Research Ground-based Observing Networks in Support of NEHRTP

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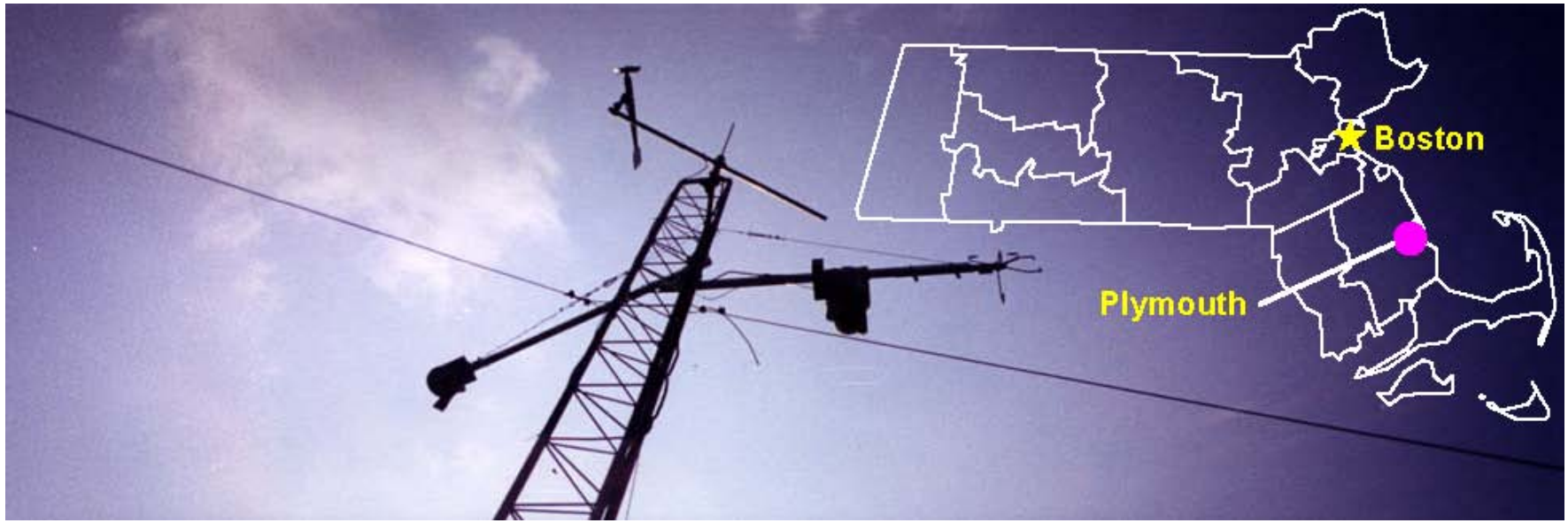
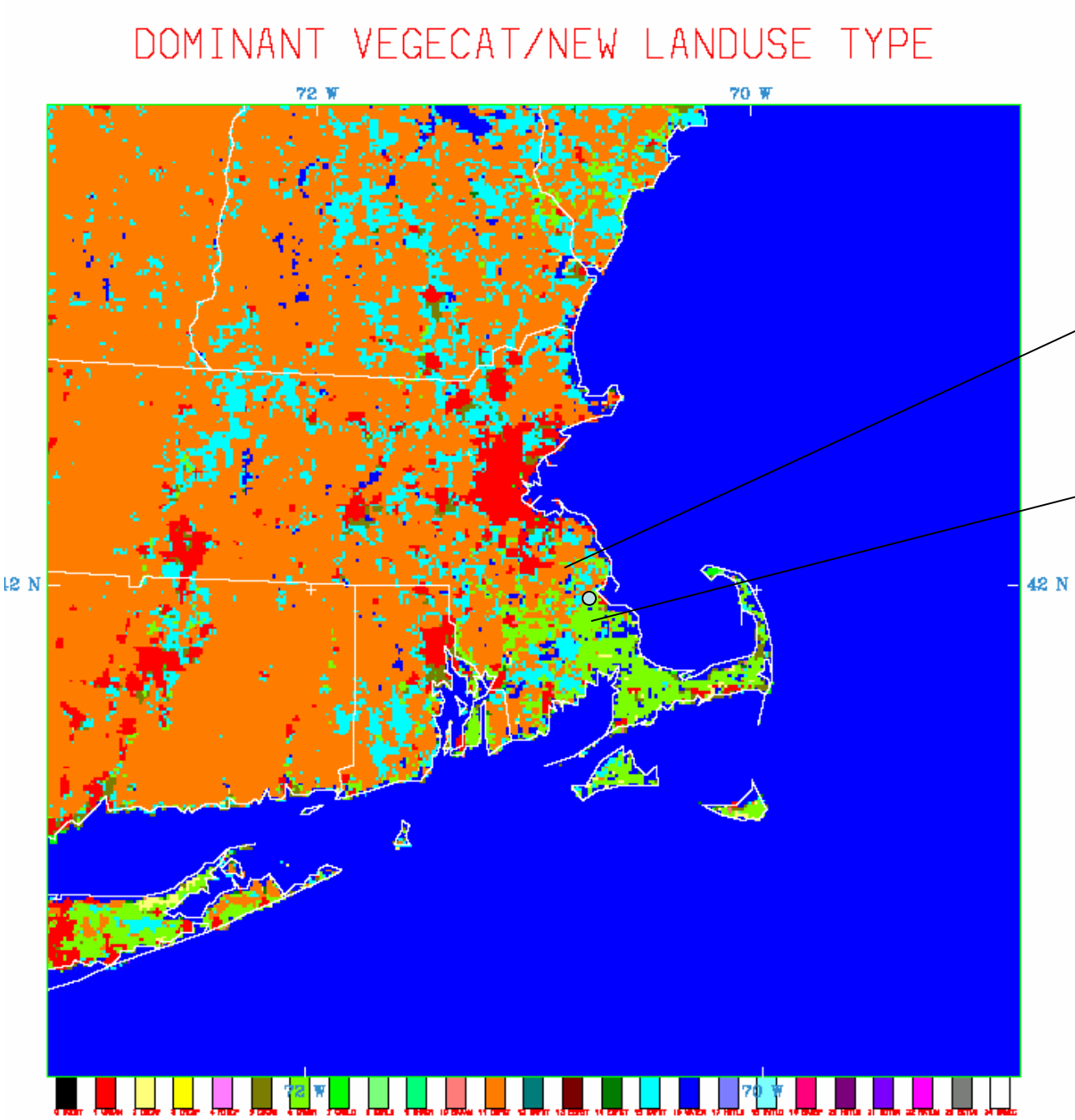
Boundary-layer and Surface Energy Site at Plymouth, MA



