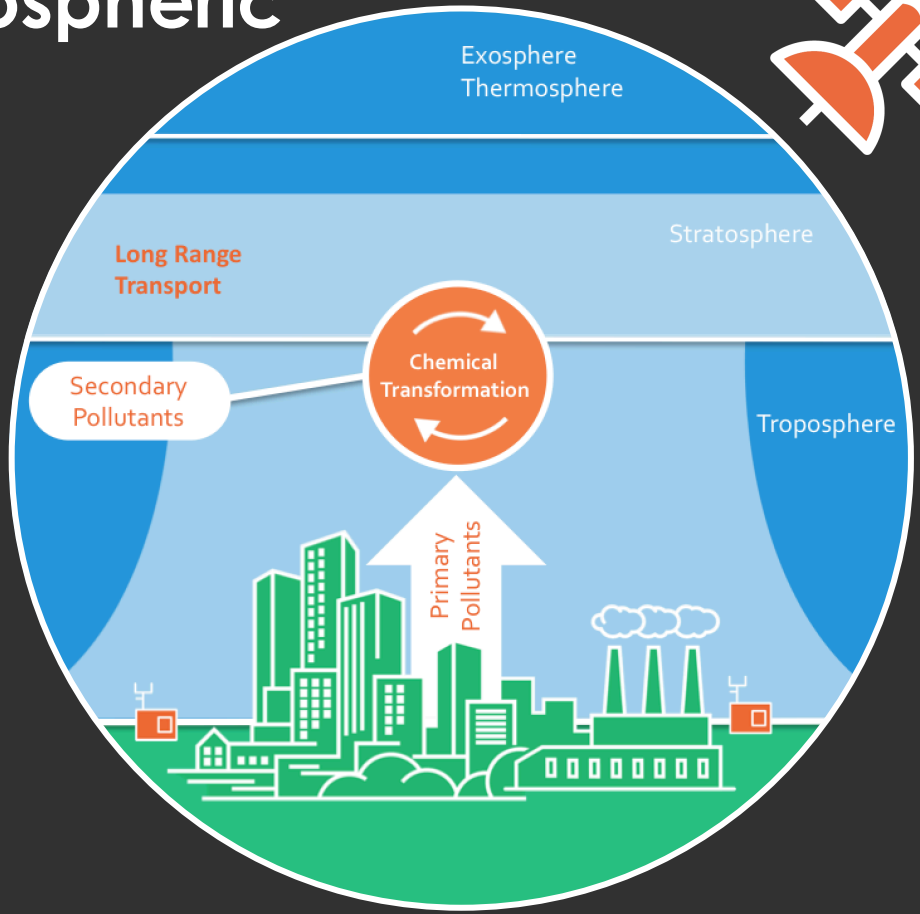
SCEPTERAIR

State-of-the-Art Atmospheric Monitoring via an Integrated Data Analytics Approach

Building a Global Atmospheric Monitoring System

- Integrate and Visualize the Vertical Air Column
- Tackle the Next Big Data Frontier, Environmental Data



