

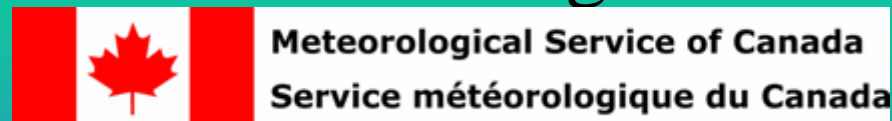


 Canadian Space Agency
Agence spatiale
canadienne



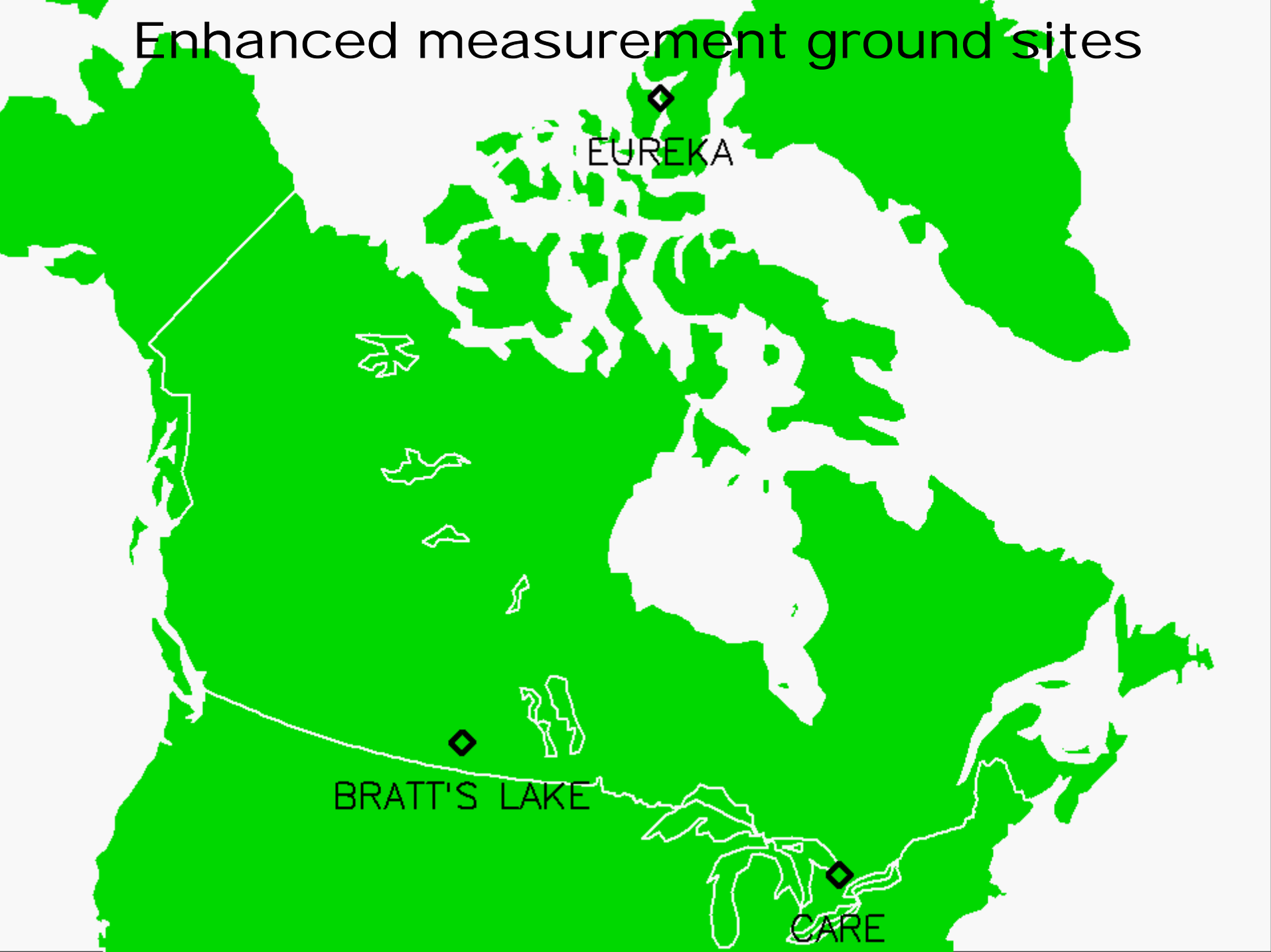
Ground-based resources

Peter Rodriguez



Canadian CloudSat/CALIPSO Validation
Project Planning Workshop
Sept 27-28, 2004, Toronto.

