Request for LOAF Facility Support

Wyoming King Air with Cloud Radar & Cloud Lidar

Two Dual-Pol DOWs + One Rapid-scan DOW

Field Catalog & Data Archive support

OWLeS (Ontario Winter Lake-effect Systems)

SAIL (Surface and Atmospheric Influences on Lake-effect convection)	Kinematics, Microphysics, and Dynamics of Long-Fetch Lake-effect Systems	Lake-effect Interactions with Orography (partly focused on the Great Salt Lake)
Corresponding PI: David Kristovich (UIUC)	**Corresponding PI:** Bart Geerts (UW)	**Corresponding PI:** Jim Steenburgh (UU)
Co-PIs: Richard Clark (MU), Neil Laird (HWS), Nicholas Metz (HWS), Todd Sikora (MU), George Young (PSU)	**Co-PIs:** Jeffrey Frame (UIUC), Kevin Knupp (UAH), Karen Kosiba (CSWR), Scott Steiger (SUNY-O), Joshua Wurman (CSWR)	

UIUC: Univ. Illinois in Urbana - Champaign
MU: Millersville Univ.
HWS: Hobart and William Smith Colleges
PSU: Penn. State Univ.
UW: Univ. Wyoming
UAH: Univ. Alabama in Huntsville
CSWR: Center for Severe Weather Research
SUNY-O: State Univ. of New York – Oswego
UU: Univ. Utah

