

# *Annual Final Report*

## *AFR*

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## **CV-Helios Network Annual Final Report for 2013**

In the year 2013, Solar Cycle no. 24

The Average CV was: 75,3 and the Average 6-rot. Smoothed CV was: 70,4

The Average CV-USAF was: 62,1

giving an Estimated STDEV of: 10,3

CV-Helios Network observed on 365 days

CV-Helios Network had a total of 5508 observations in 2013

CV-Helios Network have received 364 observation entries in the year 2013

CV-Helios Network's observers had an average of 15,5 observations per day

This Annual Final Report contain results from 33 CV-observers

A sincere thanks to all observers for their fine contributions in the passed year.

CV-Helios Network 01. April 2014



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Kjell Inge Malde  
Director



## CV-Helios Network Annual Final Report for 2013

| Collated results CV for the year 2013 |              |              |              |              |              |              |              |              |              |              |               |               |
|---------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|---------------|
| CV                                    | Jan          | Feb          | Mar          | Apr          | May          | Jun          | Jul          | Aug          | Sep          | Oct          | Nov           | Dec           |
| 1                                     | 67,85        | 48,50        | 58,36        | 65,34        | 127,30       | 27,80        | 53,13        | 64,98        | 58,19        | 37,19        | 85,56         | 100,24        |
| 2                                     | 71,97        | 44,87        | 59,79        | 77,66        | 116,76       | 48,19        | 86,32        | 70,03        | 63,10        | 50,19        | 96,97         | 109,65        |
| 3                                     | 98,50        | 53,12        | 72,34        | 84,78        | 107,83       | 61,25        | 94,92        | 64,09        | 59,89        | 64,11        | 121,16        | 93,98         |
| 4                                     | 149,33       | 42,63        | 64,26        | 86,30        | 122,02       | 59,49        | 100,29       | 56,97        | 56,55        | 56,61        | 131,20        | 102,27        |
| 5                                     | 154,13       | 40,03        | 48,19        | 94,88        | 108,20       | 72,79        | 95,05        | 45,85        | 42,92        | 33,13        | 115,00        | 74,10         |
| 6                                     | 148,22       | 45,10        | 53,98        | 97,53        | 99,80        | 61,71        | 98,05        | 41,67        | 31,36        | 25,56        | 116,00        | 72,69         |
| 7                                     | 156,88       | 47,15        | 38,09        | 115,90       | 95,19        | 43,58        | 98,76        | 42,57        | 21,23        | 36,45        | 101,67        | 71,88         |
| 8                                     | 150,43       | 46,39        | 40,62        | 112,03       | 112,67       | 29,75        | 91,30        | 47,22        | 11,18        | 53,35        | 88,83         | 71,93         |
| 9                                     | 150,75       | 46,05        | 52,10        | 141,43       | 105,45       | 26,82        | 79,39        | 32,76        | 4,09         | 53,85        | 73,18         | 132,93        |
| 10                                    | 133,60       | 44,68        | 59,56        | 138,91       | 109,16       | 24,05        | 65,90        | 27,68        | 8,98         | 86,40        | 90,18         | 160,64        |
| 11                                    | 124,42       | 48,33        | 75,71        | 129,73       | 116,84       | 15,98        | 55,79        | 49,80        | 20,43        | 91,33        | 115,76        | 165,57        |
| 12                                    | 112,71       | 49,81        | 96,48        | 113,78       | 125,64       | 20,37        | 49,98        | 62,51        | 16,42        | 97,20        | 161,91        | 134,67        |
| 13                                    | 108,80       | 35,30        | 103,80       | 99,98        | 143,66       | 32,79        | 30,97        | 77,31        | 16,73        | 126,82       | 133,53        | 138,34        |
| 14                                    | 106,15       | 26,63        | 105,13       | 97,75        | 160,82       | 48,18        | 35,30        | 84,45        | 10,67        | 92,20        | 147,56        | 129,80        |
| 15                                    | 89,21        | 28,40        | 99,08        | 70,08        | 148,43       | 64,70        | 67,44        | 95,31        | 7,69         | 96,75        | 163,27        | 115,67        |
| 16                                    | 74,82        | 25,27        | 99,71        | 67,81        | 168,88       | 91,97        | 62,28        | 85,75        | 9,28         | 102,63       | 140,45        | 94,13         |
| 17                                    | 68,30        | 39,05        | 108,18       | 72,74        | 148,43       | 101,76       | 53,25        | 82,12        | 20,15        | 135,36       | 151,00        | 114,75        |
| 18                                    | 62,67        | 71,70        | 111,94       | 56,09        | 119,55       | 110,50       | 55,45        | 97,44        | 29,00        | 136,18       | 147,20        | 111,10        |
| 19                                    | 58,41        | 106,94       | 63,14        | 46,80        | 92,53        | 119,62       | 49,68        | 111,14       | 35,73        | 101,08       | 137,27        | 113,11        |
| 20                                    | 45,88        | 88,18        | 45,42        | 65,03        | 67,00        | 122,25       | 43,29        | 125,30       | 49,46        | 97,77        | 109,10        | 121,38        |
| 21                                    | 38,11        | 78,53        | 44,98        | 71,85        | 73,18        | 122,75       | 45,75        | 112,38       | 57,07        | 112,60       | 77,88         | 109,08        |
| 22                                    | 43,17        | 63,58        | 32,41        | 66,92        | 87,25        | 134,33       | 48,85        | 115,08       | 58,77        | 97,78        | 65,40         | 106,19        |
| 23                                    | 57,05        | 31,94        | 33,19        | 67,35        | 81,65        | 97,04        | 53,56        | 90,03        | 52,52        | 121,83       | 69,92         | 97,82         |
| 24                                    | 48,77        | 23,00        | 26,00        | 84,09        | 69,35        | 79,64        | 58,69        | 49,56        | 42,49        | 141,89       | 67,60         | 86,97         |
| 25                                    | 49,67        | 40,36        | 25,87        | 120,36       | 75,28        | 52,01        | 67,15        | 28,45        | 43,33        | 128,57       | 24,75         | 59,69         |
| 26                                    | 40,50        | 55,69        | 17,05        | 108,24       | 75,75        | 34,97        | 51,75        | 28,25        | 41,13        | 151,95       | 19,57         | 64,17         |
| 27                                    | 33,66        | 51,80        | 16,00        | 83,86        | 61,86        | 31,20        | 45,06        | 40,00        | 43,44        | 171,38       | 65,27         | 74,10         |
| 28                                    | 30,84        | 61,70        | 30,80        | 85,93        | 46,36        | 35,47        | 69,67        | 45,94        | 41,13        | 182,15       | 116,88        | 74,11         |
| 29                                    | 42,00        |              | 50,99        | 126,44       | 32,18        | 35,30        | 82,29        | 47,68        | 32,96        | 138,90       | 96,00         | 82,53         |
| 30                                    | 32,50        |              | 71,81        | 143,44       | 24,20        | 45,89        | 78,80        | 53,02        | 28,67        | 128,29       | 98,48         | 77,91         |
| 31                                    | 33,33        |              | 79,09        |              | 25,79        |              | 73,92        | 64,67        |              | 120,52       |               | 87,56         |
| <b>77,02</b>                          | <b>83,31</b> | <b>49,45</b> | <b>60,78</b> | <b>93,10</b> | <b>98,36</b> | <b>61,74</b> | <b>65,87</b> | <b>65,81</b> | <b>33,82</b> | <b>99,03</b> | <b>104,28</b> | <b>101,58</b> |

## CV-Helios Network Annual Final Report for 2013

| Collated results Observers for the year 2013 |              |              |              |              |              |              |              |              |              |              |              |              |  |
|--|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--|
| Obsrvrs.                                     | Jan          | Feb          | Mar          | Apr          | May          | Jun          | Jul          | Aug          | Sep          | Oct          | Nov          | Dec          |  |
| 1  | 15           | 6            | 11           | 19           | 23           | 11           | 18           | 22           | 20           | 16           | 9            | 17           |  |
| 2  | 16           | 10           | 14           | 11           | 14           | 15           | 19           | 22           | 14           | 19           | 11           | 17           |  |
| 3  | 10           | 14           | 22           | 12           | 15           | 19           | 13           | 22           | 17           | 20           | 11           | 19           |  |
| 4  | 9            | 8            | 18           | 11           | 18           | 15           | 16           | 23           | 19           | 12           | 10           | 11           |  |
| 5  | 8            | 17           | 18           | 8            | 21           | 20           | 21           | 22           | 20           | 12           | 8            | 10           |  |
| 6  | 9            | 13           | 18           | 15           | 20           | 19           | 22           | 22           | 20           | 14           | 6            | 12           |  |
| 7  | 8            | 10           | 11           | 23           | 15           | 20           | 21           | 14           | 20           | 13           | 9            | 16           |  |
| 8  | 7            | 15           | 11           | 18           | 20           | 19           | 21           | 21           | 21           | 15           | 13           | 14           |  |
| 9  | 4            | 20           | 10           | 17           | 21           | 18           | 20           | 18           | 15           | 15           | 13           | 15           |  |
| 10   | 12           | 18           | 9            | 11           | 19           | 15           | 18           | 23           | 16           | 10           | 17           | 14           |  |
| 11   | 12           | 6            | 7            | 12           | 19           | 18           | 18           | 23           | 17           | 9            | 14           | 11           |  |
| 12   | 16           | 13           | 11           | 17           | 19           | 19           | 15           | 21           | 19           | 16           | 11           | 9            |  |
| 13   | 16           | 11           | 9            | 26           | 16           | 14           | 18           | 19           | 11           | 11           | 12           | 11           |  |
| 14   | 11           | 8            | 18           | 24           | 17           | 20           | 23           | 20           | 12           | 10           | 9            | 14           |  |
| 15   | 8            | 10           | 12           | 18           | 21           | 23           | 19           | 17           | 16           | 13           | 10           | 13           |  |
| 16   | 10           | 11           | 17           | 18           | 17           | 23           | 16           | 21           | 16           | 8            | 11           | 18           |  |
| 17   | 10           | 11           | 17           | 20           | 14           | 25           | 18           | 24           | 15           | 11           | 9            | 12           |  |
| 18   | 12           | 11           | 11           | 21           | 21           | 22           | 19           | 21           | 16           | 11           | 10           | 10           |  |
| 19   | 13           | 8            | 9            | 15           | 23           | 19           | 17           | 15           | 15           | 16           | 14           | 12           |  |
| 20   | 8            | 15           | 12           | 19           | 13           | 19           | 18           | 16           | 17           | 12           | 13           | 13           |  |
| 21   | 9            | 9            | 13           | 22           | 11           | 12           | 19           | 19           | 18           | 10           | 8            | 12           |  |
| 22   | 9            | 10           | 18           | 20           | 12           | 18           | 18           | 17           | 13           | 18           | 10           | 17           |  |
| 23   | 10           | 14           | 16           | 22           | 15           | 17           | 19           | 17           | 14           | 15           | 12           | 11           |  |
| 24   | 13           | 8            | 14           | 29           | 13           | 11           | 16           | 16           | 14           | 16           | 13           | 12           |  |
| 25   | 9            | 11           | 15           | 28           | 15           | 16           | 17           | 20           | 15           | 11           | 13           | 13           |  |
| 26   | 16           | 8            | 15           | 17           | 19           | 14           | 18           | 17           | 17           | 17           | 14           | 14           |  |
| 27   | 11           | 5            | 15           | 14           | 14           | 15           | 18           | 18           | 16           | 16           | 15           | 10           |  |
| 28   | 15           | 10           | 15           | 14           | 14           | 19           | 21           | 18           | 16           | 13           | 8            | 19           |  |
| 29   | 6            |              | 14           | 14           | 11           | 20           | 19           | 17           | 17           | 10           | 7            | 15           |  |
| 30   | 13           |              | 16           | 19           | 15           | 22           | 17           | 17           | 18           | 16           | 12           | 17           |  |
| 31   | 12           |              | 11           |              | 13           |              | 18           | 20           |              | 17           |              | 17           |  |
| <b>15,07</b>                                 | <b>10,87</b> | <b>11,07</b> | <b>13,77</b> | <b>17,80</b> | <b>16,71</b> | <b>17,90</b> | <b>18,39</b> | <b>19,42</b> | <b>16,47</b> | <b>13,61</b> | <b>11,07</b> | <b>13,71</b> |  |

