SciGlob Instruments and Services, LLC.

Global Science for Global Solutions

1. Who We Are

SciGlob is an esteemed science and engineering company dedicated to the field of atmospheric remote sensing. Our focus lies in utilizing ground, air, and space-based platforms for air quality monitoring and satellite validation. At SciGlob, we take pride in our extensive experience in developing and testing prototype Ultraviolet/Visible/Near-Infrared remote sensing instrumentation. We have successfully transformed these prototypes into fully operational systems through meticulous research and development.

Our team profoundly understands the underlying scientific principles involved in atmospheric remote sensing. This knowledge, combined with our mechanical, electrical, and optical engineering expertise, enables us to deliver comprehensive systems-based solutions. By harnessing our technological prowess and interdisciplinary approach, SciGlob strives to provide innovative solutions that meet the ever-evolving challenges faced by industries reliant on atmospheric data analysis.

2. AIR QUALITY MATTERS

At SciGlob, we believe that clean and healthy air is a fundamental right for everyone. We understand the importance of monitoring air quality with precision to address environmental challenges effectively. Providing accurate data and insights empowers governments, organizations, and individuals to make informed decisions that contribute to a better tomorrow. Our cutting-edge technology allows us to measure air quality in real-time, enabling prompt action when needed. We believe that that working together can create a sustainable future where everyone can breath freely without compromising their well-being. Whether you are an individual passionate about the environment or an organization committed to making a positive impact, choosing SciGlob means joining forces with a dedicated team of experts who are driven by the same goal as you: improving environmental conditions for all. With SciGlob by your side, you have the tools necessary to actively contribute towards building a brighter future for generations to come.

3. OUR PARTNERS

i. EPA (Environmental Protection Agency)
ii. ESA (European Space Agency)
iii. LuftBlick
iv. NASA (National Aeronautics Space Agency)

4. DRUG-FREE AND EQUAL OPPORTUNITY EMPLOYER

SciGlob is a drug-free and equal opportunity employer committed to diversity and inclusion in the workplace. We prohibit discrimination and harassment based on race, gender, color, sex, religion, sexual orientation, national origin, disability, genetic information, pregnancy, or any other protected characteristic outlined by the federal, state, or local laws. This policy applies to all employment practices within our organization, including hiring, recruiting, promotion, termination, layoff, recall, leave of absence, compensation, benefits, training, and apprenticeship. SciGlob makes hiring decisions based solely on qualifications, merit, and business needs at the time.

5. SciGlob's Mission

Sciglob is dedicated to applying its diverse engineering and scientific expertise to provide innovative, world-class instrumentation and services to monitor and enhance our knowledge and understanding of the earth's atmosphere.

6. Our Products

SciGlob developed a cost-effective, easy-to-deploy, ground-based spectrometer called Pandora to address the gap in air quality validation measurements.

Made up of a spectrometer and tracker, the Pandora provides high-quality direct sun, lunar, or sky scan radiance measurements in UV and visible wavelengths. Pandora radiance measurements combined with trace gas spectral fitting routines and, in the case of sky-scan measurements, radiative transfer modeling provide real-time data of key AQ relevant pollutants, which can compare to similar measurements from satellites. This state-of-the-art technology has been purchased and deployed worldwide.

i. Pandora-1S (Pandora 1Spectrometer):

It is now possible for simultaneous hyperspectral observations from 280nm to 530nm of direct sun, moon, and scattered skylight with the advanced technology of SciGlob's Pandora 1Spectrometer system. The system's versatility allows it to be packaged in a Field Deployable or 5URack Mount enclosure, making it perfect for a field or lab setting.

The Pandora 1S Instrument increases any research station's atmospheric remote sensing capabilities by capitalizing on today's low-cost, miniaturized, fiber-fed hyperspectral spectrometers. This precise, modular, and versatile measurement system can measure trace gases' total columns and profile information such as nitrogen dioxide, ozone, formaldehyde, etc.

