

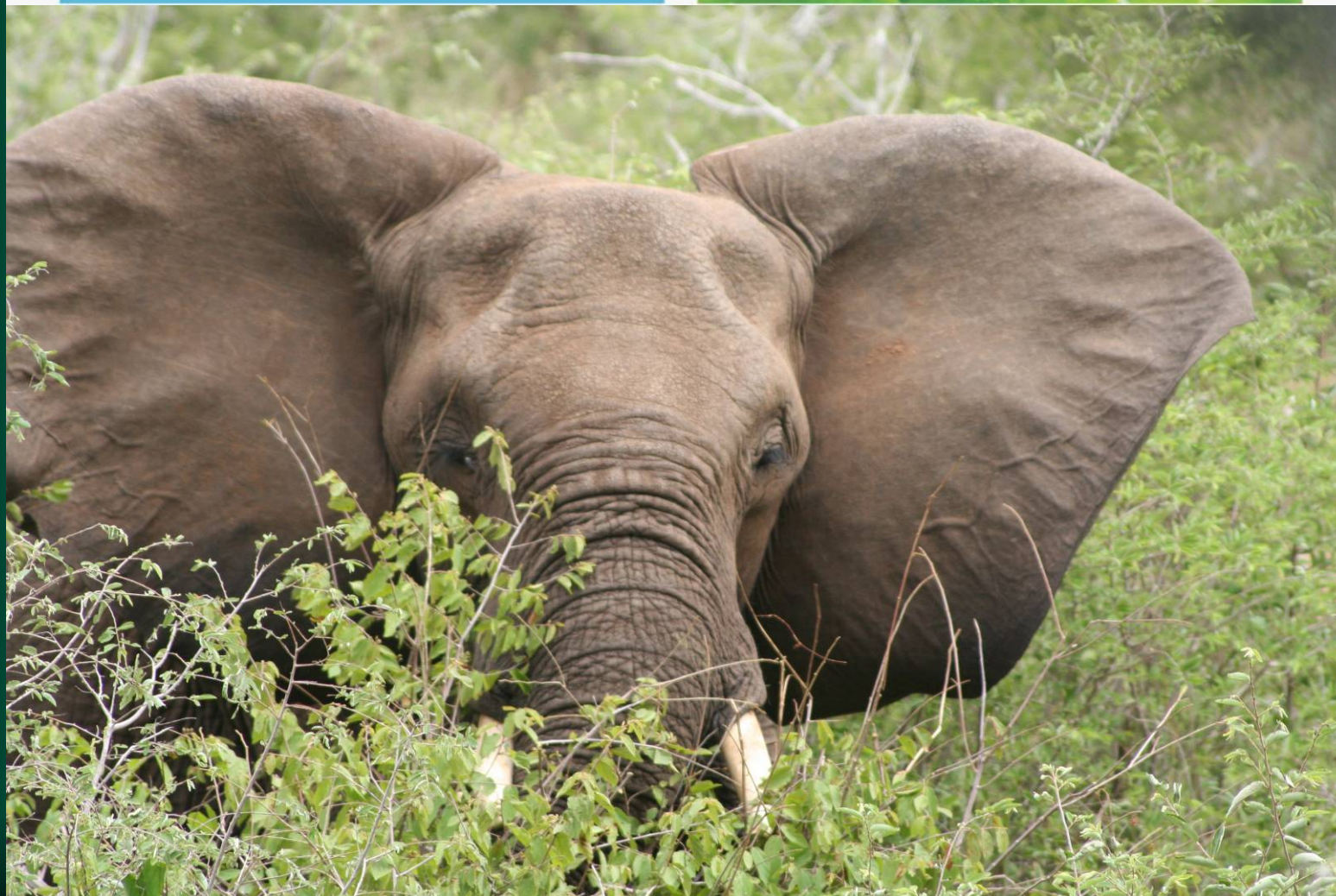
Global Atmospheric Deposition Assessment

