First E-SWAN school
Space Weather Data, Models and Services

Collaboration of

Solar-Terrestrial Centre of Excellence

European Space Weather and Space Climate Association


Simon Schmidt www.globalview.be

aeronomie.be

Royal Belgian Institute
for Space Aeronomy

Royal Meterological
Institute of Belgium

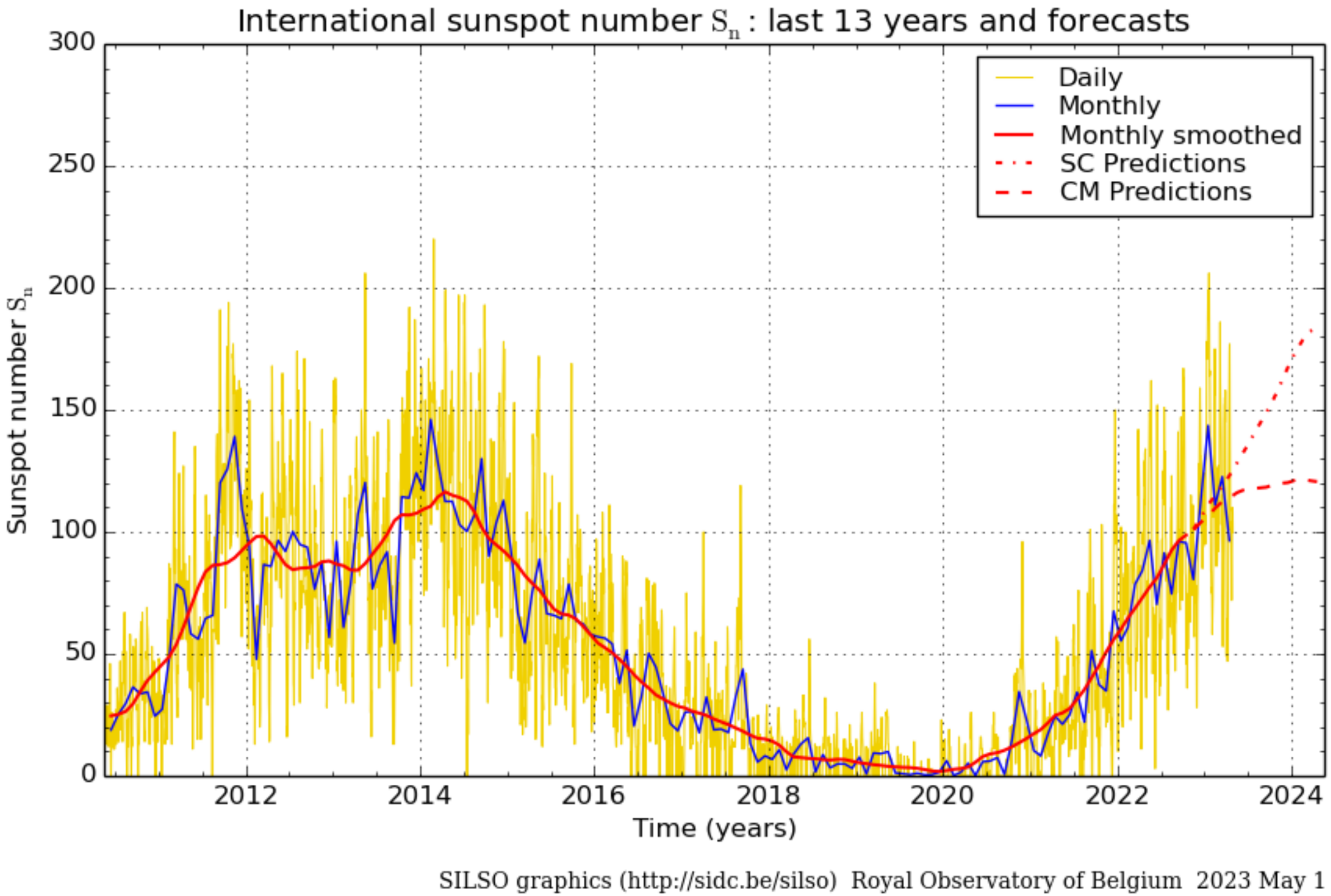
KMI

Solar Terrestrial Centre of Excellence

