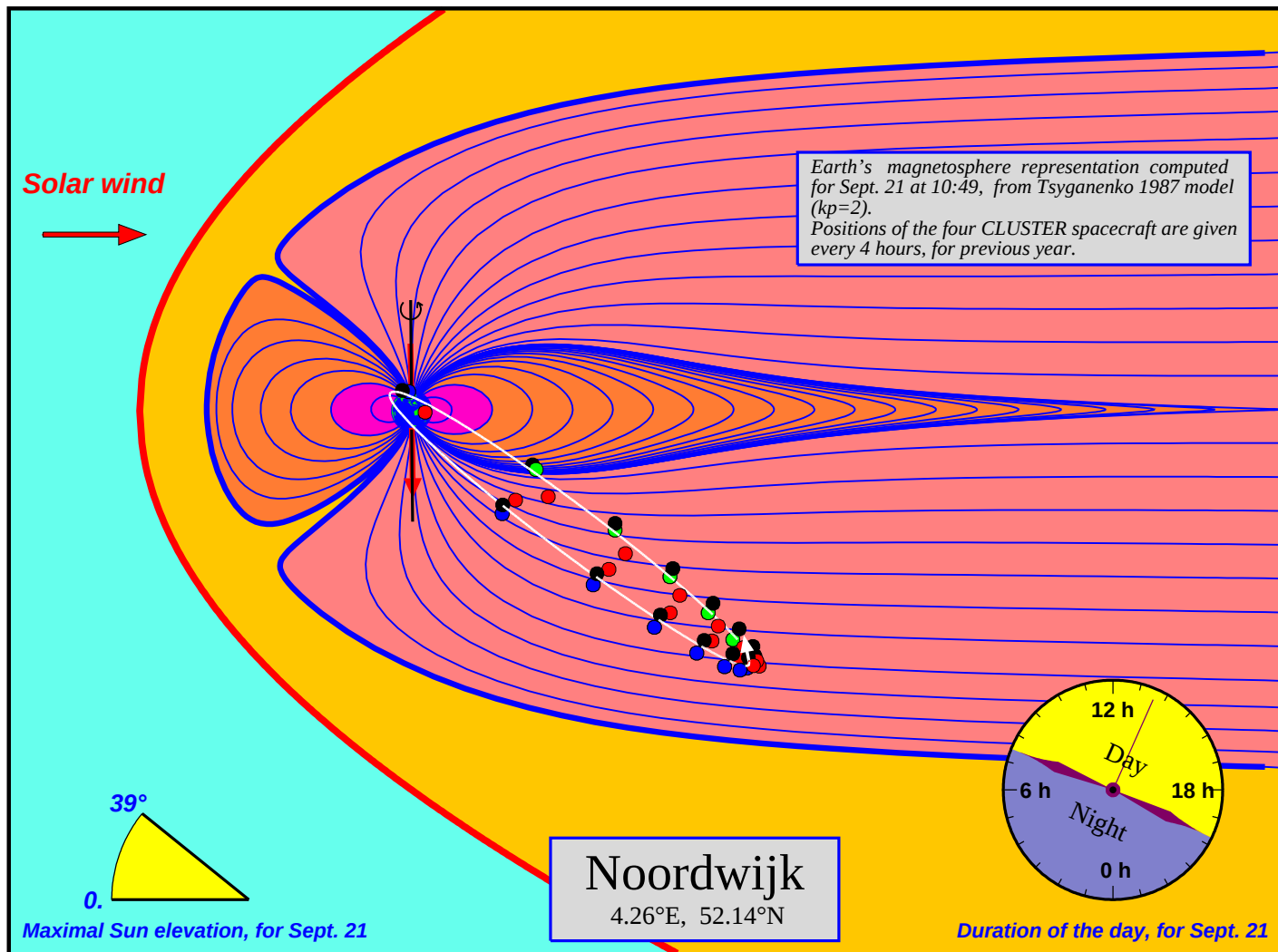


# August 2012

Sunrise and Sunset at Noordwijk (TL  $\pm 1$  mn)

Duration of the day - Variation - Sun maximal elevation (°)