World Data Centre for
Precipitation Chemistry



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Precipitation Chemistry



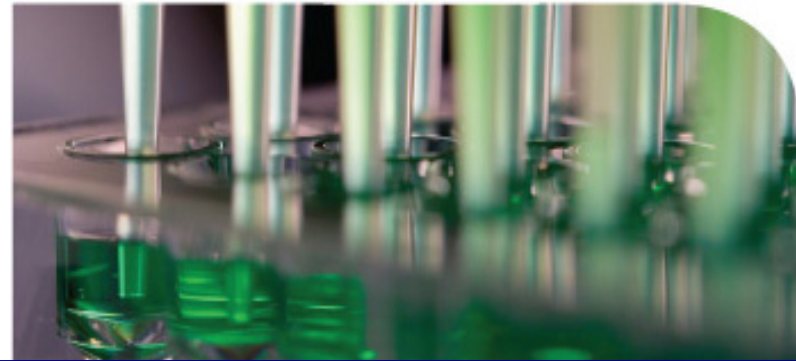
Changes Needed at WDCPC



- ▶ send questionnaire to lab managers:
 - (1) solicit lab lat/lon, pictures, and contact information
 - (2) request similar information for all sites served by lab
 - (3) develop Web mapping and interface to make this info and precipitation chemistry measurements available

Changes Needed at WDCPC

The Quality Assurance
Science Activity Centre
— Americas



...helping ensure the known high quality of
precipitation chemistry measurements

[HOME](#)

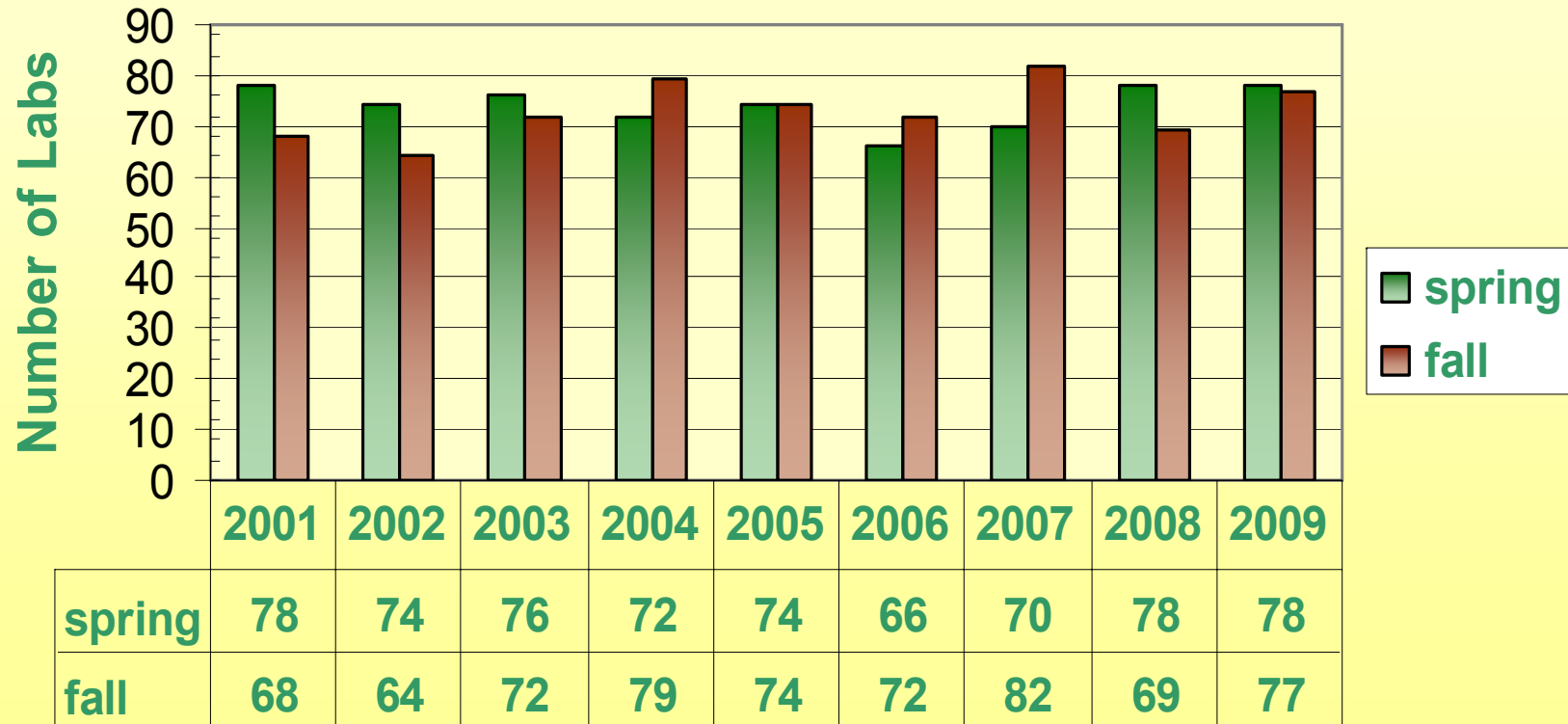
[PUBLICATIONS](#)

