STAR data Overview and Access

George Liu
Star project data manager
CEOS, University of Manitoba

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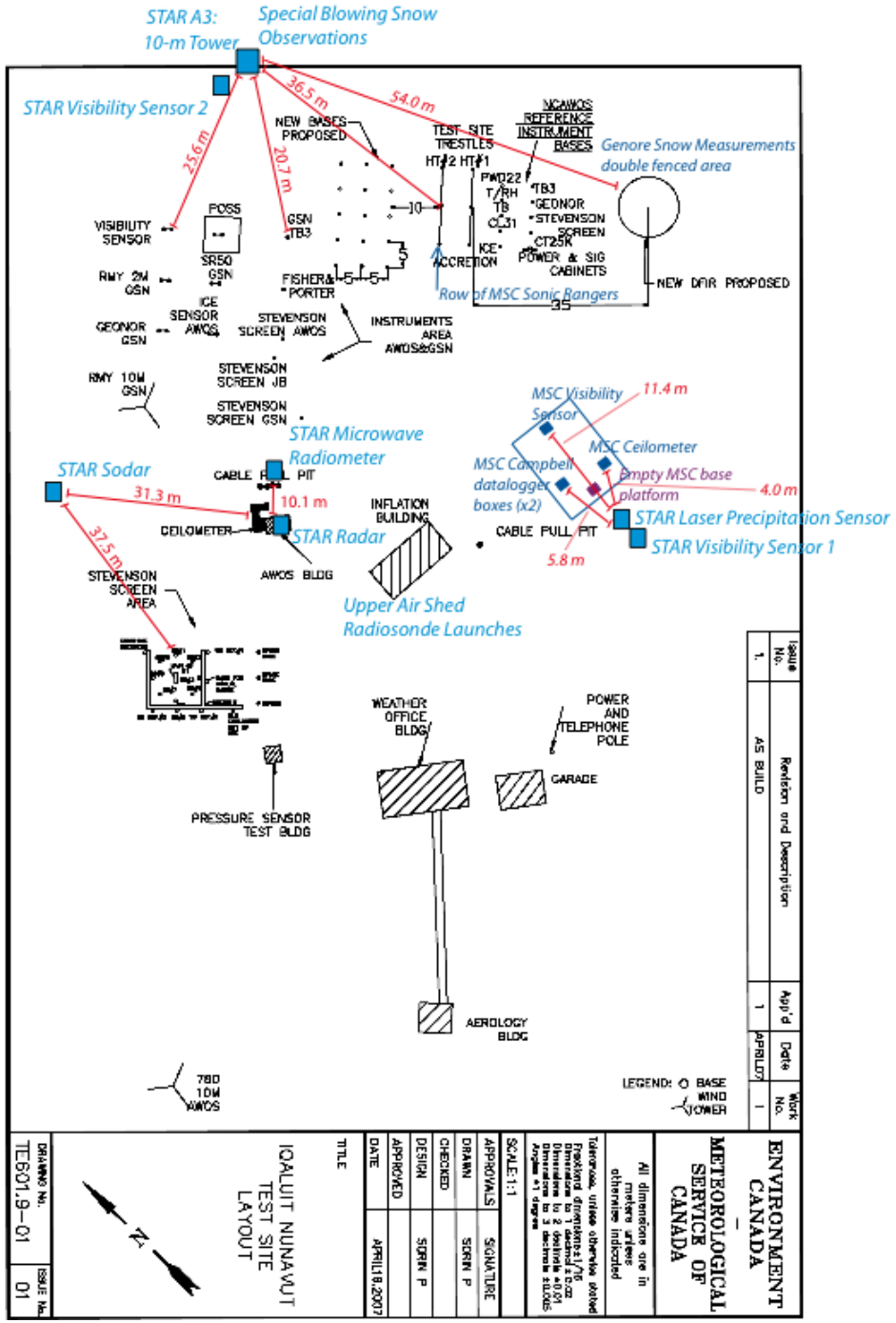
CURRENT STATUS

Currently, we have about

- 73GB field observation data
  - Aircraft data: dropsondes, radar data, 1D&2D analysis, …
  - Surface observation: sensor data, radar data, mesonet (AWS), variety of images and etc.
  - Upper-air sounding data
  - Other variety of data with variety of formats (text, specialized)
- 140Gb Satellite data
  - CloudSat, Modis, HRPT
- 350GB GEM-Regional model output
- 16Gb other data archived from internet
  - Weather analysis charts and operational forecast
  - Other data

Location of STAR Instruments at Iqaluit Airport (EC site)

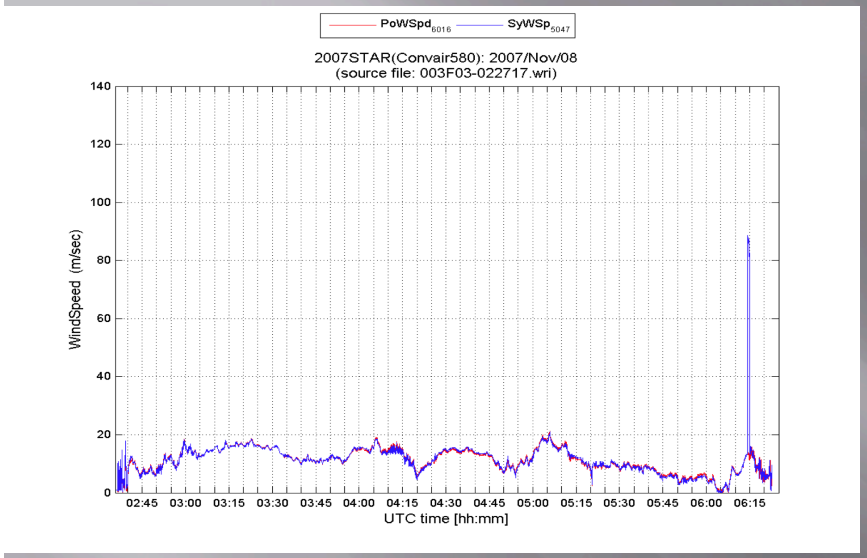


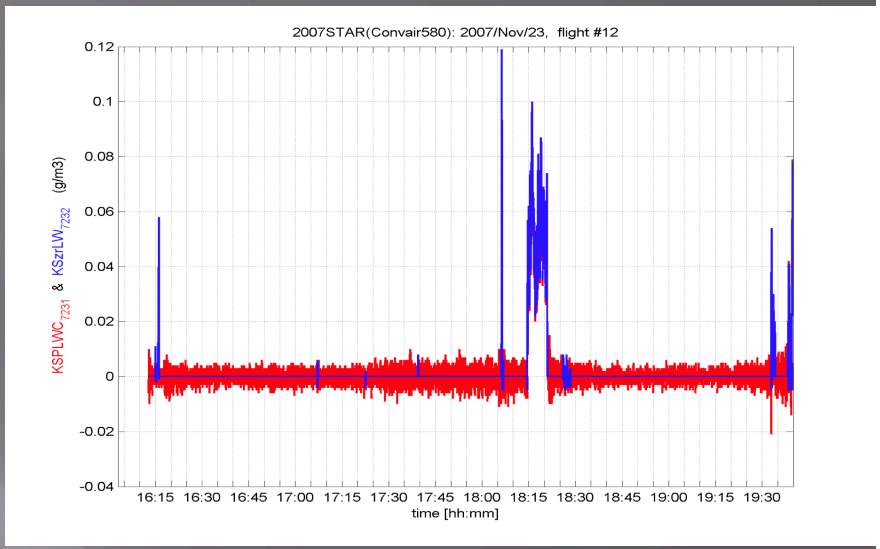
Aircraft instruments & Data

- 1D&2D analysis
- Dropsondes
- Radar data
  - W-band
  - X-band
  - Ka-band
- Flight track
- Most data in ascii, particle images, radar dat(NetCDF)

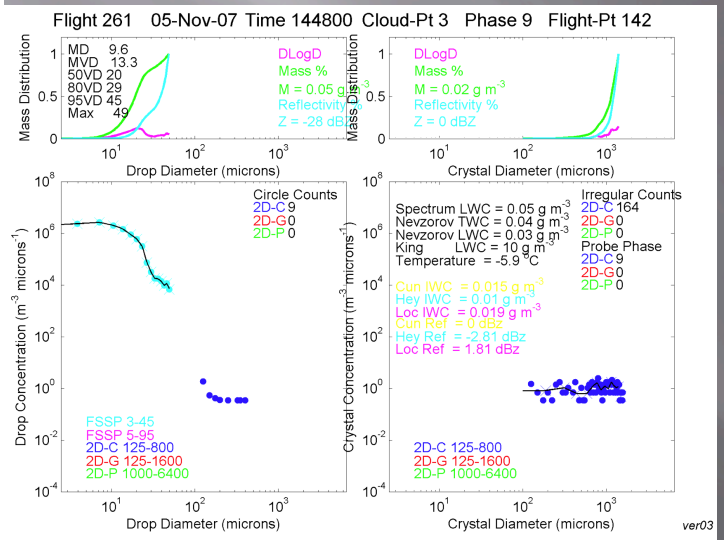
NRC Convair - 580 & EC Aircraft Instrumentation	Measurement
Atmospheric State	
Rosemont 102 probe x 3	Temperature
NCAR Reverse Flow probe	Temperature
LICOR LIC2G2 water vapour/CO2 instrument	H20 mixing ratio, CO2 mixing ratio
EG7G chilled-mirror hygrometer	Humidity
Rosemount 858 gust probe	Vertical velocity
CR-2 water vapour measurement system	Humidity, low vapour concentrations
LWC and TWC	
Rosemount Icing (RICE) Probe	Detects supercooled water
Vibrameter	Detects supercooled liquid water content (LWC)
Nevzorov LWC/TWC probe	separate estimates of LWC and total water content (TWC)
PMS CSIRO King Probe	LWC
Cloud Microphysics	
DMT ConterFlow Virtual Impactor (CVI) for TWC	TWC
DMT Cloud, Aerosol, and Precipitation Spectrometer (CAPS)	T, LWC, Nd, cloud size distribution (0.5-1500 mm)
SPEC Cloud Particle Imager (CPI)	cloud particle images (15-2500 μm)
PMS FSSP-100X	small particle spectrum (3-45 μm)
PMS FSSP-100X	small particle spectrum (5-95 μm)
PMS FSSP-002	small particle spectrum (3-45 μm); without sample tube
PMS 2D2C	cloud particle images and spectra, nominally 25-800 μm
SPEC 2DS (10 micron config.)	cloud images and spectra 10-1280 μm, orthogonal channels
PMS 2DP	cloud particles images and spectra, nominally 200-6400 μm
PMS 2DC-grey	grey-scale images of cloud particles, nominally 15-960 um
Radiometers	
Heitronics KT19.85 Infrared Thermometer (IRT)	Cloud emissivity, surface temperature; Nadir view; Narrow field of view
Kipp and Zonen broadband visible radiometers	Broadband hemispheric visible radiation, zenith and nadir view, 305-2800 nm
Epply broadband Pyrgeometers	Broadband hemispheric infrared fluxes, zenith and nadir view, 3.5-50 μm
ProSensing up looking G-band radiometer	multichannel centered on 183.31 GHZ; derived parameters water vapour and liquid water paths above aircraft
Other Remote Sensing	
Ka-band up and down-looking radar	radar cross sections (reflectivity only)
NAWX X-band/W band radar, dual polarization, Doppler, up/down/side looking	radar cross sections, and side-looking reflectivity/Doppler fields