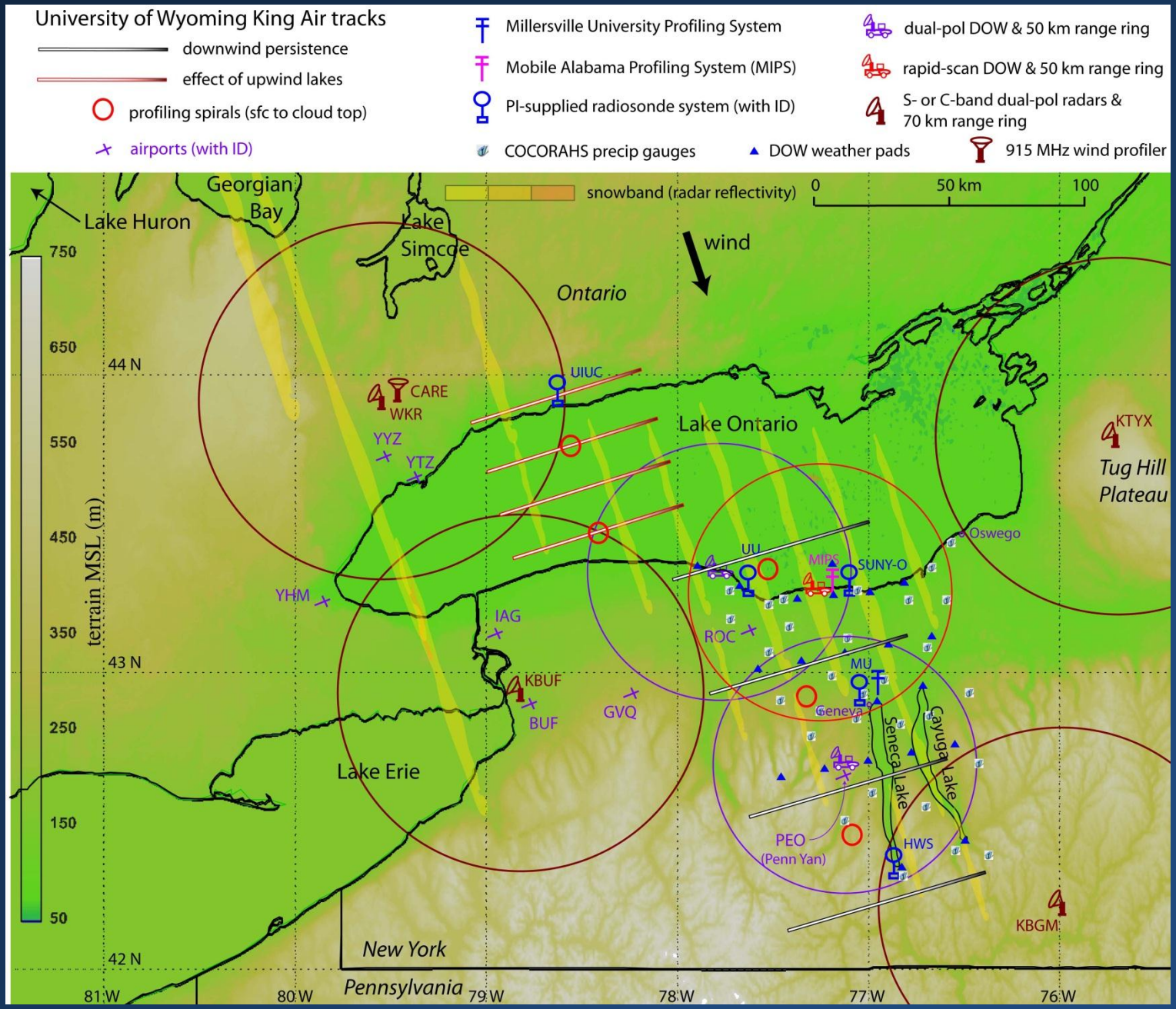
OWLeS PROJECT SUMMARY and FACILITIES

Location of Project	Southeastern and eastern shores of Lake Ontario, and vicinity
Dates of Field Deployment	Preferred period: 1-21 December 2013 and 3-24 January 2014 (43 days with 12-day break during holidays); approximately 2-week to 3-week flexibility
Location of Project	Southeastern and eastern shores of Lake Ontario, and vicinity
NSF Facilities Requested	• UWKA with WCR and WCL • 2 dual-pol DOWs and 1 rapid-scan DOW
Non-NSF experimental Facilities	(1) 5 Mobile Sounding Systems (2) MU Profiling System (MUPS) (3) UAH Mobile Integrated Profiling System (MIPS), with 915 MHz Doppler wind profiler, X-band Profiling Radar, 12-channel microwave profiling radiometer, ceilometer, Doppler wind Lidar , TSP-3100 HotPlate precip gage, Parsivel disdrometer, electric field mill, and 1 Hz meteorology (4) NCAR Snowflake Video Imager (Kucera) (5) UW TSP-3100 HotPlate (6) up to 20 CSWR weather pods (7) UU sheltered ETI gauges (2), ultrasonic snow depth sensors (2) (8) Oswego manual snow photography, snow boards (4 sites)