[STUDY RESULTS](#)

[RING DIAGRAMS](#)

[42nd STUDY](#)

GAW Lab Intercomparison Studies



► participation has varied from 64 labs to 82 labs

► 103 different labs have participated between 2001 and 2009; some labs discontinued participation while others joined

Summary - Level of Participation

Participation (percent)	Laboratories	
	Count	Percent
100	27	26.2
90 - 99	14	13.6
80 - 89	16	15.5
70-79	9	8.7
60-69	5	4.9
50-59	8	7.8
<50	24	23.3
> 75	63	61.2

► Five new participants: Indian Inst. of Tropical Meteo (Rao), Taiwan (George Lin), Wroclaw (Poland), Mexico (Bravo), Singapore (Bala)

► One termination: Meteo France (letter to WMO re funding)

Summary - Level of Participation

▶ Fractured Communications

Institute of Atmospheric Chemistry, PRC. (~100%)

Need assistance – e-communications to China have failed. I've received two e-mails with attached data files. Postage has gone un-answered.

▶ Fractured Communications –

Terminated LIS sample delivery. No response to mail or e-mail.

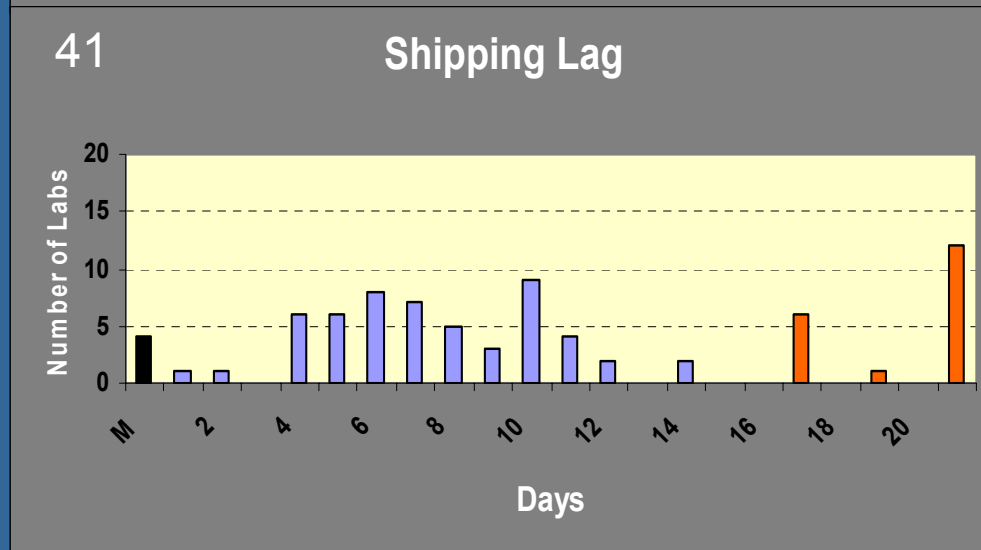
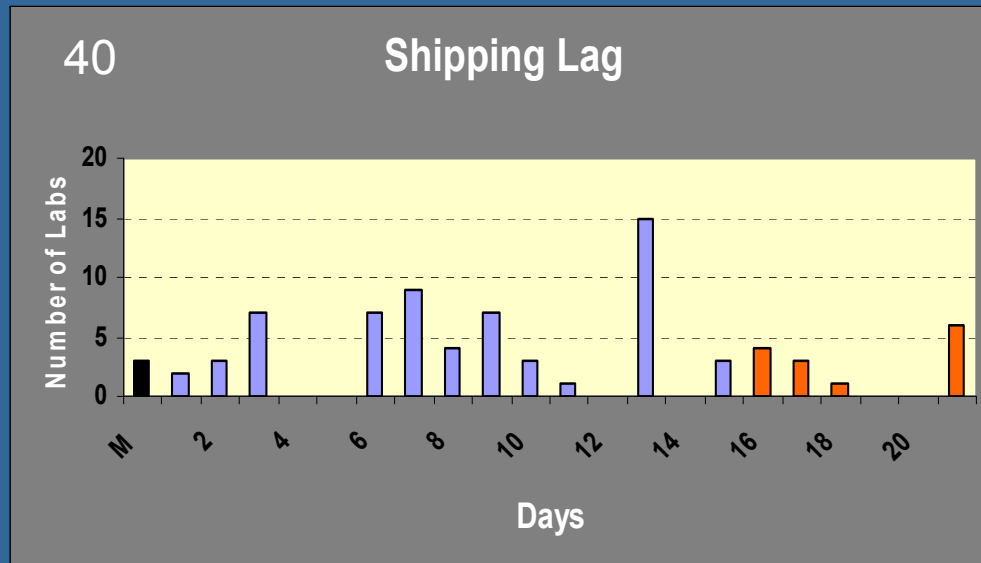
(1) National Research & Development Institute, Romania. (~70%)

