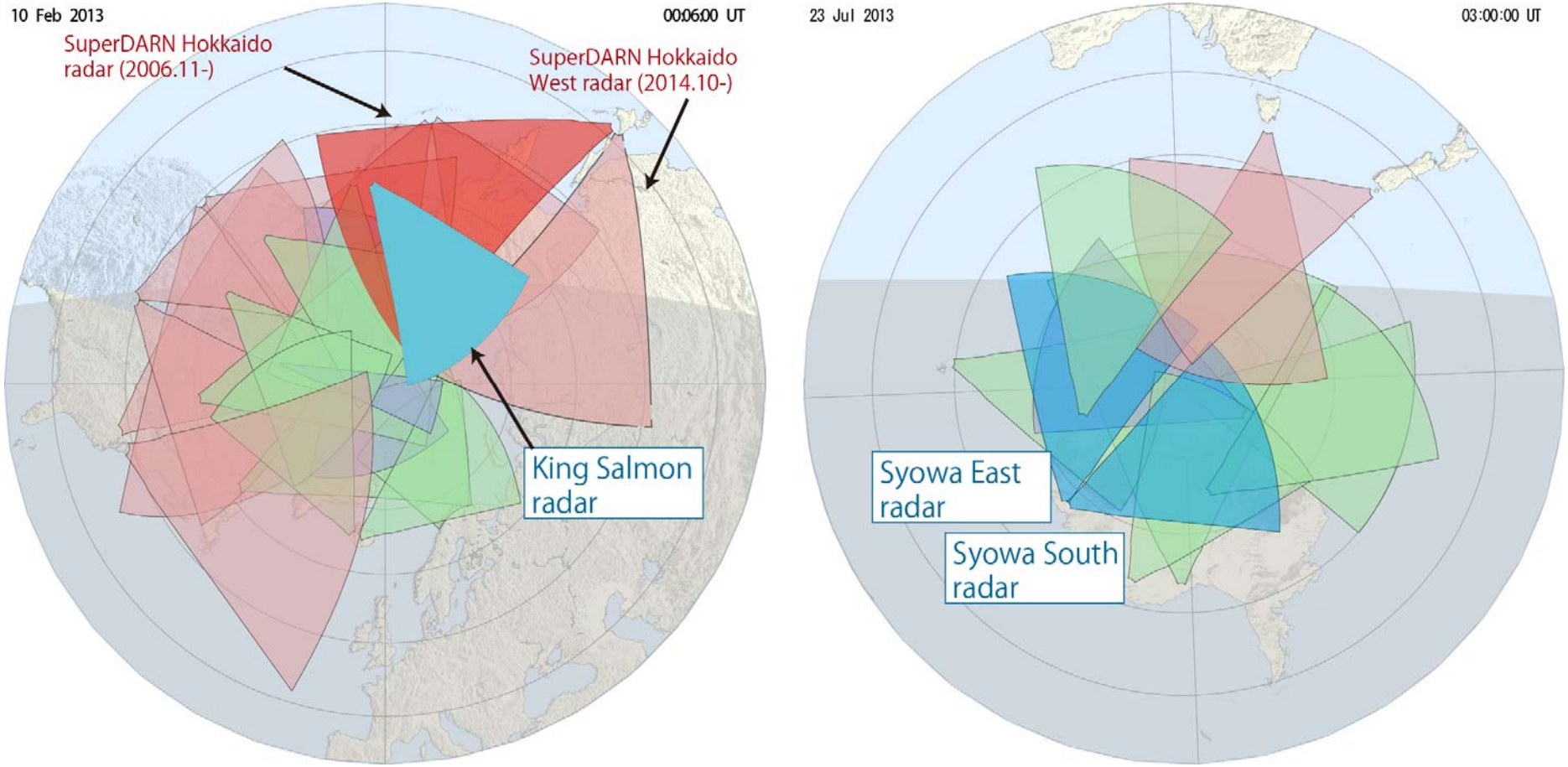
Status report on the SuperDARN HOP (Hokkaido pair of) radars for 2016-2017
北海道-陸別第一・第二レーダーの 2016 -2017年度報告

Hokkaido East radar site visit by ISEE / NIPR / JARE members (Sep 07, 2017)

SuperDARN HOP West radar (2014.10-)

Nozomu Nishitani (ISEE, Nagoya Univ.)