## CV-Helios Network Annual Final Report for 2013

| Collated results CV-USAF for the year 2013 |              |              |              |              |              |              |              |              |              |              |              |              |
|--|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| USAF-CV                                    | Jan          | Feb          | Mar          | Apr          | May          | Jun          | Jul          | Aug          | Sep          | Oct          | Nov          | Dec          |
| 1  | 51,90        | 34,14        | 43,05        | 49,53        | 111,90       | 16,77        | 38,29        | 49,20        | 42,89        | 24,39        | 69,04        | 83,77        |
| 2  | 55,82        | 30,96        | 44,36        | 61,31        | 100,81       | 33,87        | 69,79        | 53,97        | 47,44        | 35,65        | 80,46        | 93,42        |
| 3  | 82,00        | 38,28        | 56,18        | 68,27        | 91,54        | 45,72        | 78,39        | 48,36        | 44,45        | 48,38        | 105,42       | 77,44        |
| 4  | 135,59       | 29,01        | 48,52        | 69,78        | 106,32       | 44,09        | 83,82        | 41,77        | 41,39        | 41,44        | 116,05       | 85,84        |
| 5  | 140,83       | 26,79        | 33,87        | 78,34        | 91,93        | 56,60        | 78,51        | 31,82        | 29,26        | 21,03        | 98,97        | 57,86        |
| 6  | 134,38       | 31,16        | 39,05        | 81,02        | 83,32        | 46,14        | 81,54        | 28,19        | 19,59        | 15,02        | 100,01       | 56,51        |
| 7  | 143,84       | 32,95        | 25,15        | 99,90        | 78,65        | 29,83        | 82,26        | 28,96        | 11,77        | 23,77        | 85,22        | 55,73        |
| 8  | 136,79       | 32,28        | 27,29        | 95,88        | 96,54        | 18,31        | 74,76        | 33,01        | 4,89         | 38,48        | 72,29        | 55,78        |
| 9  | 137,14       | 31,99        | 37,36        | 127,02       | 89,09        | 16,00        | 62,98        | 20,73        | 1,04         | 38,93        | 56,98        | 117,90       |
| 10   | 118,61       | 30,79        | 44,15        | 124,31       | 92,91        | 13,87        | 50,06        | 16,67        | 3,58         | 69,88        | 73,63        | 147,99       |
| 11   | 108,85       | 34,00        | 59,42        | 114,48       | 100,89       | 8,03         | 40,70        | 35,30        | 11,18        | 74,79        | 99,76        | 153,44       |
| 12   | 96,58        | 35,31        | 79,96        | 97,70        | 110,15       | 11,13        | 35,46        | 46,88        | 8,34         | 80,69        | 149,39       | 119,75       |
| 13   | 92,54        | 22,82        | 87,40        | 83,50        | 129,43       | 20,75        | 19,28        | 60,96        | 8,55         | 111,39       | 118,53       | 123,69       |
| 14   | 89,81        | 15,85        | 88,77        | 81,24        | 148,19       | 33,86        | 22,82        | 67,94        | 4,58         | 75,65        | 133,66       | 114,56       |
| 15   | 72,66        | 17,24        | 82,60        | 54,02        | 134,61       | 48,93        | 51,51        | 78,78        | 2,84         | 80,23        | 150,89       | 99,67        |
| 16   | 58,56        | 14,80        | 83,23        | 51,86        | 157,11       | 75,43        | 46,67        | 69,24        | 3,75         | 86,20        | 125,97       | 77,59        |
| 17   | 52,33        | 25,95        | 91,90        | 56,56        | 134,61       | 85,31        | 38,39        | 65,65        | 10,98        | 120,50       | 137,41       | 98,71        |
| 18   | 47,03        | 55,56        | 95,79        | 40,96        | 103,73       | 94,30        | 40,38        | 80,93        | 17,71        | 121,38       | 133,27       | 94,92        |
| 19   | 43,09        | 90,62        | 47,48        | 32,65        | 75,99        | 103,80       | 35,19        | 94,96        | 23,18        | 84,62        | 122,55       | 97,00        |
| 20   | 31,83        | 71,64        | 31,43        | 49,24        | 51,10        | 106,57       | 29,59        | 109,78       | 35,00        | 81,26        | 92,85        | 105,65       |
| 21   | 25,16        | 62,15        | 31,06        | 55,70        | 56,98        | 107,09       | 31,73        | 96,24        | 41,86        | 96,47        | 61,51        | 92,83        |
| 22   | 29,48        | 47,88        | 20,45        | 51,02        | 70,72        | 119,40       | 34,46        | 99,05        | 43,42        | 81,28        | 49,59        | 89,86        |
| 23   | 41,84        | 20,07        | 21,08        | 51,42        | 65,20        | 80,52        | 38,67        | 73,48        | 37,73        | 106,13       | 53,86        | 81,31        |
| 24   | 34,38        | 13,08        | 15,36        | 67,59        | 53,32        | 63,23        | 43,35        | 35,09        | 28,89        | 127,52       | 51,66        | 70,44        |
| 25   | 35,18        | 27,07        | 15,26        | 104,58       | 59,00        | 37,27        | 51,24        | 17,28        | 29,62        | 113,25       | 14,40        | 44,27        |
| 26   | 27,19        | 40,60        | 8,77         | 91,96        | 59,45        | 22,55        | 37,04        | 17,12        | 27,73        | 138,45       | 10,56        | 48,44        |
| 27   | 21,47        | 37,09        | 8,05         | 67,37        | 46,28        | 19,47        | 31,12        | 26,76        | 29,71        | 159,89       | 49,46        | 57,86        |
| 28   | 19,18        | 46,13        | 19,15        | 69,41        | 32,26        | 22,96        | 53,62        | 31,89        | 27,72        | 171,96       | 100,93       | 57,87        |
| 29   | 28,47        |              | 36,36        | 110,99       | 20,26        | 22,82        | 65,82        | 33,42        | 20,89        | 124,30       | 79,47        | 66,06        |
| 30   | 20,52        |              | 55,67        | 129,19       | 13,99        | 31,84        | 62,42        | 38,19        | 17,45        | 112,96       | 81,99        | 61,55        |
| 31   | 21,20        |              | 62,70        |              | 15,20        |              | 57,69        | 48,90        |              | 104,74       |              | 71,02        |
| <b>62,48</b>                               | <b>68,85</b> | <b>35,58</b> | <b>46,48</b> | <b>77,23</b> | <b>83,27</b> | <b>47,88</b> | <b>50,57</b> | <b>50,99</b> | <b>22,58</b> | <b>84,21</b> | <b>89,19</b> | <b>85,77</b> |