1D&2D plot

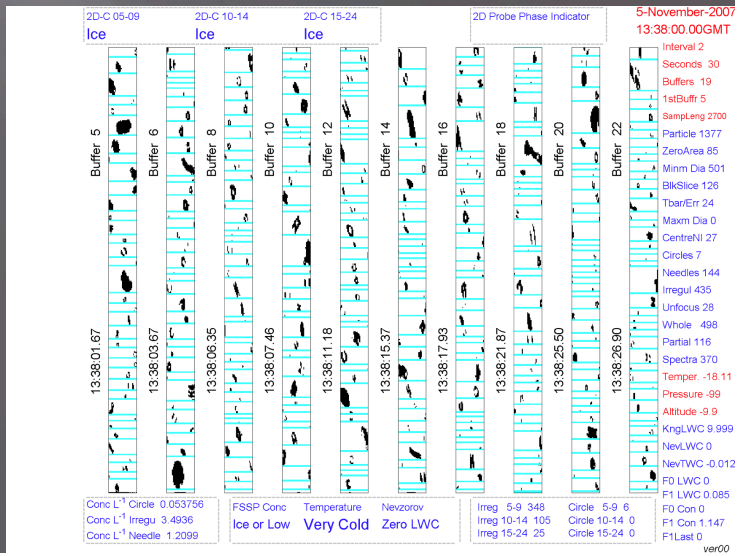




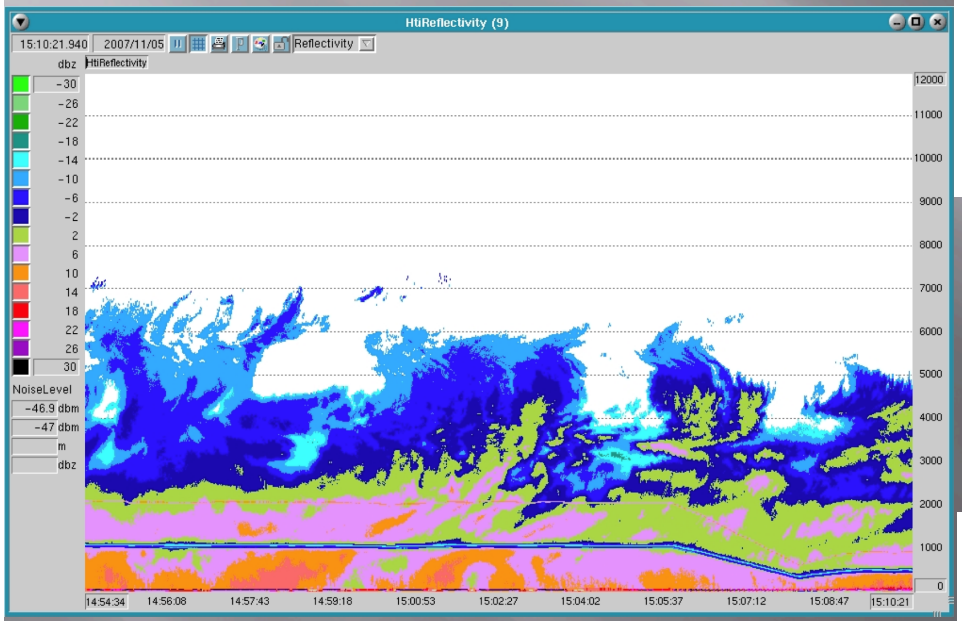
2DC and 2DP spectra

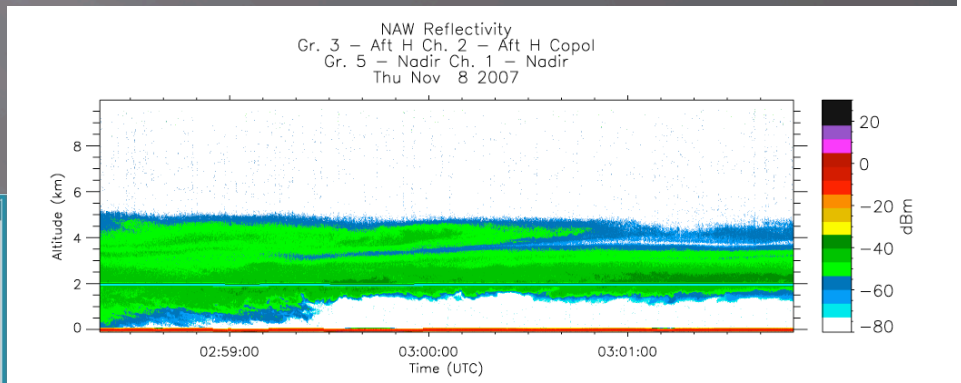


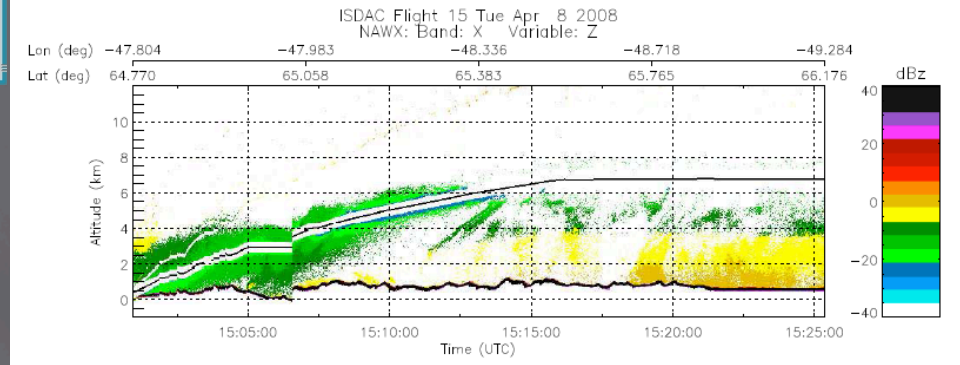
Sample plot of 2DC (C01_133800.tif)



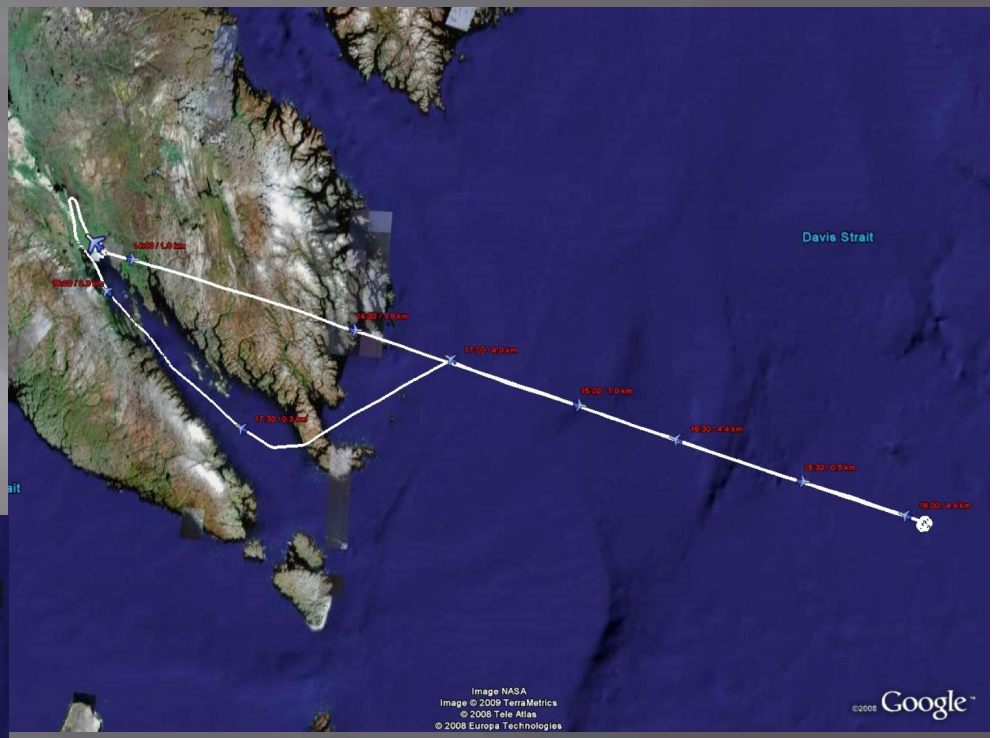
Rada reflectivity

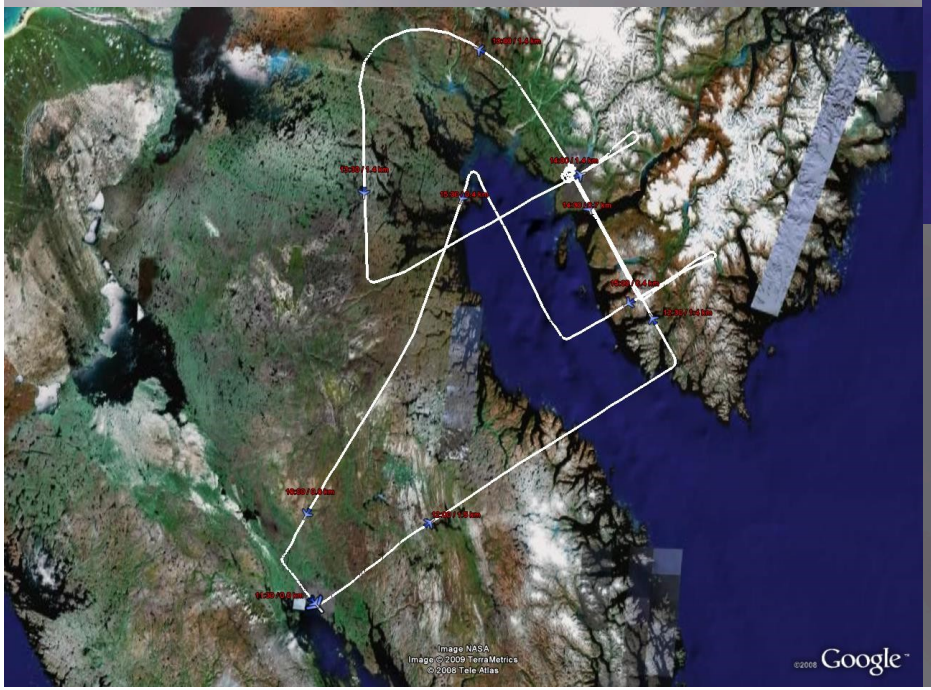






Aircraft flight Track



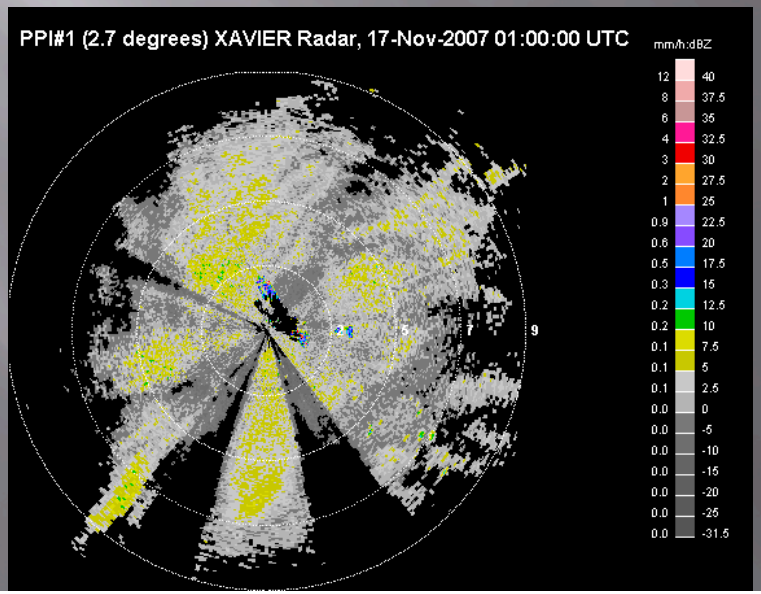


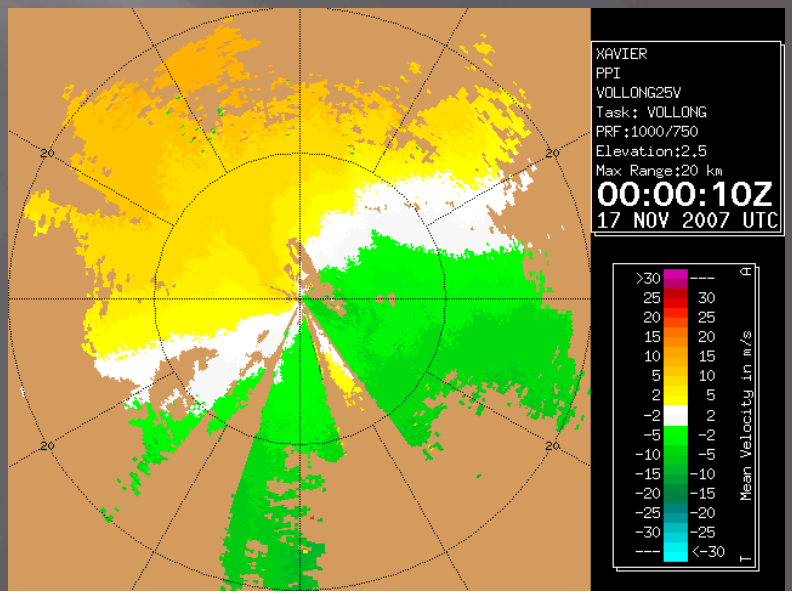
Upper air observations

- Radiosondes were flown by balloon every 3 hours during storms and special weather events
- providing atmospheric profile of
  - Temperature
  - Relative Humidity
  - Pressure
  - Wind
- The raw data are opened in Sounding Workbench software to extract 10 second intervals data in text file format

Remotely Sensed Observation

- A Portable X-band surface Doppler Radar at YFB Environment Canada Weather Office
- Data files were stored in iris format. Corresponding gif files were created from the iris files