Site is located at the edge of a uniform forested region at the southeast end of the Plymouth Regional Airport in Plymouth, MA (41.91 N, 70.73 W, 46 m elev.).



Deciduous broadleaf forest

Cropland/Woodland mosaic

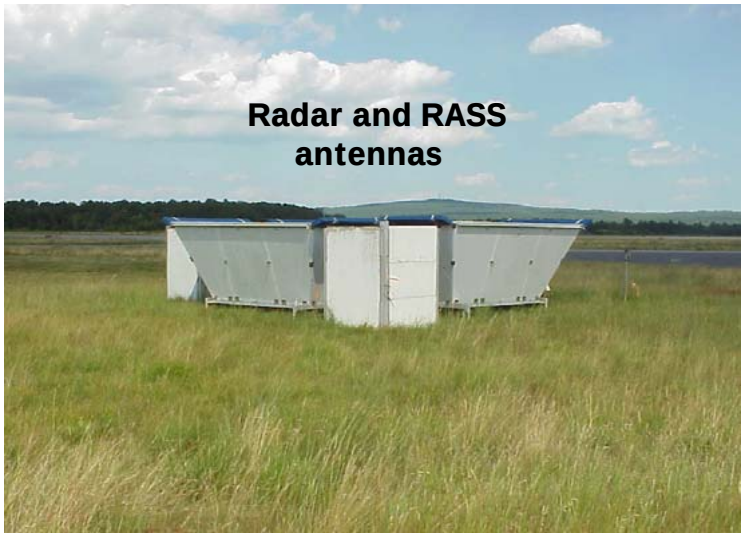
Measurements at Plymouth, MA

Parameter	Method	Sampling Resolution	PIs
Wind profile	915-MHz Doppler wind profiler	60-100 m, hourly	ETL
Temperature profile	Radio Acoustic Sounding System	100 m, hourly	ETL
Temperature profile	60-GHZ radiometer	2m-200m, 15 min	ETL
Wind, temp and humidity profile	GPS rawinsonde	30 m, occasional	ETL
Cloud profile	S-Band radar	45 m, 5 min	ETL
Integrated water vapor and cloud liquid water	Dual-channel microwave radiometer	10 min	ETL
CBL depth	915-MHz profiler	60-100 m, hourly	
Nocturnal boundary layer structure	Bistatic backscatter sodar	15 m, 5 min	ETL
Surface heat and momentum fluxes	ATI sonic anemometer	@20m 30 min	ETL
Humidity and CO fluxes	LICOR 7500	@20 m 30 min	ETL
Surface wind	RM Young wind monitor	@10 m, 20 m ; 2 min.	ETL