(2) Centre for Ambient Studies, Rimini, Italy. (~65%)

(3) Mersin University, Turkey (~30%)

(4) Mustafa Kemal University, Turkey (~12%)

Summary - Participation



- ▶ For LIS 40 , 81% arrived in less than 16 days.
- ▶ For LIS 41, 74% arrived in less than 16 days.

LESSON LEARNED:
Send samples in October,
not November.

40th STUDY

E-mail any questions you have to manager@qasac-americas.org.

Measurement	Units	DL DQO	N	Mean	Std. Dev.	Median	Sigma_{est}	Percentile	
								25th	75th
pH	pH units	N/A	72	4.94	0.19	4.95	0.07	4.90	5.00
Conductivity	$\mu\text{S/cm}$	2.0	71	8.3	0.9	8.4	0.5	8.0	8.8
Acidity (optional)	$\mu\text{eq/L}$	N/A	12	14.2	7.3	11.9	11.1	9.4	24.4
Sulfate as SO_4^{2-}	mg/L	0.060	73	0.778	0.054	0.776	0.049	0.742	0.808
Nitrate as NO_3^-	mg/L	0.090	75	0.887	0.078	0.882	0.047	0.852	0.916
Ammonium as NH_4^+	mg/L	0.020	71	0.218	0.030	0.219	0.028	0.200	0.238
Fluoride (optional)	mg/L	None	21	0.021	0.005	0.021	0.010	0.018	0.032
Chloride	mg/L	0.040	71	0.109	0.021	0.108	0.022	0.096	0.126
Sodium	mg/L	0.020	61	0.050	0.013	0.050	0.011	0.042	0.057
Potassium	mg/L	0.020	54	0.024	0.010	0.021	0.012	0.018	0.034
Calcium	mg/L	0.020	67	0.122	0.016	0.122	0.017	0.110	0.134
Magnesium	mg/L	0.010	57	0.024	0.006	0.024	0.004	0.022	0.027

Lab Managers have requested Z-scores for compliance with ISO requirements. PC-SAG prefers non-par statistics.

Ring Diagrams

Lab:

700003 - Champaign, IL, USA

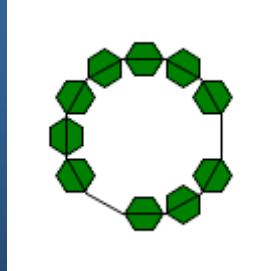
Select a single lab, or all for entire dataset.