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| Collated results STDEV for the year 2013 |       |       |       |       |       |       |       |       |       |       |       |       |
|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| std. Dev.                                | Jan   | Feb   | Mar   | Apr   | May   | Jun   | Jul   | Aug   | Sep   | Oct   | Nov   | Dec   |
| 1  | 11,28 | 10,15 | 10,83 | 11,18 | 10,89 | 7,80  | 10,50 | 11,16 | 10,82 | 9,05  | 11,68 | 11,65 |
| 2  | 11,42 | 9,84  | 10,91 | 11,56 | 11,28 | 10,13 | 11,68 | 11,36 | 11,08 | 10,28 | 11,68 | 11,48 |
| 3  | 11,66 | 10,50 | 11,43 | 11,67 | 11,52 | 10,99 | 11,69 | 11,12 | 10,91 | 11,12 | 11,13 | 11,70 |
| 4  | 9,71  | 9,63  | 11,13 | 11,68 | 11,10 | 10,89 | 11,65 | 10,75 | 10,72 | 10,73 | 10,71 | 11,62 |
| 5  | 9,40  | 9,36  | 10,13 | 11,69 | 11,51 | 11,44 | 11,69 | 9,93  | 9,66  | 8,55  | 11,33 | 11,48 |
| 6  | 9,78  | 9,86  | 10,56 | 11,67 | 11,65 | 11,01 | 11,67 | 9,53  | 8,32  | 7,45  | 11,30 | 11,44 |
| 7  | 9,21  | 10,04 | 9,15  | 11,31 | 11,69 | 9,72  | 11,66 | 9,62  | 6,69  | 8,96  | 11,63 | 11,42 |
| 8  | 9,65  | 9,97  | 9,42  | 11,42 | 11,40 | 8,09  | 11,70 | 10,04 | 4,44  | 10,51 | 11,70 | 11,42 |
| 9  | 9,62  | 9,94  | 10,43 | 10,19 | 11,57 | 7,65  | 11,60 | 8,50  | 2,15  | 10,55 | 11,45 | 10,63 |
| 10                                       | 10,60 | 9,82  | 10,90 | 10,33 | 11,49 | 7,20  | 11,20 | 7,78  | 3,82  | 11,68 | 11,70 | 8,95  |
| 11                                       | 11,01 | 10,14 | 11,52 | 10,78 | 11,28 | 5,62  | 10,67 | 10,25 | 6,54  | 11,70 | 11,31 | 8,58  |
| 12                                       | 11,40 | 10,25 | 11,68 | 11,37 | 10,96 | 6,53  | 10,27 | 11,05 | 5,72  | 11,68 | 8,85  | 10,55 |
| 13                                       | 11,50 | 8,83  | 11,59 | 11,65 | 10,06 | 8,51  | 8,26  | 11,56 | 5,78  | 10,91 | 10,60 | 10,36 |
| 14                                       | 11,55 | 7,62  | 11,57 | 11,67 | 8,93  | 10,12 | 8,83  | 11,67 | 4,30  | 11,70 | 9,83  | 10,78 |
| 15                                       | 11,70 | 7,89  | 11,66 | 11,36 | 9,77  | 11,15 | 11,26 | 11,69 | 3,42  | 11,68 | 8,75  | 11,31 |
| 16                                       | 11,50 | 7,40  | 11,65 | 11,28 | 8,32  | 11,70 | 11,04 | 11,68 | 3,91  | 11,61 | 10,24 | 11,70 |
| 17                                       | 11,30 | 9,26  | 11,51 | 11,44 | 9,77  | 11,63 | 10,51 | 11,64 | 6,49  | 10,51 | 9,61  | 11,34 |
| 18                                       | 11,06 | 11,41 | 11,42 | 10,69 | 11,19 | 11,46 | 10,65 | 11,67 | 7,98  | 10,47 | 9,85  | 11,44 |
| 19                                       | 10,83 | 11,54 | 11,08 | 10,01 | 11,70 | 11,19 | 10,24 | 11,44 | 8,88  | 11,64 | 10,41 | 11,39 |
| 20                                       | 9,93  | 11,69 | 9,89  | 11,16 | 11,25 | 11,09 | 9,69  | 10,97 | 10,23 | 11,67 | 11,49 | 11,12 |
| 21                                       | 9,15  | 11,58 | 9,85  | 11,42 | 11,46 | 11,07 | 9,92  | 11,41 | 10,75 | 11,40 | 11,57 | 11,49 |
| 22                                       | 9,68  | 11,10 | 8,46  | 11,24 | 11,69 | 10,56 | 10,18 | 11,33 | 10,85 | 11,67 | 11,18 | 11,55 |
| 23                                       | 10,75 | 8,40  | 8,56  | 11,26 | 11,63 | 11,68 | 10,53 | 11,70 | 10,46 | 11,11 | 11,35 | 11,67 |
| 24                                       | 10,17 | 7,01  | 7,52  | 11,66 | 11,33 | 11,60 | 10,85 | 10,24 | 9,61  | 10,16 | 11,27 | 11,69 |
| 25                                       | 10,24 | 9,40  | 7,50  | 11,16 | 11,51 | 10,42 | 11,25 | 7,90  | 9,70  | 10,83 | 7,31  | 10,90 |
| 26                                       | 9,41  | 10,67 | 5,85  | 11,51 | 11,52 | 8,79  | 10,40 | 7,87  | 9,48  | 9,55  | 6,37  | 11,13 |
| 27                                       | 8,62  | 10,40 | 5,62  | 11,66 | 11,02 | 8,30  | 9,86  | 9,36  | 9,71  | 8,12  | 11,17 | 11,48 |
| 28                                       | 8,25  | 11,01 | 8,24  | 11,68 | 9,97  | 8,85  | 11,34 | 9,93  | 9,48  | 7,21  | 11,28 | 11,48 |
| 29                                       | 9,57  |       | 10,34 | 10,92 | 8,43  | 8,83  | 11,64 | 10,08 | 8,53  | 10,33 | 11,69 | 11,65 |
| 30                                       | 8,47  |       | 11,41 | 10,07 | 7,22  | 9,93  | 11,59 | 10,49 | 7,93  | 10,84 | 11,66 | 11,57 |
| 31                                       | 8,58  |       | 11,59 |       | 7,49  |       | 11,48 | 11,15 |       | 11,15 |       | 11,69 |
| 10,28                                    | 10,23 | 9,81  | 10,11 | 11,22 | 10,66 | 9,80  | 10,82 | 10,48 | 7,95  | 10,48 | 10,67 | 11,18 |

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| Collated results CV 6 rot. averages for the year 2013 |              |              |              |              |              |              |              |              |              |              |              |              |
|---|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| CV-6 rot.   | Jan          | Feb          | Mar          | Apr          | May          | Jun          | Jul          | Aug          | Sep          | Oct          | Nov          | Dec          |
| 1   | 66,66        | 68,29        | 65,21        | 63,90        | 68,54        | 75,04        | 70,55        | 74,92        | 74,50        | 67,03        | 65,15        | 73,56        |
| 2   | 67,02        | 68,34        | 65,17        | 63,96        | 68,70        | 74,89        | 70,72        | 74,70        | 74,68        | 66,90        | 65,21        | 73,48        |
| 3   | 67,42        | 68,42        | 65,12        | 63,91        | 68,88        | 74,85        | 71,02        | 74,55        | 74,85        | 66,88        | 65,45        | 73,23        |
| 4   | 68,09        | 68,40        | 65,10        | 63,80        | 69,16        | 74,79        | 71,40        | 74,42        | 75,03        | 66,82        | 65,82        | 73,27        |
| 5   | 68,80        | 68,27        | 65,01        | 63,74        | 69,19        | 74,87        | 71,71        | 74,31        | 75,14        | 66,51        | 66,07        | 73,23        |
| 6   | 69,38        | 68,15        | 64,91        | 63,74        | 69,30        | 74,97        | 71,96        | 74,37        | 75,22        | 65,93        | 66,31        | 73,36        |
| 7   | 69,88        | 68,05        | 64,76        | 64,00        | 69,48        | 74,93        | 72,27        | 74,49        | 75,26        | 65,49        | 66,55        | 73,58        |
| 8   | 70,32        | 68,02        | 64,51        | 64,26        | 69,82        | 74,90        | 72,52        | 74,53        | 75,14        | 65,31        | 66,81        | 73,83        |
| 9   | 70,68        | 67,99        | 64,37        | 64,62        | 70,07        | 74,82        | 72,76        | 74,39        | 74,85        | 65,11        | 67,06        | 74,43        |
| 10  | 70,83        | 67,73        | 64,40        | 65,06        | 70,28        | 74,77        | 72,96        | 74,24        | 74,47        | 64,87        | 67,46        | 75,19        |
| 11  | 70,90        | 67,26        | 64,47        | 65,44        | 70,50        | 74,70        | 73,11        | 74,17        | 74,11        | 64,55        | 68,01        | 75,92        |
| 12  | 70,82        | 66,81        | 64,58        | 65,83        | 70,73        | 74,66        | 73,16        | 74,19        | 73,81        | 64,36        | 68,83        | 76,42        |
| 13  | 70,70        | 66,39        | 64,73        | 66,20        | 71,09        | 74,50        | 73,15        | 74,30        | 73,44        | 64,43        | 69,35        | 76,73        |
| 14  | 70,58        | 65,78        | 64,91        | 66,61        | 71,71        | 74,38        | 73,16        | 74,38        | 72,99        | 64,33        | 69,88        | 76,95        |
| 15  | 70,53        | 65,28        | 65,03        | 66,88        | 72,32        | 74,34        | 73,27        | 74,56        | 72,51        | 64,18        | 70,51        | 77,04        |
| 16  | 70,46        | 64,85        | 65,17        | 67,18        | 73,09        | 74,30        | 73,38        | 74,79        | 71,99        | 64,14        | 70,92        | 77,04        |
| 17  | 70,40        | 64,58        | 65,39        | 67,50        | 73,69        | 74,01        | 73,38        | 74,97        | 71,52        | 64,36        | 71,47        | 77,14        |
| 18  | 70,16        | 64,62        | 65,73        | 67,73        | 74,25        | 73,74        | 73,46        | 75,33        | 70,99        | 64,61        | 72,10        | 77,21        |
| 19  | 69,84        | 64,81        | 65,75        | 67,81        | 74,70        | 73,56        | 73,52        | 75,76        | 70,52        | 64,54        | 72,76        | 77,35        |
| 20  | 69,40        | 64,89        | 65,72        | 67,99        | 75,02        | 73,35        | 73,51        | 76,20        | 69,96        | 64,49        | 73,26        | 77,60        |
| 21  | 68,85        | 65,03        | 65,73        | 68,08        | 75,31        | 73,19        | 73,50        | 76,53        | 69,46        | 64,51        | 73,58        | 77,87        |
| 22  | 68,52        | 65,12        | 65,59        | 68,20        | 75,55        | 73,08        | 73,51        | 76,77        | 69,03        | 64,40        | 73,89        | 78,17        |
| 23  | 68,46        | 65,02        | 65,49        | 68,10        | 75,81        | 72,86        | 73,56        | 76,73        | 68,65        | 64,37        | 74,19        | 78,46        |
| 24  | 68,44        | 64,87        | 65,33        | 68,05        | 76,01        | 72,59        | 73,64        | 76,40        | 68,30        | 64,36        | 74,40        | 78,81        |
| 25  | 68,55        | 64,85        | 65,03        | 68,07        | 76,14        | 72,22        | 73,76        | 75,93        | 67,97        | 64,17        | 74,26        | 78,95        |
| 26  | 68,59        | 64,94        | 64,71        | 67,99        | 76,27        | 71,77        | 73,77        | 75,50        | 67,80        | 64,19        | 73,98        | 78,93        |
| 27  | 68,53        | 65,06        | 64,29        | 67,73        | 76,31        | 71,31        | 73,83        | 75,13        | 67,65        | 64,20        | 73,82        | 79,01        |
| 28  | 68,43        | 65,19        | 64,02        | 67,56        | 76,10        | 70,98        | 74,09        | 74,75        | 67,45        | 64,41        | 73,91        | 79,13        |
| 29  | 68,36        |              | 63,92        | 67,76        | 75,80        | 70,74        | 74,42        | 74,36        | 67,31        | 64,53        | 73,82        | 79,30        |
| 30  | 68,26        |              | 63,98        | 68,18        | 75,51        | 70,61        | 74,75        | 74,30        | 67,20        | 64,74        | 73,69        | 79,47        |
| 31  | 68,23        |              | 63,96        |              | 75,22        |              | 74,96        | 74,42        |              | 65,07        |              | 79,74        |
| <b>70,46</b>  | <b>69,23</b> | <b>66,32</b> | <b>64,91</b> | <b>66,33</b> | <b>72,73</b> | <b>73,66</b> | <b>73,06</b> | <b>74,98</b> | <b>71,73</b> | <b>64,96</b> | <b>70,28</b> | <b>76,59</b> |