OWLeS OBJECTIVES

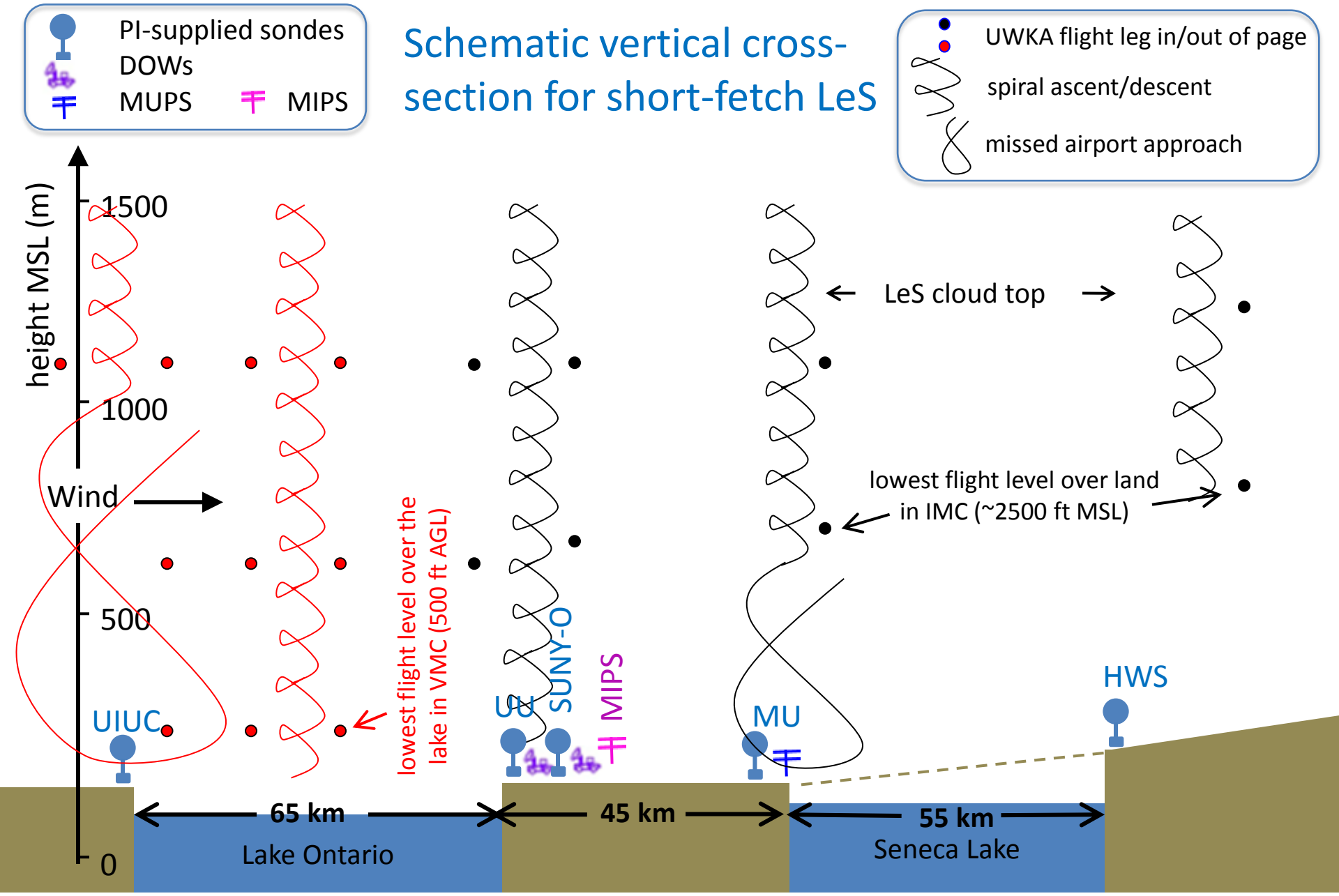
1. To understand the development of, and interactions between, internal planetary boundary layers (PBL) and residual layers resulting from advection over multiple mesoscale water bodies and intervening land surfaces
2. To understand the processes involved in the development of lake-effect systems (LeS) over the New York Finger Lakes and how these processes differ from the larger Great Lakes
3. To examine how organized, initially convective LeS structures in short-fetch conditions persist far downstream over land, long after leaving the buoyancy source (i.e., the ice-free water)
4. To examine how surface fluxes, lake-scale circulations, cloud microphysics and radiative processes affect the formation and structure of long-fetch LeS
5. To understand dynamical and microphysical processes controlling the fine-scale kinematic structures and electrification processes of intense long-fetch LeS
6. To provide in situ validation of operational (S-band) and research (X-band) dual-polarization hydrometeor type classification and lake-effect snowfall QPE
7. To understand the influence of downwind topography on LeS generated over Lake Ontario