Proprietary, but Leverage Free

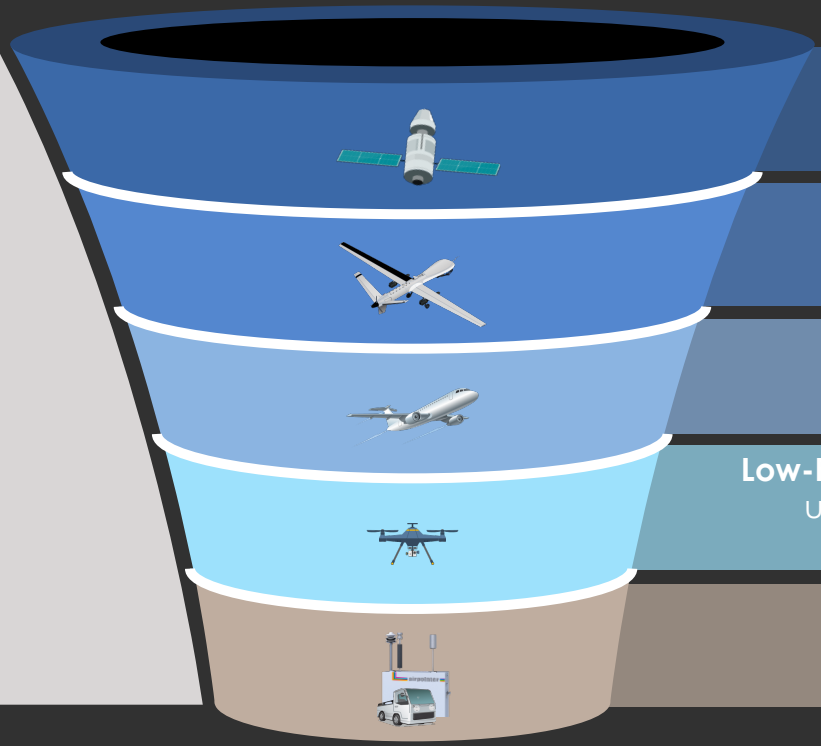
Scepter Sensors

Scepter / Partner Sensors

Scepter / Partner Sensors

Scepter / Partner Sensors

Existing Sensors



LEO Satellites
up to 500 miles

High-Flying UAVs
up to 60,000 feet

Aircraft
up to 45,000 feet

Low-Flying Drones
up to 500 feet

Mid-Range UAVs
up to 12,000 feet

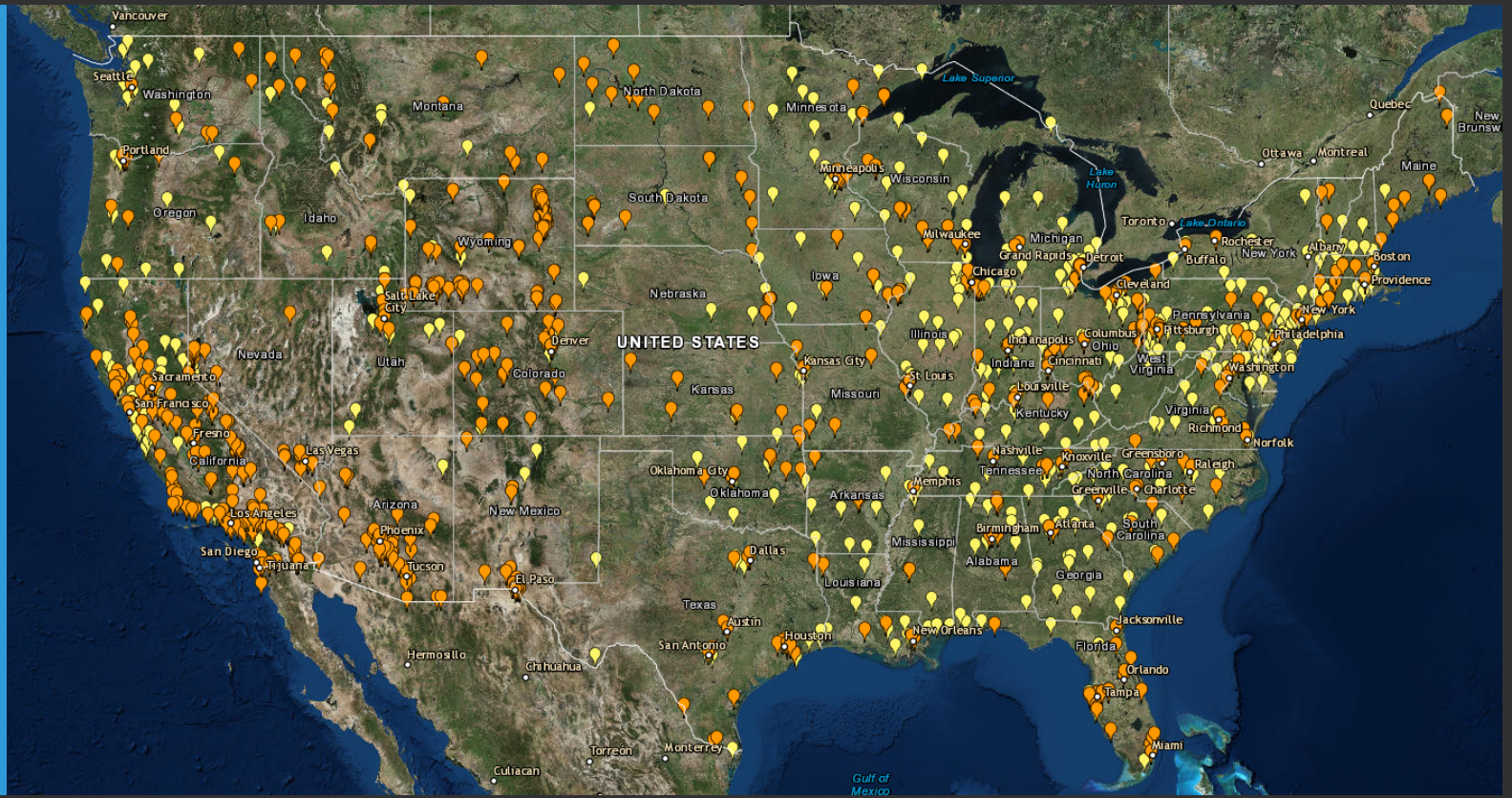
Ground
up to 30 feet

Scepter Information Processing Center

But Free Has Limitations; Spotty Coverage. . .

Active EPA Terrestrial Monitoring Stations

- PM 2.5 Monitoring Stations
- PM 10 Monitoring Stations



Transforming Atmospheric Data Into Actionable Services – "ScepterAir"

Patent: "**Atmospheric Sensor Network and Analytical Information System Related Thereto**"