- Ring Diagrams
- HTML Table

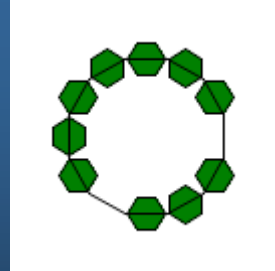
Lab 700003

Period
LIS
40

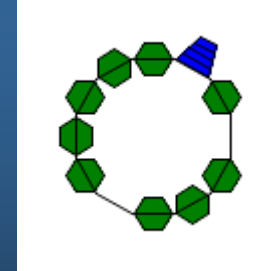
Sample Set 1

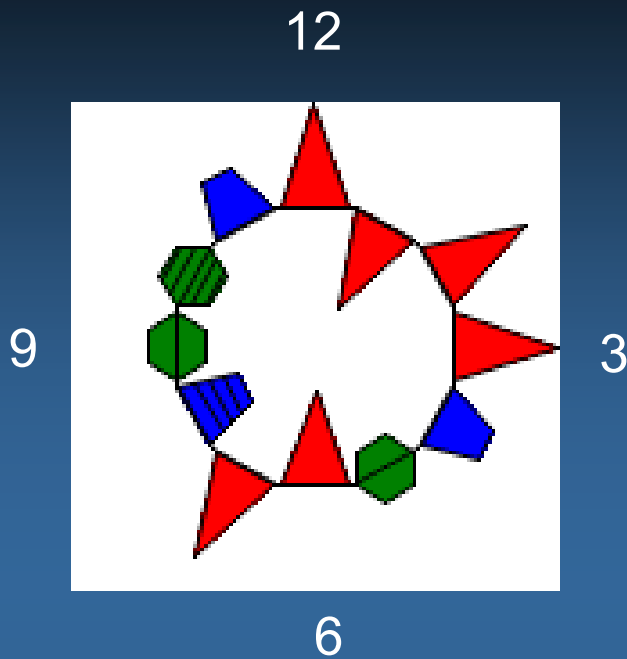


Sample Set 2



Sample Set 3





Positions

- 1 - pH
- 2 - conductivity
- 3 - acidity
- 4 - sulfate
- 5 - nitrate
- 6 - ammonium
- 7 - fluoride
- 8 - chloride
- 9 - sodium
- 10 - potassium
- 11 - calcium
- 12 - magnesium

GOOD

Green Hexagon : interquartile (IQ) range

SATISFACTORY

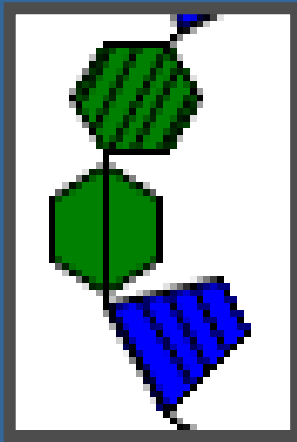
Blue Trapezoid : outside IQ range but in range = $(\text{median} \pm \text{IQ}/1.349)$

UNSATISFACTORY

Red Triangle : outside $(\text{median} \pm \text{IQ}/1.349)$

Note : Outward pointing symbol → High

Inward pointing symbol → Low



Green Hexagon with cross-hatching : IQ range but fails DQO

Blue Trapezoid with cross-hatching : outside IQ range, in range = (median \pm IQ/1.349), but fails DQO

Note : Blue Trapezoid replaces Red Triangle, when measurement meets DQO

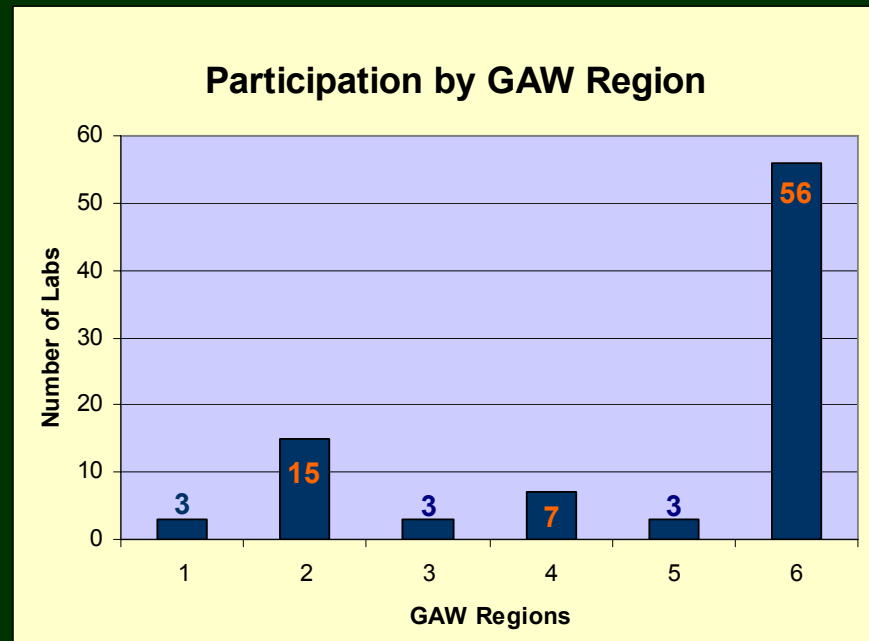
PC Data Quality Objectives

pH	0.07 units	fluoride	none
conductivity	7%	chloride	10%
acidity	25%	sodium	10%
sulfate	7%	potassium	20%
nitrate	7%	calcium	15%
ammonium	7%	magnesium	10%