Enhanced measurement ground sites





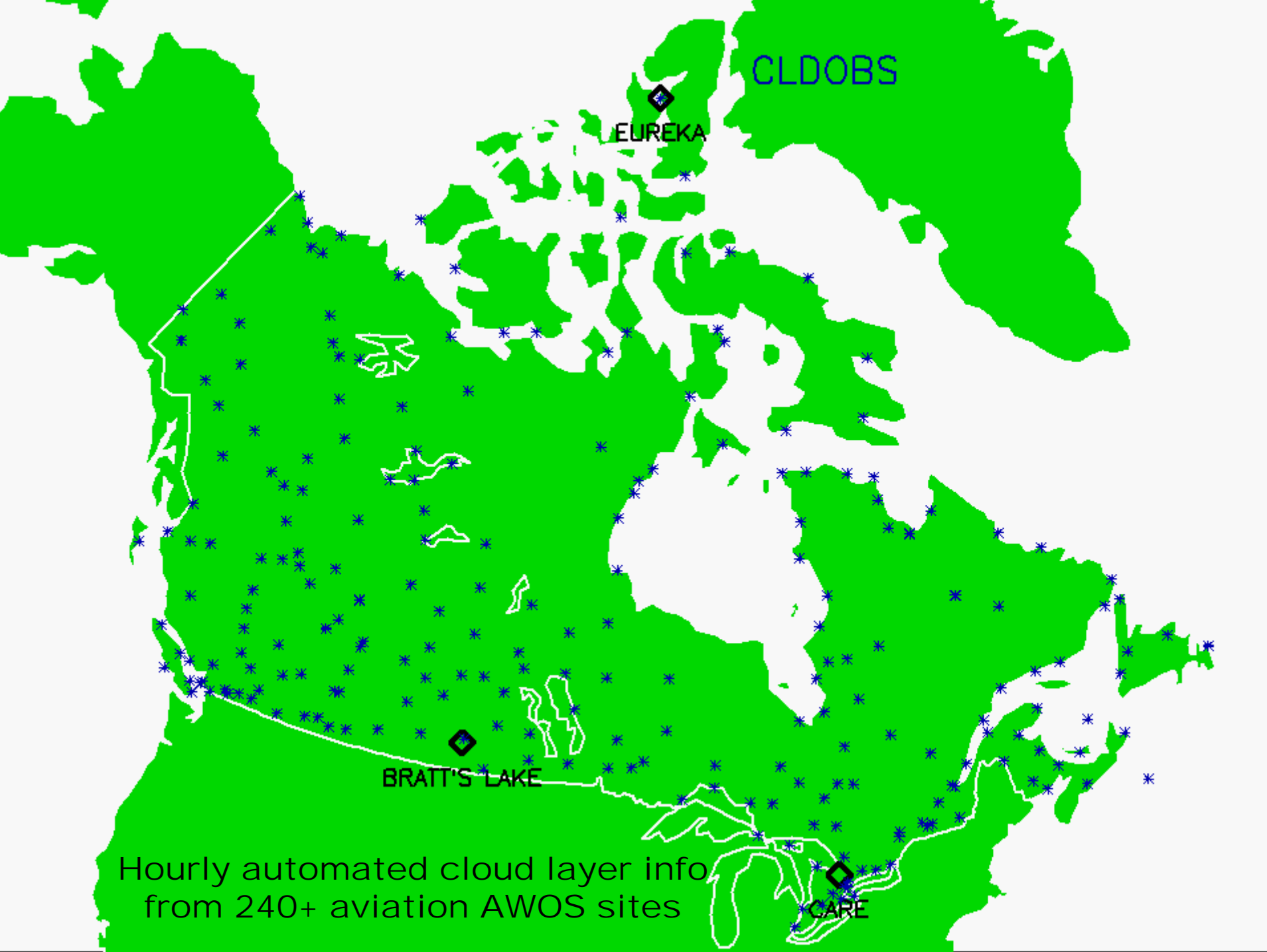
EUREKA

RADAR

BRATT'S LAKE

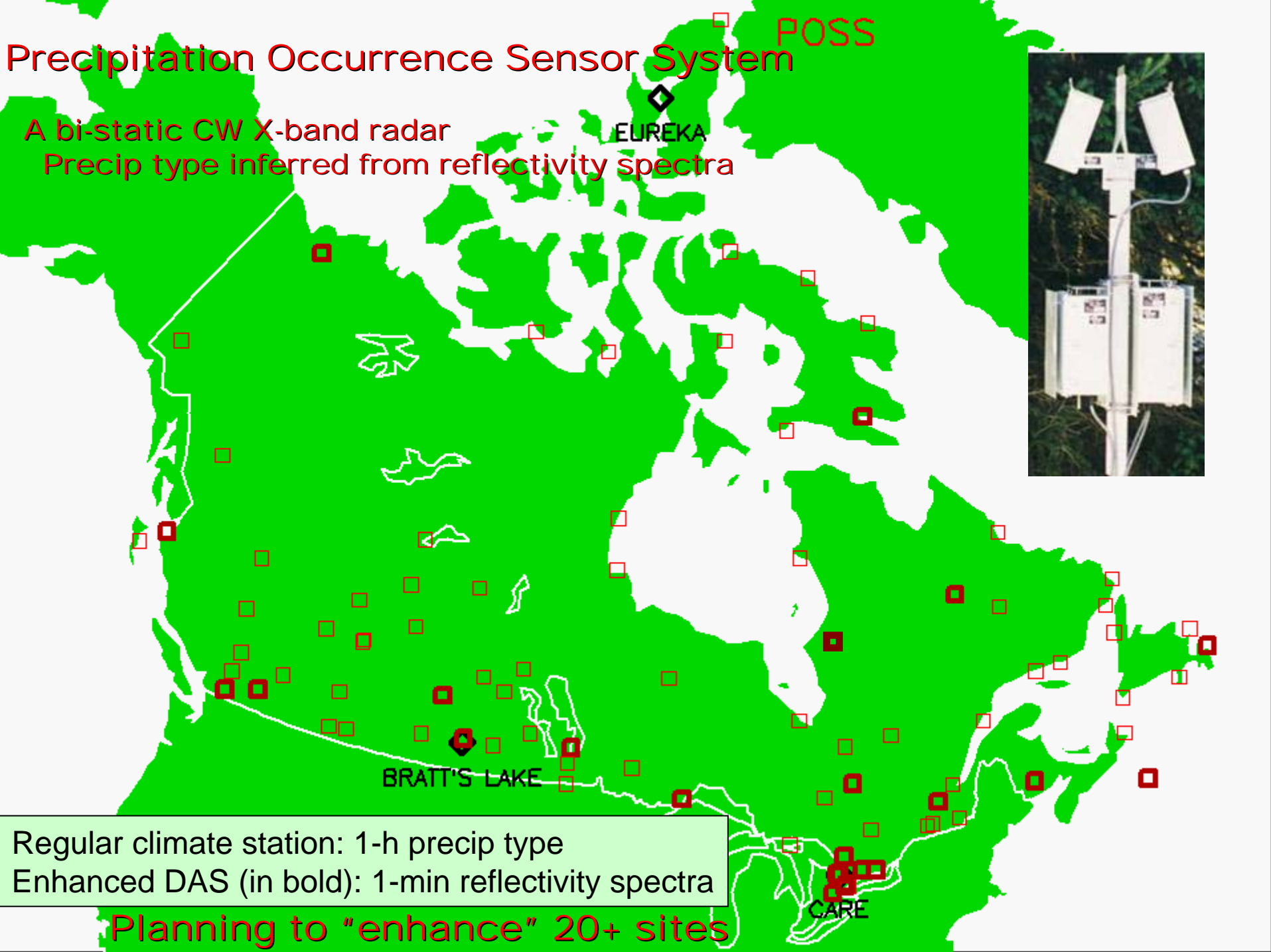
CARE

31 NRP radars
Near real-time access to volumes