Sensors

(Scepter and 3rd party)

Data Aggregation

Fusion

Analytics & Machine Learning

Presentation

Ecosystem Approach

Key Target Markets

Monitoring & Compliance Verticals

Legislated and Self Reporting Needs

Commercial & Government Verticals

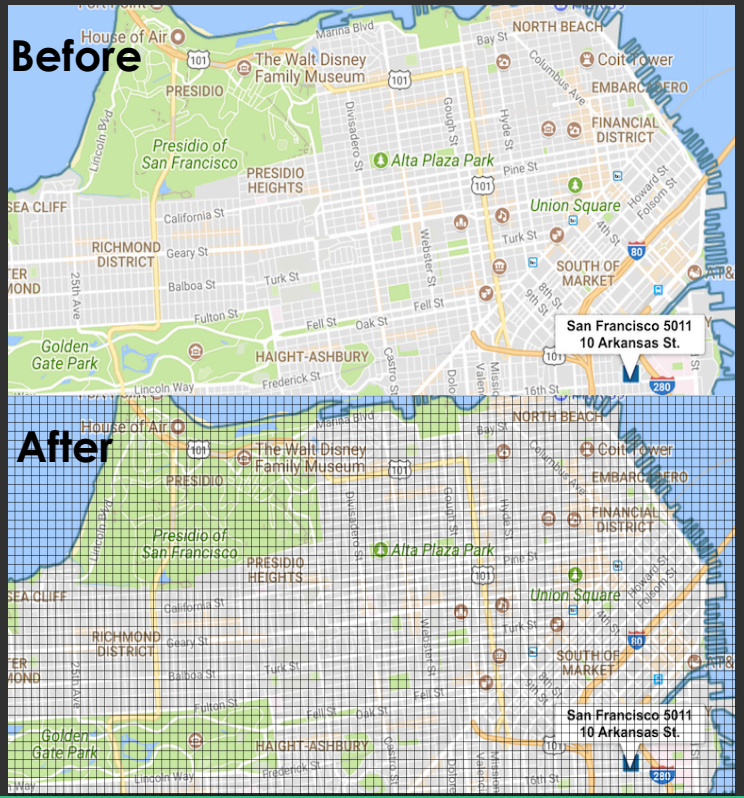
Revenue Enhancement, Cost Reduction, Strategic Decision Makings Needs

Climate Vertical

Leadership, Trust and Cost-effective Implementation Needs

How We Help: Examples

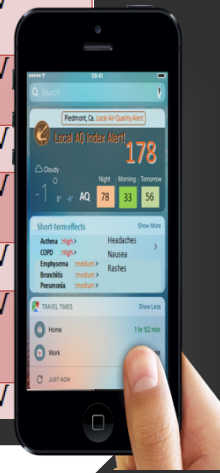
❖ Community Monitoring



❖ Health Alert Services

AQI Levels of Health Concern	Numerical Value
Good	0 to 50
Moderate	51 to 100
Unhealthy for Sensitive Groups	101 to 150
Unhealthy	151 to 200
Very Unhealthy	201 to 300
Hazardous	301 to 500

