

Solar and Ionospheric Weather Report for the Period 11 to 24 January 2007

Solar activity was very low on 13/14, from 17 to 20 and from 22 to 24 January; it was low on 11/12, 15/16 and 21 January. The maximum of the Boulder sunspot count (SSN) was 45 at the beginning of the summary period, the minimum was 15 at the end. The Penticton (British Columbia) 10.7-cm-radioflux (flux) maxed with 84 flux units (fu) on 11/12 January, whilst flux minimum was 76 fu on 19 January.

The most important events on the Sun

On 11 January decaying region 933 produced a C1.0-flare (in the following without “-flare”) near West limb, almost on the equator, and a C1.5 on the following day. Both triggered weak coronal mass ejections (CME). Let’s remember! After one solar rotation (enduring for 27 days), region 933 is the old hyperactive region 930 with its outstanding X-flares at the beginning of December (among them the unbelievable X9.0/2N of 2 December).

After a short quiescent phase and flares in the B-class, on 15 January region 938 produced a C1.4/SF at N04 E47° (cf. pic). No lesser than a C4.2 followed on 16 January at 02:42 UTC as well as a C1 at 16:11 UTC, besides a series of five B-flares. At that time, though, decay had already begun, indicated among other things, by declining solar xray background.

A full halo CME around the Sun occurred on 19 January, which had its origin on the far side (most probably in region 933). Feebly the former stately region 938 flowed apart in four plage sections, losing its spots soon.

On 21 January, though, region 939 emerged sympathically at S03 W17°, a very close neighbour, as a result of magnetic connections. And after a B6.8, the region “flexed its muscles” with a midday C2.3. Region 939 grew, but was only capable of generating yet a few C-flares. With a remarkable size of 170 millionths of the disc it tried to rebel, which was only illustrated by four VHF radio events on 23 January, when it was already losing spots.

In the mean-time coronal rays and loops heralded the return at the East limb of old active region 933, ready to start a fifth walk over the disc. The first eruption occurred on 24 January. It was a long-duration-(LDE)-B9.0 maxing at 14:52 UTC and enduring four 2 hours and 23 minutes, triggering a bright CME in the East.

The Earth’s magnetic field (field) and world propagation (condx)

The beginning of the summary period saw harbingers of spring, when for instance, embedded in a calm field, West Australian NCDXF-beacon VK6RBP was registered in the 10-m-ham band at the DW ionospheric station near Berlin in the midmorning of 11 January. After another 27-day recurrence, a weak coronal hole (c. h.) exerted its geoactive influence. In order to recognize it, one had to go back two rotations (54 days), as the powerful December storms, caused by the major flares of region 930, had completely covered up last disc transit. Consequently the condx degraded and remained so until 13 January, when c. h. geoefficiency ended. In addition the Sun’s weakness now, near the minimum of the 23rd 11-year-activity cycle, curtailed critical frequencies of the F-region, whose daytime maxima in North Germany hovered near 5 MHz.

Onset of the next c. h. occurred on 14 January near 12 UTC, presenting us with a modest, though, positive phase (p. p.), which on the following day tipped over into the negative phase.

On 16 January the DW Operations Control Dept. issued storm alert, valid for two more days.