Precipitation Occurrence Sensor System

A bi-static CW X-band radar
Precip type inferred from reflectivity spectra



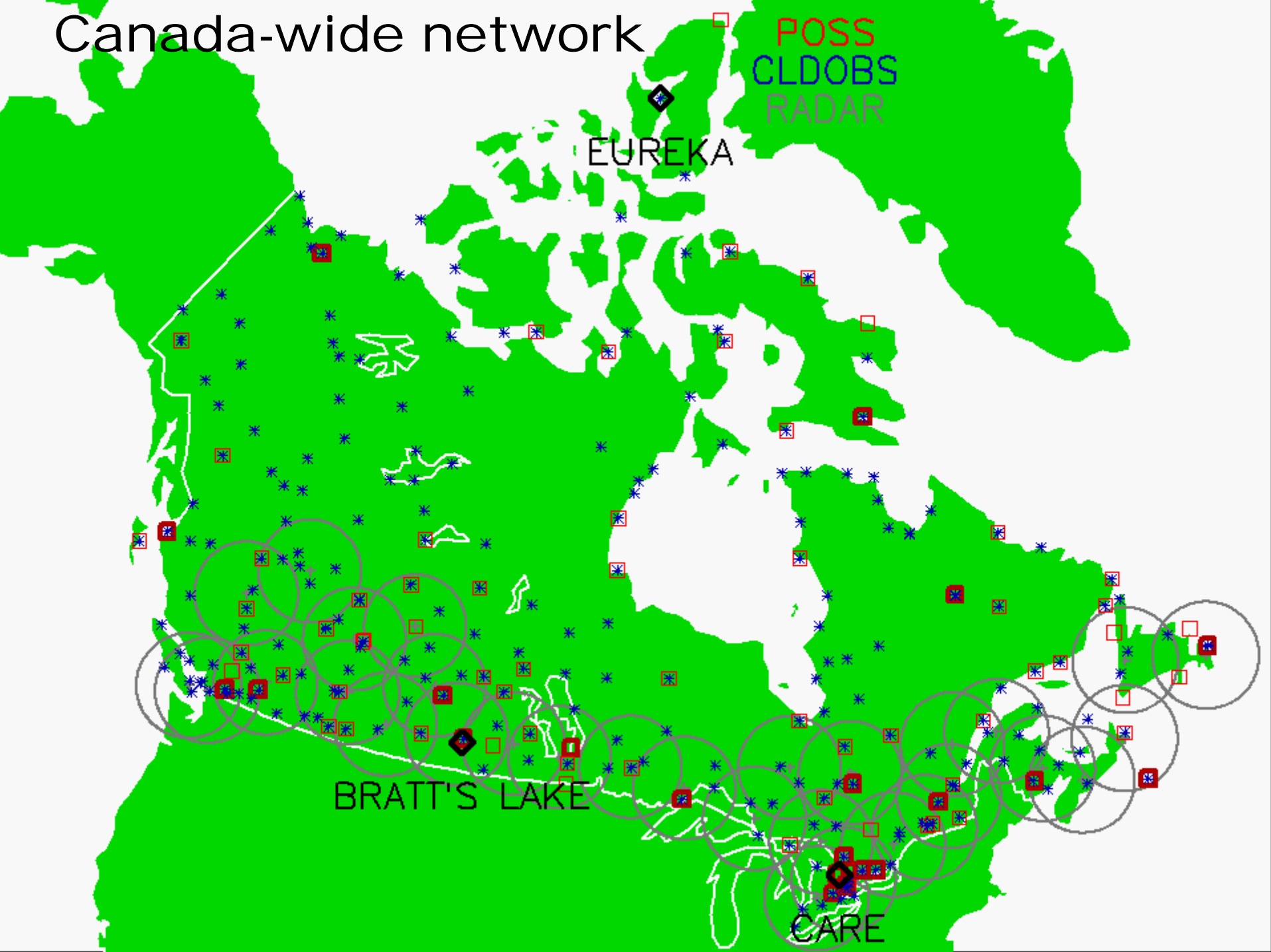
Canada-wide network

POSS
CLDOBS
RADAR

EUREKA

BRATT'S LAKE

CARE



Bratt's Lake, Saskatchewan

Part of Baseline Surface Radiation Network (BSRN)

15-sec output:

- CT75k Ceilometer
- DFIR & Alter shield precip amt

1-min output:

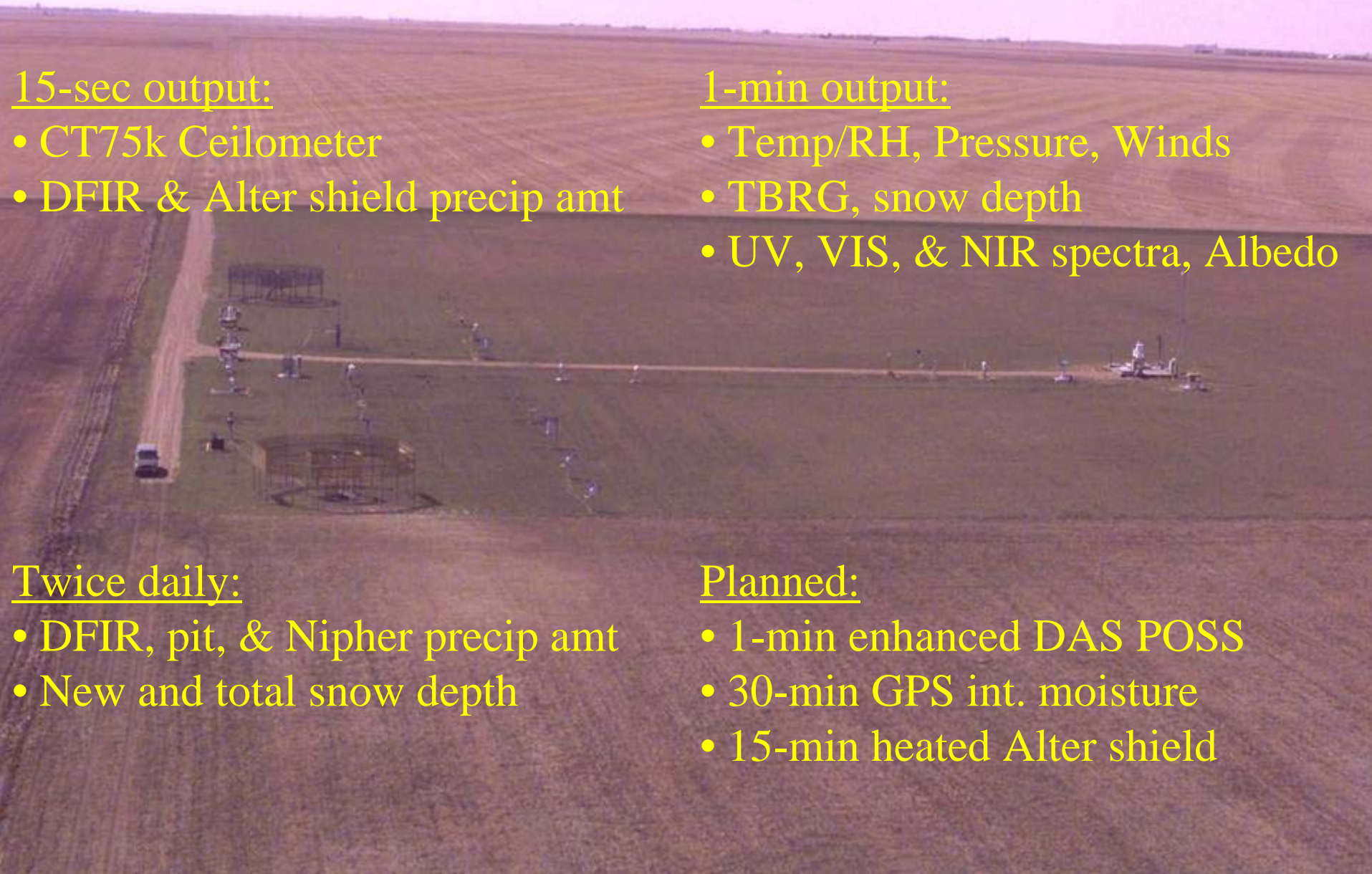
- Temp/RH, Pressure, Winds
- TBRG, snow depth
- UV, VIS, & NIR spectra, Albedo

Twice daily:

- DFIR, pit, & Nipher precip amt
- New and total snow depth

Planned:

- 1-min enhanced DAS POSS
- 30-min GPS int. moisture
- 15-min heated Alter shield



Centre For Atmospheric Research Experiments (CARE)