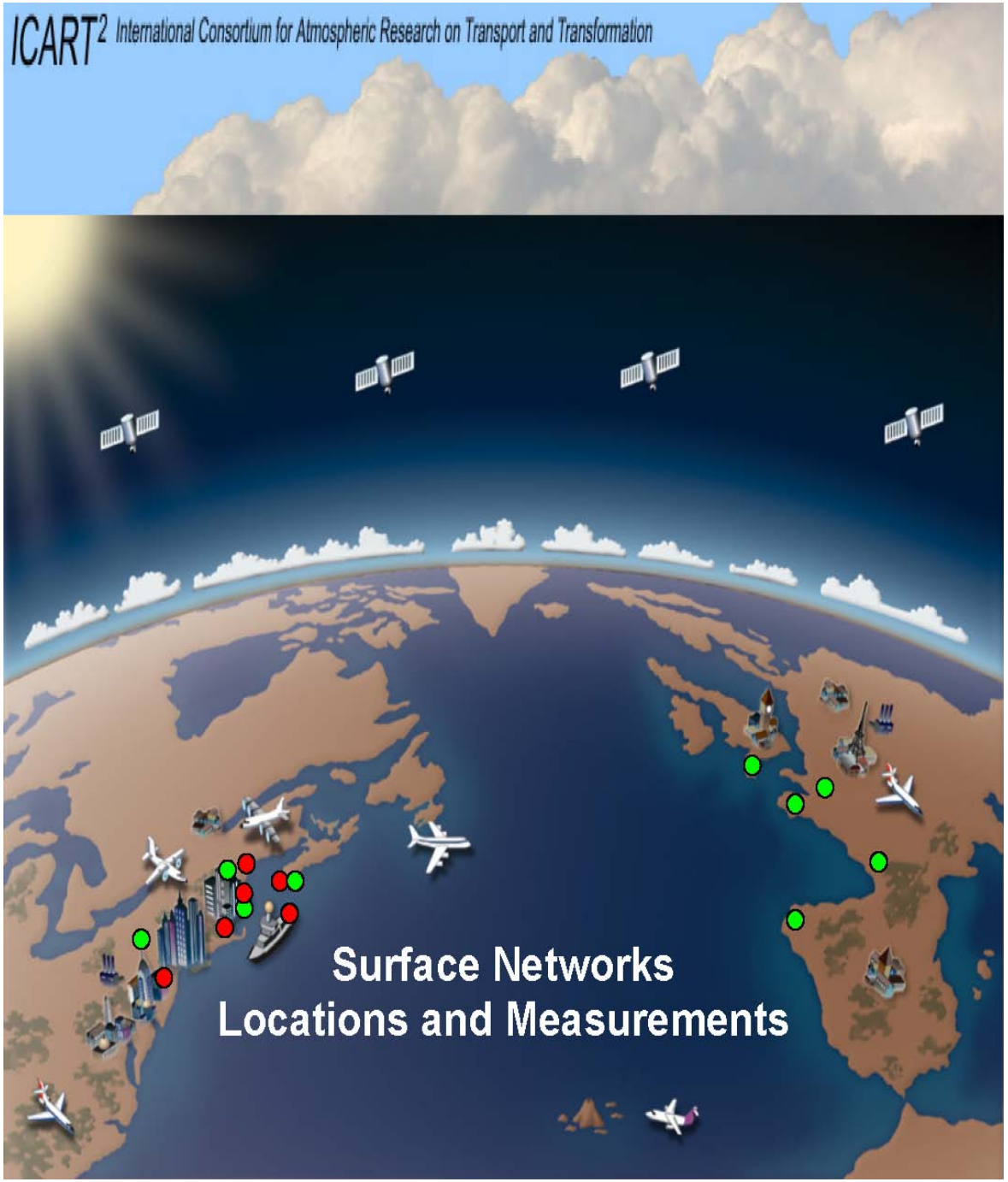
Measurements at Plymouth, MA (continued)

Parameter	Method	Sampling Resolution	PIs
Pressure	Vaisala analog pressure probe	@1 m, 2 min.	ETL
Temp., RH	Vaisala HMP45C	@2 m, 20 m 2 min.	ETL
Solar radiation	Kipp & Zonen pyranometer	@2 m 2 min.	ETL
Net radiation	REBS net radiometer	@2 m, 2 min.	ETL
Rainfall	Texas Electronics tipping bucket	@1 m, 2 min.	ETL
Aerosol optical depth	Sun photometer	@1 m, hourly	ETL
4 stream radiation	Eppley	@20 m, hourly	ETL
Direct/Diffuse solar	Eppley	@1m, hourly	ETL
Soil temperature	CSI-107	@5, 10, 15, and 60 cm hourly	ETL
Soil moisture	CSI-660	@10 and 60 cm, hourly	ETL
Ground heat flux	HFT3	@2cm, hourly	ETL

Boundary-layer and Surface Radiation Site at Concord, NH



- **Site supported by the NOAA New England High Resolution Temperature Program.**
- **Instrumentation consists of a 915-MHz wind profiler with RASS, a 10-m meteorological tower, and radiation sensors (pyranometers, pyrgeometers, sun photometer).**
- **The radiation sensors were installed in July ’03.**
- **Site has operated continuously since May ’02.**



A multi-agency, international air quality study conducted by ICART^2 will also occur in the summer of 2004.