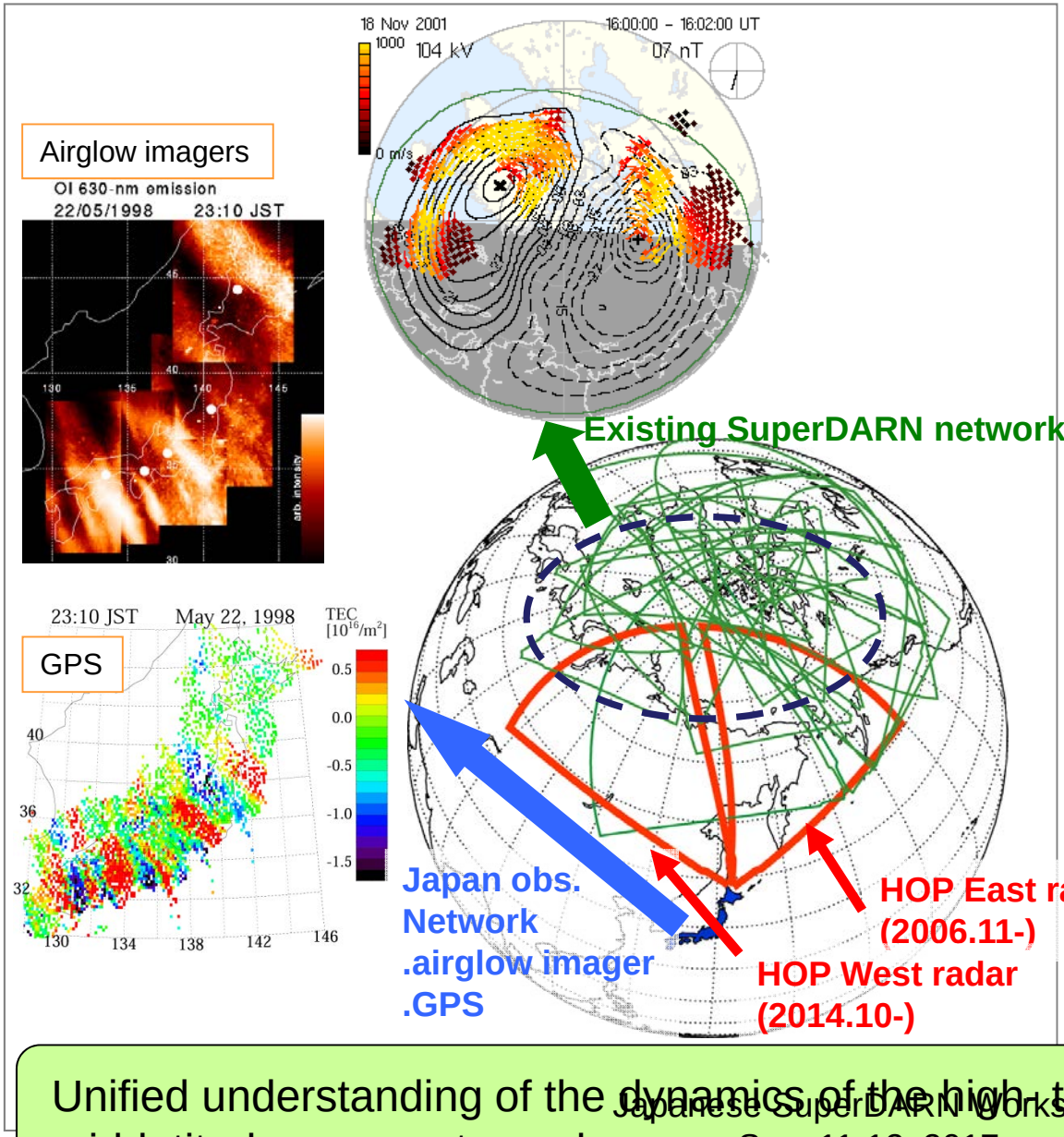
Super Dual Auroral Radar Network (SuperDARN)