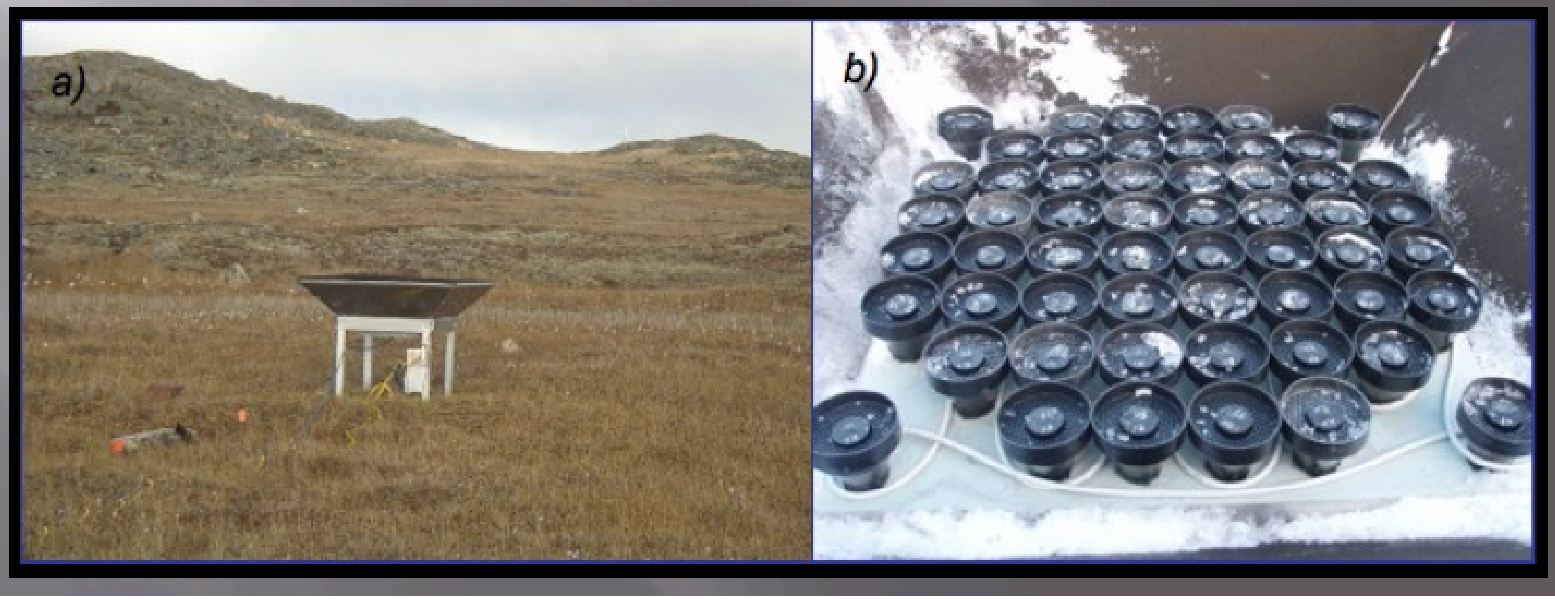


Passive Microwave Radiometer

- To measure total column integrated water vapor and liquid water content
- Data format:
  - .los (ascii)
  - .sav (ascii)
  - .err (ascii)
  - .log (ascii)

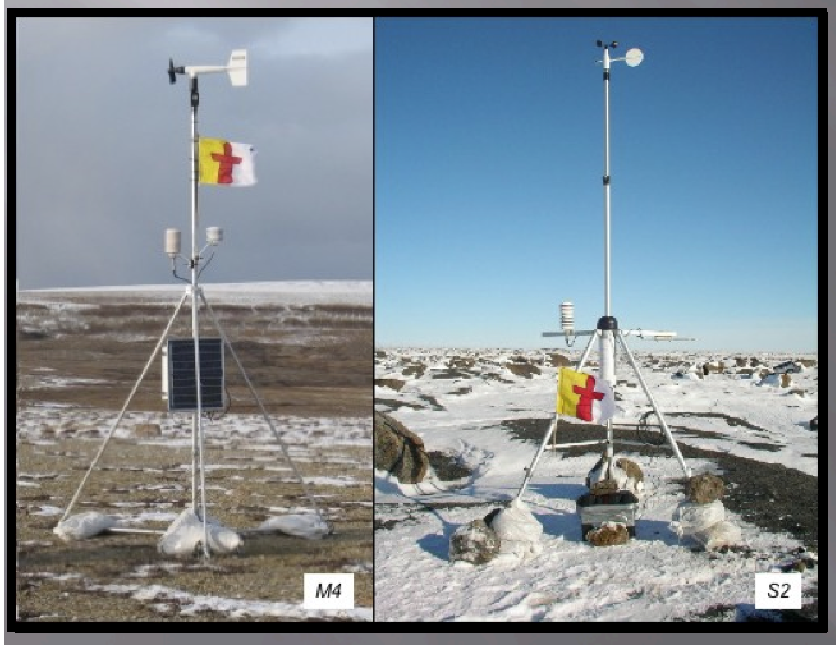
Doppler SODAR

- An acoustic Doppler SODAR (sound detection and ranging) system (Remtech PA1-NT) was used to assess the three component winds between 0 – 1.2 km AGL with a 30 m vertical resolution every 30 minutes.
- Data format: .dat (ascii)



Automatic Weather Stations

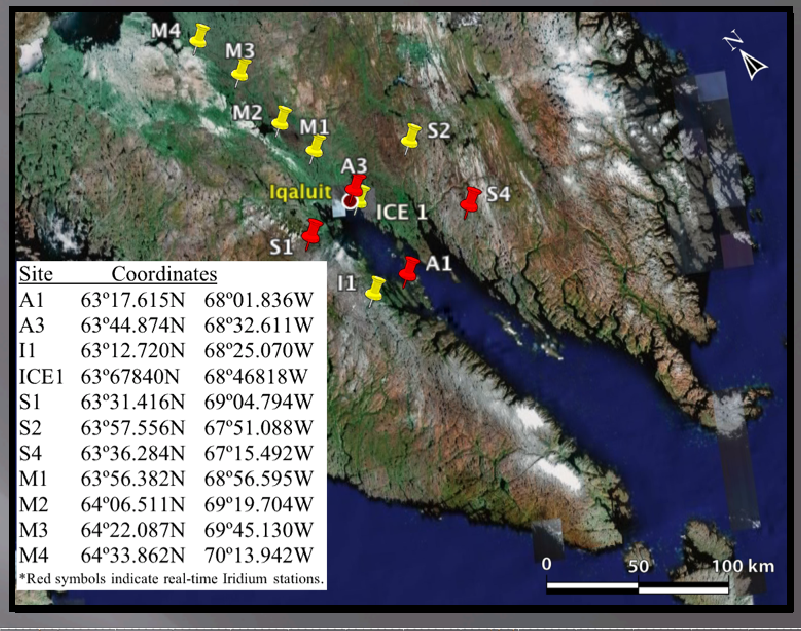
- Mesonet around Iqaluit
- Instrumentation collectively provided by:
  - York University
  - Environment Canada
  - University of Manitoba (CEOS)
  - Indian and Northern Affairs Canada
  - McGill University



- An MAWS201 automatic weather station produced by Vaisala was set up ~100 m west of the weather station at the Pangnirtung airport

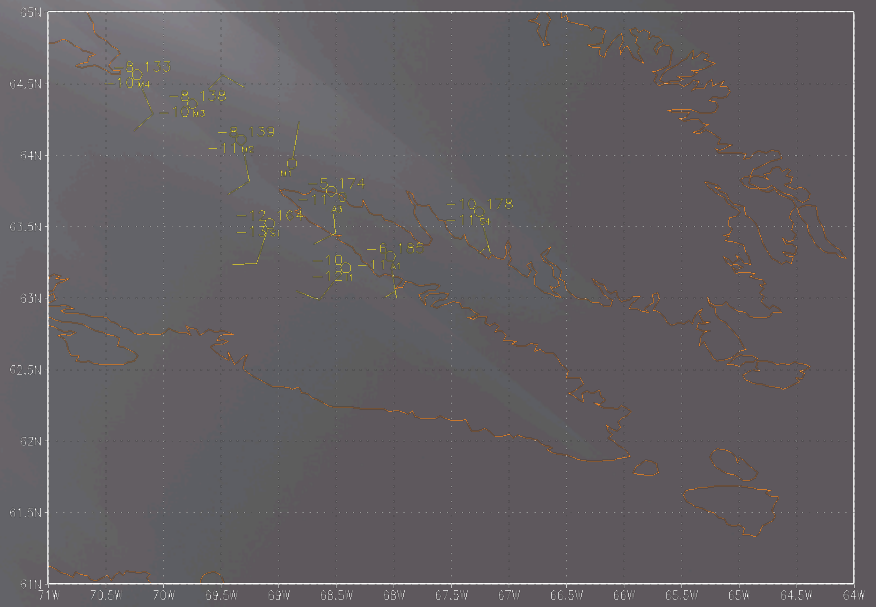
Southern Baffin Island Mesonet

- A small mesonet of 10 automatic weather stations, within a 100 km radius of Iqaluit was installed
- Provided real-time weather data. Such as 3m wind velocity and pressure, 2m temperature, and 2m humidity every 10-minutes.
- One of the ten stations was equipped also anemometers sampling at 10 m, 4 m, 3 m, 2 m and 1 m and a visibility sensor.
- Data format: text



Site	Coordinates	
A1	63°17.615N	68°01.836W
A3	63°44.874N	68°32.611W
I1	63°12.720N	68°25.070W
ICE1	63°67840N	68°46818W
S1	63°31.416N	69°04.794W
S2	63°57.556N	67°51.088W
S4	63°36.284N	67°15.492W
M1	63°56.382N	68°56.595W
M2	64°06.511N	69°19.704W
M3	64°22.087N	69°45.130W
M4	64°33.862N	70°13.942W

*Red symbols indicate real-time Iridium stations.

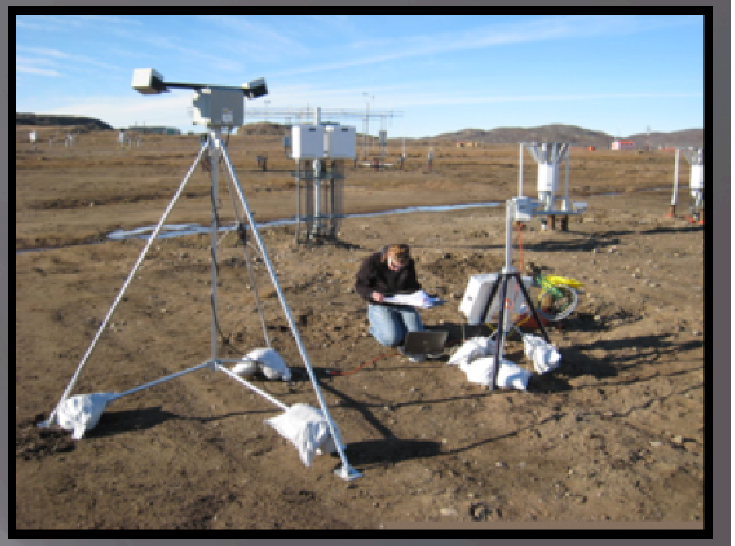


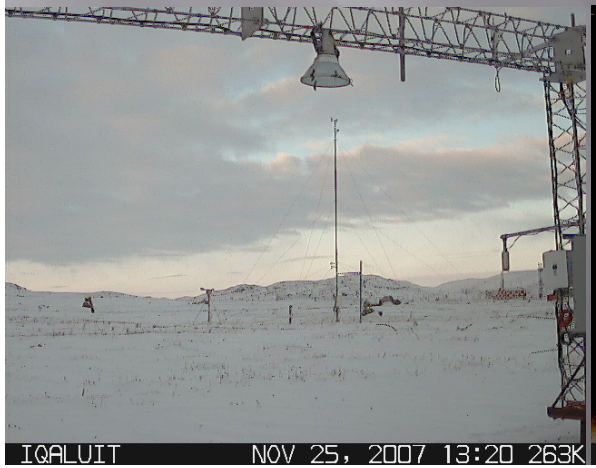
Special Surface Observations

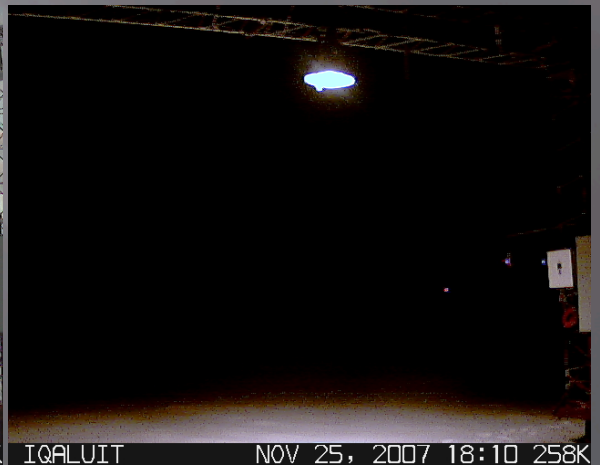
- Double fence facility with Geonor Snow system
  - proving precipitation measurements taken with a T-200B series weighing bucket precipitation gauge
  - Data format: excel
- Laser Precipitation Sensor
  - providing 1-minute averaged precipitation type, size distribution, and fall velocity of the precipitation
  - Raw data (*.dat) were converted to excel format
- Snowflake Microphotography
  - Photos of precipitation particles were taken during six precipitation events over the fall field campaign
  - Data format: jpg