- Climate reference station
- Canadian Air & Precipitation Monitoring Network (CAPMoN) site
- Air Quality studies
- Research field for Instruments Branch
- Lidar research

Rural setting
70km north of Toronto



CARE ground (con't): LIDAR

MOBILE:

Rapid Acquisition Scanning Aerosol Lidar (**RASCAL**)

- 26ft mobile lab, generators, air/ground comm
- capable of fast az. & elev. scanning profiles
- 1064nm, adding 532nm, 50Hz
- resolution of 3m along the beam axis
- two large 24" mirrors
- can operate while mobile



CARE LAB:

Aerosol Lidar Instrument for Atmospheric Studies (**ALIAS**)

- Dual 1064/532 nm, 10Hz
- depolarization capability
- typical vertical resolution of 3.75 m
- new 30" telescope



CARE ground (con't)

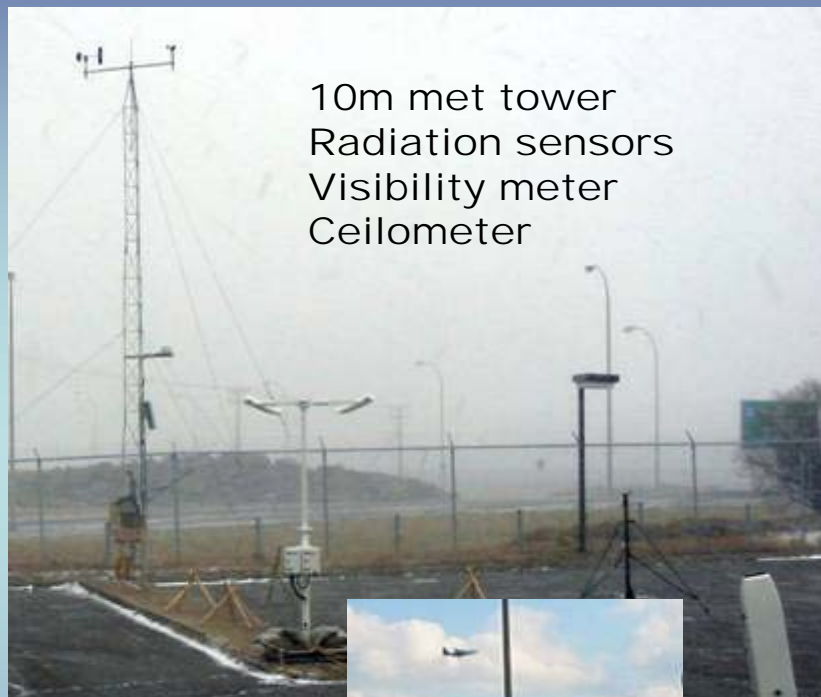


Instrumentation

- Precipitation gauges
- Sky camera
- Wind profiler
- Upper Air System?
- Ceilometer
- Sun Photometer
- Radiation sensors
- GPS moisture?

CARE ground (con't)

MSC field project deployment suite



(AIRSII Mirabel shown)



CARE ground (con't)

U. of Alaska

95GHz Polarimetric radar

Wavelength = 3.2 mm (W-band)