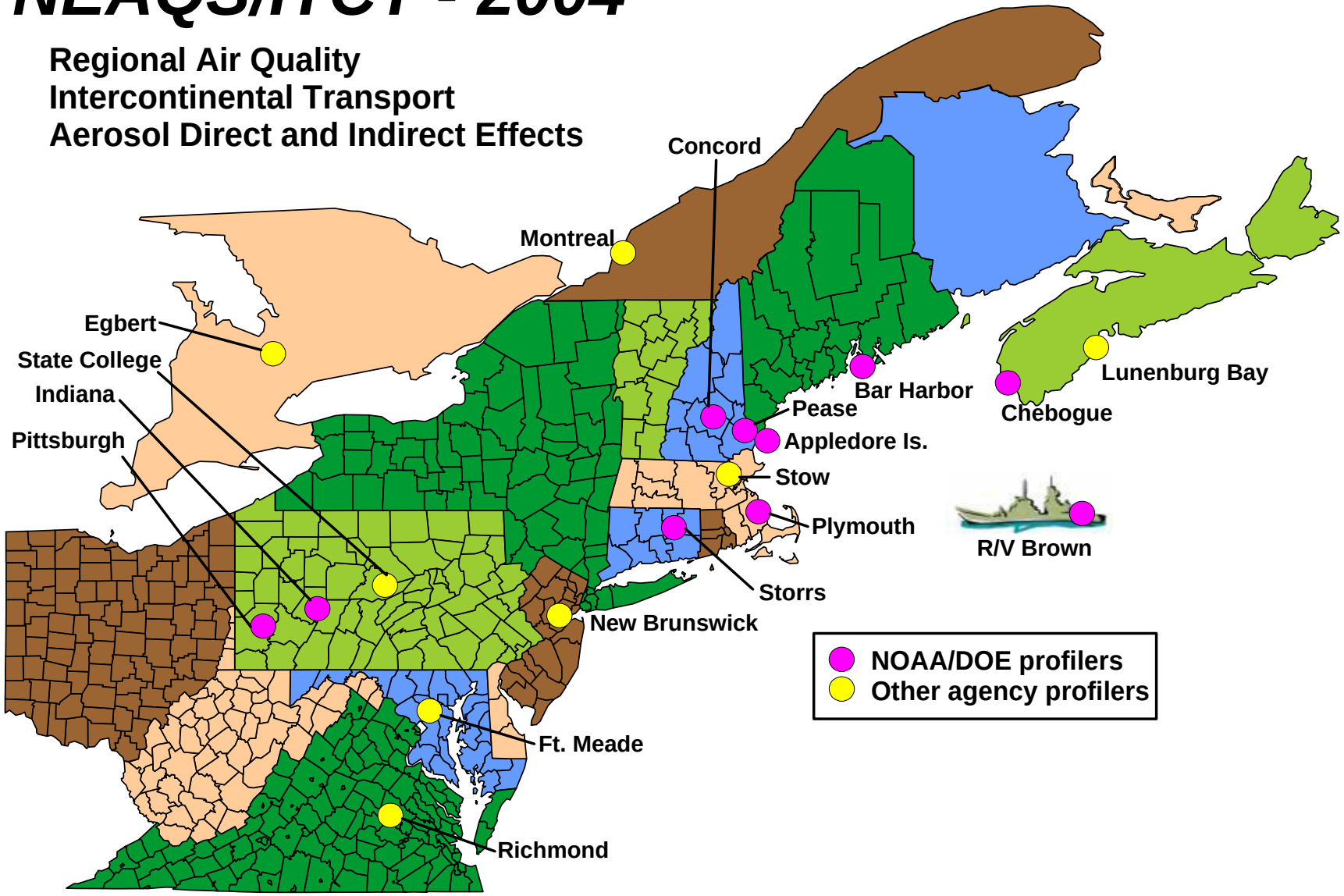
The 2004 New England Air Quality Study (NEAQS-2004) will have a number of research networks that will benefit NEHRTP.

More information is available at http://www.al.noaa.gov/ICARTT/StudyCoordination/WGSN.shtml and http://www.al.noaa.gov/2004/.

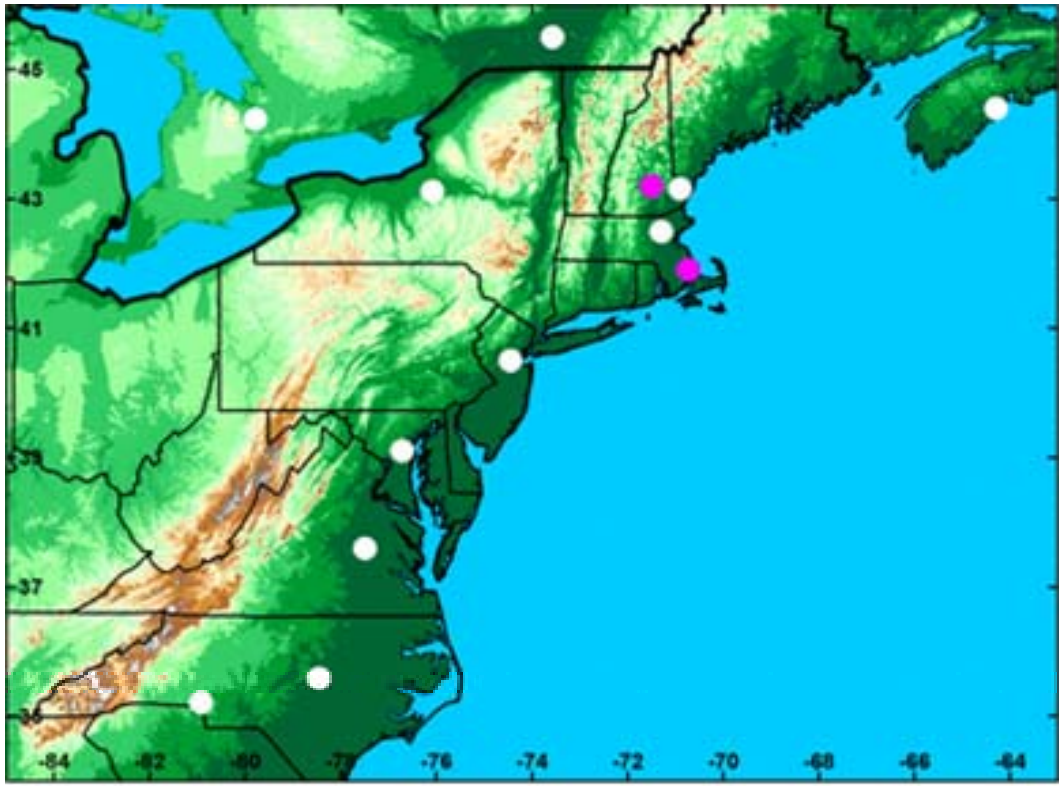
Integrated Boundary-layer Wind Profiler Observing Network