Mounted on a microprocessor-controlled azimuth elevation tracker, the Pandora 1S can point anywhere in the sky. Complimentary control software allows automated measurements, remote monitoring, and data transfers over the Internet. Field deployable without requiring extensive support facilities.

ii. Pandora-2S (Pandora 2Spectrometer):

Simultaneous hyperspectral observations from 270nm to 900nm of direct sun, moon, and scattered skylight are now possible with the SciGlob Pandora 2Spectrometer System. The system's adaptable nature allows it to be packaged in a Field Deployable or 5U Rack Mount enclosure, making it perfect for a field or lab setting.

The Pandora 2S Instrument increases any research station's atmospheric remote sensing capabilities by capitalizing on today's low-cost, miniaturized, fiber-fed hyperspectral spectrometers. This precise, modular, and versatile measurement system can measure trace gases' total columns and profile information such as nitrogen dioxide, ozone, formaldehyde, etc.

Mounted on a microprocessor-controlled azimuth elevation tracker, the Pandora 2S can point anywhere in the sky. Complimentary control software allows automated measurements, remote monitoring, and data transfers over the Internet. Field deployable without requiring extensive support facilities.

iii. Pan Tilt Unit (Dual Axes Tracker):

The Dual Axes Tracker is traditionally used with the Pandora Spectrometer System but is adaptable to various remote sensing applications. The tracker employs high-precision motors with absolute mechanical encoders to position the optical sensor accurately.

The new sun tracking system is equipped with state-of-the-art motors operating in closed loop mode, capable of accurately positioning larger inertia loads. The motor controller allows easy networking and simplified multi-axis control with the RS-485 Communication protocol. The tracker is designed for continuous operation and can handle sudden load fluctuations during high winds.

It can complete a full rotation in the zenith and azimuthal directions with a precision of 0.01 and a rotation speed of up 1200 degrees/second. Programmable current and speed allow the system to handle torques up to 1.48Nm. Both axes are equipped with electromagnetic brakes to protect the system during power loss.

The tracker is housed in a weatherized aluminum enclosure and can be equipped with an internal heating element for operation in colder environments.

An optional tripod provides a secure base to mount the tracker and is well-suited for most applications; however, custom mounting options can be accommodated.

7. Our Deployments

Over 160 SciGlob Pandora Spectrometers have been deployed across the globe as part of the Panonia Global Network (PGN), providing real-time air quality measurements. The Pandora Spectrometers name, location and ID is given below,

ID	Name
2	GreenbeltMD
17	LabGSFC
18	LabGSFC
20	Busan
21	Bremen
25	HoustonTX
26	Harvard
27	LabGSFC
29	Fajardo
30	LabLuftBlick
31	CharlesCityVA
32	GreenbeltMD
34	MountainViewCA
36	Dakar
37	HamptonVA
38	BayonneNJ
39	DearbornMI
40	WallopsIslandVA
49	HoustonTX
51	OldFieldNY
52	RichmondCA
53	Potchefstroom METS
54	Seoul
55	QueensNY
56	MaunaLoaHI
57	LabGSFC
58	CharlesCityVA
59	LabGSFC
60	GreenbeltMD
61	AldineTX
63	LaPorteTX
64	NewHavenCT
65	Altzomoni
66	LabSciGlob
67	Cologne
68	WrightwoodCA
69	NewBrunswickNJ
70	ChapelHillNC

72	SaltLakeCityUT - Hawthorne
73	Islamabad - NUST
74	EdwardsCA
75	EssexMD
76	Dhaka
77	Singapore - NUS
78	Banting
80	BeltsvilleMD
81	Undefined
83	Undefined
101	Izana
103	Downsview
104	Downsview
105	Helsinki
106	Innsbruck
108	Toronto - West
109	LabGSFC
110	LabLuftBlick
111	Bucharest
112	Broadmeadows
114	BuenosAiresSMN
115	Rome - ISAC
117	Rome - SAP
118	Cabauw
119	Athens - NOA
120	Innsbruck - FKS
121	Izana
122	Downsview
123	LabGSFC
124	ComodoroRivadavia
125	BuenosAiresSMN
127	LabGSFC
128	ColumbiaMD
129	AliceSprings
130	Lindenberg
131	Palau
132	Berlin
134	BristolPA
135	ManhattanNY - CCNY
138	Rome - IIA
139	SouthJordanUT
140	WashingtonDC
142	MexicoCity - UNAM
143	LibertyTX
144	Eureka - PEARL
145	Toronto - Scarborough
146	Yokosuka
147	SWDetroitMI
149	Seoul - SNU