|    | Monday                                                  | Tuesday                                                 | Wednesday                                               | Thursday                                                | Friday                                                  | Saturday                                                | Sunday                                                  |
|----|---------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|
| 31 | <b>30</b> 212 - 154<br>06:02 - 21:36<br>15:35 -3 m. 57° | <b>31</b> 213 - 153<br>06:03 - 21:35<br>15:32 -3 m. 57° | <b>1</b> 214 - 152<br>06:05 - 21:33<br>15:28 -4 m. 56°  | <b>2</b> 215 - 151<br>06:06 - 21:31<br>15:25 -3 m. 56°  | <b>3</b> 216 - 150<br>06:08 - 21:30<br>15:22 -3 m. 56°  | <b>4</b> 217 - 149<br>06:09 - 21:28<br>15:18 -4 m. 55°  | <b>5</b> 218 - 148<br>06:11 - 21:26<br>15:15 -3 m. 55°  |
| 32 | <b>6</b> 219 - 147<br>06:13 - 21:24<br>15:12 -3 m. 55°  | <b>7</b> 220 - 146<br>06:14 - 21:22<br>15:08 -4 m. 55°  | <b>8</b> 221 - 145<br>06:16 - 21:20<br>15:05 -3 m. 54°  | <b>9</b> 222 - 144<br>06:17 - 21:19<br>15:01 -4 m. 54°  | <b>10</b> 223 - 143<br>06:19 - 21:17<br>14:58 -3 m. 54° | <b>11</b> 224 - 142<br>06:21 - 21:15<br>14:54 -4 m. 53° | <b>12</b> 225 - 141<br>06:22 - 21:13<br>14:50 -4 m. 53° |
| 33 | <b>13</b> 226 - 140<br>06:24 - 21:11<br>14:47 -3 m. 53° | <b>14</b> 227 - 139<br>06:26 - 21:09<br>14:43 -4 m. 53° | <b>15</b> 228 - 138<br>06:27 - 21:07<br>14:40 -3 m. 52° | <b>16</b> 229 - 137<br>06:29 - 21:05<br>14:36 -4 m. 52° | <b>17</b> 230 - 136<br>06:31 - 21:03<br>14:32 -4 m. 52° | <b>18</b> 231 - 135<br>06:32 - 21:01<br>14:29 -3 m. 51° | <b>19</b> 232 - 134<br>06:34 - 20:58<br>14:25 -4 m. 51° |
| 34 | <b>20</b> 233 - 133<br>06:35 - 20:56<br>14:21 -4 m. 51° | <b>21</b> 234 - 132<br>06:37 - 20:54<br>14:17 -4 m. 50° | <b>22</b> 235 - 131<br>06:39 - 20:52<br>14:13 -4 m. 50° | <b>23</b> 236 - 130<br>06:40 - 20:50<br>14:09 -4 m. 50° | <b>24</b> 237 - 129<br>06:42 - 20:48<br>14:06 -3 m. 49° | <b>25</b> 238 - 128<br>06:44 - 20:45<br>14:02 -4 m. 49° | <b>26</b> 239 - 127<br>06:45 - 20:43<br>13:58 -4 m. 49° |
| 35 | <b>27</b> 240 - 126<br>06:47 - 20:41<br>13:54 -4 m. 48° | <b>28</b> 241 - 125<br>06:49 - 20:39<br>13:50 -4 m. 48° | <b>29</b> 242 - 124<br>06:50 - 20:37<br>13:46 -4 m. 48° | <b>30</b> 243 - 123<br>06:52 - 20:34<br>13:43 -3 m. 47° | <b>31</b> 244 - 122<br>06:53 - 20:32<br>13:39 -4 m. 47° | <b>1</b> 245 - 121<br>06:55 - 20:30<br>13:35 -4 m. 46°  | <b>2</b> 246 - 120<br>06:57 - 20:27<br>13:31 -4 m. 46°  |