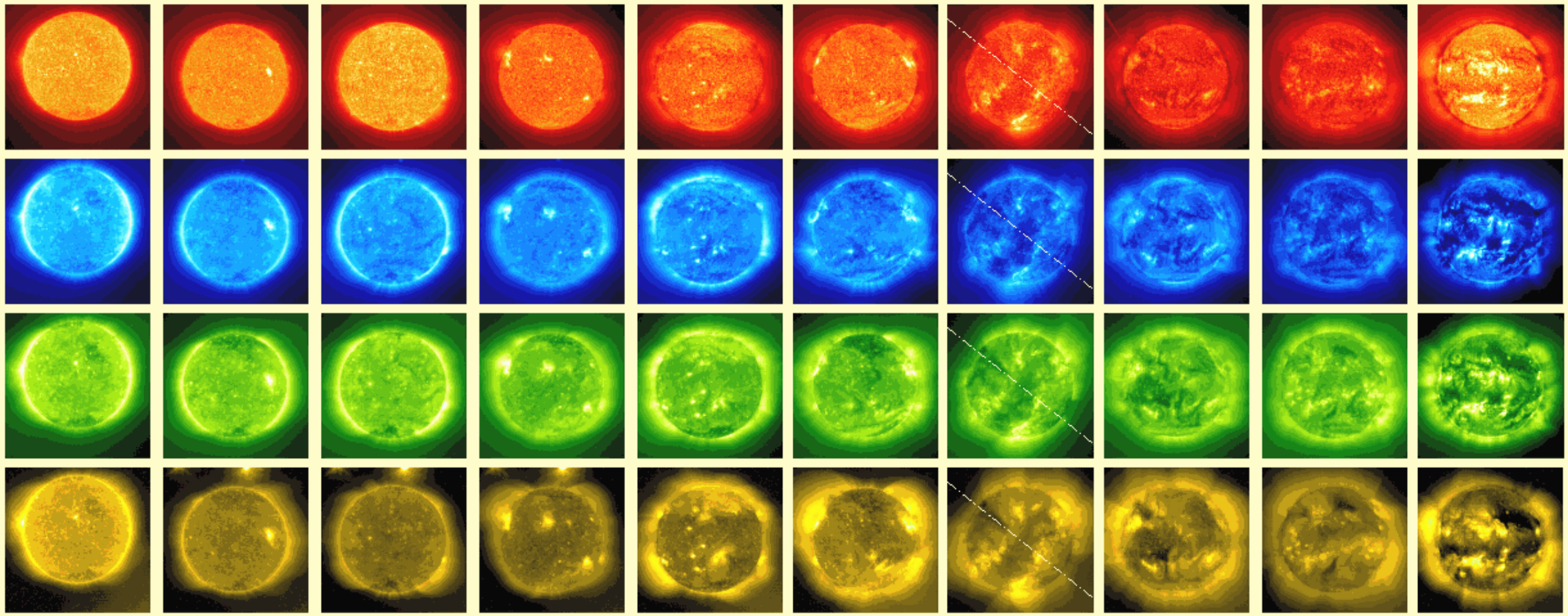
Royal Observatory
of Belgium

Simon Schmidt www.globalview.be

SILSO - WDC


International sunspot number S_n : last 13 years and forecasts
Daily
Monthly
Monthly smoothed
SC Predictions
CM Predictions
Sunspot number S_n
300
250
200
150
100
50
0
2012
2014
2016
2018
2020
2022
2024
Time (years)
SILSO graphics (http://sidc.be/silso) Royal Observatory of Belgium 2023 May 1

