

# Monthly Preliminary Geomagnetic Bulletin - FEBRUARY 2019

## Coimbra Magnetic Observatory (COI, IAGA code)

$\phi = 40.222^\circ$ ;  $\lambda = 351.578^\circ$

Observatório Geofísico e Astronómico da Universidade de Coimbra (OGAUC)

### Absolute monthly means

| H (nT) | D (°)  | Z (nT) | X (nT) | Y (nT) | I (°)  | F (nT) |
|--------|--------|--------|--------|--------|--------|--------|
| 25769  | -2,052 | 36267  | 25753  | -923   | 54,605 | 44490  |

### Monthly daily amplitudes\*

|      | H (nT) | D (°) | Z (nT) | X (nT) | Y (nT) | I (°) | F (nT) |
|------|--------|-------|--------|--------|--------|-------|--------|
| mean | 29     | 3,9   | 23     | 28     | 30     | 2,5   | 20     |
| min  | 6      | 2,2   | 13     | 6      | 17     | 0,9   | 7      |
| max  | 72     | 8,3   | 48     | 73     | 63     | 5,9   | 39     |

### Monthly maximum amplitudes\*

| H (nT) | D (°) | Z (nT) | X (nT) | Y (nT) | I (°) | F (nT) |
|--------|-------|--------|--------|--------|-------|--------|
| 87     | 8,8   | 48     | 86     | 66     | 7,3   | 44     |

(\*) - Based on hourly values

## Geomagnetic Activity - K indices

| Day | K indices |   |   |   |    |    |    |    |      | ak indices (nT) |    |    |    |    |    |    |    |      |
|-----|-----------|---|---|---|----|----|----|----|------|-----------------|----|----|----|----|----|----|----|------|
|     | 0         | 3 | 6 | 9 | 12 | 15 | 18 | 21 | Ak   | 0               | 3  | 6  | 9  | 12 | 15 | 18 | 21 | Ak   |
| 1   | 3         | 3 | 3 | 2 | 3  | 3  | 3  | 5  | 25,4 | 21              | 21 | 21 | 10 | 21 | 21 | 21 | 67 | 25,4 |
| 2   | 4         | 3 | 3 | 2 | 2  | 4  | 3  | 3  | 22,4 | 38              | 21 | 21 | 10 | 10 | 38 | 21 | 21 | 22,4 |
| 3   | 2         | 2 | 2 | 1 | 2  | 2  | 2  | 3  | 10,5 | 10              | 10 | 10 | 4  | 10 | 10 | 10 | 21 | 10,5 |
| 4   | 1         | 0 | 1 | 1 | 2  | 1  | 4  | 3  | 10,7 | 4               | 0  | 4  | 4  | 10 | 4  | 38 | 21 | 10,7 |
| 5   | 4         | 2 | 1 | 0 | 1  | 1  | 1  | 1  | 8,6  | 38              | 10 | 4  | 0  | 4  | 4  | 4  | 4  | 8,6  |
| 6   | 1         | 1 | 1 | 3 | 3  | 2  | 3  | 2  | 11,9 | 4               | 4  | 4  | 21 | 21 | 10 | 21 | 10 | 11,9 |
| 7   | 2         | 1 | 1 | 0 | 1  | 2  | 2  | 3  | 7,9  | 10              | 4  | 4  | 0  | 4  | 10 | 10 | 21 | 7,9  |
| 8   | 2         | 1 | 1 | 2 | 2  | 1  | 3  | 4  | 12,6 | 10              | 4  | 4  | 10 | 10 | 4  | 21 | 38 | 12,6 |
| 9   | 2         | 2 | 2 | 2 | 2  | 3  | 3  | 1  | 11,9 | 10              | 10 | 10 | 10 | 10 | 21 | 21 | 4  | 11,9 |
| 10  | 2         | 2 | 1 | 1 | 1  | 1  | 1  | 2  | 6,3  | 10              | 10 | 4  | 4  | 4  | 4  | 4  | 10 | 6,3  |
| 11  | 1         | 1 | 1 | 1 | 3  | 3  | 2  | 2  | 9,8  | 4               | 4  | 4  | 4  | 21 | 21 | 10 | 10 | 9,8  |
| 12  | 2         | 2 | 0 | 1 | 1  | 1  | 1  | 2  | 5,8  | 10              | 10 | 0  | 4  | 4  | 4  | 4  | 10 | 5,8  |
| 13  | 1         | 2 | 2 | 3 | 3  | 4  | 2  | 2  | 15,4 | 4               | 10 | 10 | 21 | 21 | 38 | 10 | 10 | 15,4 |
| 14  | 2         | 3 | 2 | 3 | 1  | 1  | 3  | 2  | 12,6 | 10              | 21 | 10 | 21 | 4  | 4  | 21 | 10 | 12,6 |
| 15  | 3         | 1 | 1 | 1 | 1  | 1  | 1  | 0  | 5,8  | 21              | 4  | 4  | 4  | 4  | 4  | 4  | 0  | 5,8  |
| 16  | 0         | 0 | 1 | 0 | 2  | 3  | 3  | 1  | 7,5  | 0               | 0  | 4  | 0  | 10 | 21 | 21 | 4  | 7,5  |
| 17  | 0         | 0 | 1 | 1 | 1  | 1  | 2  | 3  | 6,0  | 0               | 0  | 4  | 4  | 4  | 4  | 10 | 21 | 6,0  |
| 18  | 4         | 2 | 1 | 1 | 2  | 2  | 2  | 1  | 11,2 | 38              | 10 | 4  | 4  | 10 | 10 | 10 | 4  | 11,2 |
| 19  | 1         | 1 | 0 | 0 | 1  | 1  | 1  | 0  | 2,6  | 4               | 4  | 0  | 0  | 4  | 4  | 4  | 0  | 2,6  |
| 20  | 0         | 0 | 1 | 1 | 1  | 1  | 2  | 2  | 4,6  | 0               | 0  | 4  | 4  | 4  | 4  | 10 | 10 | 4,6  |
| 21  | 2         | 1 | 3 | 2 | 3  | 2  | 1  | 3  | 12,6 | 10              | 4  | 21 | 10 | 21 | 10 | 4  | 21 | 12,6 |
| 22  | 2         | 0 | 1 | 1 | 1  | 1  | 1  | 2  | 5,1  | 10              | 0  | 4  | 4  | 4  | 4  | 4  | 10 | 5,1  |
| 23  | 0         | 0 | 1 | 1 | 1  | 1  | 1  | 0  | 2,6  | 0               | 0  | 4  | 4  | 4  | 4  | 4  | 0  | 2,6  |
| 24  | 0         | 0 | 1 | 1 | 2  | 1  | 0  | 0  | 2,8  | 0               | 0  | 4  | 4  | 10 | 4  | 0  | 0  | 2,8  |
| 25  | 1         | 1 | 1 | 1 | 1  | 2  | 1  | 1  | 4,9  | 4               | 4  | 4  | 4  | 4  | 10 | 4  | 4  | 4,9  |
| 26  | 1         | 0 | 1 | 0 | 1  | 1  | 1  | 1  | 3,2  | 4               | 0  | 4  | 0  | 4  | 4  | 4  | 4  | 3,2  |
| 27  | 1         | 0 | 1 | 1 | 2  | 4  | 4  | 4  | 17,0 | 4               | 0  | 4  | 4  | 10 | 38 | 38 | 38 | 17,0 |
| 28  | 4         | 3 | 2 | 3 | 4  | 3  | 5  | 3  | 29,6 | 38              | 21 | 10 | 21 | 38 | 21 | 67 | 21 | 29,6 |