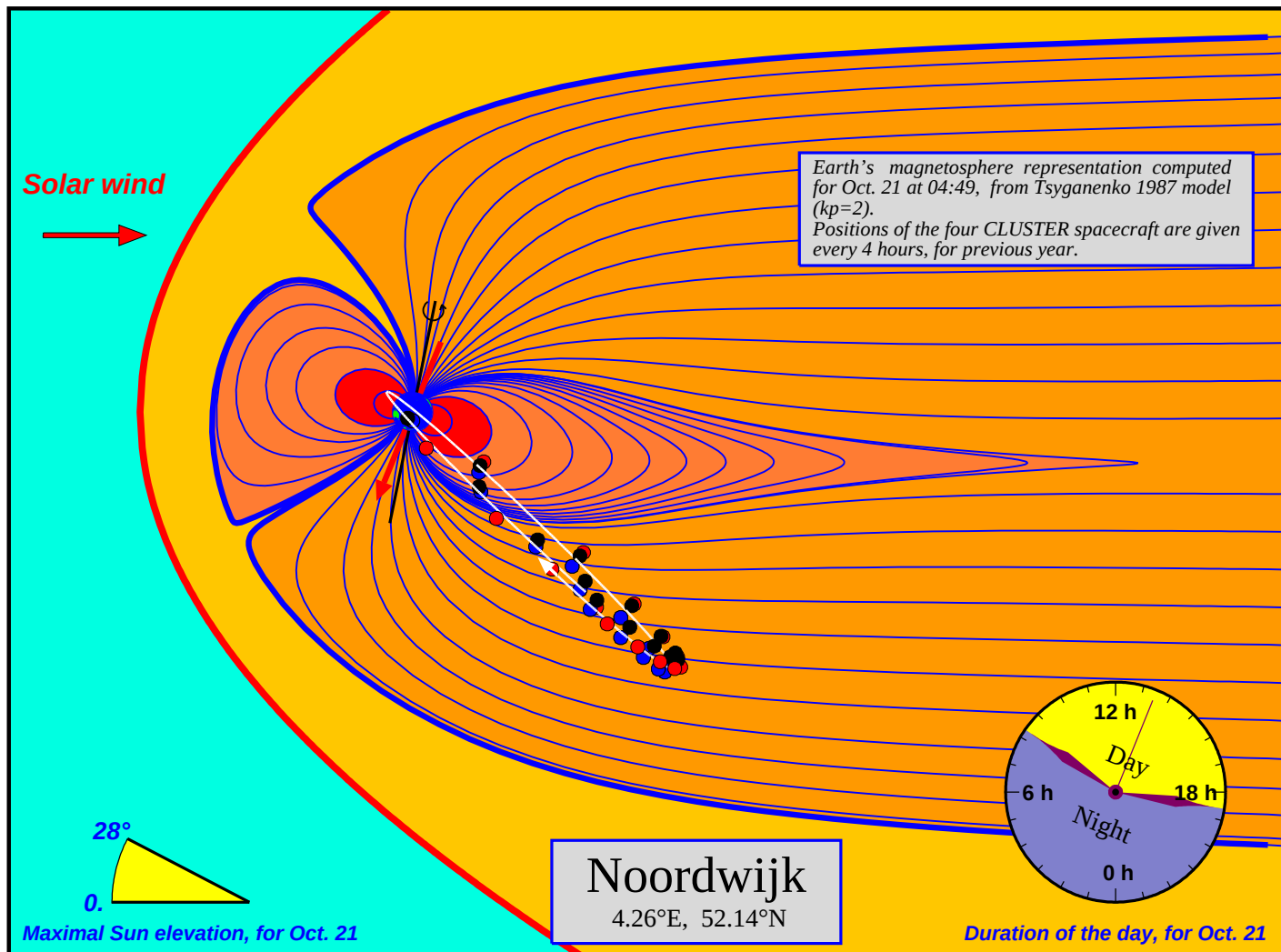


# September 2012

Sunrise and Sunset at Noordwijk (TL  $\pm 1$  mn)

Duration of the day - Variation - Sun maximal elevation (°)

|    | Monday                                                  | Tuesday                                                 | Wednesday                                               | Thursday                                                | Friday                                                  | Saturday                                                | Sunday                                                  |
|----|---------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|
| 35 | <b>27</b> 240 - 126<br>06:47 - 20:41<br>13:54 -4 m. 48° | <b>28</b> 241 - 125<br>06:49 - 20:39<br>13:50 -4 m. 48° | <b>29</b> 242 - 124<br>06:50 - 20:37<br>13:46 -4 m. 48° | <b>30</b> 243 - 123<br>06:52 - 20:34<br>13:43 -3 m. 47° | <b>31</b> 244 - 122<br>06:53 - 20:32<br>13:39 -4 m. 47° | <b>1</b> 245 - 121<br>06:55 - 20:30<br>13:35 -4 m. 46°  | <b>2</b> 246 - 120<br>06:57 - 20:27<br>13:31 -4 m. 46°  |
| 36 | <b>3</b> 247 - 119<br>06:58 - 20:25<br>13:27 -4 m. 46°  | <b>4</b> 248 - 118<br>07:00 - 20:23<br>13:23 -4 m. 45°  | <b>5</b> 249 - 117<br>07:02 - 20:21<br>13:19 -4 m. 45°  | <b>6</b> 250 - 116<br>07:03 - 20:18<br>13:15 -4 m. 45°  | <b>7</b> 251 - 115<br>07:05 - 20:16<br>13:11 -4 m. 44°  | <b>8</b> 252 - 114<br>07:07 - 20:14<br>13:07 -4 m. 44°  | <b>9</b> 253 - 113<br>07:08 - 20:11<br>13:03 -4 m. 43°  |
| 37 | <b>10</b> 254 - 112<br>07:10 - 20:09<br>12:59 -4 m. 43° | <b>11</b> 255 - 111<br>07:11 - 20:07<br>12:55 -4 m. 43° | <b>12</b> 256 - 110<br>07:13 - 20:04<br>12:51 -4 m. 42° | <b>13</b> 257 - 109<br>07:15 - 20:02<br>12:47 -4 m. 42° | <b>14</b> 258 - 108<br>07:16 - 20:00<br>12:43 -4 m. 42° | <b>15</b> 259 - 107<br>07:18 - 19:57<br>12:39 -4 m. 41° | <b>16</b> 260 - 106<br>07:20 - 19:55<br>12:35 -4 m. 41° |
| 38 | <b>17</b> 261 - 105<br>07:21 - 19:53<br>12:31 -4 m. 40° | <b>18</b> 262 - 104<br>07:23 - 19:50<br>12:27 -4 m. 40° | <b>19</b> 263 - 103<br>07:25 - 19:48<br>12:23 -4 m. 40° | <b>20</b> 264 - 102<br>07:26 - 19:46<br>12:19 -4 m. 39° | <b>21</b> 265 - 101<br>07:28 - 19:43<br>12:15 -4 m. 39° | <b>22</b> 266 - 100<br>07:30 - 19:41<br>12:11 -4 m. 38° | <b>23</b> 267 - 99<br>07:31 - 19:38<br>12:07 -4 m. 38°  |
| 39 | <b>24</b> 268 - 98<br>07:33 - 19:36<br>12:03 -4 m. 38°  | <b>25</b> 269 - 97<br>07:35 - 19:34<br>11:59 -4 m. 37°  | <b>26</b> 270 - 96<br>07:36 - 19:31<br>11:55 -4 m. 37°  | <b>27</b> 271 - 95<br>07:38 - 19:29<br>11:51 -4 m. 37°  | <b>28</b> 272 - 94<br>07:40 - 19:27<br>11:47 -4 m. 36°  | <b>29</b> 273 - 93<br>07:41 - 19:24<br>11:43 -4 m. 36°  | <b>30</b> 274 - 92<br>07:43 - 19:22<br>11:39 -4 m. 35°  |