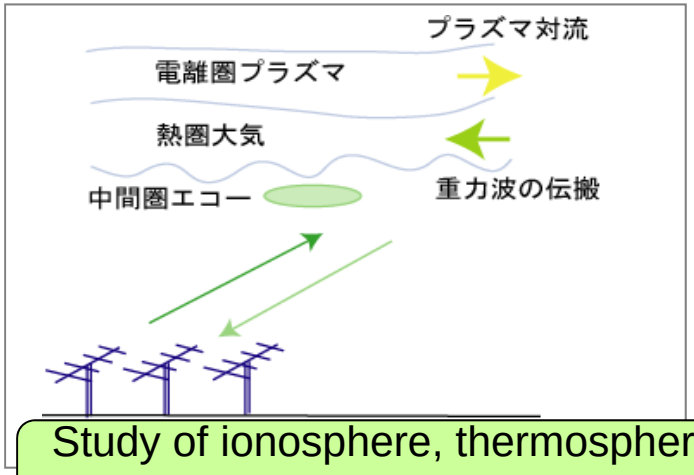


Number of operating HF radars: 35 (23 in the northern and 12 in the southern hemispheres) as of Jan 01, 2016

Standard temporal resolution: 1-2 min

SuperDARN HOP radars (2006.11-) # of papers: 34





Study of ionosphere, thermosphere and upper mesosphere

Unified understanding of the dynamics of the high- to mid-latitude upper atmosphere

HOP general status: fully operational

Recent topics of HOP West (hkw)

- During the site trip in July 7-9 it was found that 7 of the 16 transmitters had problems in switching between 12 / 20 MHz low-pass filters. As a result we had experienced significant echo power decrease when chB was operating above 12 MHz. We tentatively solved it by continuously operating with 11 MHz (chA) and 9 MHz (chB) (we have been doing this since June 14, 01 UT). Since then we obtained hkw data with much better quality, as good as HOP East (hok). We have been fixing the transmitters one by one by replacing vacuum relays in Nagoya.
- During the site trip in Sep 4-7 it was found that two antennas (F5 / R3) had minor problems in VSWR profile, but it was outside our operation frequency range. So this problem does not affect our observation.

HOP general status: fully operational

Recent topics of HOP East (hok)

- During the site trip in July 7-9 it was found that one transmitter had problem in switching in 12 / 20 MHz low-pass filters.
- During the site trip in Sep 4-7 it was found that one transmitter had significantly lower power than usual. We will investigate this.
- Since last year we had problems of VSWR performance in F3, F4 and R2 antennas. In July the antenna manufacturer fixed the problems by replacing the wire between the antenna mast and feeder or adjusting antenna elements.

HOP West (hkw) radar: unsolved issues

- Maximum range issue (we want to change from 70 to 110 but we do not know how to do it)

- Access limited during the winter time

- General issue: The network link to the HOP East / West sites was sometimes unstable last year, which turned out to be due to insufficient connection between the cable and devices. The local electric company fixed this last fall. Still we have problems of slow connection during winter time (possibly affected by snowfall).

HOP East issue

- Both BASBOX's still having a problem in chA but we can use chB (HOP East is a mono radar) without a problem, so probably it is ok.