NEAQS/ITCT - 2004

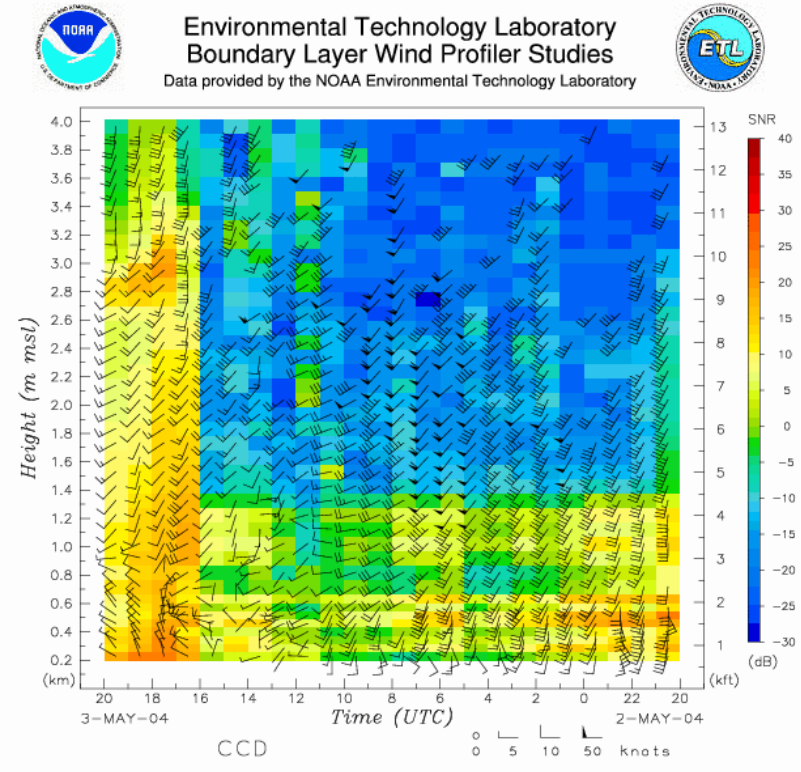
Regional Air Quality
Intercontinental Transport
Aerosol Direct and Indirect Effects