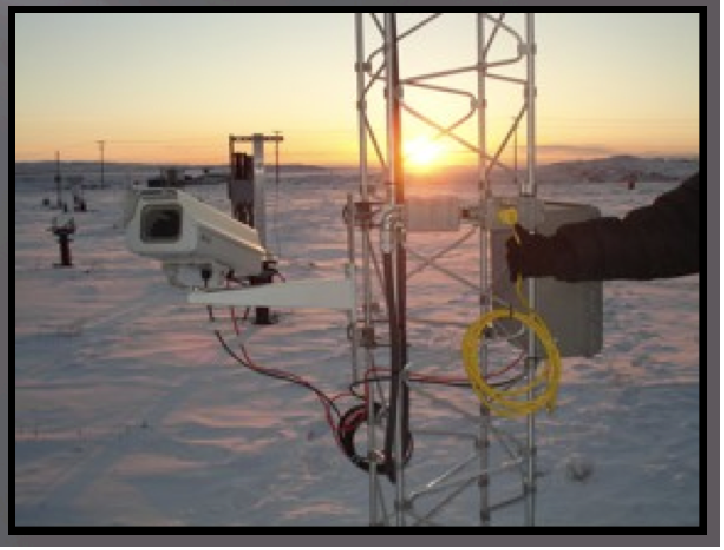
Special Surface Observations(*cont.*)

- *Visibility Sensors*
  - measured the atmospheric visibility or the meteorological optical range
  - Data format: .DAT(ascii)
- 5-Minute Camera Stills
  - provided images of the sky and current surface conditions
  - Data format: JPG



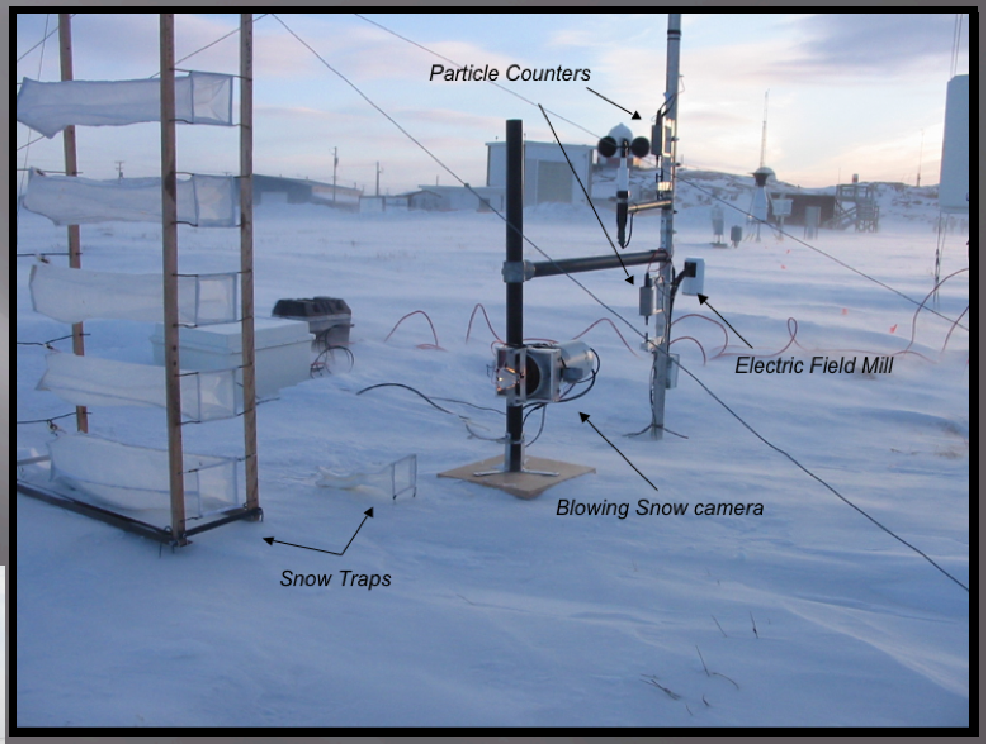






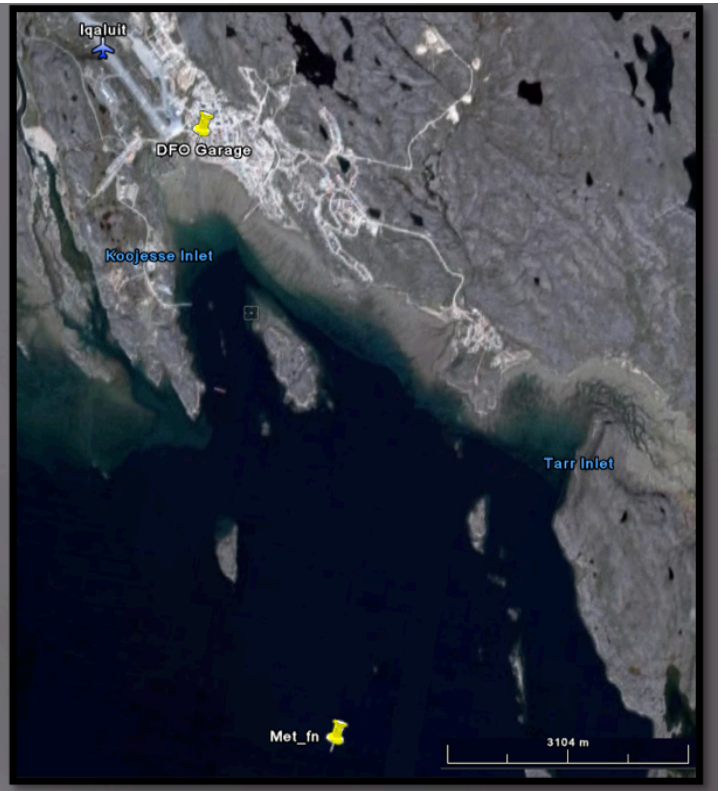
Blowing Snow Observations

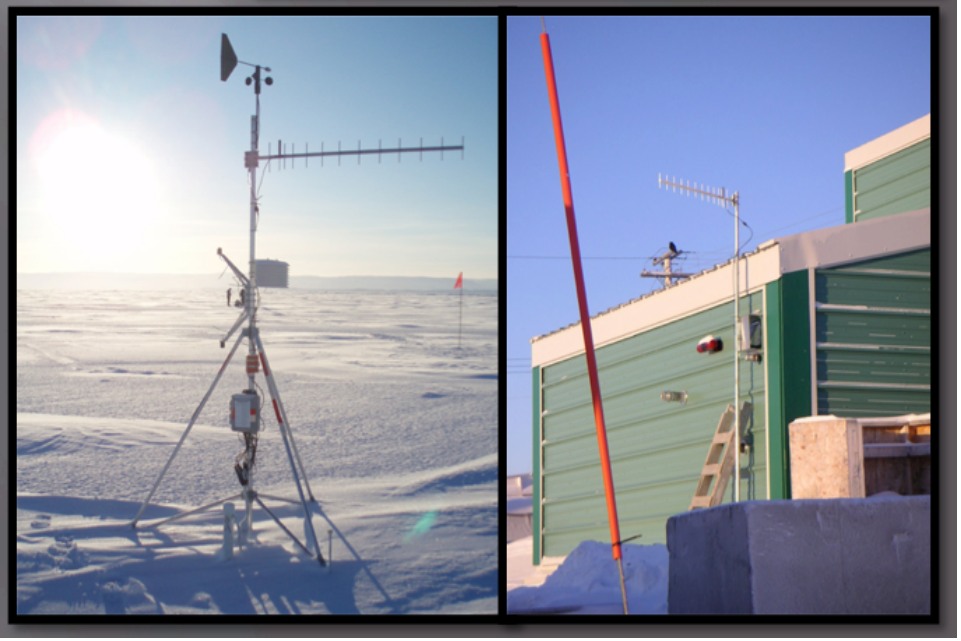
- Instruments were set up by a team from York University
  - *Particle Counters*
  - *Electronic Field Mill*
  - *Blowing Snow Camera*
  - *Snow Traps*



Sea-ice Observations

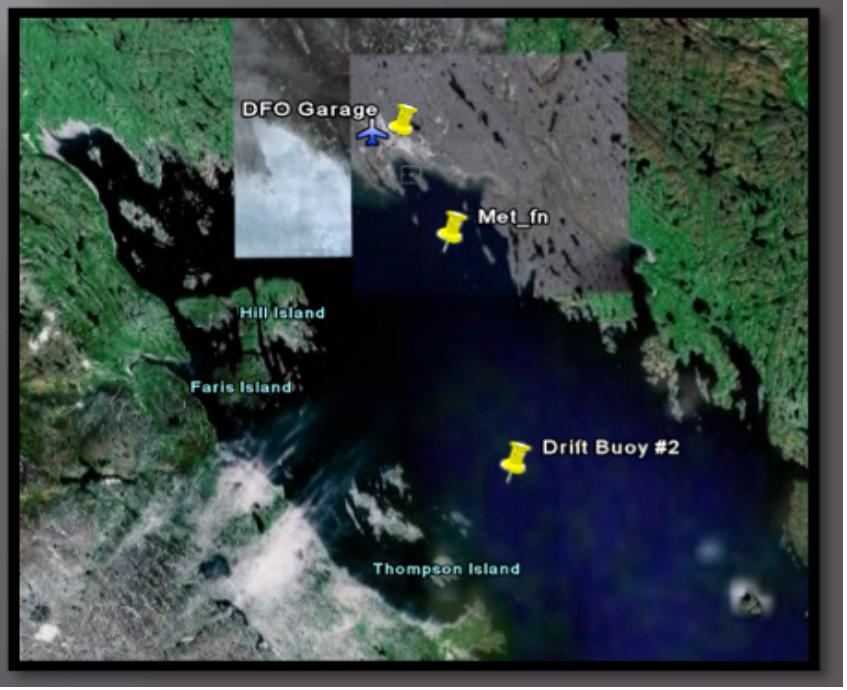
- a Sea Ice Meteorological station was established 8.2 km outside of Iqaluit .
- It recorded typical parameters including mean air temperature, relative humidity, wind speed, wind direction, maximum (3 second) wind gusts at 10 minute intervals.
- Additional sensors included two Silicon Pyranometers measuring downwelling and upwelling solar radiation (W/m^2; 300-1100 nm).
- The data was logged on site and downloaded to the DFO Garage in Iqaluit, with the cooperation of Jamal Shirley of NRI.





Ice Drift Beacons

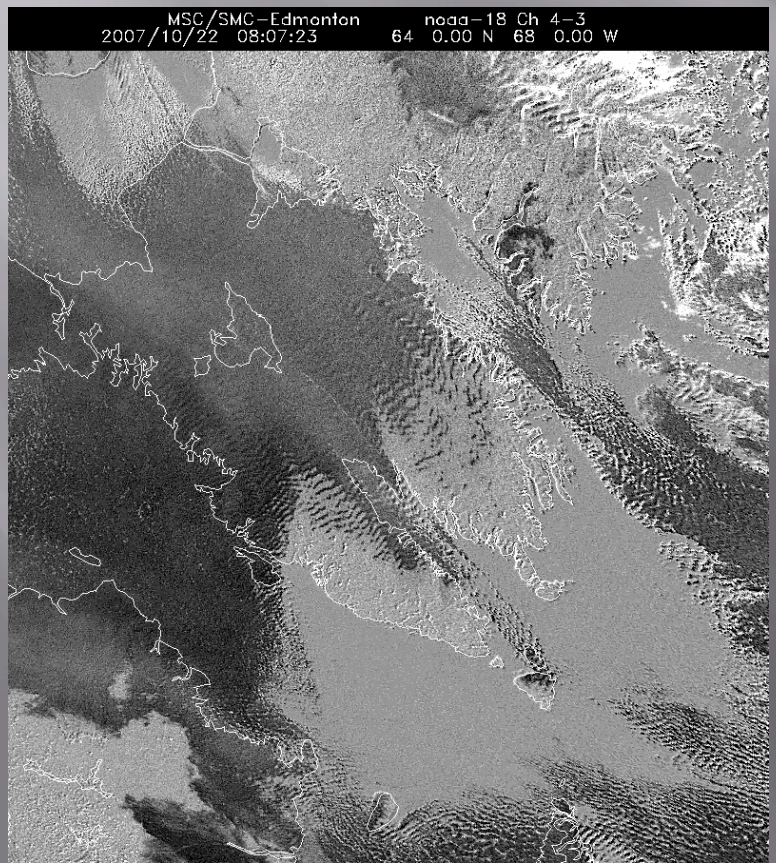
- Two Oceanetic 703 Ice Tracker Beacons were deployed in the Iqaluit area
- Tracking sea ice during the spring breakup period