150	Ulsan
152	NyAlesund
153	ChelseaMA
154	SaltLakeCityUT
155	BostonMA
156	HamptonVA - HU
157	MexicoCity - Vallejo
158	AtlantaGA - Conyers
159	Wakkerstroom
162	Brussels - Uccle
163	Tsukuba - NIES - West
164	Seosan
165	WashingtonDC - AnacostiaFwy
166	PhiladelphiaPA
167	KenoshaWI
169	Egbert
170	StGeorge
171	Beijing - RADI
173	AtlantaGA - GATech
174	FairbanksAK
176	Tsukuba - NIES
177	WestportCT
178	LabGSFC
179	CornwallCT
180	ColumbiaMD
181	SanJoseCA
182	Tel - Aviv
183	LondonderryNH
184	CapeElizabethME
185	LabGSFC
186	MadisonCT
187	PittsburghPA
188	LapwaiID
189	Incheon - ESC
190	Bangkok
192	Tokyo - Sophia
193	Tsukuba
194	Tokyo - TMU
195	Sapporo
196	Sapporo
197	Nagoya
198	Kobe
199	Fukuoka
200	GrandForksND
204	BoulderCO - NCAR
205	FortYatesND
206	BuffaloNY
207	ArlingtonTX
208	Windsor - West

209	Izana
210	Bandung
211	Agam
212	Pontianak
213	ChiangMai
214	LabSciGlob
216	Ulaanbaatar
217	Dalanzadgad
218	Vientiane
230	Gongju - KNU
231	Suwon - USW
232	Yongin
235	Seoul - KU
236	NewLondonCT
237	AtlantaGA - SouthDeKalb
238	Granada
239	Kosetice
240	Thessaloniki
242	Trollhaugen
243	Toronto - CNTower
246	IowaCityIA - WHS
247	WhittierCA
248	TurlockCA
249	ChicagoIL
251	Nainital - ARIES
253	TucsonAZ
254	TubaCityAZ
255	VirginiaBeachVA - CBBT
256	MiamiFL - FIU
257	AustinTX
258	CorpusChristiTX
260	CameronLA
261	HoustonTX - SanJacinto
270	Warsaw - UW

8. Services Offered

Field Instruments: SciGlob's staff has extensive experience in installing air quality monitoring instrumentation all around the world. Our experience has shown that a proper installation of a field instrument performed by professionals is necessary to ensure smooth operation.

Instrument Maintenance: SciGlob offers the service of remote instrument control. Our operators check the spectrometer's performance, alerting local operators of possible issues and assisting them in restoring an operational status.

Instrument Repair: Ground instrumentation can be damaged due to human errors or environmental events (thunderstorms, hail, etc.). SciGlob is capable of doing onsite repairs for small and moderate damages. In addition, SciGlob can arrange shipments to and from their facility for more extensive damages and issues and repair them in-house.

9. Laboratory Calibration and Analysis

SciGlob performs initial laboratory and field calibration for spectrometer systems such as Pandora. This includes:

i. wavelength calibration (dispersion and slit function)
ii. radiometric calibration (flat fielding, linearity, temperature dependence, and absolute calibration)
iii. stray light calibration

10. Satellite Calibration and Performance

SciGlob is the sole provider of instrument-level calibration analysis for NASA's Earth Polychromatic Imaging Camera (EPIC) on the Deep Space Climate Observatory (DSCOVR) spacecraft.

i. EPIC provides full-disk images for air quality and land and cloud physics analysis multiple times daily.
ii. SciGlob was involved in pre-launch calibration and developed the L1a processing software, converting raw data into radiances.
iii. SciGlob provides in-flight maintenance and updates of instrument calibration.