http://www.etl.noaa.gov/et7/data/sitemap/Northeast/



ETL Profiler/RASS/Met
Other Agency Profiler

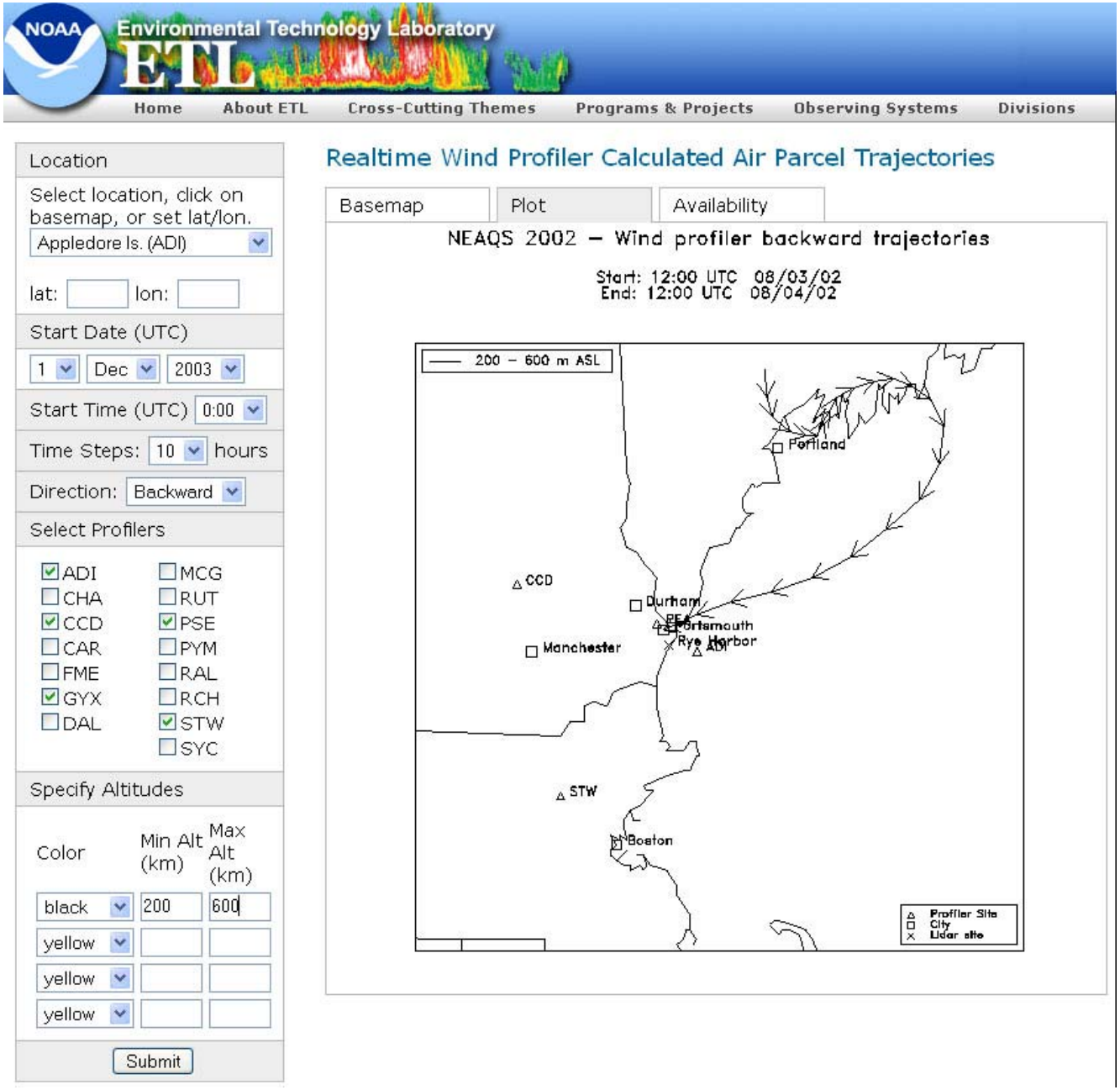


Links

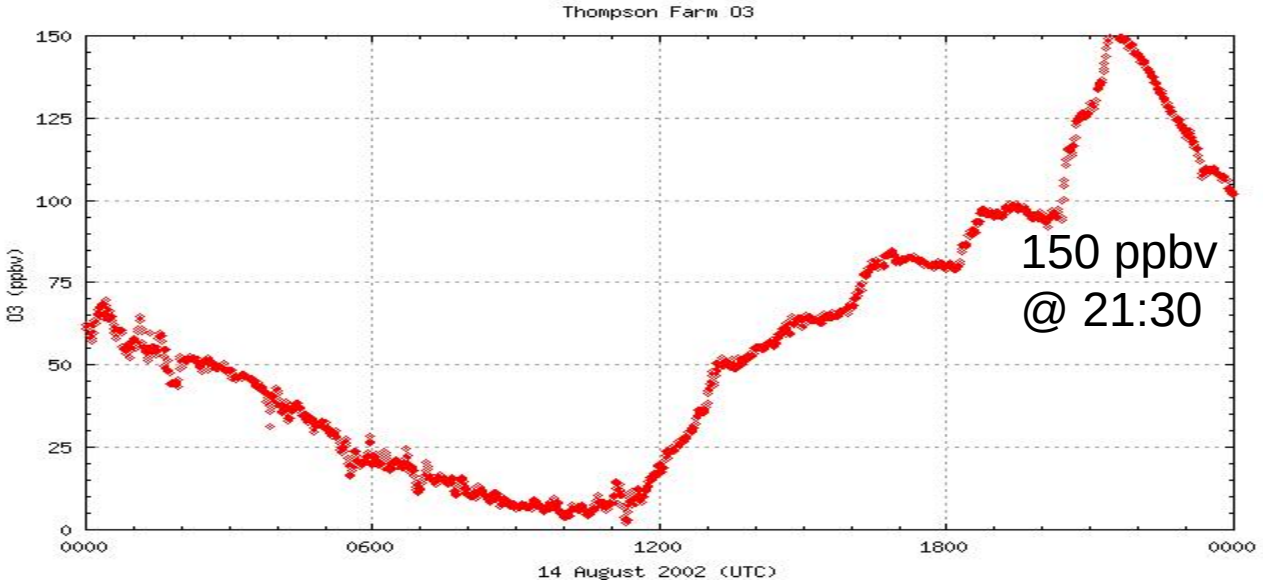
New England High Resolution Temperature Program
Data/Image Archive
West Coast US Clickable Map
ETL Data/Image Library
Data questions and/or requests