北海道-陸別第一・第二レーダーの2016.09-2017.04の状況

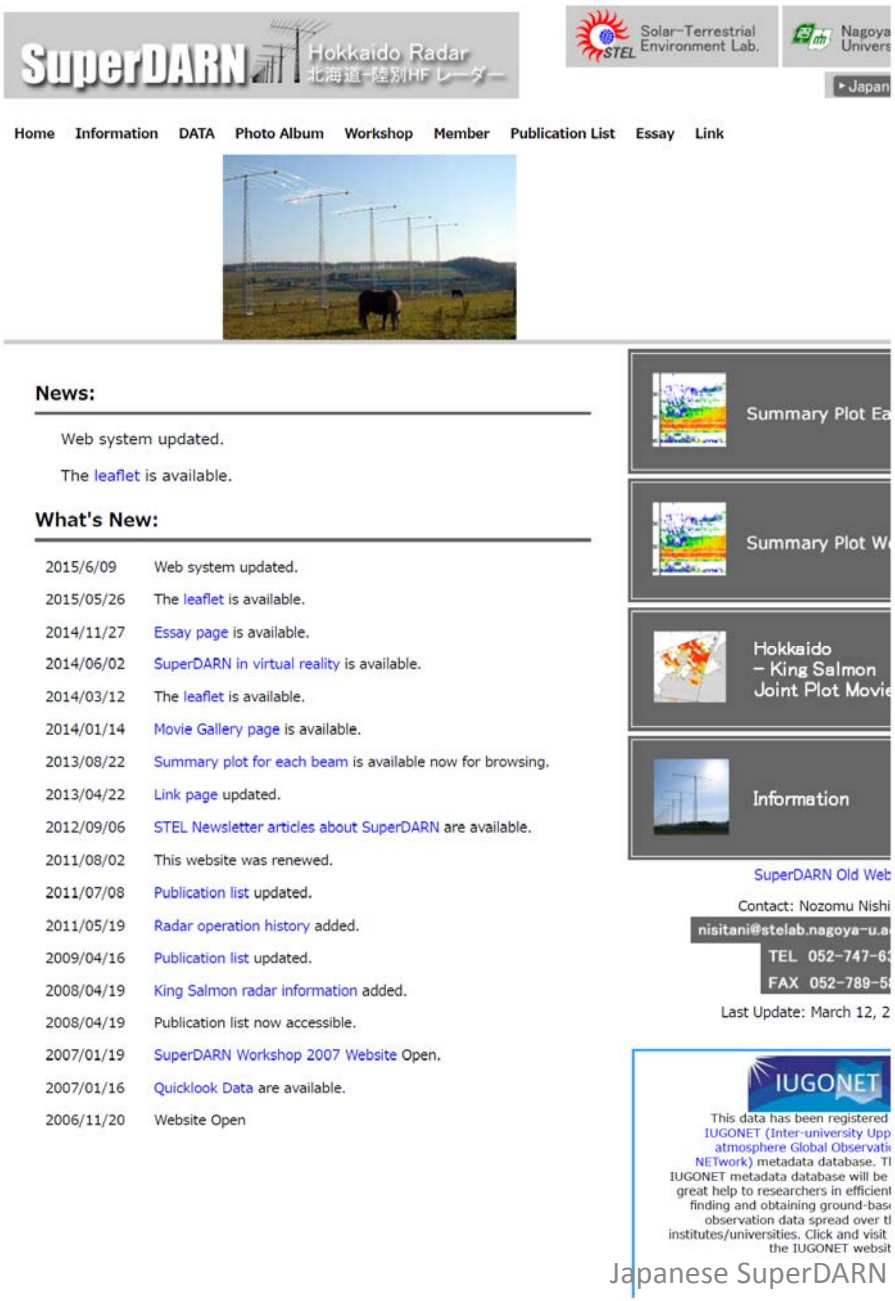
- 第二レーダー
  - 12/29-1/12 ハードディスクフルによりデータ記録できず、システム領域の圧迫の為ログイン不可
  - 1/12に観測所に持って帰りデータを整理して復旧するも、直後に第一-第二レーダー間通信装置が故障、1/12-2/7の間稼働停止
  - 計14+26=40日間稼働停止 (12/29-2/7)
  - 2/7から稼働中(in time for ARASE-SD campaign: 3/17-)ただしchBにおいて12MHz以上で運用している場合のエコー量低下の問題あり