EIT INSTRUMENT ONBOARD SOHO



```
:Issued: 2000 Oct 16 1506 UTC
:Product: documentation at http://www.sidc.be/products/meu
#-----------------------------------------------------------------------#
# DAILY BULLETIN ON SOLAR AND GEOMAGNETIC ACTIVITY from the SIDC        #
# (RWC Belgium)                                                         #
#-----------------------------------------------------------------------#



MEUDON URSIGRAM 01016
MEUDON SOLAR BULLETIN 16/10/00 1506UT
MEUDON FORECAST
FLARES     16/2 : Eruptive (C-classe flares expected, probability >50%)
MAGNETISM  16/2 : Active conditions expected ( A > 20 or K = 4)
PROTONS    16/2 : Proton event expected ( 10 pfu at > 10 MeV)
PRED 10CM FLUX  16/3 : 169 186 205
PRED AP         16/3 : 020 018 011
SOLAR INDICES FOR 13/10/00
SUNSPOT INDEX       : 176
10CM SOLAR FLUX     : 168
AK CHAMBON LA FORET : 44
AK Wingst           : 32
ESTIMATED AP        : 32
SOLAR INDICES FOR 14/10/00
SUNSPOT INDEX       : ///
10CM SOLAR FLUX     : 163
AK CHAMBON LA FORET : 49
AK Wingst           : 39
ESTIMATED AP        : 40
SOLAR INDICES FOR 15/10/00
SUNSPOT INDEX       : ///
10CM SOLAR FLUX     : 161
AK CHAMBON LA FORET : 14
AK Wingst           : 9
ESTIMATED AP        : 8
NOTICEABLE EVENTS SUMMARY
DAY BEGIN MAX  END    LOC    XRAY  OP  10CM  TYPE   SID
NONE
END
BT


#-----------------------------------------------------------------------#
# Solar Influences Data analysis Center - RWC Belgium                   #
# Royal Observatory of Belgium                                          #
# Fax : 32 (0) 2 373 0 224                                              #
# Tel.: 32 (0) 2 373 0 491                                              #
#                                                                       #
# For more information, see http://www.sidc.be.  Please do not reply    #
# directly to this message, but send comments and suggestions to        #
# 'sidctech@oma.be'. If you are unable to use that address, use         #
# 'rvdlinden@spd.aas.org' instead.                                      #
# To unsubscribe, visit http://sidc.be/registration/unsub.php           #
#-----------------------------------------------------------------------#
```