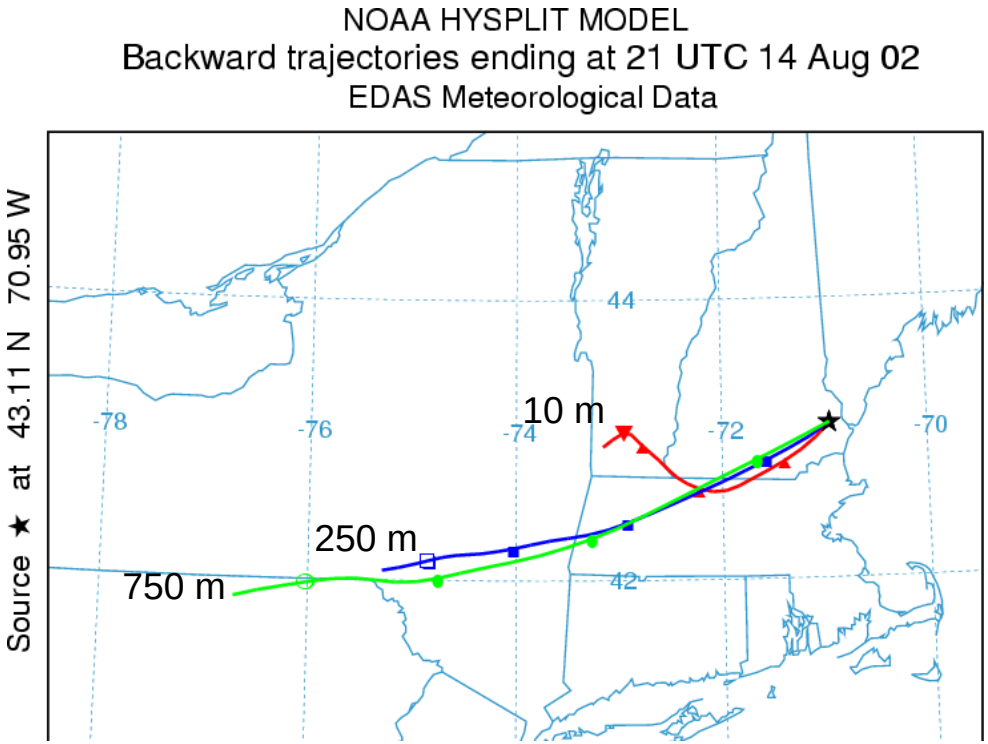
Thumbnails for all available data products will be shown

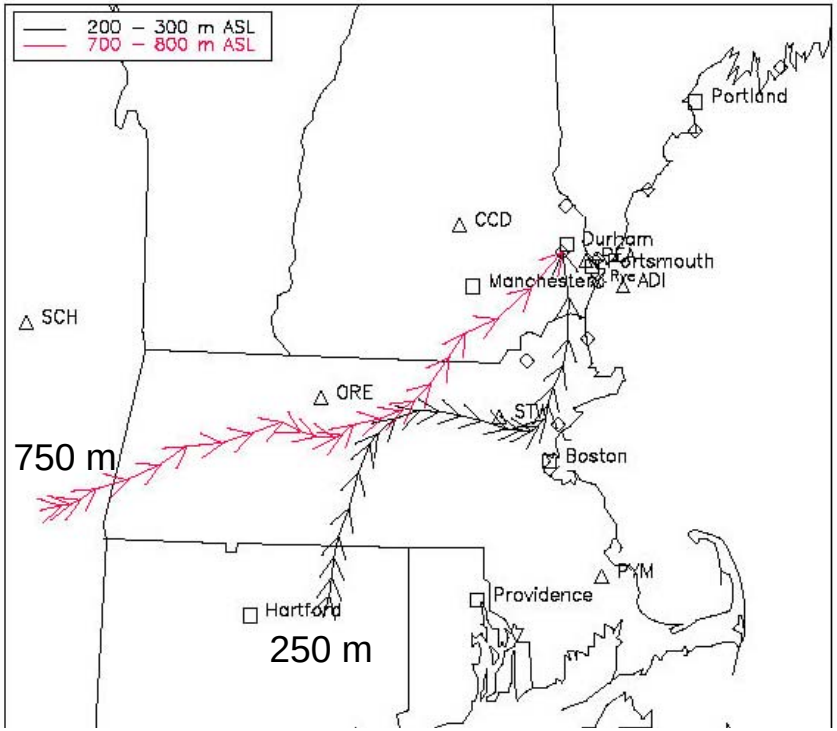
Profiler Trajectory Tool



Surface ozone trace on 8/14/02 from AIRMAP's Thompson Farm site in SE New Hampshire