Beamwidth = 0.25 deg

Dish Diameter = 90 cm

Range Resolution = 75 m



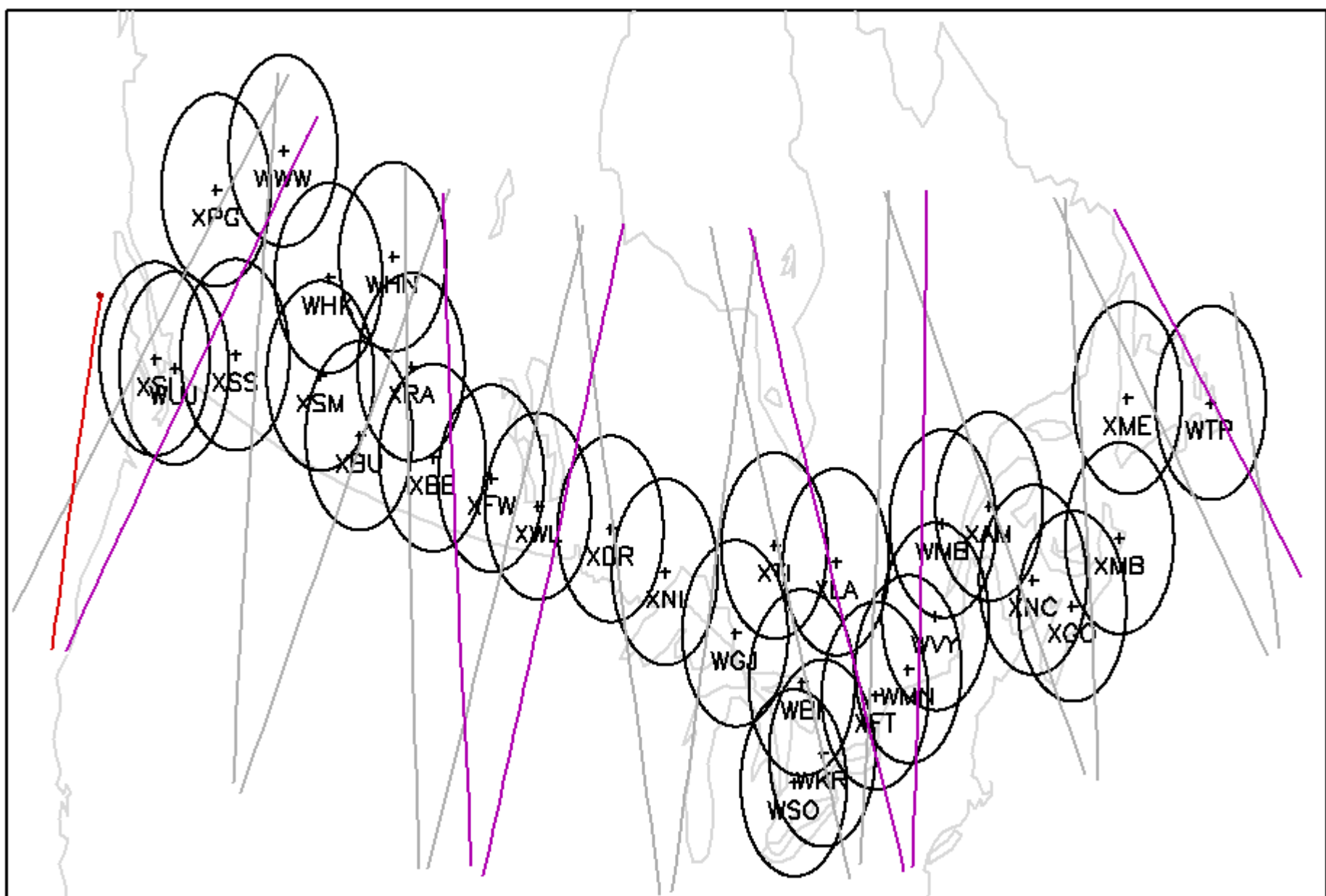
To show
AQUA satellite predicted orbits
across the NRP domain