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| NOAA Regions year 2013 |      |          |       |      |       |     | 299 regions |      |          |       |      |       |     |
|------------------------|------|----------|-------|------|-------|-----|-------------|------|----------|-------|------|-------|-----|
| Reg.                   | Date | Lat.     | Long. | Rot. | Class |     | Reg.        | Date | Lat.     | Long. | Rot. | Class |     |
| 1                      | 1641 | 01.01.13 | 05    | 274  | 2132  | CSO | 271         | 1911 | 01.12.13 | -12   | 222  | 2144  | CSO |
| 2                      | 1642 | 01.01.13 | -24   | 255  | 2132  | HAX | 272         | 1912 | 03.12.13 | -21   | 145  | 2144  | HSX |
| 3                      | 1643 | 03.01.13 | -14   | 256  | 2132  | BXO | 273         | 1913 | 03.12.13 | -13   | 267  | 2144  | DAO |
| 4                      | 1644 | 03.01.13 | 15    | 235  | 2132  | ESO | 274         | 1914 | 03.12.13 | -18   | 230  | 2144  | AXX |
| 5                      | 1645 | 04.01.13 | -13   | 293  | 2132  | DRO | 275         | 1915 | 04.12.13 | -29   | 206  | 2144  | BXO |
| 6                      | 1646 | 04.01.13 | 13    | 231  | 2132  | HSX | 276         | 1916 | 05.12.13 | -14   | 165  | 2144  | BXO |
| 7                      | 1647 | 05.01.13 | 16    | 329  | 2132  | CAO | 277         | 1917 | 08.12.13 | -16   | 83   | 2144  | DAO |
| 8                      | 1648 | 05.01.13 | 05    | 221  | 2132  | CRO | 278         | 1918 | 09.12.13 | -09   | 56   | 2144  | HAX |
| 9                      | 1649 | 05.01.13 | -14   | 200  | 2132  | HSX | 279         | 1919 | 10.12.13 | -06   | 144  | 2144  | CRO |
| 10                     | 1650 | 05.01.13 | -26   | 197  | 2132  | HSX | 280         | 1920 | 10.12.13 | 12    | 47   | 2144  | HSX |
| 11                     | 1651 | 05.01.13 | 19    | 225  | 2132  | AXX | 281         | 1921 | 10.12.13 | 06    | 43   | 2144  | HSX |
| 12                     | 1652 | 06.01.13 | 20    | 187  | 2132  | HSX | 282         | 1922 | 11.12.13 | 12    | 120  | 2144  | DAO |
| 13                     | 1653 | 06.01.13 | 09    | 183  | 2132  | HRX | 283         | 1923 | 11.12.13 | 17    | 77   | 2144  | BXO |
| 14                     | 1654 | 09.01.13 | 08    | 149  | 2132  | HHX | 284         | 1924 | 12.12.13 | -13   | 151  | 2144  | CRO |
| 15                     | 1655 | 10.01.13 | -22   | 210  | 2132  | BXO | 285         | 1925 | 14.12.13 | -08   | 11   | 2144  | CRO |
| 16                     | 1656 | 12.01.13 | 22    | 130  | 2132  | AXX | 286         | 1926 | 15.12.13 | 09    | 54   | 2144  | CRO |
| 17                     | 1657 | 12.01.13 | -17   | 159  | 2132  | CRO | 287         | 1927 | 17.12.13 | -25   | 100  | 2144  | BXO |
| 18                     | 1658 | 14.01.13 | -12   | 90   | 2132  | CSO | 288         | 1928 | 18.12.13 | -15   | 04   | 2144  | DAO |
| 19                     | 1659 | 18.01.13 | 04    | 50   | 2132  | BXO | 289         | 1929 | 19.12.13 | -11   | 305  | 2145  | HRX |
| 20                     | 1660 | 20.01.13 | 11    | 64   | 2132  | DSO | 290         | 1930 | 19.12.13 | -09   | 325  | 2145  | CAI |
| 21                     | 1661 | 23.01.13 | 13    | 336  | 2133  | HRX | 291         | 1931 | 19.12.13 | -14   | 284  | 2145  | HAX |
| 22                     | 1662 | 24.01.13 | 26    | 319  | 2133  | HSX | 292         | 1932 | 20.12.13 | 04    | 331  | 2145  | AXX |
| 23                     | 1663 | 27.01.13 | -10   | 299  | 2133  | BXO | 293         | 1933 | 21.12.13 | -13   | 27   | 2144  | CSO |
| 24                     | 1664 | 28.01.13 | 29    | 23   | 2132  | CRO | 294         | 1934 | 21.12.13 | -15   | 269  | 2145  | CAO |
| 25                     | 1665 | 30.01.13 | 12    | 243  | 2133  | HAX | 295         | 1935 | 24.12.13 | -05   | 244  | 2145  | BXO |
| 26                     | 1666 | 30.01.13 | -23   | 244  | 2133  | AXX | 296         | 1936 | 24.12.13 | -17   | 223  | 2145  | BXO |
| 27                     | 1667 | 02.02.13 | 24    | 204  | 2133  | CAO | 297         | 1937 | 27.12.13 | -12   | 194  | 2145  | BXO |
| 28                     | 1668 | 04.02.13 | 12    | 255  | 2133  | DAO | 298         | 1938 | 28.12.13 | -12   | 181  | 2145  | HAX |
| 29                     | 1669 | 06.02.13 | 08    | 159  | 2133  | BXO | 299         | 1939 | 30.12.13 | -06   | 285  | 2145  | BXO |
| 30                     | 1670 | 08.02.13 | 18    | 161  | 2133  | DRO | 300         |      |          |       |      |       |     |
| 31                     | 1671 | 12.02.13 | 14    | 76   | 2133  | HSX | 301         |      |          |       |      |       |     |
| 32                     | 1672 | 12.02.13 | -18   | 95   | 2133  | CRO | 302         |      |          |       |      |       |     |
| 33                     | 1673 | 16.02.13 | -11   | 13   | 2133  | HSX | 303         |      |          |       |      |       |     |
| 34                     | 1674 | 16.02.13 | 14    | 84   | 2133  | BXO | 304         |      |          |       |      |       |     |
| 35                     | 1675 | 17.02.13 | 12    | 36   | 2133  | BXO | 305         |      |          |       |      |       |     |
| 36                     | 1676 | 17.02.13 | -18   | 350  | 2134  | HAX | 306         |      |          |       |      |       |     |
| 37                     | 1677 | 18.02.13 | -27   | 350  | 2134  | BXO | 307         |      |          |       |      |       |     |
| 38                     | 1678 | 19.02.13 | 10    | 67   | 2133  | DRO | 308         |      |          |       |      |       |     |
| 39                     | 1679 | 20.02.13 | -14   | 345  | 2134  | AXX | 309         |      |          |       |      |       |     |
| 40                     | 1680 | 26.02.13 | -28   | 274  | 2134  | DAO | 310         |      |          |       |      |       |     |
| 41                     | 1681 | 26.02.13 | 16    | 249  | 2134  | HSX | 311         |      |          |       |      |       |     |
| 42                     | 1682 | 26.02.13 | -18   | 300  | 2134  | DRO | 312         |      |          |       |      |       |     |
| 43                     | 1683 | 28.02.13 | -17   | 203  | 2134  | HSX | 313         |      |          |       |      |       |     |
| 44                     | 1684 | 02.03.13 | 18    | 244  | 2134  | AXX | 314         |      |          |       |      |       |     |
| 45                     | 1685 | 02.03.13 | -13   | 185  | 2134  | HRX | 315         |      |          |       |      |       |     |
| 46                     | 1686 | 04.03.13 | -13   | 261  | 2134  | DRO | 316         |      |          |       |      |       |     |
| 47                     | 1687 | 04.03.13 | 06    | 166  | 2134  | CRO | 317         |      |          |       |      |       |     |
| 48                     | 1688 | 04.03.13 | -17   | 178  | 2134  | HSX | 318         |      |          |       |      |       |     |
| 49                     | 1689 | 05.03.13 | -17   | 153  | 2134  | BXO | 319         |      |          |       |      |       |     |
| 50                     | 1690 | 07.03.13 | 23    | 122  | 2134  | HSX | 320         |      |          |       |      |       |     |
| 51                     | 1691 | 09.03.13 | 12    | 119  | 2134  | CRO | 321         |      |          |       |      |       |     |
| 52                     | 1692 | 10.03.13 | 09    | 77   | 2134  | HHX | 322         |      |          |       |      |       |     |
| 53                     | 1693 | 11.03.13 | 18    | 167  | 2134  | CRO | 323         |      |          |       |      |       |     |
| 54                     | 1694 | 11.03.13 | 15    | 71   | 2134  | HSX | 324         |      |          |       |      |       |     |
| 55                     | 1695 | 12.03.13 | 09    | 54   | 2134  | HSX | 325         |      |          |       |      |       |     |
| 56                     | 1696 | 12.03.13 | 05    | 91   | 2134  | CSO | 326         |      |          |       |      |       |     |
| 57                     | 1697 | 15.03.13 | 15    | 108  | 2134  | CRO | 327         |      |          |       |      |       |     |
| 58                     | 1698 | 15.03.13 | -20   | 115  | 2134  | CRO | 328         |      |          |       |      |       |     |
| 59                     | 1699 | 18.03.13 | -15   | 91   | 2134  | CRO | 329         |      |          |       |      |       |     |
| 60                     | 1700 | 18.03.13 | -13   | 352  | 2135  | BXO | 330         |      |          |       |      |       |     |
| 61                     | 1701 | 21.03.13 | 14    | 65   | 2134  | CRO | 331         |      |          |       |      |       |     |
| 62                     | 1702 | 22.03.13 | 08    | 16   | 2134  | DRO | 332         |      |          |       |      |       |     |
| 63                     | 1703 | 23.03.13 | -25   | 39   | 2134  | DAO | 333         |      |          |       |      |       |     |
| 64                     | 1704 | 24.03.13 | 15    | 253  | 2135  | HSX | 334         |      |          |       |      |       |     |
| 65                     | 1705 | 26.03.13 | -12   | 279  | 2135  | DAO | 335         |      |          |       |      |       |     |
| 66                     | 1706 | 28.03.13 | -06   | 268  | 2135  | BXO | 336         |      |          |       |      |       |     |
| 67                     | 1707 | 29.03.13 | -11   | 229  | 2135  | BXO | 337         |      |          |       |      |       |     |
| 68                     | 1708 | 29.03.13 | 12    | 190  | 2135  | CSO | 338         |      |          |       |      |       |     |
| 69                     | 1709 | 30.03.13 | -33   | 269  | 2135  | BXO | 339         |      |          |       |      |       |     |
| 70                     | 1710 | 30.03.13 | -22   | 199  | 2135  | CAO | 340         |      |          |       |      |       |     |
| 71                     | 1711 | 31.03.13 | -17   | 158  | 2135  | CAI | 341         |      |          |       |      |       |     |
| 72                     | 1712 | 01.04.13 | 01    | 183  | 2135  | CRO | 342         |      |          |       |      |       |     |
| 73                     | 1713 | 03.04.13 | 08    | 171  | 2135  | CAO | 343         |      |          |       |      |       |     |
| 74                     | 1714 | 03.04.13 | 12    | 129  | 2135  | HSX | 344         |      |          |       |      |       |     |
| 75                     | 1715 | 05.04.13 | 18    | 183  | 2135  | BXO | 345         |      |          |       |      |       |     |
| 76                     | 1716 | 06.04.13 | -19   | 123  | 2135  | AXX | 346         |      |          |       |      |       |     |
| 77                     | 1717 | 06.04.13 | -10   | 89   | 2135  | AXX | 347         |      |          |       |      |       |     |
| 78                     | 1718 | 06.04.13 | 23    | 110  | 2135  | AXX | 348         |      |          |       |      |       |     |
| 79                     | 1719 | 06.04.13 | 08    | 77   | 2135  | HSX | 349         |      |          |       |      |       |     |
| 80                     | 1720 | 08.04.13 | 11    | 137  | 2135  | CSO | 350         |      |          |       |      |       |     |
| 81                     | 1721 | 11.04.13 | -18   | 54   | 2135  | BXO | 351         |      |          |       |      |       |     |
| 82                     | 1722 | 11.04.13 | -20   | 45   | 2135  | CSO | 352         |      |          |       |      |       |     |
| 83                     | 1723 | 14.04.13 | -18   | 01   | 2136  | BXO | 353         |      |          |       |      |       |     |
| 84                     | 1724 | 14.04.13 | -27   | 340  | 2136  | HAX | 354         |      |          |       |      |       |     |
| 85                     | 1725 | 20.04.13 | 10    | 28   | 2135  | CRO | 355         |      |          |       |      |       |     |
| 86                     | 1726 | 20.04.13 | 13    | 323  | 2136  | DRO | 356         |      |          |       |      |       |     |
| 87                     | 1727 | 20.04.13 | 26    | 273  | 2136  | DAO | 357         |      |          |       |      |       |     |
| 88                     | 1728 | 24.04.13 | 19    | 214  | 2136  | CSO | 358         |      |          |       |      |       |     |
| 89                     | 1729 | 24.04.13 | -14   | 285  | 2136  | BXO | 359         |      |          |       |      |       |     |
| 90                     | 1730 | 25.04.13 | -19   | 217  | 2136  | BXO | 360         |      |          |       |      |       |     |