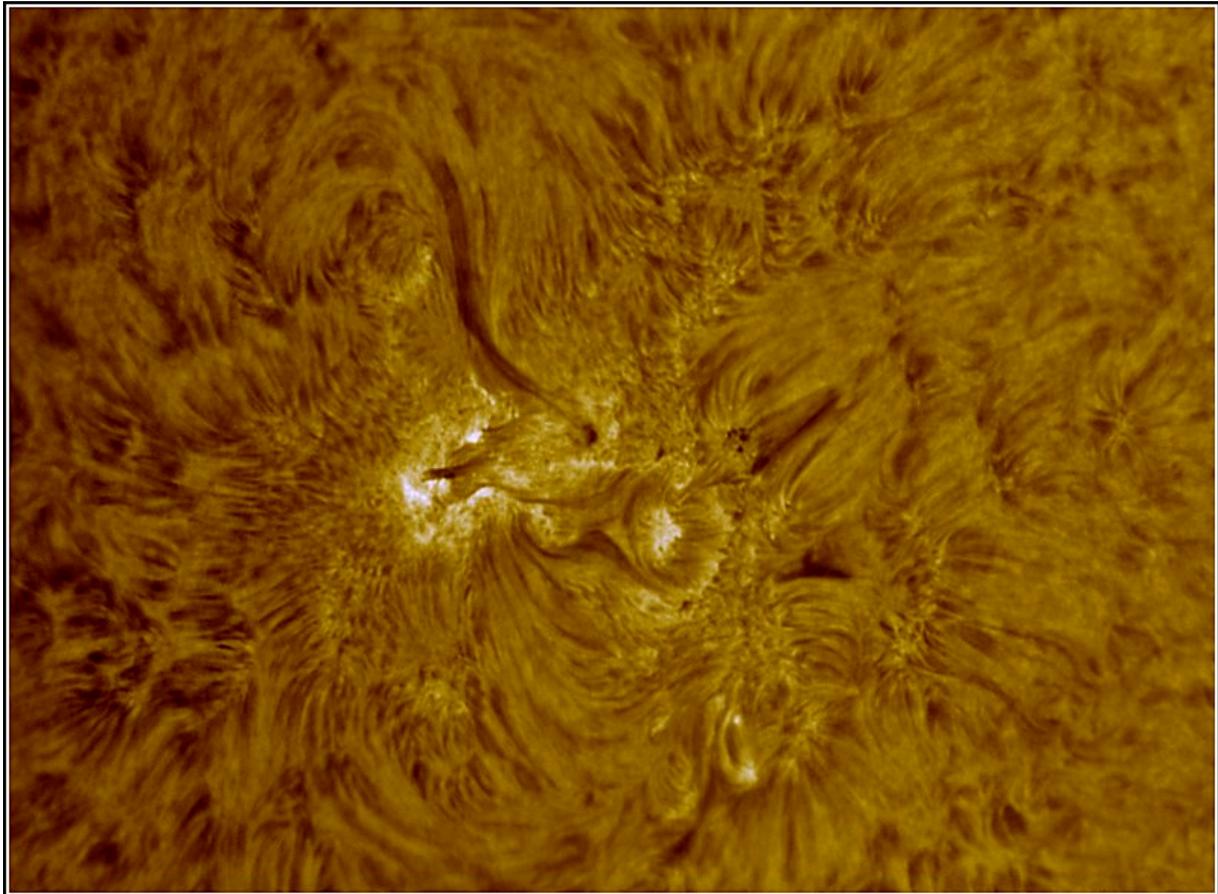
This Southern c. h. had the shape of a long, writhing lindworm and was to impair our condx until about 21 January. Especially affected were the distant E/W-circuits (less intensive the circuits Europe – New Zealand, Australia) through abnormal fading, blackouts and reduced Maximum Usable Frequencies (MUF) in addition on circuits across higher latitudes, there were radioaurora, signal sputter and Dopplers.

On 22 January a mystery had to be solved, when the condx were far worse than anticipated, after 27 day recurrence. The answer turned soon out to be simple: The expected c. h. was early by one day. Geoefficiency of this large and weakened old "semi"-c. h. was still felt negatively on the bands, even though quiet magnetic and other parameters didn't indicate that.

The forecast valid until 15 February 2007

Solar activity will be low to very low in general. Depending on developments of up and coming old region 933 (perhaps as 940) in matters of magnetic complexity, isolated M-flares are possible. SSN around 40; flux near 80 fu.

Field and condx: Minor degradation until 27 January. Minor improvement on 28 and still favourable on 29 January; following this, loss of propagational quality until 9 February. 10 February will see favourable condx and the days until the end of the forecast period will be degraded, barring any flaring-CME arrivals at the Earth.



Region 938 on 15 January with its plasma, shaken by magnetic flux. Bright and hot areas as well as flaring regions contrast with dark areas: sunspots and long filaments (hovering above). An invitation to imagination, too! Wondrous complexions peek out of a dense fairy forest. Look for instance at the "lava stream" leaving the large bright area to the right and going up to a "crowned Inca-face". Fractal similarities.

Foto by courtesy of Philippe Vercoutter, Belgium