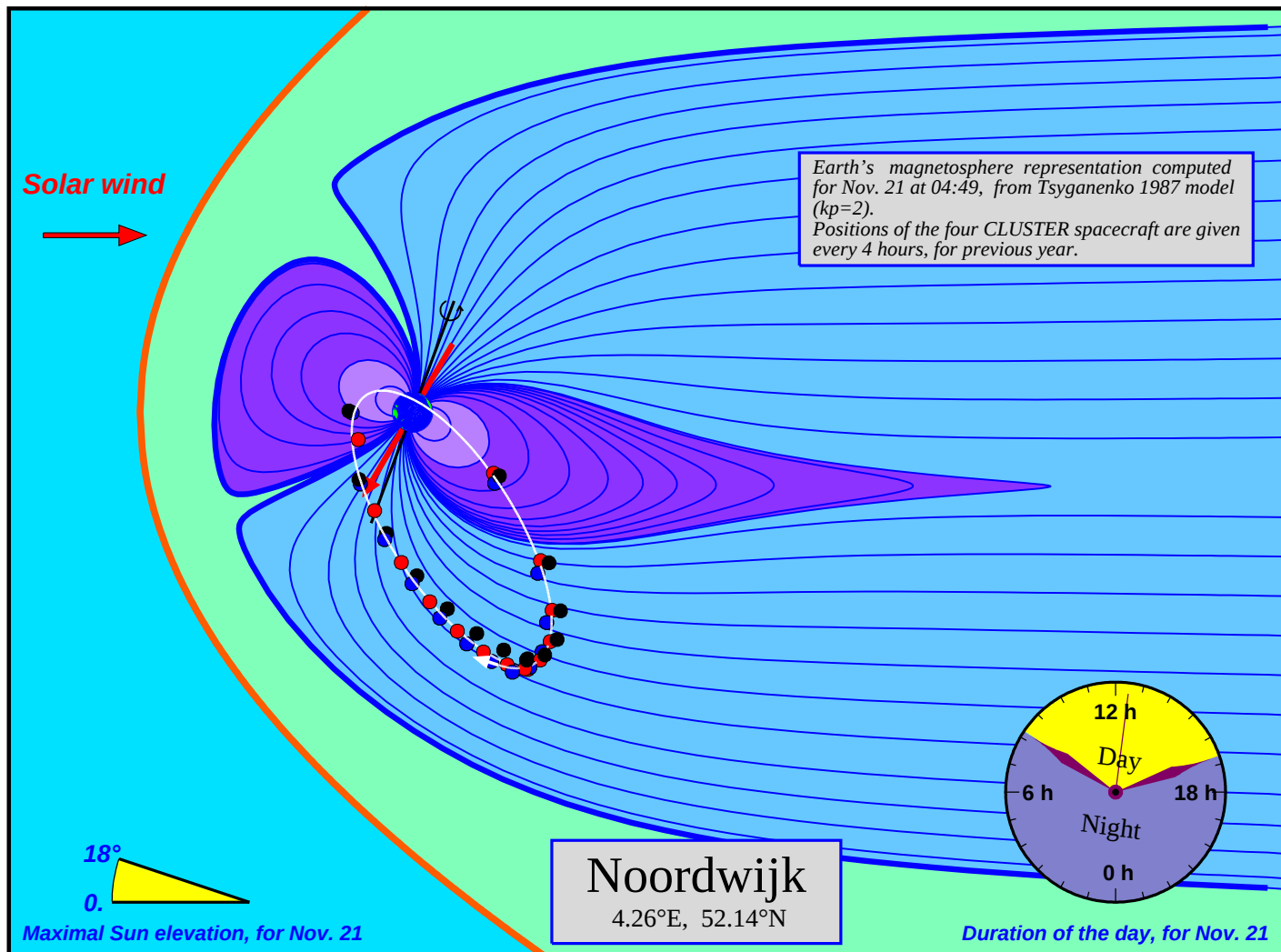
# October 2012

heure d'hivers  
le 28 à 03:00

Sunrise and Sunset at Noordwijk (TL  $\pm 1$  mn)

Duration of the day - Variation - Sun maximal elevation (°)