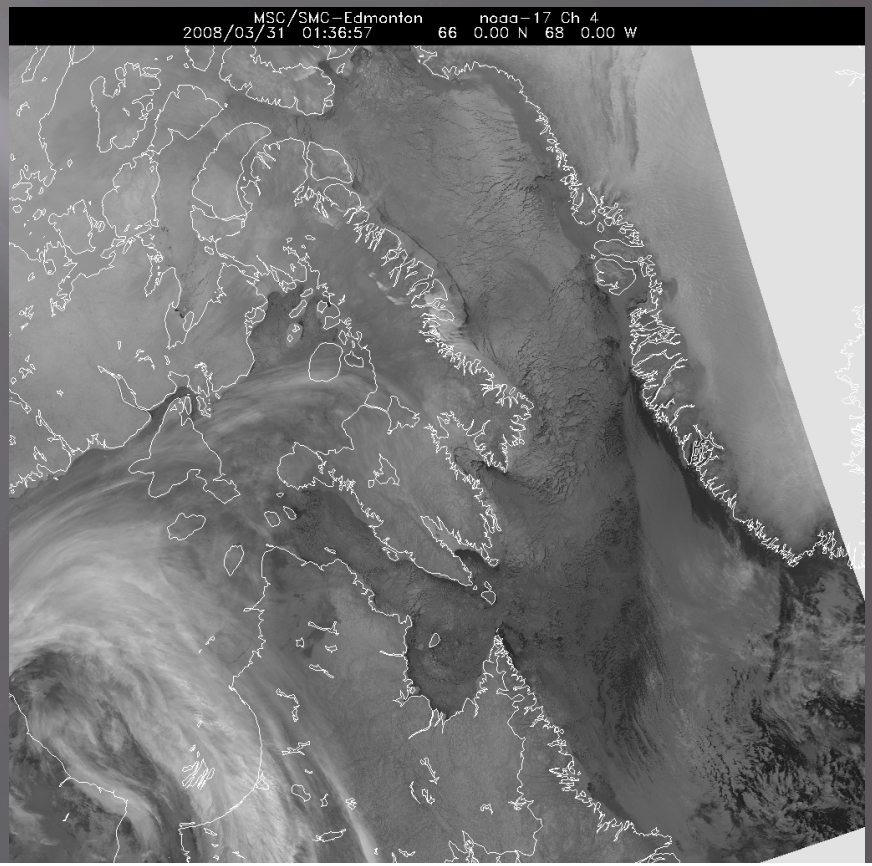


Other data and images are collected During STAR Project

Satellite images (HRPT imagery over Baffin Island)

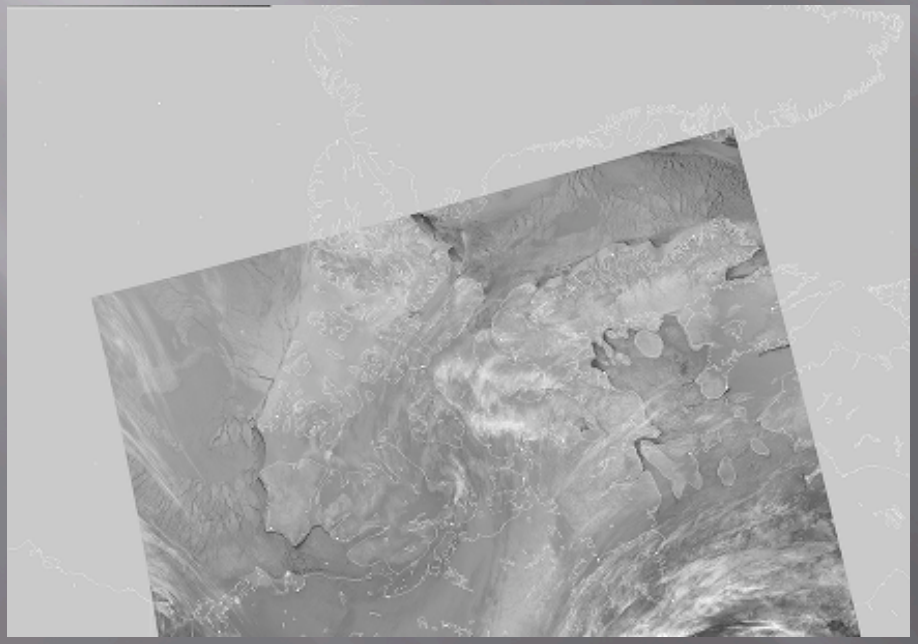
- Uploaded to CEOS ftp site by Ed. Hudson
- Format: GIF
- Period: 20070920-20080416

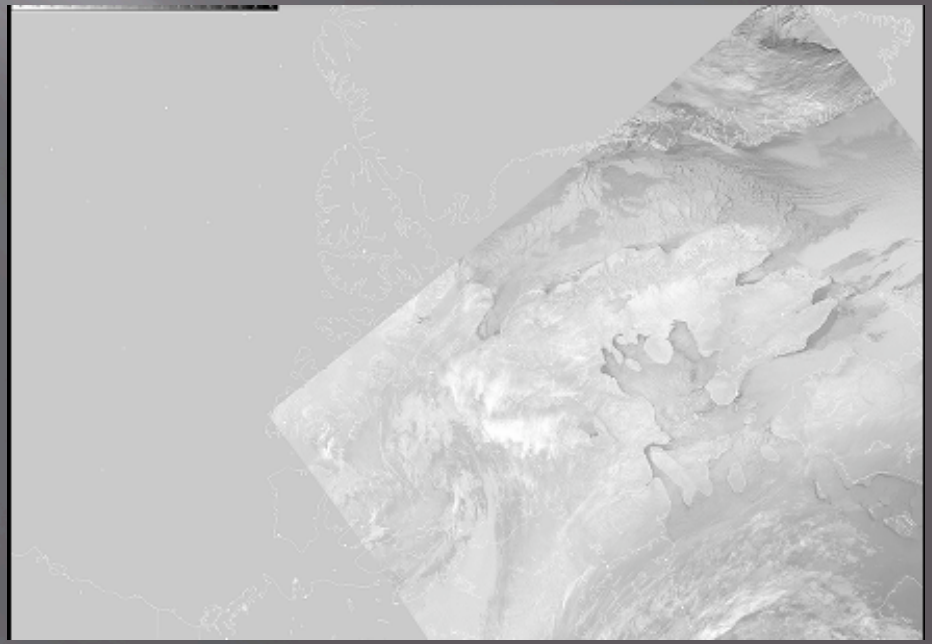




MrSid mapped images

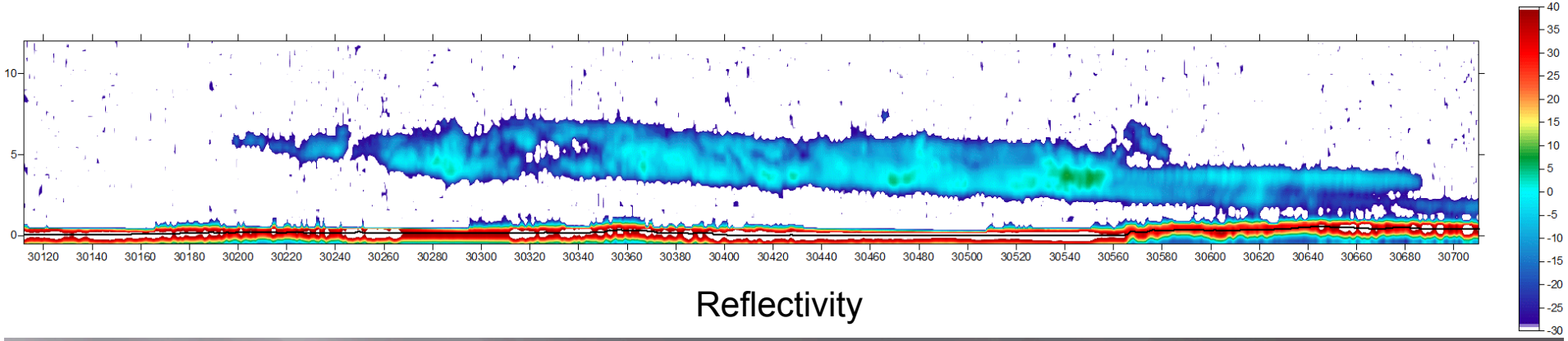
- Site: ftp://cisclient.cis.ec.gc.ca/IPY-API/ArWx/HRPT_images_MrSid-mapped/
  - a. IPY.2. near infra red 'visible' imagery
  - b. IPY.3. combination of infra red and visible
  - c. IPY.4. infra red imagery
- Format: MrSid
- Period: 20070916-20081019



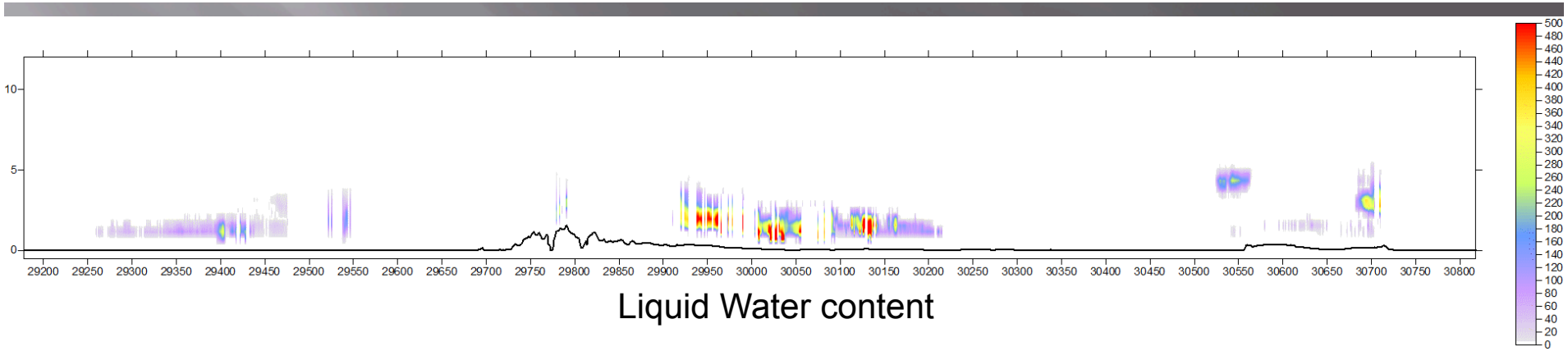


CloudSat

- Downloaded by Alex Laplante
- CloudSat Lidar
- CloudSat Radar
- Data format: HDF
- Data period: 20071001-20071130