RWC - DAILY BULLETINS AND ALERTS

```
:Issued: 2022 Feb 16 0848 UTC
:Product: documentation at http://www.sidc.be/products/presto
#-----------------------------------------------------------------#
# FAST WARNING 'PRESTO' MESSAGE  from the SIDC (RWC-Belgium)      #
#-----------------------------------------------------------------#
SoHO LASCO C2 coronagraph data show a halo CME from Feb 15 22:12UT onwards. The CME
is directed primarily to the North-East from Earth perspective. Combined with STEREO
A cor2 coronagraph data (where the CME is seen as also primarily directed to the
North-East from that perspective) the CME is analysed to be backward and will not
influence Earth.
```

```
:Issued: 2022 Feb 16 0739 UTC
:Product: documentation at http://www.sidc.be/products/cactus
#-----------------------------------------------------------------#
# HALO CME ALERTS from the SIDC (RWC-Belgium), generated by CACTUS   #
#-----------------------------------------------------------------#

  A halo or partial-halo CME was detected with the following characteristics:

            t0      | dt0| pa | da |  v   |  dv | minv| maxv|
2022-02-15T22:12:07.559 | 2.0 | 322 | 350 | 762 | 368 | 191 | 1736


     t0: onset time, earliest indication of liftoff
    dt0: duration of liftoff (hours)
     pa: principal angle, counterclockwise from North (degrees)
     da: angular width of the CME (degrees),
      v: median velocity (km/s)
     dv: variation (1 sigma) of velocity over the width of the CME
  mindv: lowest velocity detected within the CME
  maxdv: highest velocity detected within the CME
```

```
SIDC URSIGRAM 20216
SIDC SOLAR BULLETIN 16 Feb 2022, 1242UT
SIDC FORECAST (valid from 1230UT, 16 Feb 2022 until 18 Feb 2022)
SOLAR FLARES  : C-class flares expected, (probability >=50%)
GEOMAGNETISM  : Quiet (A<20 and K<4)
SOLAR PROTONS : Quiet
PREDICTIONS FOR 16 Feb 2022  10CM FLUX: 114 / AP: 003
PREDICTIONS FOR 17 Feb 2022  10CM FLUX: 115 / AP: 005
PREDICTIONS FOR 18 Feb 2022  10CM FLUX: 118 / AP: 004
COMMENT: Solar activity reached moderate levels. Catania group 26 (NOAA
region 2941) was most active, producing a M1.3 flare peaking at 18:15UT Feb
15. The region has now begun to rotate over the limb along with Catania
group 36 (NOAA region 2947). Catania group 32 (NOAA region 2943) also
produced some low level C-class flares. The remaining regions, including
Catania group 33 (NOAA region 2946), Catania group 37 (NOAA region 2948)
and Catania group 38 (NOAA region 2950), are small and relatively inactive.
Two other small regions emerged over the period; Catania group 39 (NOAA
region 2949, N25W10) and Catania group 40 (S24E07) but are not expected to
produce any significant flaring activity. Solar activity is expected to be
at low levels with a slight chance for an M-class flare in the next 24
hours, particularly while Catania group 26 (NOAA region 2941) remains just
over the western limb.

A halo Coronal Mass Ejection (CME) was observed in LASCO-C2 data from
22:12UT Feb 15. This was associated with an eruption that was visible over
the north-east limb and is therefore not expected to influence Earth. No
Earth directed CMEs have been observed in the available coronagraph data.

The greater than 10 MeV proton flux was slightly enhanced over the past 24
hours, possibly related to the far side CME, but remained far below the
10pfu threshold and is expected to remain below this threshold for the next
24 hours. The greater than 2 MeV electron flux exceeded the 1000 pfu alert
threshold. The threshold is expected to be exceeded again today. The 24
hour electron fluence was at moderate levels and is expected to be at
moderate levels during the next 24 hours.

The solar wind speed continued to show a decreasing trend, with values
decreasing from 420 km/s to 350 km/s. The magnitude of the interplanetary
magnetic field ranged between 1 and 6nT. The interplanetary magnetic field
phi angle was predominantly in the negative sector (directed towards from
the Sun). The solar wind conditions are expected to reflect a slow solar
wind regime for the next 24 hours.

Geomagnetic conditions were quiet (NOAA Kp 1-2 and local K Belgium 1-2).
Quiet conditions with are expected over the next 48 hours.

TODAY'S ESTIMATED ISN  : 095, BASED ON 10 STATIONS.

SOLAR INDICES FOR 15 Feb 2022
WOLF NUMBER CATANIA    : 109
10CM SOLAR FLUX        : 114
AK CHAMBON LA FORET    : 006
AK WINGST              : 004
ESTIMATED AP           : 002
ESTIMATED ISN          : 086, BASED ON 22 STATIONS.

NOTICEABLE EVENTS SUMMARY
DAY BEGIN MAX  END  LOC    XRAY OP  10CM Catania/NOAA RADIO_BURST_TYPES
15  1754  1815 1831 N26W73 M1.3 SF       26/2941      III/1VI/1
END
```