|    | Monday                                                 | Tuesday                                                | Wednesday                                              | Thursday                                               | Friday                                                 | Saturday                                               | Sunday                                                 |
|----|--------------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------|
| 40 | <b>1</b> 275 - 91<br>07:45 - 19:20<br>11:35 -4 m. 35°  | <b>2</b> 276 - 90<br>07:46 - 19:17<br>11:31 -4 m. 35°  | <b>3</b> 277 - 89<br>07:48 - 19:15<br>11:27 -4 m. 34°  | <b>4</b> 278 - 88<br>07:50 - 19:13<br>11:23 -4 m. 34°  | <b>5</b> 279 - 87<br>07:51 - 19:11<br>11:19 -4 m. 33°  | <b>6</b> 280 - 86<br>07:53 - 19:08<br>11:15 -4 m. 33°  | <b>7</b> 281 - 85<br>07:55 - 19:06<br>11:11 -4 m. 33°  |
| 41 | <b>8</b> 282 - 84<br>07:56 - 19:04<br>11:07 -4 m. 32°  | <b>9</b> 283 - 83<br>07:58 - 19:01<br>11:03 -4 m. 32°  | <b>10</b> 284 - 82<br>08:00 - 18:59<br>10:59 -4 m. 32° | <b>11</b> 285 - 81<br>08:02 - 18:57<br>10:56 -3 m. 31° | <b>12</b> 286 - 80<br>08:03 - 18:55<br>10:51 -5 m. 31° | <b>13</b> 287 - 79<br>08:05 - 18:53<br>10:48 -3 m. 30° | <b>14</b> 288 - 78<br>08:07 - 18:50<br>10:44 -4 m. 30° |
| 42 | <b>15</b> 289 - 77<br>08:09 - 18:48<br>10:40 -4 m. 30° | <b>16</b> 290 - 76<br>08:10 - 18:46<br>10:36 -4 m. 29° | <b>17</b> 291 - 75<br>08:12 - 18:44<br>10:32 -4 m. 29° | <b>18</b> 292 - 74<br>08:14 - 18:42<br>10:28 -4 m. 29° | <b>19</b> 293 - 73<br>08:16 - 18:40<br>10:24 -4 m. 28° | <b>20</b> 294 - 72<br>08:17 - 18:37<br>10:20 -4 m. 28° | <b>21</b> 295 - 71<br>08:19 - 18:35<br>10:16 -4 m. 28° |
| 43 | <b>22</b> 296 - 70<br>08:21 - 18:33<br>10:12 -4 m. 27° | <b>23</b> 297 - 69<br>08:23 - 18:31<br>10:09 -3 m. 27° | <b>24</b> 298 - 68<br>08:25 - 18:29<br>10:05 -4 m. 26° | <b>25</b> 299 - 67<br>08:26 - 18:27<br>10:01 -4 m. 26° | <b>26</b> 300 - 66<br>08:28 - 18:25<br>9:57 -4 m. 26°  | <b>27</b> 301 - 65<br>08:30 - 18:23<br>9:53 -4 m. 25°  | <b>28</b> 302 - 64<br>07:32 - 17:21<br>9:49 -4 m. 25°  |
| 44 | <b>29</b> 303 - 63<br>07:34 - 17:19<br>9:45 -4 m. 25°  | <b>30</b> 304 - 62<br>07:35 - 17:17<br>9:42 -3 m. 24°  | <b>31</b> 305 - 61<br>07:37 - 17:16<br>9:38 -4 m. 24°  | <b>1</b> 306 - 60<br>07:39 - 17:14<br>9:34 -4 m. 24°   | <b>2</b> 307 - 59<br>07:41 - 17:12<br>9:31 -3 m. 23°   | <b>3</b> 308 - 58<br>07:43 - 17:10<br>9:27 -4 m. 23°   | <b>4</b> 309 - 57<br>07:44 - 17:08<br>9:24 -3 m. 23°   |