OWLeS experimental design: short-fetch bands



North or Northwest winds, bands across the long axis of Lake Ontario

Schematic vertical cross-section for short-fetch LeS

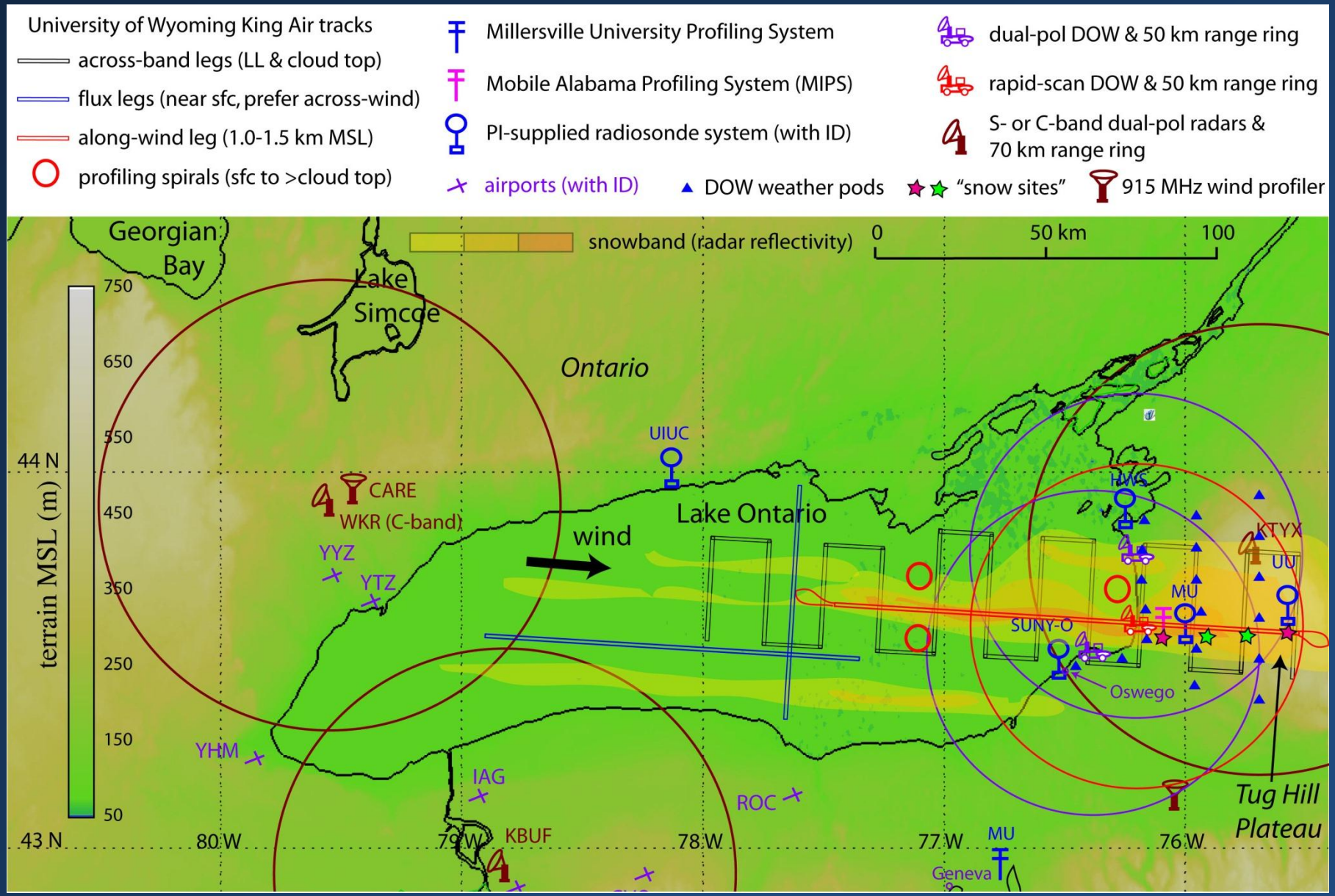


Flights for upwind land/lake variations are shown in red.