The PC DQOs will be re-evaluated, using LIS data.

Changes Needed at QA-SAC

- ▶ **Web site: add SOPs and helpful suggestions on corrective actions for improving measurements. Perhaps use a bulletin board approach.**
- ▶ **send follow-up samples to labs with measurement problems**
- ▶ **add section for PC-SAG information, etc.**
- ▶ **expand coverage in WMO regions 1,3,and 5**



Changes Needed at QA-SAC

GAW Regions

Select a Region

Click on the map or follow the links on the left.

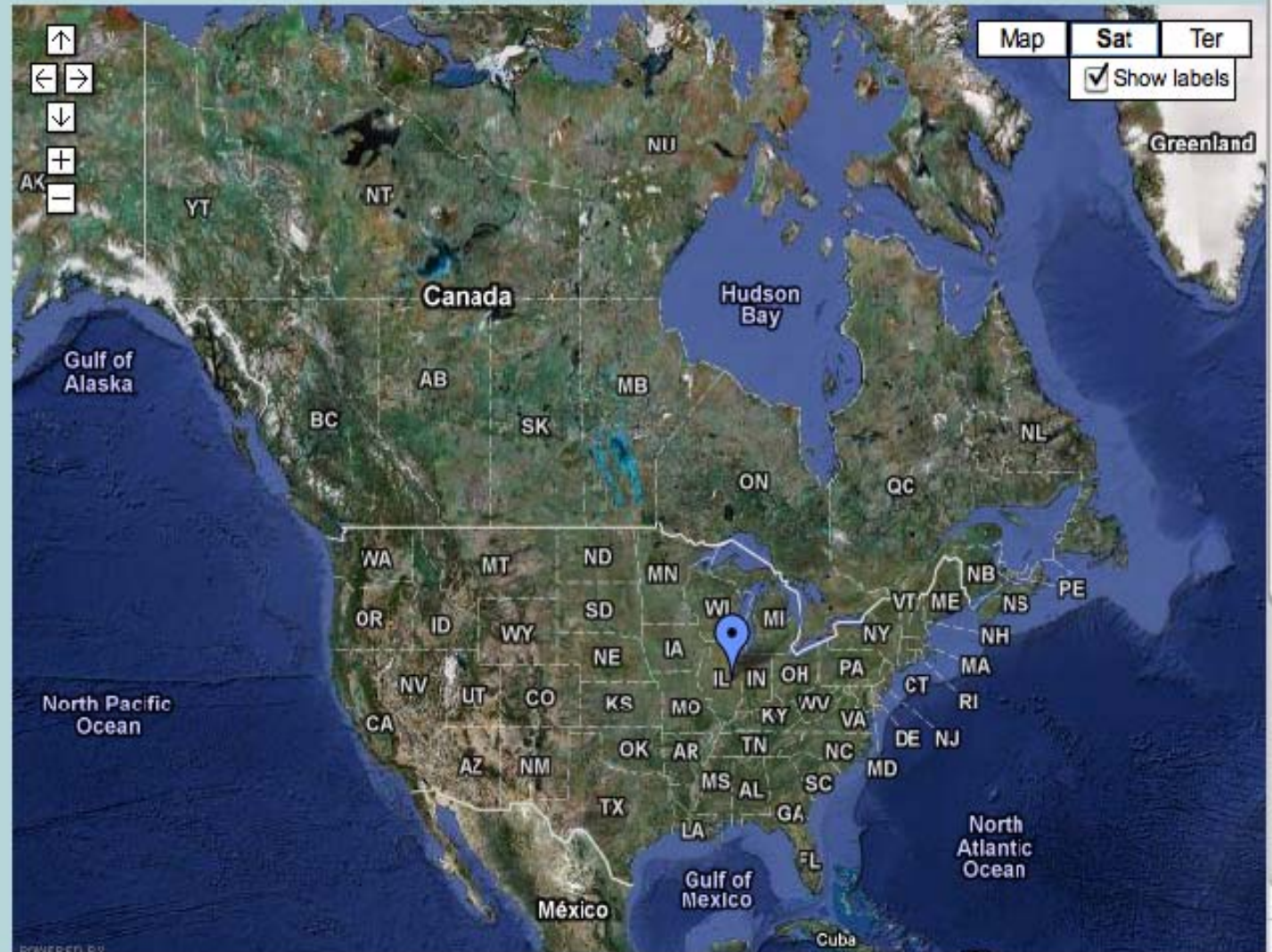
- Africa
- Antarctica
- Asia
- Australia
- Europe
- North America
- South America