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|     |      |          |     |     |      |     |     |  |  |  |  |  |
|-----|------|----------|-----|-----|------|-----|-----|--|--|--|--|--|
| 91  | 1731 | 26.04.13 | 07  | 189 | 2136 | DKC | 361 |  |  |  |  |  |
| 92  | 1732 | 28.04.13 | -15 | 157 | 2136 | HSX | 362 |  |  |  |  |  |
| 93  | 1733 | 28.04.13 | -16 | 253 | 2136 | CSO | 363 |  |  |  |  |  |
| 94  | 1734 | 30.04.13 | -19 | 134 | 2136 | DSO | 364 |  |  |  |  |  |
| 95  | 1735 | 30.04.13 | -17 | 246 | 2136 | CRO | 365 |  |  |  |  |  |
| 96  | 1736 | 02.05.13 | -07 | 138 | 2136 | BXO | 366 |  |  |  |  |  |
| 97  | 1737 | 04.05.13 | 19  | 115 | 2136 | AXX | 367 |  |  |  |  |  |
| 98  | 1738 | 04.05.13 | 16  | 87  | 2136 | HSX | 368 |  |  |  |  |  |
| 99  | 1739 | 04.05.13 | 13  | 75  | 2136 | DAC | 369 |  |  |  |  |  |
| 100 | 1740 | 05.05.13 | -20 | 67  | 2136 | HSX | 370 |  |  |  |  |  |
| 101 | 1741 | 07.05.13 | -20 | 45  | 2136 | BXO | 371 |  |  |  |  |  |
| 102 | 1742 | 10.05.13 | 30  | 17  | 2136 | DAI | 372 |  |  |  |  |  |
| 103 | 1743 | 10.05.13 | 24  | 11  | 2136 | HRX | 373 |  |  |  |  |  |
| 104 | 1744 | 10.05.13 | 05  | 04  | 2136 | DAO | 374 |  |  |  |  |  |
| 105 | 1745 | 11.05.13 | 11  | 340 | 2137 | HRX | 375 |  |  |  |  |  |
| 106 | 1746 | 12.05.13 | -27 | 335 | 2137 | DSO | 376 |  |  |  |  |  |
| 107 | 1747 | 13.05.13 | -18 | 338 | 2137 | BXO | 377 |  |  |  |  |  |
| 108 | 1748 | 14.05.13 | 12  | 292 | 2137 | DKI | 378 |  |  |  |  |  |
| 109 | 1749 | 16.05.13 | -23 | 27  | 2136 | BXO | 379 |  |  |  |  |  |
| 110 | 1750 | 16.05.13 | -11 | 360 | 2136 | BXO | 380 |  |  |  |  |  |
| 111 | 1751 | 16.05.13 | -23 | 323 | 2137 | BXO | 381 |  |  |  |  |  |
| 112 | 1752 | 17.05.13 | 18  | 01  | 2136 | CRO | 382 |  |  |  |  |  |
| 113 | 1753 | 21.05.13 | 04  | 216 | 2137 | DSO | 383 |  |  |  |  |  |
| 114 | 1754 | 21.05.13 | -16 | 229 | 2137 | AXX | 384 |  |  |  |  |  |
| 115 | 1755 | 22.05.13 | 10  | 204 | 2137 | DSO | 385 |  |  |  |  |  |
| 116 | 1756 | 22.05.13 | -20 | 213 | 2137 | DAO | 386 |  |  |  |  |  |
| 117 | 1757 | 26.05.13 | -09 | 145 | 2137 | HSX | 387 |  |  |  |  |  |
| 118 | 1758 | 27.05.13 | -23 | 129 | 2137 | AXX | 388 |  |  |  |  |  |
| 119 | 1759 | 28.05.13 | -08 | 120 | 2137 | BXO | 389 |  |  |  |  |  |
| 120 | 1760 | 30.05.13 | 10  | 98  | 2137 | AXX | 390 |  |  |  |  |  |
| 121 | 1761 | 30.05.13 | -17 | 109 | 2137 | AXX | 391 |  |  |  |  |  |
| 122 | 1762 | 02.06.13 | -30 | 130 | 2137 | DAO | 392 |  |  |  |  |  |
| 123 | 1763 | 02.06.13 | -15 | 124 | 2137 | CRO | 393 |  |  |  |  |  |
| 124 | 1764 | 03.06.13 | 12  | 131 | 2137 | DAO | 394 |  |  |  |  |  |
| 125 | 1765 | 06.06.13 | 09  | 50  | 2137 | CRO | 395 |  |  |  |  |  |
| 126 | 1766 | 06.06.13 | 18  | 111 | 2137 | BXO | 396 |  |  |  |  |  |
| 127 | 1767 | 10.06.13 | -17 | 334 | 2138 | BXO | 397 |  |  |  |  |  |
| 128 | 1768 | 13.06.13 | -11 | 354 | 2138 | DAO | 398 |  |  |  |  |  |
| 129 | 1769 | 14.06.13 | -23 | 261 | 2138 | BXO | 399 |  |  |  |  |  |
| 130 | 1770 | 14.06.13 | -13 | 254 | 2138 | HSX | 400 |  |  |  |  |  |
| 131 | 1771 | 15.06.13 | -12 | 246 | 2138 | HRX | 401 |  |  |  |  |  |
| 132 | 1772 | 15.06.13 | -20 | 255 | 2138 | BXO | 402 |  |  |  |  |  |
| 133 | 1773 | 16.06.13 | 04  | 232 | 2138 | HRX | 403 |  |  |  |  |  |
| 134 | 1774 | 16.06.13 | -18 | 238 | 2138 | BXO | 404 |  |  |  |  |  |
| 135 | 1775 | 16.06.13 | -25 | 223 | 2138 | HAX | 405 |  |  |  |  |  |
| 136 | 1776 | 19.06.13 | 11  | 252 | 2138 | AXX | 406 |  |  |  |  |  |
| 137 | 1777 | 21.06.13 | -16 | 165 | 2138 | HSX | 407 |  |  |  |  |  |
| 138 | 1778 | 23.06.13 | -16 | 129 | 2138 | HSX | 408 |  |  |  |  |  |
| 139 | 1779 | 26.06.13 | 17  | 111 | 2138 | BXO | 409 |  |  |  |  |  |
| 140 | 1780 | 27.06.13 | -09 | 140 | 2138 | BXO | 410 |  |  |  |  |  |
| 141 | 1781 | 29.06.13 | 22  | 128 | 2138 | CRO | 411 |  |  |  |  |  |
| 142 | 1782 | 29.06.13 | -14 | 75  | 2138 | HRX | 412 |  |  |  |  |  |
| 143 | 1783 | 01.07.13 | 04  | 38  | 2138 | BXO | 413 |  |  |  |  |  |
| 144 | 1784 | 02.07.13 | -15 | 53  | 2138 | BXO | 414 |  |  |  |  |  |
| 145 | 1785 | 02.07.13 | -09 | 09  | 2138 | HAX | 415 |  |  |  |  |  |
| 146 | 1786 | 03.07.13 | -31 | 54  | 2138 | CRO | 416 |  |  |  |  |  |
| 147 | 1787 | 04.07.13 | -14 | 348 | 2139 | DSO | 417 |  |  |  |  |  |
| 148 | 1788 | 06.07.13 | -15 | 14  | 2138 | BXO | 418 |  |  |  |  |  |
| 149 | 1789 | 08.07.13 | -24 | 344 | 2139 | BXO | 419 |  |  |  |  |  |
| 150 | 1790 | 08.07.13 | -15 | 321 | 2139 | AXX | 420 |  |  |  |  |  |
| 151 | 1791 | 13.07.13 | -15 | 252 | 2139 | DSO | 421 |  |  |  |  |  |
| 152 | 1792 | 13.07.13 | 05  | 243 | 2139 | BXO | 422 |  |  |  |  |  |
| 153 | 1793 | 15.07.13 | 19  | 206 | 2139 | DHO | 423 |  |  |  |  |  |
| 154 | 1794 | 15.07.13 | 13  | 330 | 2139 | BXO | 424 |  |  |  |  |  |
| 155 | 1795 | 15.07.13 | -06 | 209 | 2139 | BXO | 425 |  |  |  |  |  |
| 156 | 1796 | 18.07.13 | -14 | 272 | 2139 | BXO | 426 |  |  |  |  |  |
| 157 | 1797 | 18.07.13 | -19 | 222 | 2139 | CRO | 427 |  |  |  |  |  |
| 158 | 1798 | 19.07.13 | -12 | 177 | 2139 | BXO | 428 |  |  |  |  |  |
| 159 | 1799 | 19.07.13 | -18 | 161 | 2139 | AXX | 429 |  |  |  |  |  |
| 160 | 1800 | 19.07.13 | -10 | 156 | 2139 | HAX | 430 |  |  |  |  |  |
| 161 | 1801 | 24.07.13 | 20  | 86  | 2139 | HSX | 431 |  |  |  |  |  |
| 162 | 1802 | 24.07.13 | 14  | 200 | 2139 | BXO | 432 |  |  |  |  |  |
| 163 | 1803 | 24.07.13 | -09 | 143 | 2139 | BXO | 433 |  |  |  |  |  |
| 164 | 1804 | 25.07.13 | -21 | 211 | 2139 | BXO | 434 |  |  |  |  |  |
| 165 | 1805 | 26.07.13 | -07 | 128 | 2139 | CSO | 435 |  |  |  |  |  |
| 166 | 1806 | 28.07.13 | -16 | 44  | 2139 | AXX | 436 |  |  |  |  |  |
| 167 | 1807 | 30.07.13 | 28  | 92  | 2139 | DAO | 437 |  |  |  |  |  |
| 168 | 1808 | 30.07.13 | 15  | 21  | 2139 | BXO | 438 |  |  |  |  |  |
| 169 | 1809 | 31.07.13 | 14  | 342 | 2140 | HSX | 439 |  |  |  |  |  |
| 170 | 1810 | 01.08.13 | -26 | 334 | 2140 | HAX | 440 |  |  |  |  |  |
| 171 | 1811 | 02.08.13 | 06  | 08  | 2139 | CRO | 441 |  |  |  |  |  |
| 172 | 1812 | 03.08.13 | -12 | 84  | 2139 | CRO | 442 |  |  |  |  |  |
| 173 | 1813 | 08.08.13 | -13 | 321 | 2140 | CRO | 443 |  |  |  |  |  |
| 174 | 1814 | 08.08.13 | -27 | 251 | 2140 | HSX | 444 |  |  |  |  |  |
| 175 | 1815 | 08.08.13 | 06  | 02  | 2140 | BXO | 445 |  |  |  |  |  |
| 176 | 1816 | 08.08.13 | -19 | 253 | 2140 | AXX | 446 |  |  |  |  |  |
| 177 | 1817 | 11.08.13 | -22 | 242 | 2140 | CRO | 447 |  |  |  |  |  |
| 178 | 1818 | 11.08.13 | -07 | 218 | 2140 | HRX | 448 |  |  |  |  |  |
| 179 | 1819 | 11.08.13 | -20 | 227 | 2140 | AXX | 449 |  |  |  |  |  |
| 180 | 1820 | 14.08.13 | -13 | 176 | 2140 | CSO | 450 |  |  |  |  |  |
| 181 | 1821 | 15.08.13 | 01  | 244 | 2140 | BXO | 451 |  |  |  |  |  |
| 182 | 1822 | 16.08.13 | -08 | 153 | 2140 | DAO | 452 |  |  |  |  |  |
| 183 | 1823 | 16.08.13 | -07 | 138 | 2140 | HSX | 453 |  |  |  |  |  |