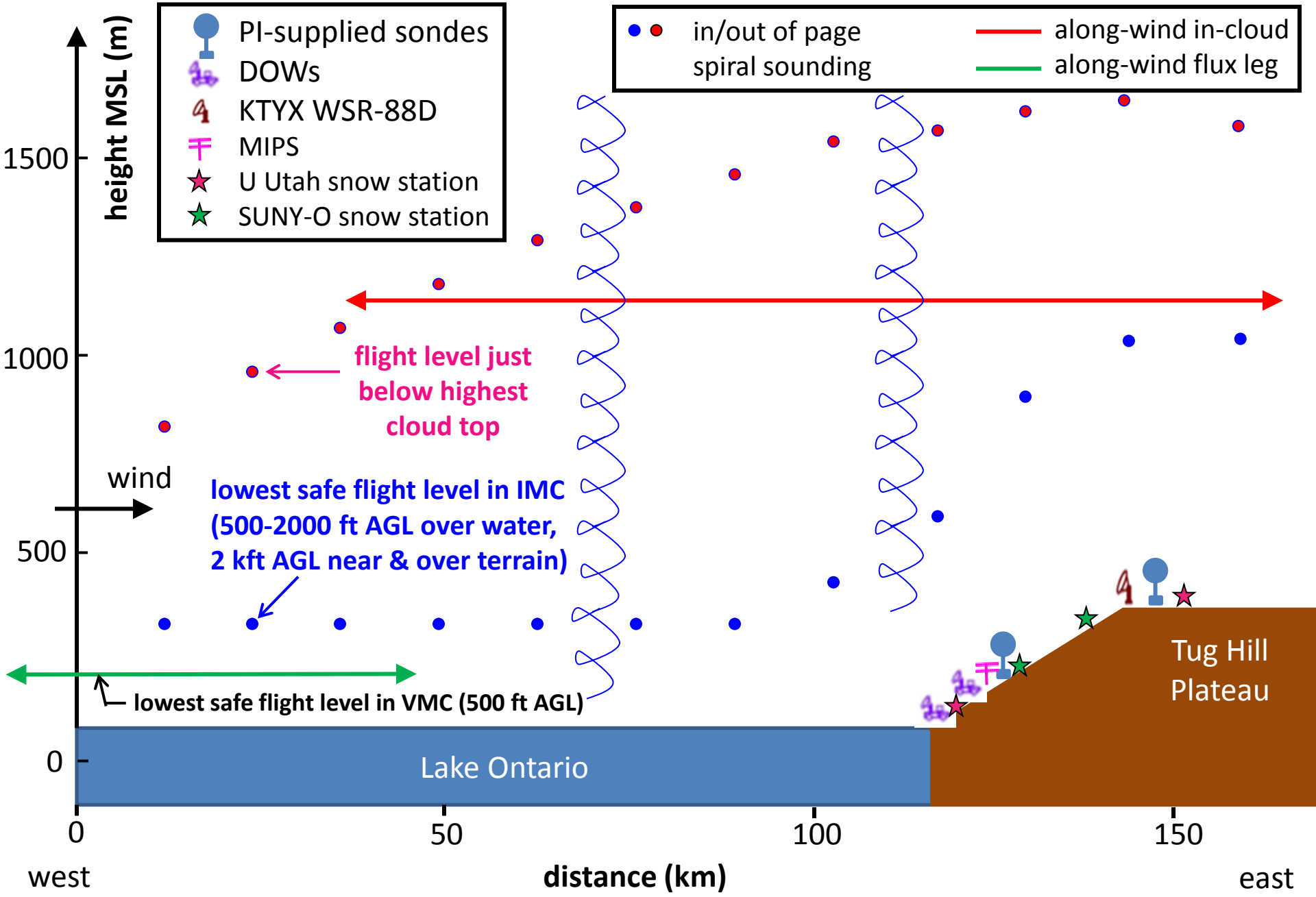
Flights for downwind persistence and small lake effects are shown in black.

OWLeS experimental design: long-fetch bands

Westerly Winds, bands along the long axis of Lake Ontario



Schematic vertical cross-section for long-fetch LeS



OWLeS experimental design: long-fetch bands

zoom-in on the east end of Lake Ontario