North America

Select a Lab or Station

- Africa
- Antarctica
- Asia
- Australia
- Europe
- North America
- South America



Champaign, Illinois, USA Lab

Lab Name

Champaign, Illinois, USA

Host Organization

Illinois State Water Survey

Lab Manager/Contact

Illinois State Water Survey

Joe Smith

123 Easy St

Champaign, Illinois, 61801 USA

(217) 123-4567

(217) 123-5678 (fax)

joe.smith@usa.org

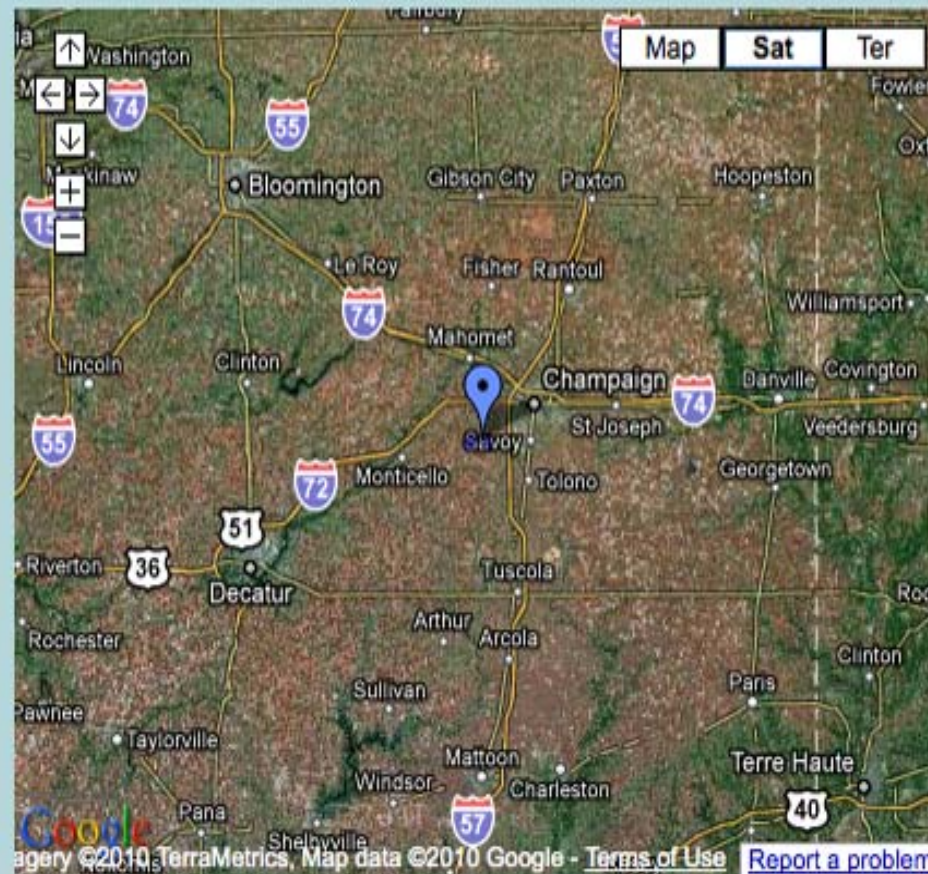
Intercomparison Data

2009 Ring Diagram

Go

Stations Served

Bondville, Illinois, USA



View [Bondville Site](#) in a larger map

“Drill down” to view land cover/use around site.