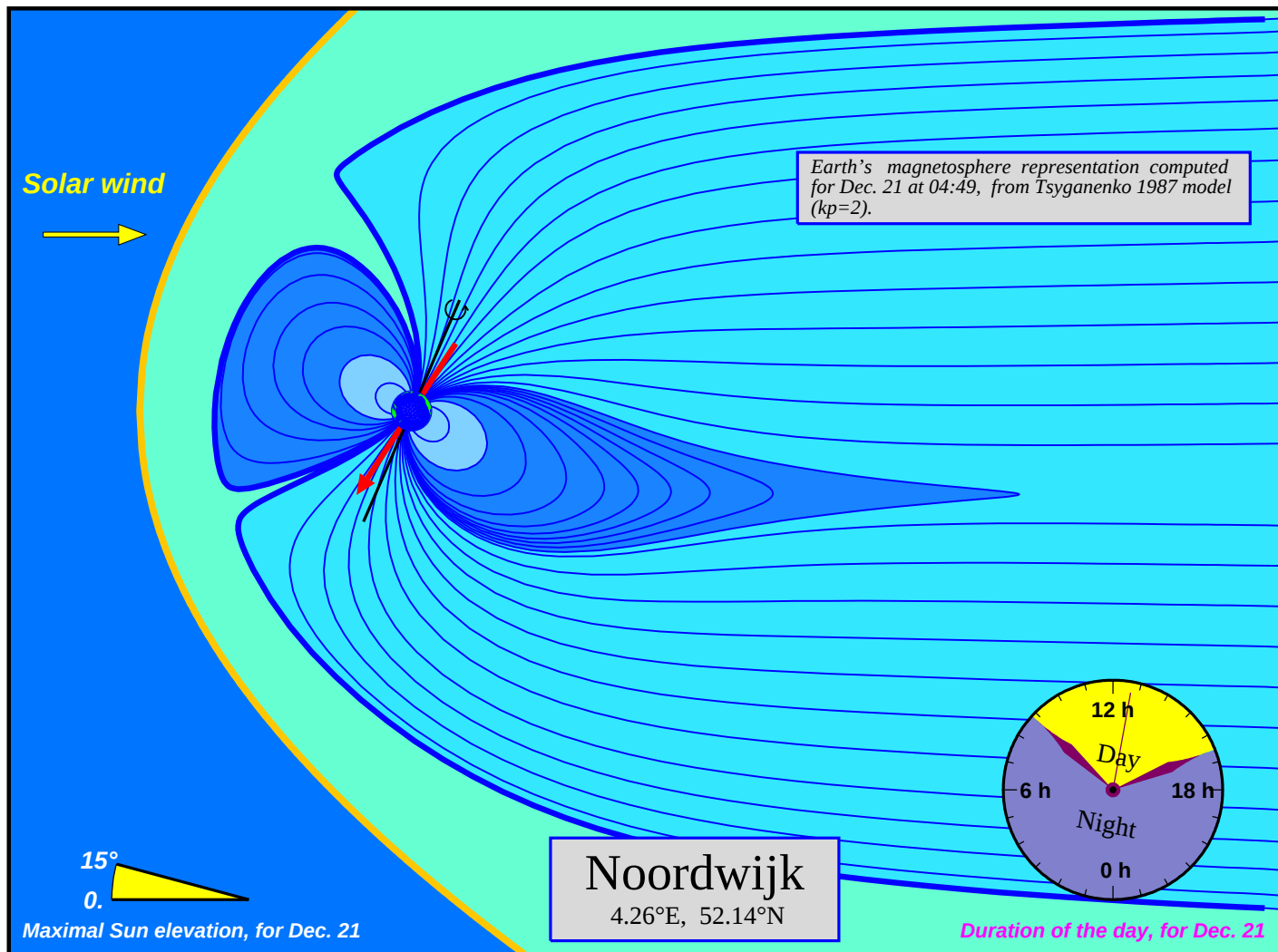


# November 2012

Sunrise and Sunset at Noordwijk (TL  $\pm 1$  mn)

Duration of the day - Variation - Sun maximal elevation (°)

|    | Monday                                                | Tuesday                                               | Wednesday                                             | Thursday                                              | Friday                                                | Saturday                                              | Sunday                                                |
|----|-------------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------|
| 44 | <b>29</b> 303 - 63<br>07:34 - 17:19<br>9:45 -4 m. 25° | <b>30</b> 304 - 62<br>07:35 - 17:17<br>9:42 -3 m. 24° | <b>31</b> 305 - 61<br>07:37 - 17:16<br>9:38 -4 m. 24° | <b>1</b> 306 - 60<br>07:39 - 17:14<br>9:34 -4 m. 24°  | <b>2</b> 307 - 59<br>07:41 - 17:12<br>9:31 -3 m. 23°  | <b>3</b> 308 - 58<br>07:43 - 17:10<br>9:27 -4 m. 23°  | <b>4</b> 309 - 57<br>07:44 - 17:08<br>9:24 -3 m. 23°  |
| 45 | <b>5</b> 310 - 56<br>07:46 - 17:07<br>9:20 -4 m. 23°  | <b>6</b> 311 - 55<br>07:48 - 17:05<br>9:16 -4 m. 22°  | <b>7</b> 312 - 54<br>07:50 - 17:03<br>9:13 -3 m. 22°  | <b>8</b> 313 - 53<br>07:52 - 17:02<br>9:10 -3 m. 22°  | <b>9</b> 314 - 52<br>07:53 - 17:00<br>9:06 -4 m. 21°  | <b>10</b> 315 - 51<br>07:55 - 16:58<br>9:03 -3 m. 21° | <b>11</b> 316 - 50<br>07:57 - 16:57<br>8:59 -4 m. 21° |
| 46 | <b>12</b> 317 - 49<br>07:59 - 16:55<br>8:56 -3 m. 21° | <b>13</b> 318 - 48<br>08:01 - 16:54<br>8:53 -3 m. 20° | <b>14</b> 319 - 47<br>08:02 - 16:52<br>8:50 -3 m. 20° | <b>15</b> 320 - 46<br>08:04 - 16:51<br>8:46 -4 m. 20° | <b>16</b> 321 - 45<br>08:06 - 16:50<br>8:43 -3 m. 20° | <b>17</b> 322 - 44<br>08:08 - 16:48<br>8:40 -3 m. 19° | <b>18</b> 323 - 43<br>08:09 - 16:47<br>8:37 -3 m. 19° |
| 47 | <b>19</b> 324 - 42<br>08:11 - 16:46<br>8:34 -3 m. 19° | <b>20</b> 325 - 41<br>08:13 - 16:45<br>8:31 -3 m. 19° | <b>21</b> 326 - 40<br>08:14 - 16:43<br>8:29 -2 m. 18° | <b>22</b> 327 - 39<br>08:16 - 16:42<br>8:26 -3 m. 18° | <b>23</b> 328 - 38<br>08:18 - 16:41<br>8:23 -3 m. 18° | <b>24</b> 329 - 37<br>08:19 - 16:40<br>8:21 -2 m. 18° | <b>25</b> 330 - 36<br>08:21 - 16:39<br>8:18 -3 m. 18° |
| 48 | <b>26</b> 331 - 35<br>08:22 - 16:38<br>8:15 -3 m. 17° | <b>27</b> 332 - 34<br>08:24 - 16:37<br>8:13 -2 m. 17° | <b>28</b> 333 - 33<br>08:25 - 16:37<br>8:11 -2 m. 17° | <b>29</b> 334 - 32<br>08:27 - 16:36<br>8:08 -3 m. 17° | <b>30</b> 335 - 31<br>08:28 - 16:35<br>8:06 -2 m. 17° | <b>1</b> 336 - 30<br>08:30 - 16:34<br>8:04 -2 m. 17°  | <b>2</b> 337 - 29<br>08:31 - 16:34<br>8:02 -2 m. 16°  |