Data provided by NASA @
<http://www-air.larc.nasa.gov/tools/predict.htm>

AQUA_ORBITS_DAY02_PASS06

2003-11-24 21:23:20

ASCENDING



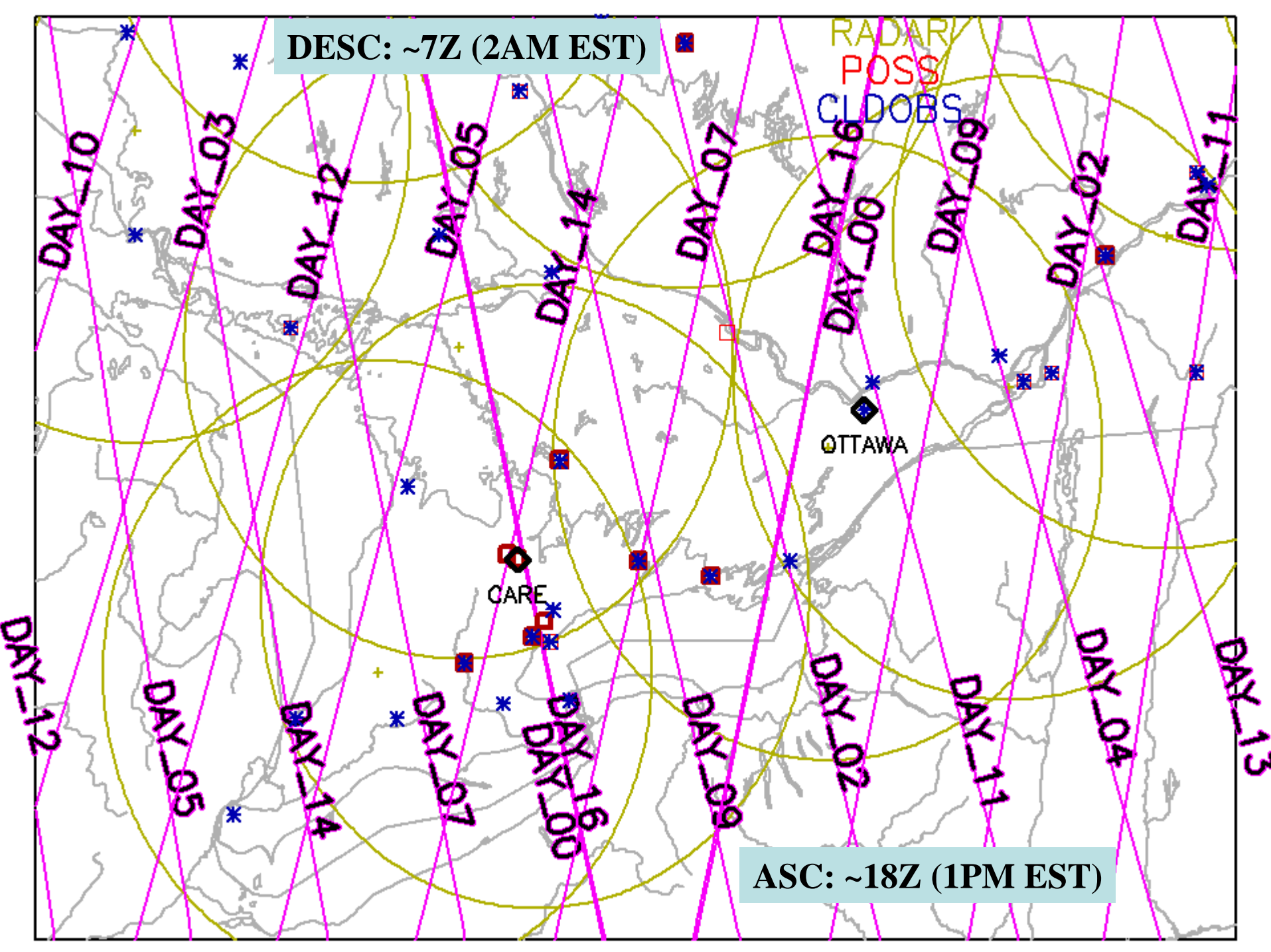
Number of passes through NRP domain

<u>Between adjacent passes:</u>				
1:40 [hr:min]				
7 [orbits away]				
840 [km]				
<u>Day</u>	<u>DESC Interval [Z]</u>	<u># DESC</u>	<u>ASC Interval [Z]</u>	<u># ASC</u>
0	0530 - 1025	4	1639 - 1956	3
1	0613 - 0930	3	1722 - 2040	3
2	0655 - 1013	3	1627 - 2123	4
3	0601 - 0917	3	1709 - 2027	3
4	0643 - 1001	3	1616 - 2111	4
5	0548 - 1044	4	1657 - 2015	3
6	0631 - 0948	3	1740 - 2048	3
7	0536 - 1031	4	1645 - 2003	3
8	0619 - 0936	3	1728 - 2046	3
9	0526 - 1019	4	1632 - 2129	4
10	0607 - 0923	3	1716 - 2034	3
11	0649 - 1007	3	1621 - 2117	4
12	0555 - 1050	4	1703 - 2021	3
13	0637 - 0954	3	1611 - 2104	4
14	0542 - 1038	4	1651 - 2009	3
15	0625 - 0942	3	1734 - 2052	3
16	0531 - 1025	4	1639 - 2135	4
Typically:	0530Z - 1100Z	4	1600Z - 2130Z	4

To show 16-day cycle of AQUA overpasses within
Southern Ontario field project area

DESC: ~7Z (2AM EST)

RADAR
POSS
CLOUDS
DOBS



ASC: ~18Z (1PM EST)