SWEC

Space Weather Education Center

First SWIC: May 2017

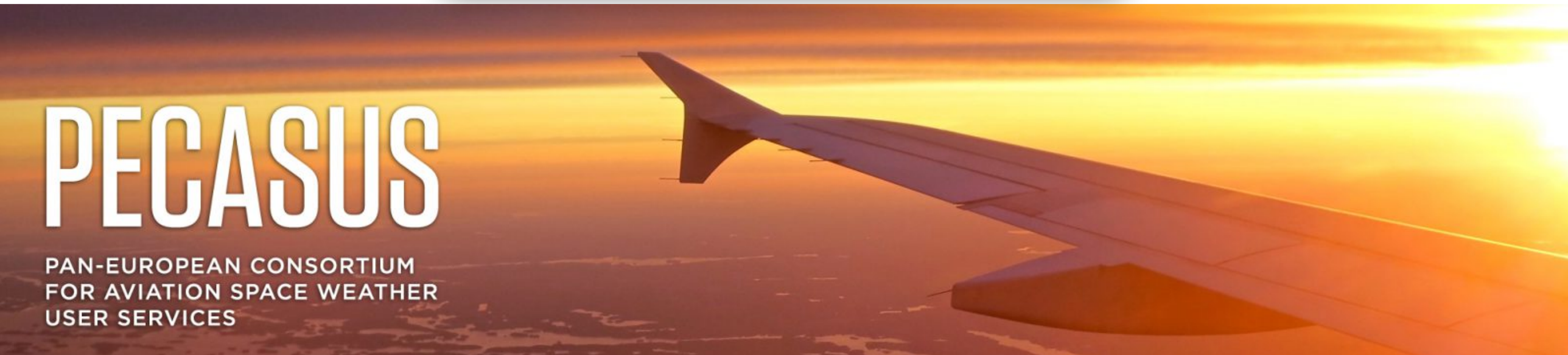
PECASUS - ADVISORIES

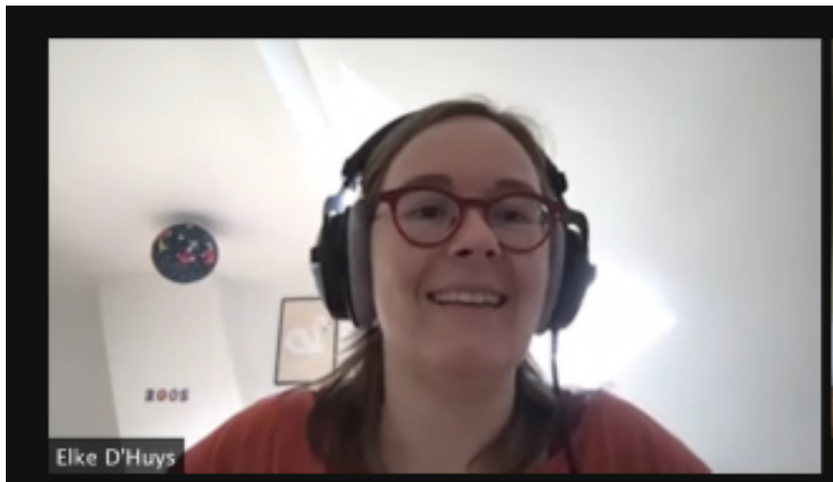
GNSS Advisory:

0000060401

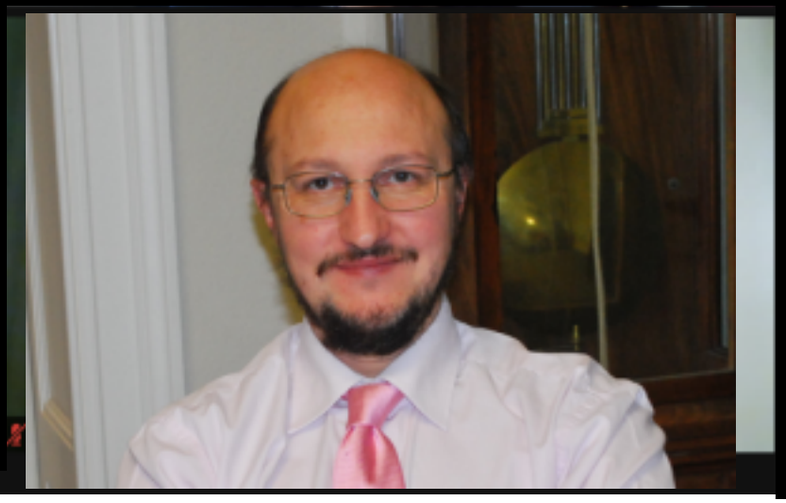
FNXX01 EGRR 291526

SWX ADVISORY
DTG: 20220129/1526Z
SWXC: PECASUS
ADVISORY NR: 2022/2
SWX EFFECT: GNSS SEV
OBS SWX: 29/1155Z HSH E105 - E165
FCST SWX +6 HR: 29/1800Z NOT AVBL
FCST SWX +12 HR: 30/0000Z NOT AVBL
FCST SWX +18 HR: 30/0600Z NOT AVBL
FCST SWX +24 HR: 30/1200Z NOT AVBL
RMK: SPACE WEATHER EVENT (IONOSPHERIC DISTURBANCE) IN
PROGRESS. IMPACT ON GNSS
PERFORMANCE POSSIBLY LEADING TO LOSS OF GNSS SIGNALS AND/OR
DEGRADATION OF
TIMING AND POSITIONING PERFORMANCE.
NXT ADVISORY: WILL BE ISSUED BY 20220129/2038Z=





stce_coordination@stce.be



SWEC
Space Weather Education Center