北海道-陸別第一・第二レーダーの2016.09-2017.04の状況

- 第一レーダー
  - 1/12に第一-第二レーダー間通信装置が故障、blanking信号が受信できずに受信不可になる。1/27にblanking信号ケーブルを外して稼働再開(その後2/7に第二レーダーも復旧)。
  - 2/15に制御計算機が稼働停止、様々な試行錯誤の上で3/2に第二レーダー用の予備機を代替機として再稼働に成功
  - 計15+15=30日間稼働停止 (1/12-27, 2/15-3/2)
  - 3/2から稼働再開 (in time for ARASE-SD campaign: 3/17-)ただしノイズレベル、range offset等の問題あり
  - 5月から元のメインコンピュータに戻して運用開始
  - 7月にもメインコンピュータのハードディスク冷却ファン停止により2週間ほど停止
    - 第一・第二レーダーメインコンピュータの予備機を用意し、9/4-7の訪問時に現地テスト実施

HOP East / West scheduling

- HOP East
  - Follows the scheduling Workgroup
  - “interleaved normalscan” (ERG-SD conjunction mode) now running during special time (during discretionary time we run normalscan presently)
- HOP West
  - chB camping beam (#10) mode with fixed frequency (9 MHz) since Dec 14, 2017, and chB normalscan mode with 11 MHz frequency. During the ERG-SD conjunction period we run interleaved normalscan using chA.



SuperDARN HOP (Hokkaido Pair of) radars web page

URL:

http://cicr.isee.nagoya-u.ac.jp/hokkaido/

Informal information for other SuperDARN radars

- Visit to ISTP, RAS SB in Irkutsk (March 19-23) (N. Nishitani)
  - Main purpose was to discuss PWING data exchange (induction magnetometer and optical instrument) between ISTP and ISEE, I also had a chance to discuss with Oleg Berngardt on the Ekaterinburg data exchange. They expect to distribute fitacf data by t Discussion on the collaboration between ISTP and Japanese PWING group, as well as some conversation about SuperDARN / Russian HF radar

- Meeting with Jiaojiao Zhang at AOGS Singapore (Aug. 9)
  - She said that they succeeded obtaining first light of their Jiamsi radar. She showed me their first light plot (2-D echo power distribution), which looked reasonable. She said they would check their observations in several ways including the comparison with the HOP radar plots.

Announcement: Rikubetsu radar site 10th anniversary symposium

- Joint with Rikubetsu observatory 20th anniversary symposium
- Final schedule: November 8-9, 2017 (postponed from the last year)
- Place: Rikubetsu Town Hall

Japanese SuperDARN Mailing list

- ML address: sdjapan@isee.nagoya-u.ac.jp
- Mailing list for exchanging information on SuperDARN (and related activities) and discussion related to SuperDARN
- Anyone interested in SuperDARN can join!

ISEE/CICR International Workshop: Review of the Accomplishments of the Mid-Latitude SuperDARN Network (approved)

- ISSI-style workshop
- 15 participants
- the main purpose is to write up a review paper or special issue papers
- Leader: Nozomu Nishitani
- General review: Nozomu Nishitani, Mark Lester and Mike Ruohoniemi
- Other participants: Gareth Chisham, Jim Wild, Aurelie Mauchaudon, Sasha Koustov, Roman Makarevich, Tomoaki Hori, Simon Shepherd, Yusuke Ebihara, Keisuke Hosokawa, Jo Baker, Pasha Ponorenko and Evan Thomas
- Dates: Jan 10-14, 2017.
- Place: ISEE, Nagoya University
- Review paper is now under preparation