Monthly mean of the daily equivalent amplitude Ak: 10,3

| K values:  | 0     | 1     | 2     | 3     | 4    | 5    | 6    | 7    | 8    | 9    |
|------------|-------|-------|-------|-------|------|------|------|------|------|------|
| Freq. (N): | 26    | 91    | 56    | 37    | 12   | 2    | 0    | 0    | 0    | 0    |
| Freq. (%): | 11,61 | 40,63 | 25,00 | 16,52 | 5,36 | 0,89 | 0,00 | 0,00 | 0,00 | 0,00 |

| Classification of days | Quiet |    |    |    |    | Disturbed |    |    |     |     |
|------------------------|-------|----|----|----|----|-----------|----|----|-----|-----|
|                        | Q1    | Q2 | Q3 | Q4 | Q5 | D1        | D2 | D3 | D4  | D5  |
| Coimbra (local K):     | 19    | 23 | 26 | 24 | 20 | 28        | 1  | 2  | 27* | 13* |
| International (Kp):    | 25    | 24 | 23 | 26 | 19 | 28        | 2* | 1* | 13* | 21* |

## Principal Magnetic Storms

| Storminess period |      |     |        |      | Commencement |           |       | Maximum activity |     |   | Range  |       |        |
|-------------------|------|-----|--------|------|--------------|-----------|-------|------------------|-----|---|--------|-------|--------|
| Begin             |      |     | End    |      | Type         | Amplitude |       | Day              | 3hp | K | H (nT) | D (°) | Z (nT) |
| Day               | hour | min | day    | hour |              | H (nT)    | D (°) |                  |     |   |        |       |        |
| 1                 | 13   | -   | 2      | 8    | Gradual      | -         | -     | 1                | 8   | 5 | 77     | 4,7   | 20     |
| 28                | 13   | -   | 01/mar | 6    | Gradual      | -         | -     | 28               | 7   | 5 | 71     | 9,2   | 49     |

SSC: storm sudden commencement;

3hp: daily 3-hour period of maximum activity; K: maximum local index

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