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|     |      |          |     |     |      |     |     |  |  |  |  |  |  |  |
|-----|------|----------|-----|-----|------|-----|-----|--|--|--|--|--|--|--|
| 184 | 1824 | 18.08.13 | -14 | 196 | 2140 | DAO | 454 |  |  |  |  |  |  |  |
| 185 | 1825 | 19.08.13 | 16  | 182 | 2140 | BXO | 455 |  |  |  |  |  |  |  |
| 186 | 1826 | 19.08.13 | 08  | 149 | 2140 | AXX | 456 |  |  |  |  |  |  |  |
| 187 | 1827 | 19.08.13 | -17 | 100 | 2140 | DSO | 457 |  |  |  |  |  |  |  |
| 188 | 1828 | 20.08.13 | 15  | 92  | 2140 | CAO | 458 |  |  |  |  |  |  |  |
| 189 | 1829 | 22.08.13 | 06  | 190 | 2140 | DAO | 459 |  |  |  |  |  |  |  |
| 190 | 1830 | 22.08.13 | -06 | 167 | 2140 | BXO | 460 |  |  |  |  |  |  |  |
| 191 | 1831 | 22.08.13 | 14  | 164 | 2140 | CAO | 461 |  |  |  |  |  |  |  |
| 192 | 1832 | 23.08.13 | 25  | 166 | 2140 | CSO | 462 |  |  |  |  |  |  |  |
| 193 | 1833 | 24.08.13 | 18  | 96  | 2140 | BXO | 463 |  |  |  |  |  |  |  |
| 194 | 1834 | 25.08.13 | 14  | 19  | 2140 | BXO | 464 |  |  |  |  |  |  |  |
| 195 | 1835 | 25.08.13 | -09 | 10  | 2140 | HSX | 465 |  |  |  |  |  |  |  |
| 196 | 1836 | 28.08.13 | 10  | 342 | 2141 | HSX | 466 |  |  |  |  |  |  |  |
| 197 | 1837 | 03.09.13 | -16 | 350 | 2141 | DSO | 467 |  |  |  |  |  |  |  |
| 198 | 1838 | 06.09.13 | -03 | 223 | 2141 | HSX | 468 |  |  |  |  |  |  |  |
| 199 | 1839 | 11.09.13 | -13 | 253 | 2141 | HRX | 469 |  |  |  |  |  |  |  |
| 200 | 1840 | 12.09.13 | -12 | 215 | 2141 | CRO | 470 |  |  |  |  |  |  |  |
| 201 | 1841 | 12.09.13 | -05 | 143 | 2141 | HSX | 471 |  |  |  |  |  |  |  |
| 202 | 1842 | 13.09.13 | 04  | 261 | 2141 | CRO | 472 |  |  |  |  |  |  |  |
| 203 | 1843 | 18.09.13 | 01  | 127 | 2141 | CAO | 473 |  |  |  |  |  |  |  |
| 204 | 1844 | 18.09.13 | 24  | 189 | 2141 | AXX | 474 |  |  |  |  |  |  |  |
| 205 | 1845 | 18.09.13 | -20 | 73  | 2141 | AXX | 475 |  |  |  |  |  |  |  |
| 206 | 1846 | 18.09.13 | -16 | 56  | 2141 | HAX | 476 |  |  |  |  |  |  |  |
| 207 | 1847 | 18.09.13 | 11  | 66  | 2141 | AXX | 477 |  |  |  |  |  |  |  |
| 208 | 1848 | 20.09.13 | -10 | 70  | 2141 | AXX | 478 |  |  |  |  |  |  |  |
| 209 | 1849 | 20.09.13 | 22  | 75  | 2141 | BXO | 479 |  |  |  |  |  |  |  |
| 210 | 1850 | 20.09.13 | 09  | 31  | 2141 | AXX | 480 |  |  |  |  |  |  |  |
| 211 | 1851 | 23.09.13 | -16 | 358 | 2141 | HRX | 481 |  |  |  |  |  |  |  |
| 212 | 1852 | 24.09.13 | -21 | 82  | 2141 | AXX | 482 |  |  |  |  |  |  |  |
| 213 | 1853 | 27.09.13 | 19  | 95  | 2141 | CRO | 483 |  |  |  |  |  |  |  |
| 214 | 1854 | 29.09.13 | 06  | 284 | 2142 | DSO | 484 |  |  |  |  |  |  |  |
| 215 | 1855 | 01.10.13 | -13 | 305 | 2142 | BXO | 485 |  |  |  |  |  |  |  |
| 216 | 1856 | 03.10.13 | 08  | 225 | 2142 | CAO | 486 |  |  |  |  |  |  |  |
| 217 | 1857 | 03.10.13 | -06 | 228 | 2142 | HAX | 487 |  |  |  |  |  |  |  |
| 218 | 1858 | 04.10.13 | 09  | 349 | 2142 | CAO | 488 |  |  |  |  |  |  |  |
| 219 | 1859 | 05.10.13 | -17 | 277 | 2142 | CRO | 489 |  |  |  |  |  |  |  |
| 220 | 1860 | 08.10.13 | -28 | 189 | 2142 | AXX | 490 |  |  |  |  |  |  |  |
| 221 | 1861 | 08.10.13 | -13 | 164 | 2142 | BXO | 491 |  |  |  |  |  |  |  |
| 222 | 1862 | 08.10.13 | -24 | 248 | 2142 | BXO | 492 |  |  |  |  |  |  |  |
| 223 | 1863 | 09.10.13 | -18 | 197 | 2142 | BXO | 493 |  |  |  |  |  |  |  |
| 224 | 1864 | 09.10.13 | -23 | 154 | 2142 | HSX | 494 |  |  |  |  |  |  |  |
| 225 | 1865 | 09.10.13 | -20 | 143 | 2142 | CAO | 495 |  |  |  |  |  |  |  |
| 226 | 1866 | 10.10.13 | -16 | 266 | 2142 | BXO | 496 |  |  |  |  |  |  |  |
| 227 | 1867 | 11.10.13 | 23  | 183 | 2142 | AXX | 497 |  |  |  |  |  |  |  |
| 228 | 1868 | 14.10.13 | 18  | 100 | 2142 | AXX | 498 |  |  |  |  |  |  |  |
| 229 | 1869 | 14.10.13 | 19  | 85  | 2142 | DSO | 499 |  |  |  |  |  |  |  |
| 230 | 1870 | 15.10.13 | -13 | 143 | 2142 | CRO | 500 |  |  |  |  |  |  |  |
| 231 | 1871 | 15.10.13 | 16  | 74  | 2142 | HSX | 501 |  |  |  |  |  |  |  |
| 232 | 1872 | 16.10.13 | -15 | 55  | 2142 | HSX | 502 |  |  |  |  |  |  |  |
| 233 | 1873 | 17.10.13 | 11  | 49  | 2142 | CRO | 503 |  |  |  |  |  |  |  |
| 234 | 1874 | 18.10.13 | -10 | 75  | 2142 | DAO | 504 |  |  |  |  |  |  |  |
| 235 | 1875 | 18.10.13 | 07  | 27  | 2142 | CAO | 505 |  |  |  |  |  |  |  |
| 236 | 1876 | 18.10.13 | 05  | 158 | 2142 | BXO | 506 |  |  |  |  |  |  |  |
| 237 | 1877 | 19.10.13 | -11 | 09  | 2142 | HSX | 507 |  |  |  |  |  |  |  |
| 238 | 1878 | 21.10.13 | -10 | 112 | 2142 | BXO | 508 |  |  |  |  |  |  |  |
| 239 | 1879 | 22.10.13 | -13 | 352 | 2143 | DSO | 509 |  |  |  |  |  |  |  |
| 240 | 1880 | 22.10.13 | 12  | 60  | 2142 | BXO | 510 |  |  |  |  |  |  |  |
| 241 | 1881 | 25.10.13 | -22 | 329 | 2143 | BXO | 511 |  |  |  |  |  |  |  |
| 242 | 1882 | 25.10.13 | -08 | 293 | 2143 | DSO | 512 |  |  |  |  |  |  |  |
| 243 | 1883 | 27.10.13 | 04  | 265 | 2143 | HAX | 513 |  |  |  |  |  |  |  |
| 244 | 1884 | 27.10.13 | -09 | 261 | 2143 | HAX | 514 |  |  |  |  |  |  |  |
| 245 | 1885 | 27.10.13 | -17 | 264 | 2143 | HSX | 515 |  |  |  |  |  |  |  |
| 246 | 1886 | 30.10.13 | 14  | 307 | 2143 | CRO | 516 |  |  |  |  |  |  |  |
| 247 | 1887 | 31.10.13 | 21  | 222 | 2143 | HSX | 517 |  |  |  |  |  |  |  |
| 248 | 1888 | 01.11.13 | -15 | 304 | 2143 | CRO | 518 |  |  |  |  |  |  |  |
| 249 | 1889 | 03.11.13 | -18 | 224 | 2143 | CRO | 519 |  |  |  |  |  |  |  |
| 250 | 1890 | 03.11.13 | -09 | 173 | 2143 | HSX | 520 |  |  |  |  |  |  |  |
| 251 | 1891 | 07.11.13 | -18 | 205 | 2143 | CAO | 521 |  |  |  |  |  |  |  |
| 252 | 1892 | 07.11.13 | -05 | 126 | 2143 | AXX | 522 |  |  |  |  |  |  |  |
| 253 | 1893 | 09.11.13 | -12 | 102 | 2143 | HSX | 523 |  |  |  |  |  |  |  |
| 254 | 1894 | 09.11.13 | -07 | 201 | 2143 | BXO | 524 |  |  |  |  |  |  |  |
| 255 | 1895 | 11.11.13 | -15 | 74  | 2143 | CAO | 525 |  |  |  |  |  |  |  |
| 256 | 1896 | 11.11.13 | 13  | 66  | 2143 | HSX | 526 |  |  |  |  |  |  |  |
| 257 | 1897 | 12.11.13 | -18 | 63  | 2143 | DAI | 527 |  |  |  |  |  |  |  |
| 258 | 1898 | 12.11.13 | -26 | 116 | 2143 | AXX | 528 |  |  |  |  |  |  |  |
| 259 | 1899 | 13.11.13 | 06  | 37  | 2143 | HHX | 529 |  |  |  |  |  |  |  |
| 260 | 1900 | 15.11.13 | -19 | 105 | 2143 | DSO | 530 |  |  |  |  |  |  |  |
| 261 | 1901 | 15.11.13 | -24 | 131 | 2143 | BXO | 531 |  |  |  |  |  |  |  |
| 262 | 1902 | 16.11.13 | 19  | 80  | 2143 | DSO | 532 |  |  |  |  |  |  |  |
| 263 | 1903 | 18.11.13 | -12 | 332 | 2144 | HSX | 533 |  |  |  |  |  |  |  |
| 264 | 1904 | 24.11.13 | 12  | 37  | 2143 | DAI | 534 |  |  |  |  |  |  |  |
| 265 | 1905 | 24.11.13 | 19  | 258 | 2144 | DSO | 535 |  |  |  |  |  |  |  |
| 266 | 1906 | 26.11.13 | -17 | 262 | 2144 | AXX | 536 |  |  |  |  |  |  |  |
| 267 | 1907 | 27.11.13 | -09 | 273 | 2144 | DRO | 537 |  |  |  |  |  |  |  |
| 268 | 1908 | 28.11.13 | -25 | 233 | 2144 | DAO | 538 |  |  |  |  |  |  |  |
| 269 | 1909 | 28.11.13 | -18 | 208 | 2144 | DSO | 539 |  |  |  |  |  |  |  |
| 270 | 1910 | 29.11.13 | 04  | 273 | 2144 | CRO | 540 |  |  |  |  |  |  |  |