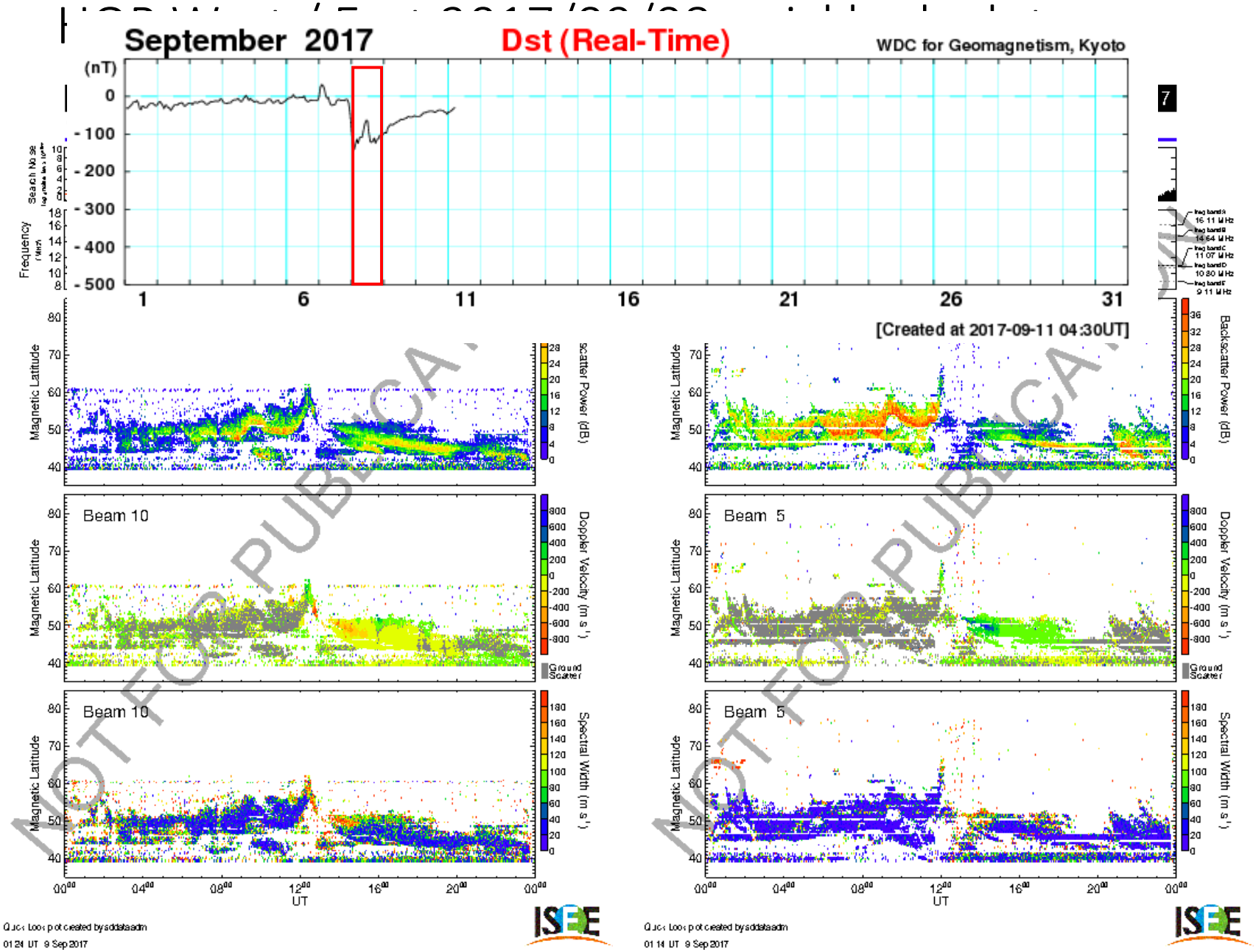
Summary

- Both HOP East / HOP Wes radars have been working. They (especially HOP West) had problems although. For details please see:

  http://cicr.isee.nagoya-u.ac.jp/hokkaido/hok_operation.txt

  http://cicr.isee.nagoya-u.ac.jp/hokkaido/hkw_operation.txt

- Anniversary conference in Rikubetsu will be held on November 8-9.
- ISEE/CICR International Workshop was held in January, and the review paper is in preparation.
- PWING
- Etc.


September 2017
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(nT)
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Beam 10
Beam 5
Magnetic Latitude
Scatter Power (dB)
Backscatter Power (dB)
Doppler Velocity (m s⁻¹)
Spectral Width (m s⁻¹)
Ground Scatter
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Quick Look plot created by sddataadm
01:24 UT 9 Sep 2017
01:14 UT 9 Sep 2017
NOT FOR PUBLICATION