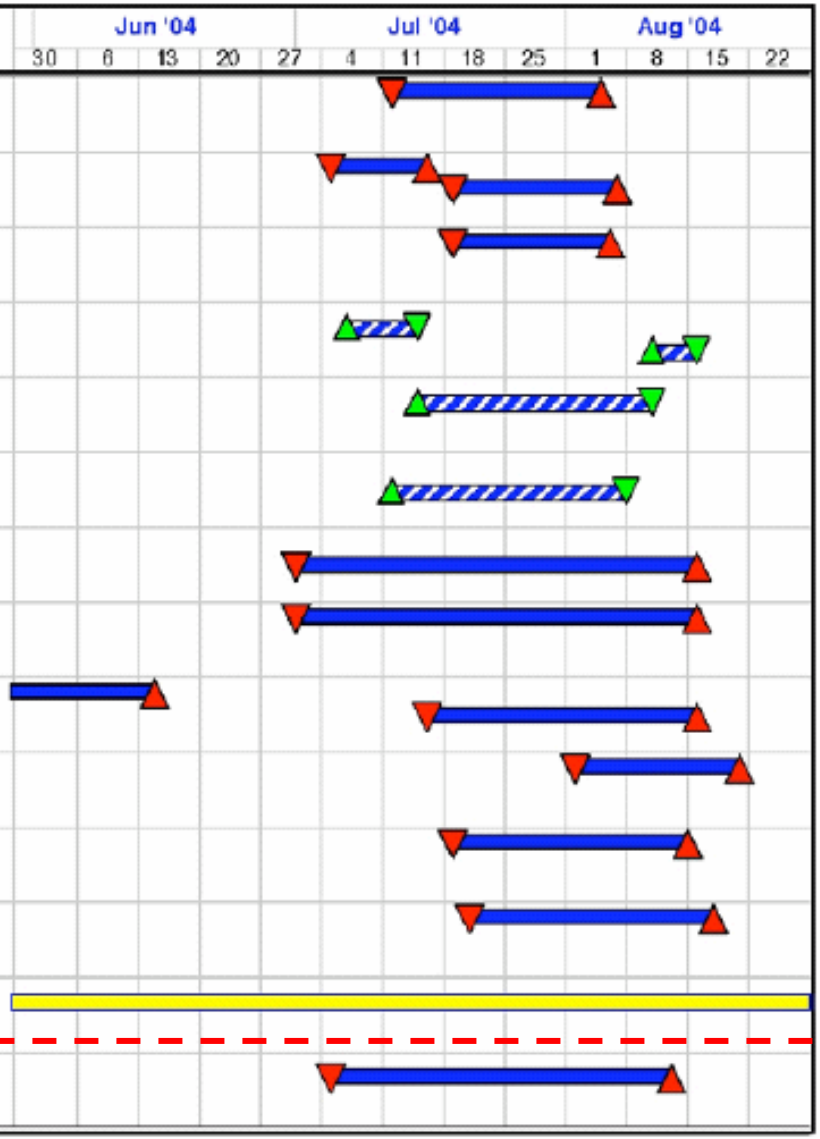


ICART^2 Mobile Platforms

http://www.al.noaa.gov/ICARTT/StudyCoordination/WGAaSC.shtml

Platform Deployment Schedule

	Activity Name	Start Date	Finish Date
1	NERC BAe 146-300	7/12/04	8/4/04
2	DLR Falcon Oberpfaffenhofen Creil	7/5/04 7/19/04	7/16/04 8/6/04
3	CNRS Mystere/Falcon	7/19/04	8/6/04
4	NASA DC-8 St. Louis	7/7/04 8/11/04	7/15/04 8/15/04
5	Pease	7/15/04	8/11/04
6	NASA/SkyResearch BAe J-31	7/12/04	8/8/04
7	NOAA Lidar aircraft	7/1/04	8/15/04
8	NOAA WP-3D	7/1/04	8/15/04
9	NSF/Harvard/U. Wyoming KingAir	5/16/04 7/16/04	6/15/04 8/15/04
10	Cal Tech/ONR Twin Otter	8/2/04	8/20/04
11	DOE G-1	7/19/04	8/15/04
12	NRC-IAR Convair 580	7/21/04	8/18/04
13	U. Maryland Aztec	5/15/04	9/30/04
14	NOAA R/V RONALD H. BROWN	7/5/04	8/13/04



A subset of the planned measurements on the R/V Brown during NEAQS-2004

Irradiance	Portable radiation package	M. Reynolds/BNL
Vertical ozone profiles	Ozonesondes	A.Thompson/NASA
Aerosol optical depth	Microtops	P. Quinn/NOAA-PMEL
Ozone & Aerosol backscatter	Lidar (OPAL)	C. Senff/NOAA-ETL
Vertically resolved O_3, NO_2, SO_2, CH_2O	Multi-angle DOAS	U. Platt/U. Heidelberg
Wind/temperature profiles	915 MHz wind profiler	A. White/NOAA-ETL
Temperatue/relative humidity profiles	Radiosondes	A. White/NOAA-ETL
Liquid water path	Microwave radiometer	C. Fairall/NOAA-ETL
Cloud height	Ceilometer	C. Fairall/NOAA-ETL
Cloud drop size distribution, updraft velocity	K-band radar	B. Albrecht/U. Miami
Turbulent fluxes/energy balance	Bow-mounted eddy covariance package	C. Fairall/NOAA-ETL
Low altitude temp profiles	60 GHz scanning microwave	C. Fairall/NOAA-ETL
High-resolution turbulence	Mini-sodar	C. Fairall/NOAA-ETL
Wind profiles/microturbulence	C-band radar	C. Fairall/NOAA-ETL
BL wind/aerosol profiles	Doppler lidar (HRDL)	A. Brewer/NOAA-ETL

Summary

- **Together with ICART^2, the measurements planned for NEHRTP will provide an unprecedented characterization of physical processes in the boundary-layer over land and sea.**

- **Data from the land-based research networks will become available on the web by July 1, 2004.**

- **The Plymouth, MA site will be maintained beyond the Summer of 2004 to gain insight into interseasonal variations in the physical processes that impact the surface-energy budget.**