## CV-Helios Network Annual Final Report for 2013

### ZÜRICH/McINTOSH-CLASSIFICATIONS DISTRIBUTION for the year 2013

| A      | B      | C      | D     | E     | F   | H      |
|--------|--------|--------|-------|-------|-----|--------|
| AXX    | BXO    | CRO    | DRO   | ERO   | FRO | HRX    |
| 11,4 % | 23,7 % | 12,7 % | 2,7 % |       |     | 4,0 %  |
|        | BXI    | CRI    | DRI   | ERI   | FRI | HAX    |
|        |        |        |       |       |     | 5,0 %  |
|        |        | CAO    | DAO   | EAO   | FAO | HSX    |
|        |        | 4,7 %  | 6,7 % |       |     | 14,7 % |
|        |        | CAI    | DAI   | EAI   | FAI | HKX    |
|        |        | 0,7 %  | 1,0 % |       |     |        |
|        |        | CSO    | DSO   | ESO   | FSO | HHX    |
|        |        | 4,3 %  | 5,7 % | 0,3 % |     | 1,0 %  |
|        |        | CSI    | DSI   | ESI   | FSI |        |
|        |        |        |       |       |     |        |
|        |        | CKO    | DAC   | EAC   | FAC |        |
|        |        |        | 0,3 % |       |     |        |
|        |        | CKI    | DSC   | ESC   | FSC |        |
|        |        |        |       |       |     |        |
|        |        | CHO    | DKO   | EKO   | FKO |        |
|        |        |        |       |       |     |        |
|        |        | CHI    | DKI   | EKI   | FKI |        |
|        |        |        | 0,3 % |       |     |        |
|        |        |        | DHO   | EHO   | FHO |        |
|        |        |        | 0,3 % |       |     |        |
|        |        |        | DHI   | EHI   | FHI |        |
|        |        |        |       |       |     |        |
|        |        |        | DKC   | EKC   | FKC |        |
|        |        |        | 0,3 % |       |     |        |
|        |        |        | DHC   | EHC   | FHC |        |
|        |        |        |       |       |     |        |

#### SUNSPOT CLASS

1st letter

|   | 299 |        |
|---|-----|--------|
| A | 34  | 11,4 % |
| B | 71  | 23,7 % |
| C | 67  | 22,4 % |
| D | 52  | 17,4 % |
| E | 1   | 0,3 %  |
| F | 0   | 0,0 %  |
| H | 74  | 24,7 % |

#### MAIN SUNSPOT TYPE

2nd letter

|   | 299 |        |
|---|-----|--------|
| X | 105 | 35,1 % |
| R | 58  | 19,4 % |
| A | 55  | 18,4 % |
| S | 75  | 25,1 % |
| K | 2   | 0,7 %  |
| H | 4   | 1,3 %  |