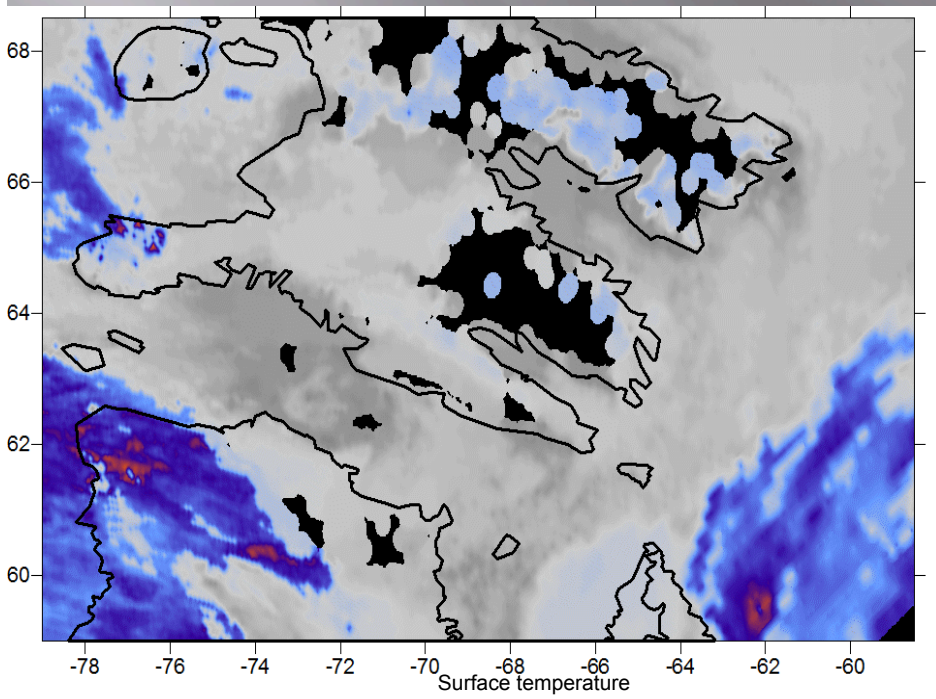
Reflectivity

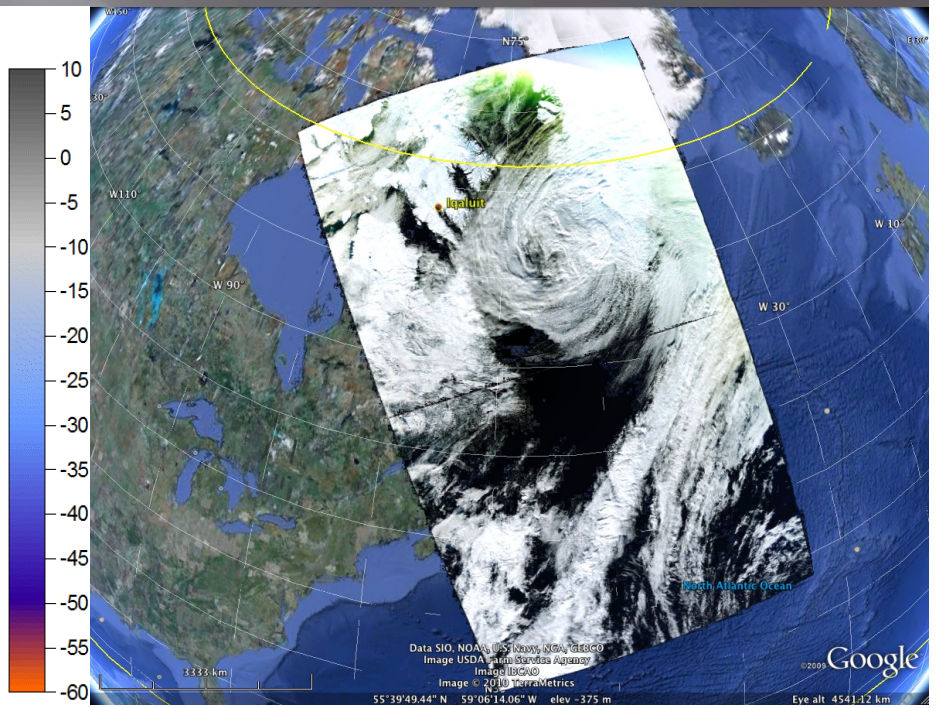


Liquid Water content

Modis satellite Product

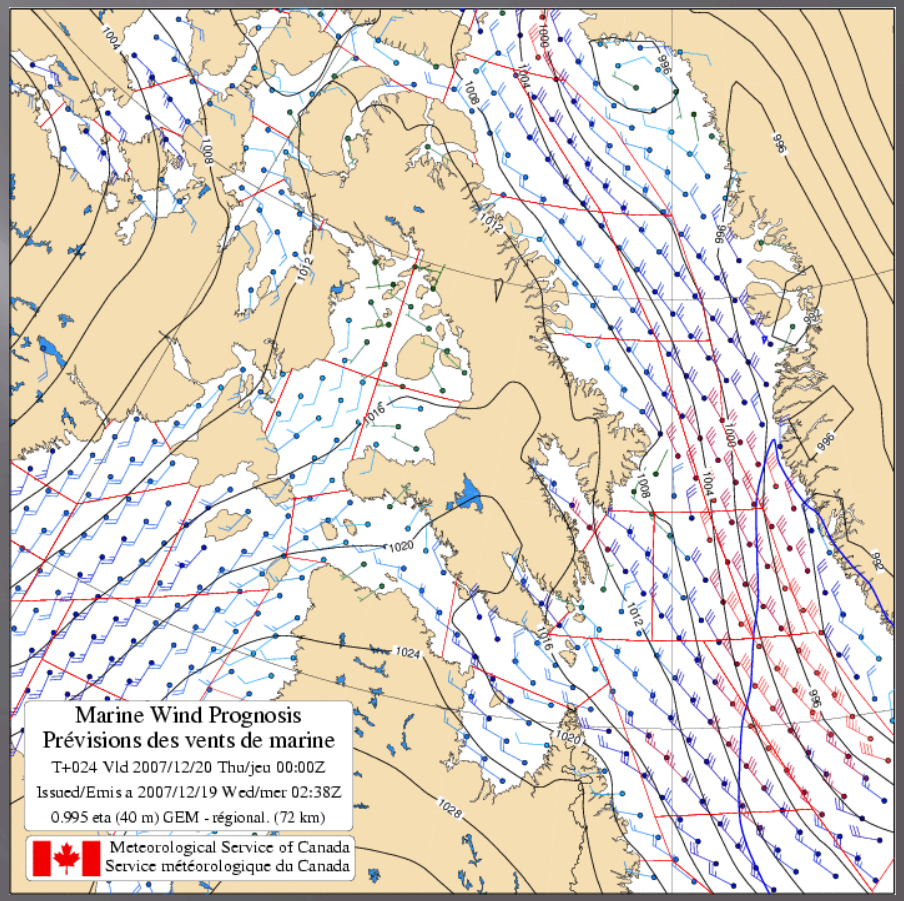
- Level 1B Calibrated Radiance-Visible(MOD02/MYD02)
- Level 2 Cloud Product(MYD06)
- Data format: HDF
- Data period: 20071001-20071130





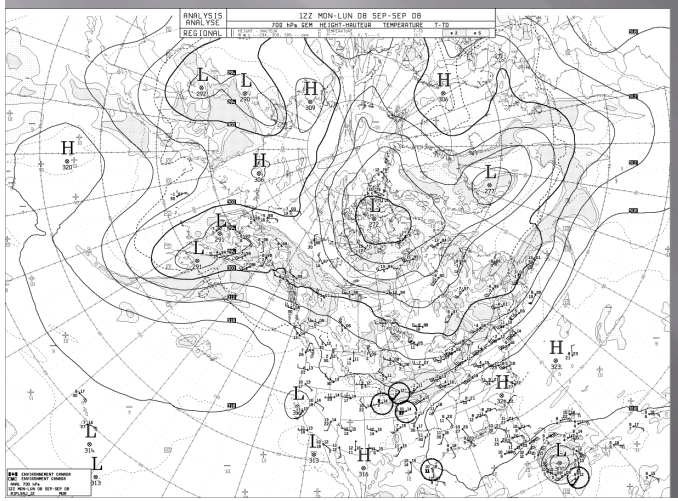
Wind forecast visualizations & wind animations For IPY

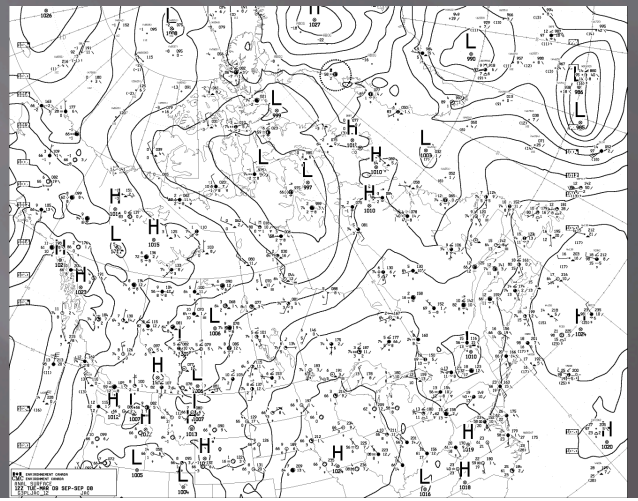
- Site: ftp://cisclient.cis.ec.gc.ca/IPY-API/ArWx/
- The domain of the images coantains:
  - Baffin Islands and surroundings
  - Beafort sea
  - North pole and etc
- Images were generated every 3 hours from the GEM-REG forecast till 48 hours
- Twice a day(00Z,12Z)
- Data format Gif, mpg
- Period: 20071218-20081021

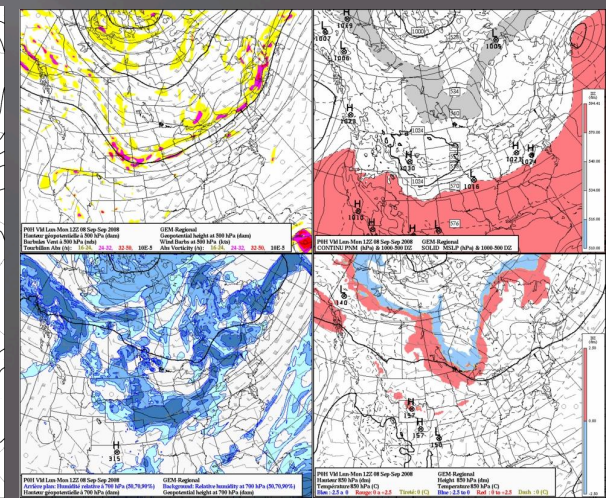


Weather analysis charts and operational forecast

- Site: http://www.weatheroffice.gc.ca/canada_e.html
  - Northern Hemisphere Upper Air Analysis(250hpa, 500hpa, 700hpa, 850hpa)
  - Surface Analysis (00z,06z,12z,18z)
  - Classic 4-Panel (00/12z run: 00 12 24 36 48)
  - Precipitation (00/12z run: 00 12 24 36 48)
- Format: GIF, JPG, PNG
- Period: 20070918-20070918

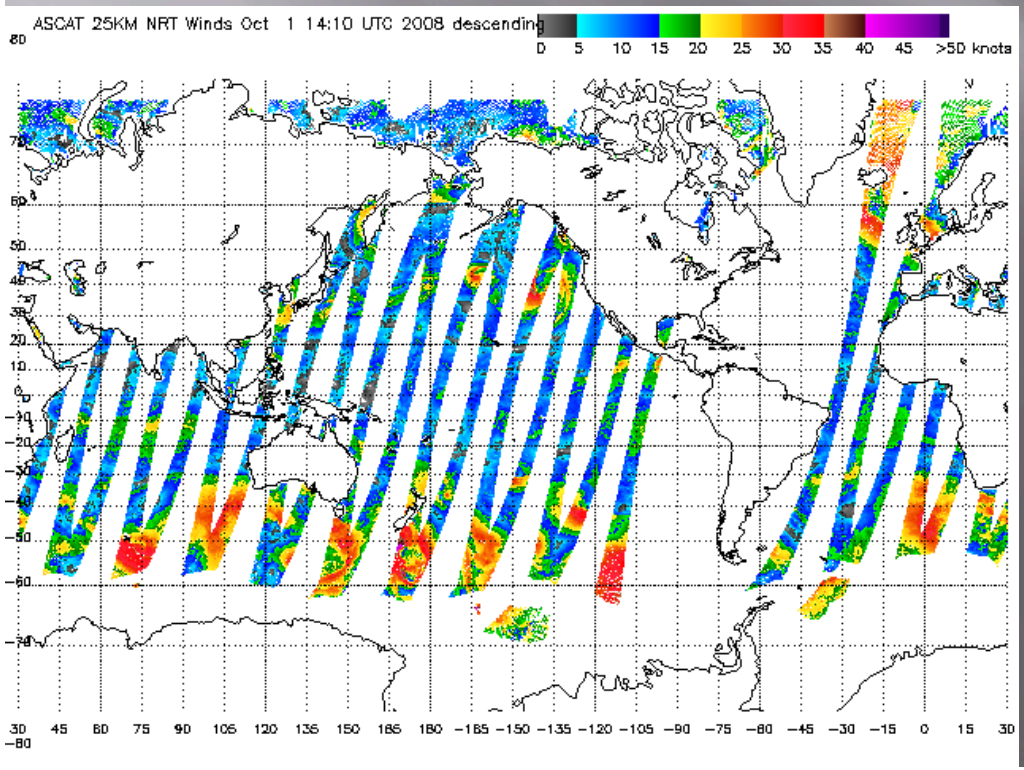


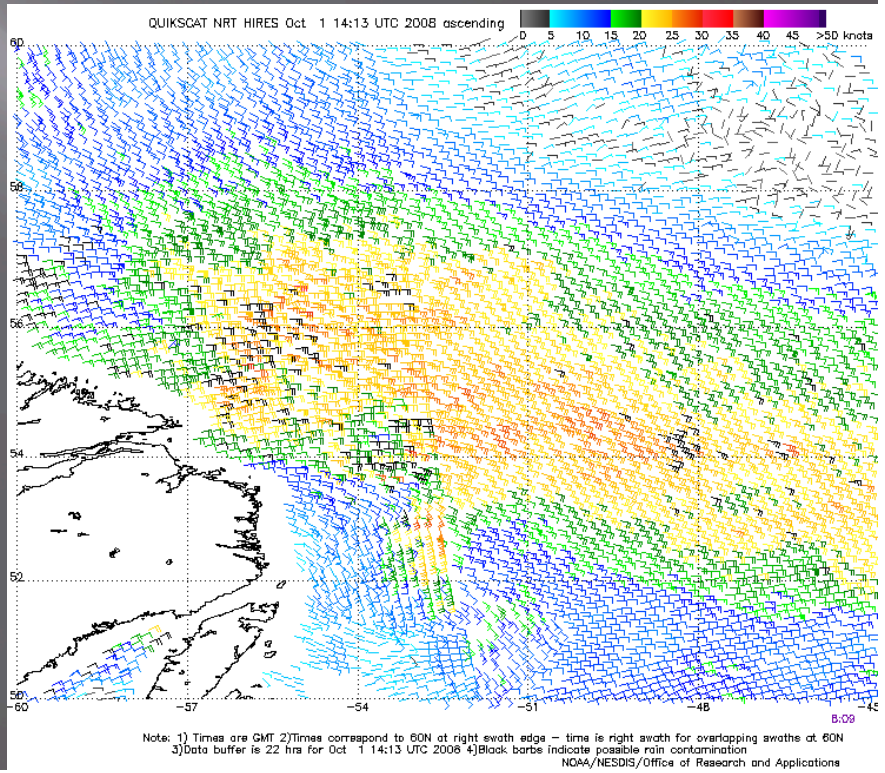




Ocean Surface Winds

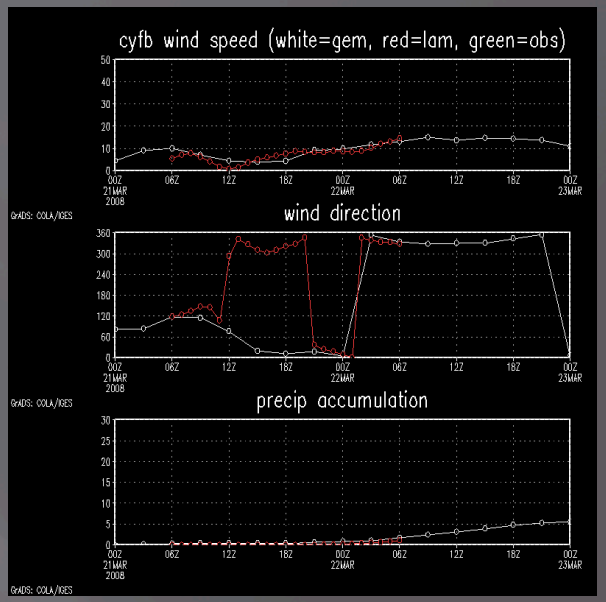
- Derived from the Advanced catterometer (QuikSCAT)
- Site: http://manati.orbit.nesdis.noaa.gov/hires/
- Data format: PNG
- Period: 20071003-20081019