# December 2012

Sunrise and Sunset at Noordwijk (TL  $\pm 1$  mn)

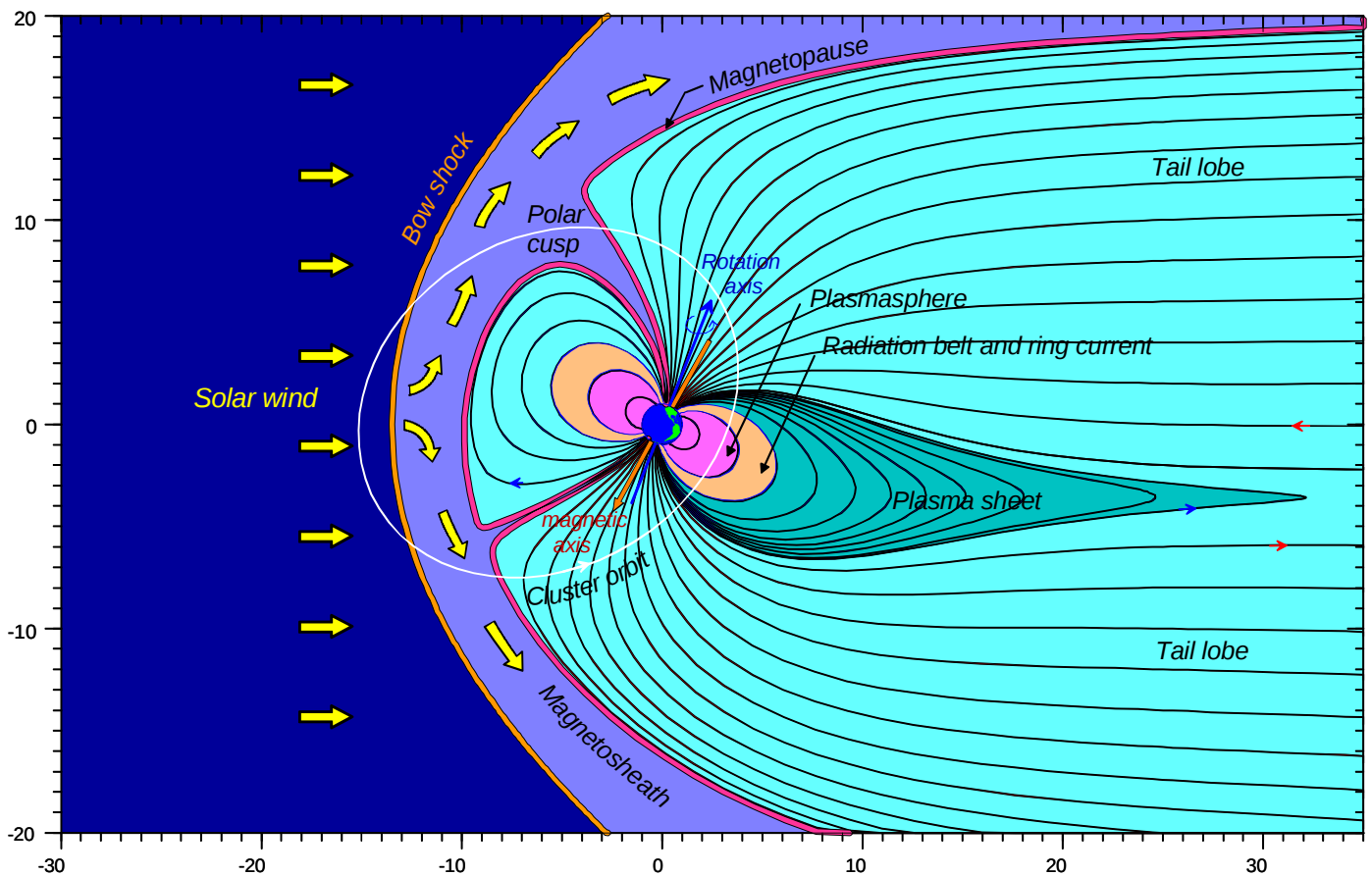
Duration of the day - Variation - Sun maximal elevation (°)