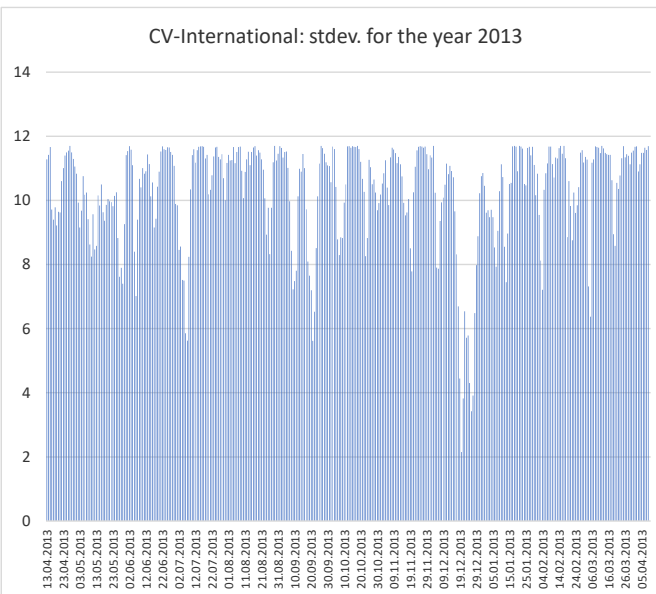
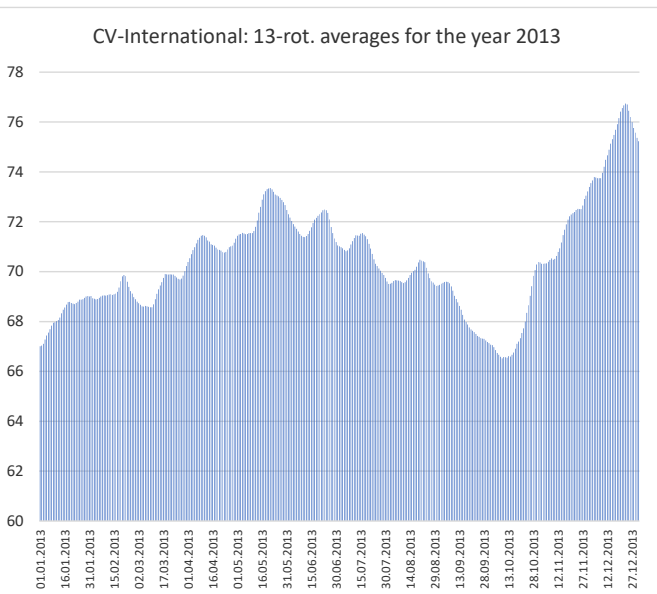
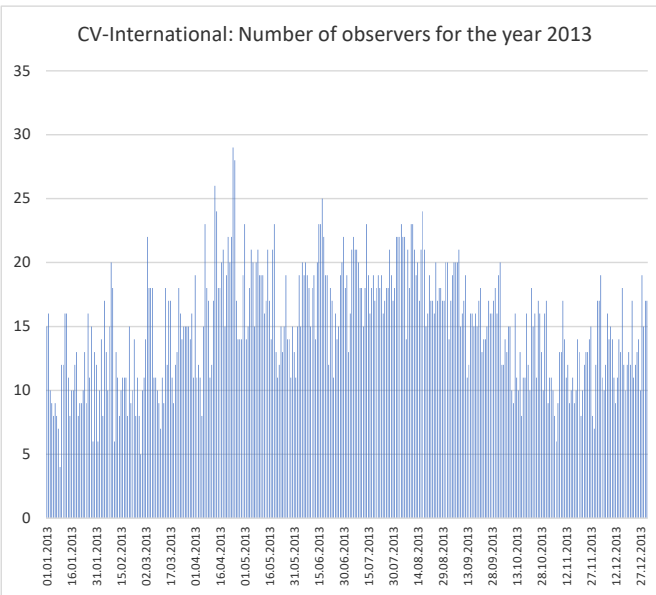
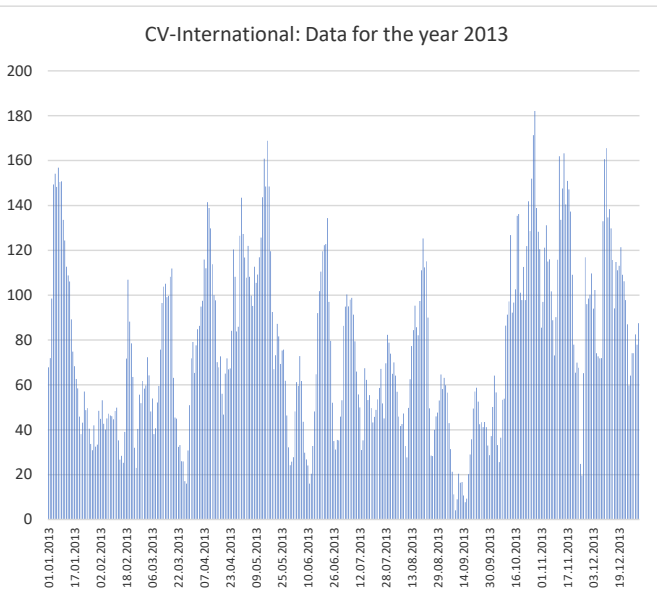
#### SUNSPOT DISTRIBUTION

3rd letter

|   | 299 |        |
|---|-----|--------|
| X | 108 | 36,1 % |
| O | 183 | 61,2 % |
| I | 6   | 2,0 %  |
| C | 2   | 0,7 %  |

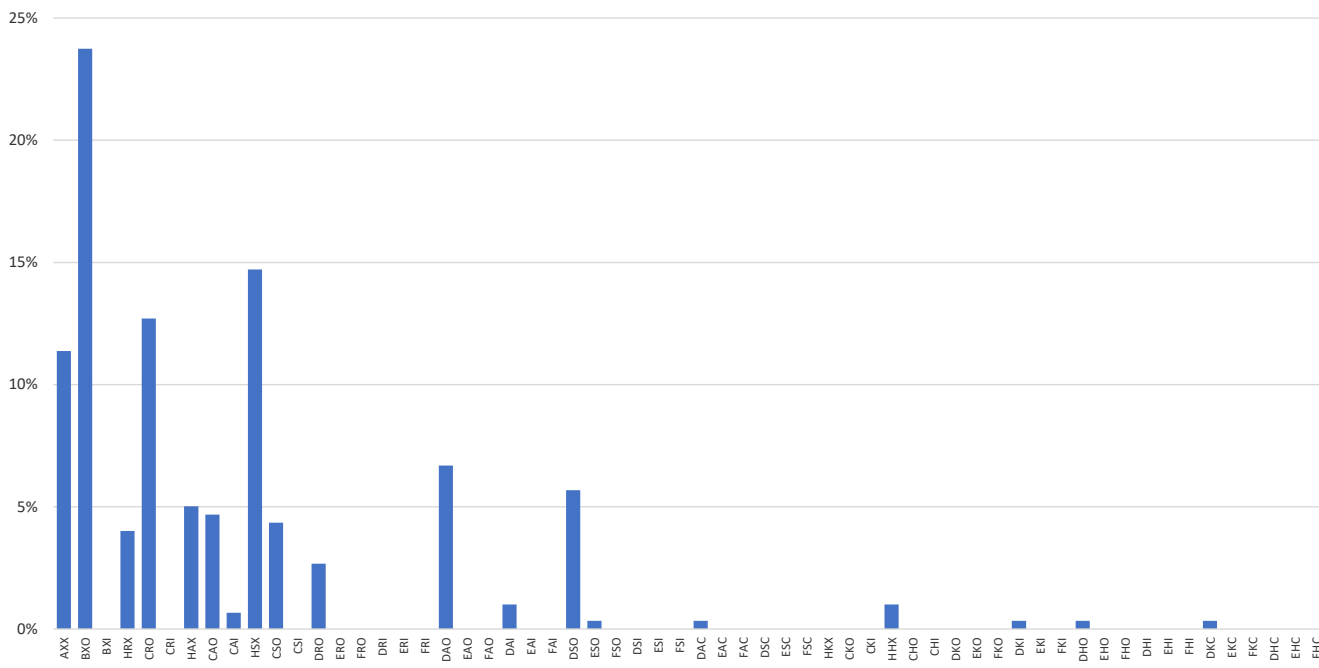
### CV-Helios Network Annual Final Report for 2013

#### Graphics for the year 2013

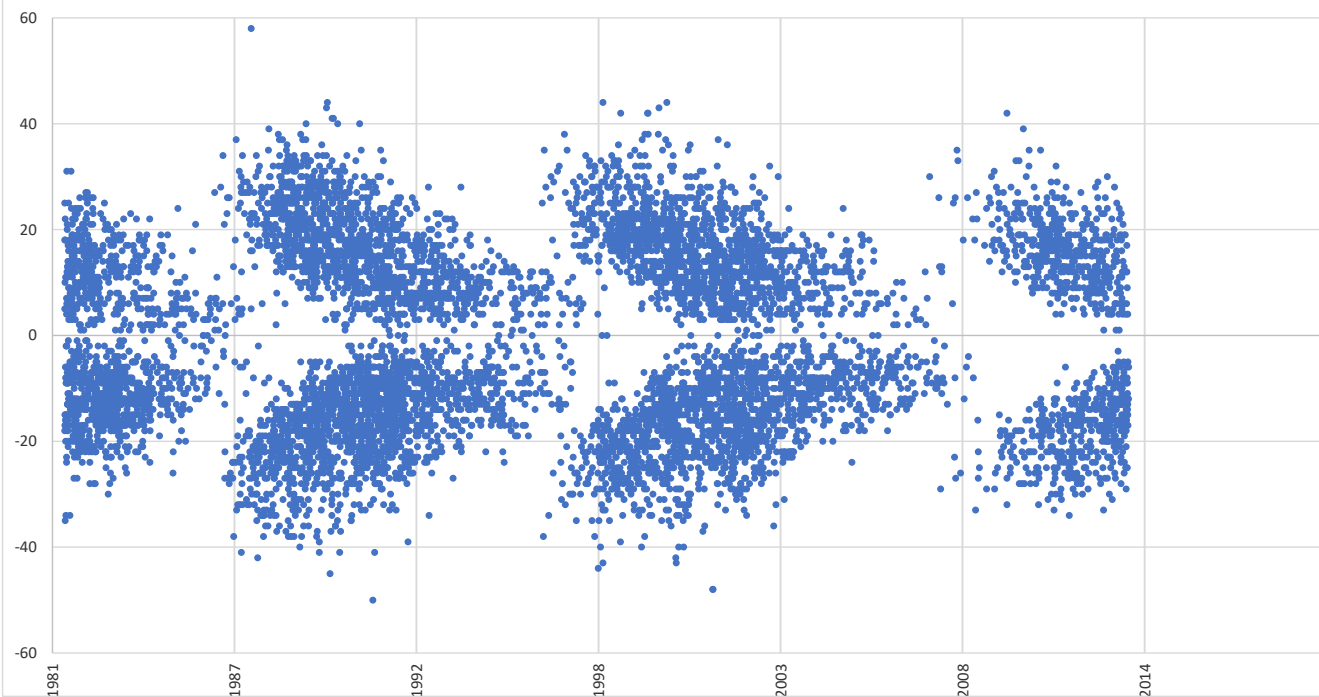


### CV-Helios Network Annual Final Report for 2013

Zürich/McIntosh-classifications denoted by NOAA/USAF for the year 2013



RGO/NOAA-USAF Sunspot Regions 1981-2013



## CV-Helios Network Annual Final Report for 2013

**CV-Helios Network - over 32 years in solar amateur astronomy service!**

There are now 8703 entries registered  
containing 137314 CV-observations!

**This AFR issued 1st April 2014**

### **CV-Helios Network**

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[www.cv-helios.net](http://www.cv-helios.net)

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Worldwide Amateur Solar Observing Network  
Magnetic Sunspot Classifications Zürich/McIntosh system  
CV - Classification Values (Malde/1981) - numeric system  
Serving Amateur Solar Astronomy since 1981

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