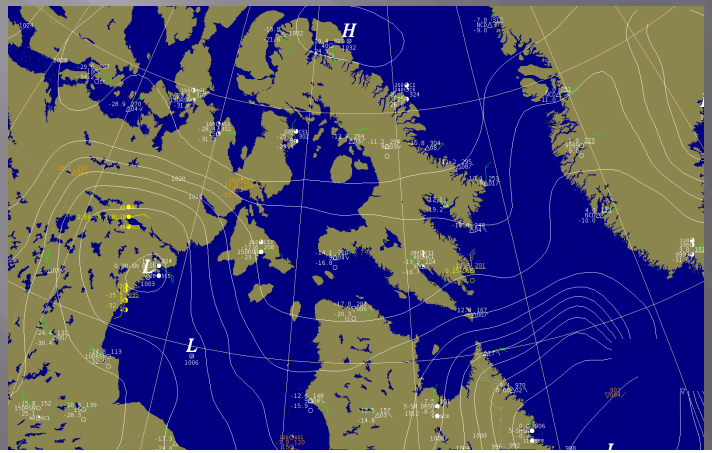


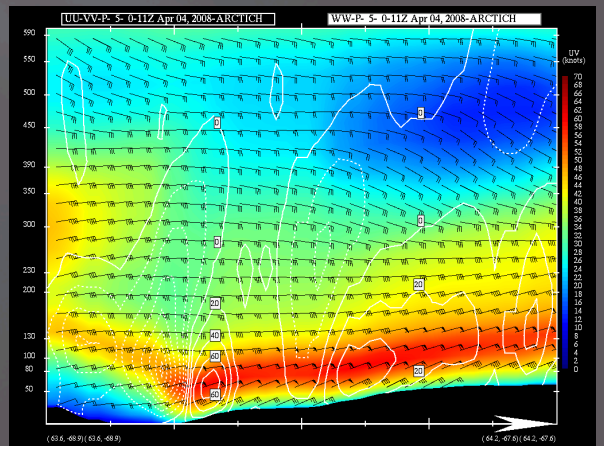


Surface analysis,wind cross-section and weather analysis chart

- Upload to CEOS ftp site by R. Goodson
- Model surface analysis
  - Stations:YXP,YVM,YTE,YLC,YFB
  - Wind speed and direction, precipitation accumulation
  - GEM,GEM-LAM,Observations
- Wind cross section
  - YFB-nesw, YFB_nwse, YXP_ew
- Surface weather analysis chart with satellite image
  - Generated hourly
- Format: GIF
- Period: 20071220-20080404

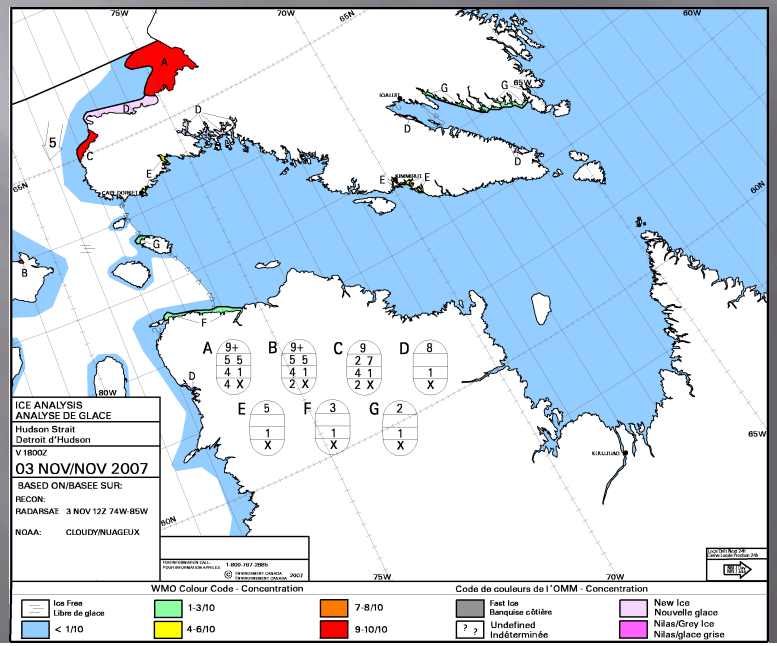


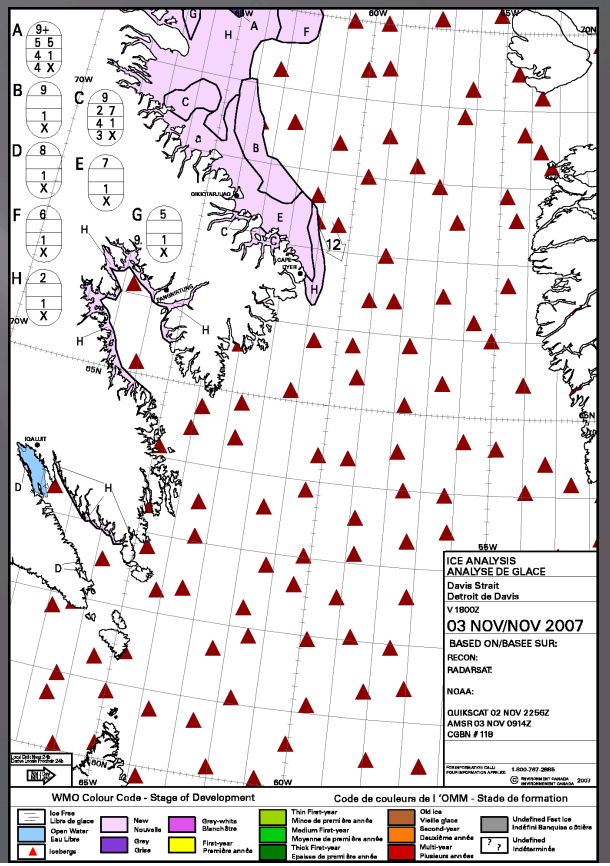




Sea-ice daily analysis charts

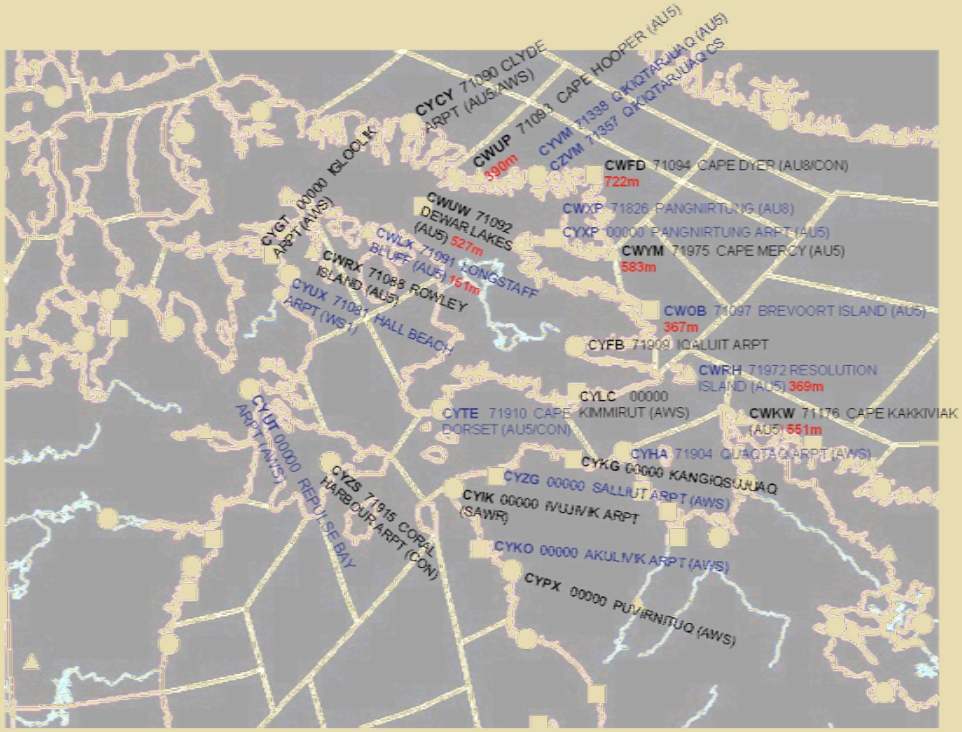
- Site: http://ice-glaces.ec.gc.ca/app/WsvPrdCanQry.cfm?CanID=11092&Lang=eng,
- Hudson strait & Davis Strait
- Data format Gif
- Period:20071029-20080929





Upperair observations and surface observations

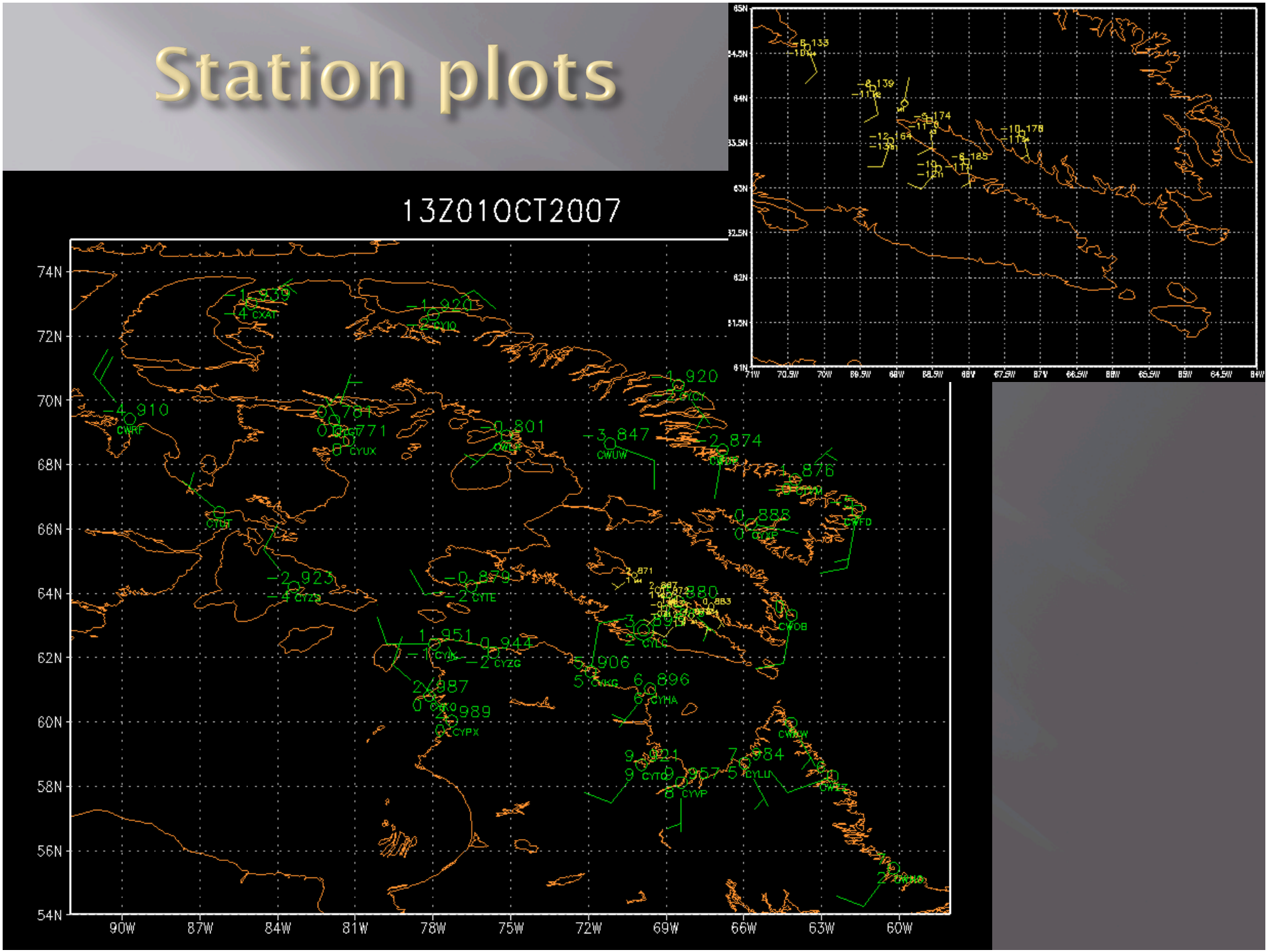
- Site: ftp://clientservices.pnr.ec.gc.ca/ by Ed. Hudson
- Upper air:
  - Stations: bgbw bgem pabr pafa yah ycb yfb yph yux yvp yzs yev ysm yvq
  - Format: TXT
  - Period: 20071105-20081026
- Surface observations:
  - Stations: YPX YKO YIK YKG YHA WKW YTE WRH YFB WOB WYM WXP YXP WFD YVM ZVM WUP YCY WUW WLX WRX YUX YGT YUT YZS
  - Format: Metars
  - Period: 20071005-20081026