Symptom	Exposure	Pollutant	Effect	Actionable
Myocardial infarction (MI	25 µg/m³ $PM_{2.5}$ 2 hours	<PM2.5 ambient air	28%-41% increase per exposure *1996	√
In Utero development	Accumulative 9 months	Diesel exhaust VOC $PM_{2.5}$ -PM_{10}		√
Renal function cardiovascular	Accumulative	> $PM_{2.5}$ ambient air VOC		√
Systemic Lupus	1-7 days Accumulative	> $PM_{2.5}$, BC, and NOx, 03		√
Asthma	15 min Accumulative	Urban PM_{10} PM_{100} NO2 CO VOC O_3		√
Atherosclerosis		>$PM_{2.5}$ ambient air		√
Cardiopulmonary disease	14 days Accumulative	>$PM_{2.5}$ ambient air	21 % Acute decompensated heart failure (ADHF)	√
Respiratory	1-3 days	Urban $PM_{2.5}$		√



Today

With Scepter

Emerged from Stealth Mode

SPACENEWS

5th edition
LATSAT
May 15-16, 2018 / Mexico City

Scepter Inc. unveils plan for global atmospheric monitoring constellation

by Debra Werner — March 23, 2018

Philip Father, Scepter chief executive, and former DigitalGlobe executive Rafay Khan, discuss plans for a global constellation of atmsopheric-monitoring satellites at Space Systems Loral, a Maxar Technologies company. Credit: SSL.

PALO ALTO, California — Scepter Inc., a Silicon Valley startup, unveiled plans March 22 to launch a constellation of satellites to provide global atmospheric monitoring services for government and commercial customers.

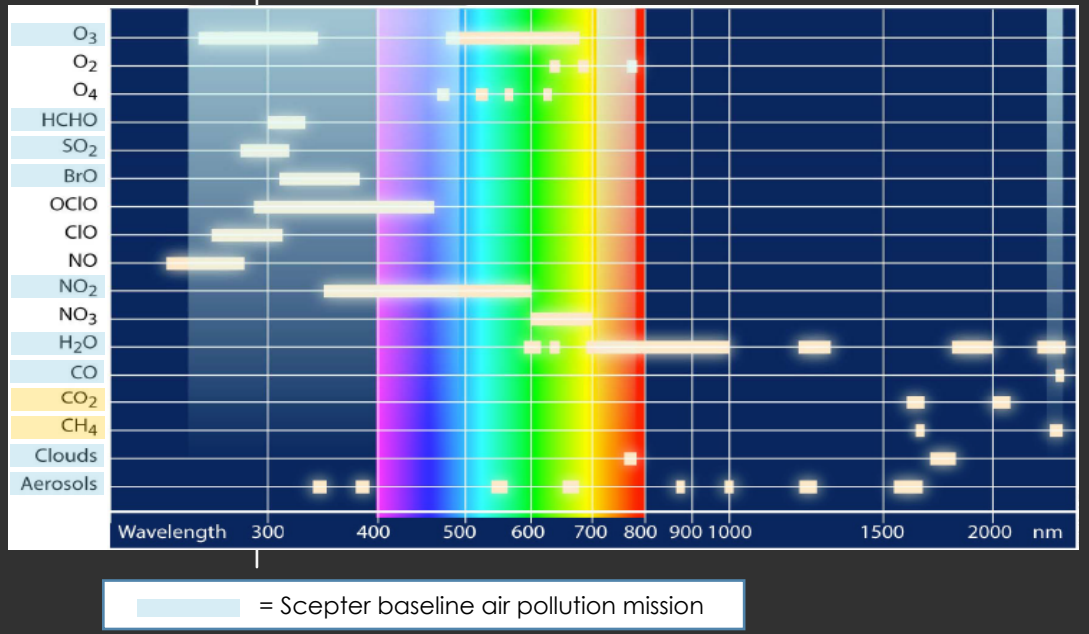
Appendix

Sensors Monitor Air Pollution and Climate

Approximately 25 Species Comprise Baseline Mission

- CH_4 and CO_2 are within wavelength range

Example Plot of Wavelength for Different Species



Source: The TROPOMI Telescope, Ad Verlaan

Sensor(s) by Harris, for Example