|    | Monday                                         | Tuesday                                        | Wednesday                                      | Thursday                                       | Friday                                         | Saturday                                       | Sunday                                         |
|----|------------------------------------------------|------------------------------------------------|------------------------------------------------|------------------------------------------------|------------------------------------------------|------------------------------------------------|------------------------------------------------|
| 48 | 26 331 - 35<br>08:22 - 16:38<br>8:15 -3 m. 17° | 27 332 - 34<br>08:24 - 16:37<br>8:13 -2 m. 17° | 28 333 - 33<br>08:25 - 16:37<br>8:11 -2 m. 17° | 29 334 - 32<br>08:27 - 16:36<br>8:08 -3 m. 17° | 30 335 - 31<br>08:28 - 16:35<br>8:06 -2 m. 17° | 1 336 - 30<br>08:30 - 16:34<br>8:04 -2 m. 17°  | 2 337 - 29<br>08:31 - 16:34<br>8:02 -2 m. 16°  |
| 49 | 3 338 - 28<br>08:33 - 16:33<br>8:00 -2 m. 16°  | 4 339 - 27<br>08:34 - 16:33<br>7:58 -2 m. 16°  | 5 340 - 26<br>08:35 - 16:32<br>7:57 -1 m. 16°  | 6 341 - 25<br>08:36 - 16:32<br>7:55 -2 m. 16°  | 7 342 - 24<br>08:38 - 16:32<br>7:53 -2 m. 16°  | 8 343 - 23<br>08:39 - 16:31<br>7:52 -1 m. 16°  | 9 344 - 22<br>08:40 - 16:31<br>7:51 -1 m. 16°  |
| 50 | 10 345 - 21<br>08:41 - 16:31<br>7:49 -2 m. 15° | 11 346 - 20<br>08:42 - 16:31<br>7:48 -1 m. 15° | 12 347 - 19<br>08:43 - 16:31<br>7:47 -1 m. 15° | 13 348 - 18<br>08:44 - 16:31<br>7:46 -1 m. 15° | 14 349 - 17<br>08:45 - 16:31<br>7:46 +0 m. 15° | 15 350 - 16<br>08:46 - 16:31<br>7:45 -1 m. 15° | 16 351 - 15<br>08:47 - 16:31<br>7:44 -1 m. 15° |
| 51 | 17 352 - 14<br>08:47 - 16:31<br>7:44 +0 m. 15° | 18 353 - 13<br>08:48 - 16:32<br>7:43 -1 m. 15° | 19 354 - 12<br>08:49 - 16:32<br>7:43 +0 m. 15° | 20 355 - 11<br>08:49 - 16:32<br>7:43 +0 m. 15° | 21 356 - 10<br>08:50 - 16:33<br>7:43 +0 m. 15° | 22 357 - 9<br>08:50 - 16:34<br>7:43 +0 m. 15°  | 23 358 - 8<br>08:51 - 16:34<br>7:43 +0 m. 15°  |
| 52 | 24 359 - 7<br>08:51 - 16:35<br>7:43 +0 m. 15°  | 25 360 - 6<br>08:51 - 16:35<br>7:44 +1 m. 15°  | 26 361 - 5<br>08:52 - 16:36<br>7:44 +0 m. 15°  | 27 362 - 4<br>08:52 - 16:37<br>7:45 +1 m. 15°  | 28 363 - 3<br>08:52 - 16:38<br>7:45 +0 m. 15°  | 29 364 - 2<br>08:52 - 16:39<br>7:46 +1 m. 15°  | 30 365 - 1<br>08:52 - 16:40<br>7:47 +1 m. 15°  |
| 53 | 31 366 - 0<br>08:52 - 16:41<br>7:48 +1 m. 15°  |                                                |                                                |                                                |                                                |                                                |                                                |

## Visualisation of magnetic field lines of the Earth

Model: Tsyganenko 87 version exshor ikp=4 (kp= 2+) Date/Time: 16 janvier 2001 02:00 Coordinates: GSM

P. Robert, CETP/CNRS, 1996



**Illustration :** Visualization of magnetic field lines of the Earth, showing the magnetosphere.

The magnetic Earth's field lines, due to the internal field, initially dipolar and symmetric around the axis of the magnetic dipole, are deformed by the solar wind, which create a closed cavity, named magnetosphere, and a shock wave upstream of this cavity. The various regions are artificially colored. The color choice, here as well as from one season to another for the calendar, is purely esthetical.

The magnetic field model used is the one of Tsyganenko 1987. The computation of the magnetosphere geometries, from the magnetic field model, is done from a specific library developed at CETP, the "Comagnetolib". All the graphical is produced by an owner library, the "Rogralib".

### Calendar:

The sunrise and sunset time, the computation of the maximal elevation of the Sun at the local noon, the duration of the day, are computed thanks to a coordinate system library, developed initially for the CLUSTER mission in 1992, the "Rocotlib", completed by all the routines allowing calendar and time conversions. Sunrise, sunset and local noon time are now available for polar zones in the December 2011 version of this library.

Computations are done assuming a spherical Earth, and for a constant value of the indices of refraction of the air at the horizon. Computations have been checked with the ephemerid values delivered by the "Bureau Des Longitudes" in Paris. The accuracy is around one minute in time and a few minutes in angles. Sunrise and sunset are defined when the apparent upper edge of the sun reach the local horizon.

This calendar can be automatically produced for any city in the world, including polar zones, and for all years between 1901 and 2099.

For any more information, contact [Patrick.Robert@lpp.polytechnique.fr](mailto:Patrick.Robert@lpp.polytechnique.fr)

Many calendar examples computed for various places in the world are available here : <http://www.lpp.fr/?Patrick-Robert>