Surface observations from UYOM

- Site: http://weather.uwyo.edu/surface/meteogram
- WFD WFP WHO WKW WLX WOB WRF WRH WRX WTU WUP WUW WVD WYM WZZ XAT YAS YBB YCY YFB YGT YHA YIK YIO YKG YKO YLC YLU YPX YTE YTQ YUT YUX YVP YXP YZG YZS YVM WYM
- Data format: Metars
- Period: 20071001-20080420

Station plots

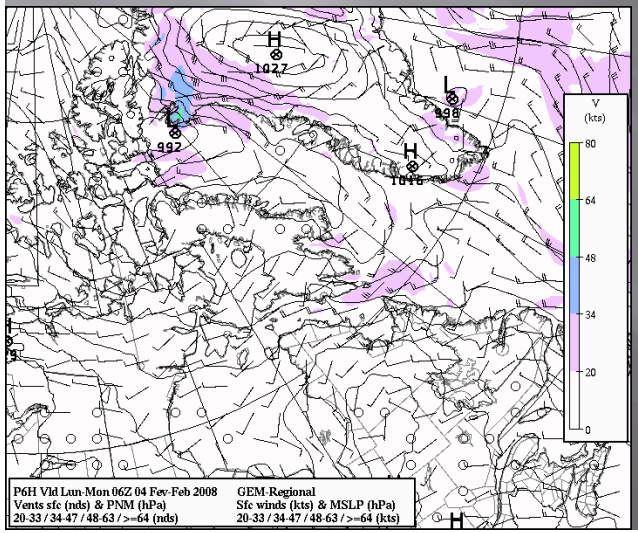


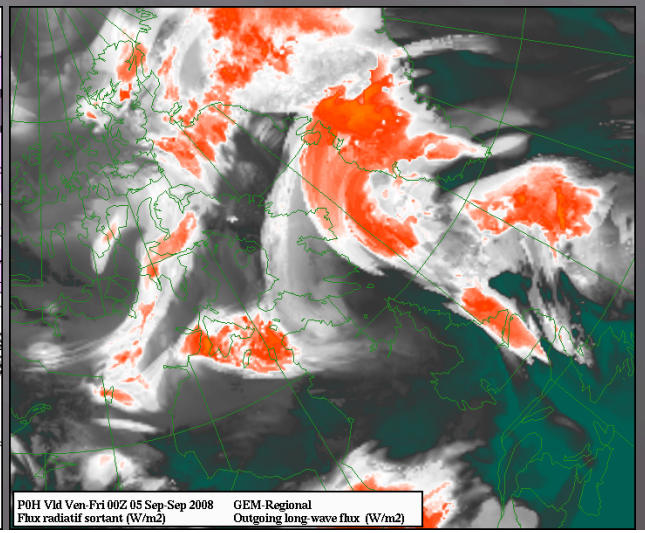
GEM-Regional 15km forecast

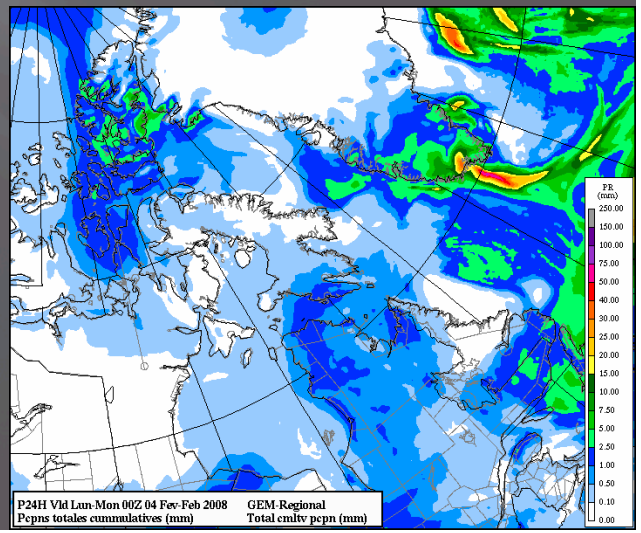
- Site: http://dd.weatheroffice.ec.gc.ca/grib/public/hires/
- Output for every 3 hours till 48 hours forecast,
- Two runs(00z,12z) each day
- The temperature, geopotential height, wind components, specific humidity for upper air (1015 1000 985 970 950 925 900 875 850 800 700 500 250 200 150 100 50)
- Wind speed (module), vertical velocity, absolute vorticity for 4 isobaric levels (250 500 700 850)
- 10m wind, 2m temperature and dew-point, Sea level surface pressure, thickness, cloud cover, albedo, Upward/Downward Short/Long Wave Radiation Flux, Sensible/Latent Heat Net Flux, Precipitation Rate, Total Precipitation, Convective Precipitation, Net Long Wave Radiation at Surface
- Water Temperature, Land Cover, Snow Depth
- Data format: grib
- Period: 20071018-20081020

VIZAWEB images

- Vizaweb is an interface to access, view & compare CMC colour images via the web. It helps people load and animate single panel or 4 panel colour images.

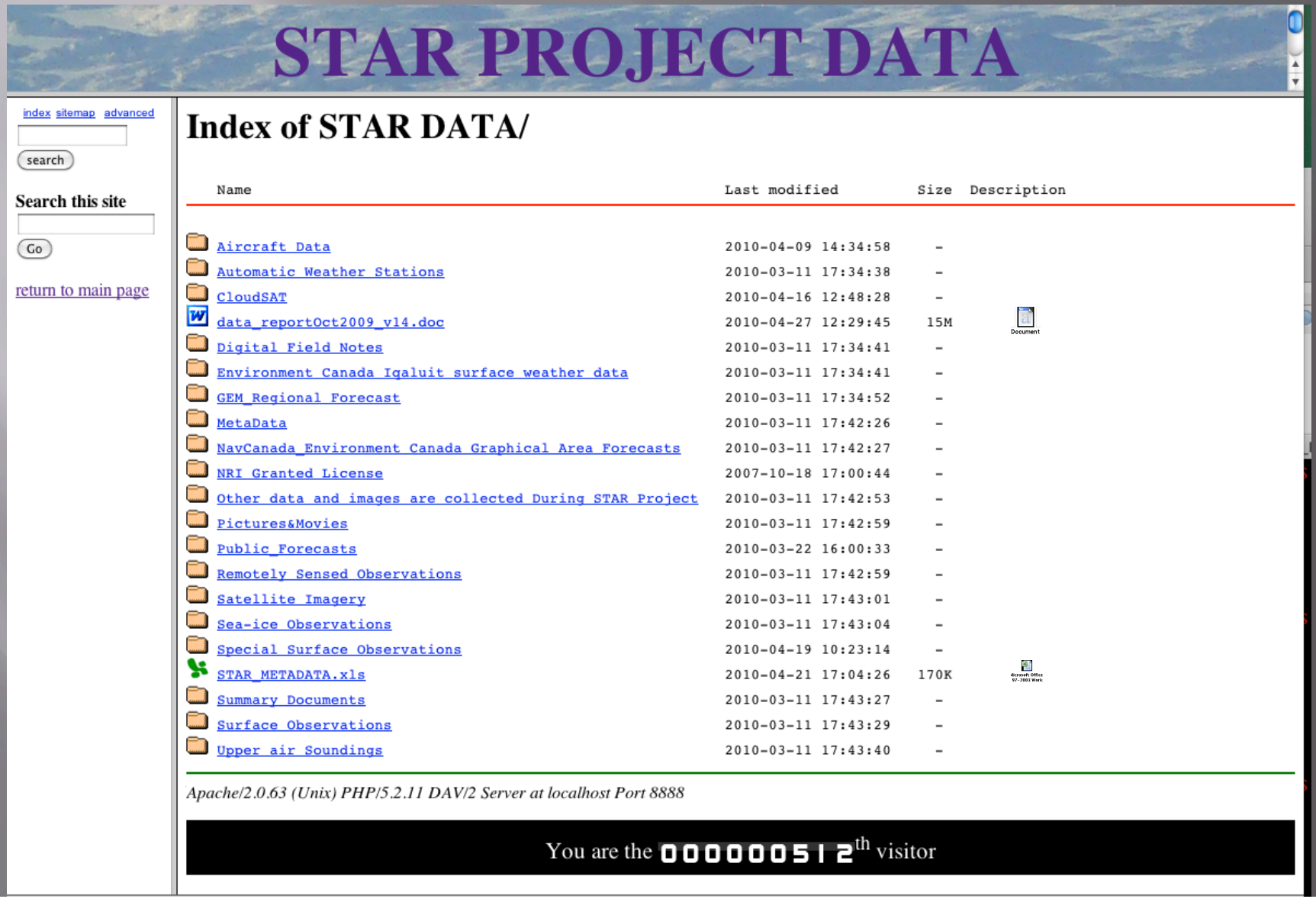






Data access

ftp://ceoser:a13iafw@ftp.ceos.umanitoba.ca/STAR/HTML/DATA/main.htm



STAR PROJECT DATA

index sitemap advanced

search

Search this site

Go

return to main page

Index of STAR DATA/

Name	Last modified	Size	Description
Aircraft Data	2010-04-09 14:34:58	-	
Automatic Weather Stations	2010-03-11 17:34:38	-	
CloudSAT	2010-04-16 12:48:28	-	
data_reportOct2009_v14.doc	2010-04-27 12:29:45	15M	
Digital Field Notes	2010-03-11 17:34:41	-	
Environment Canada Igaluit surface weather data	2010-03-11 17:34:41	-	
GEM_Regional Forecast	2010-03-11 17:34:52	-	
MetaData	2010-03-11 17:42:26	-	
NavCanada_Environment Canada Graphical Area Forecasts	2010-03-11 17:42:27	-	
NRI Granted License	2007-10-18 17:00:44	-	
Other data and images are collected During STAR Project	2010-03-11 17:42:53	-	
Pictures&Movies	2010-03-11 17:42:59	-	
Public_Forecasts	2010-03-22 16:00:33	-	
Remotely Sensed Observations	2010-03-11 17:42:59	-	
Satellite Imagery	2010-03-11 17:43:01	-	
Sea-ice Observations	2010-03-11 17:43:04	-	
Special Surface Observations	2010-04-19 10:23:14	-	
STAR_METADATA.xls	2010-04-21 17:04:26	170K	
Summary Documents	2010-03-11 17:43:27	-	
Surface Observations	2010-03-11 17:43:29	-	
Upper air Soundings	2010-03-11 17:43:40	-	

Apache/2.0.63 (Unix) PHP/5.2.11 DAV/2 Server at localhost Port 8888

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Summary

- 41G ./Aircraft Data
- 20M ./Automatic Weather Stations
- 24M ./Digital Field Notes
- 433M ./Environment Canada Iqaluit surface weather data
- 351G ./GEM_Regional Forecast
- 2.3M ./MetaData
- 102M ./NavCanada_Environment Canada Graphical Area Forecasts
- 780K ./NRI Granted License
- 16G ./Other data and images are collected During STAR Project
- 3.8G ./Pictures&Movies
- 2.6M ./Public_Forecasts
- 22G ./Remotely Sensed Observations
- 139G ./Satellite Imagery
- 175M ./Sea-ice Observations
- 5.0G ./Special Surface Observations
- 8.9M ./Summary Documents
- 30M ./Surface Observations
- 124M ./Upper air Soundings
- 580G .

Questions?

- Please send email to:
- Zhuo_liu@umanitoba.ca

Thanks