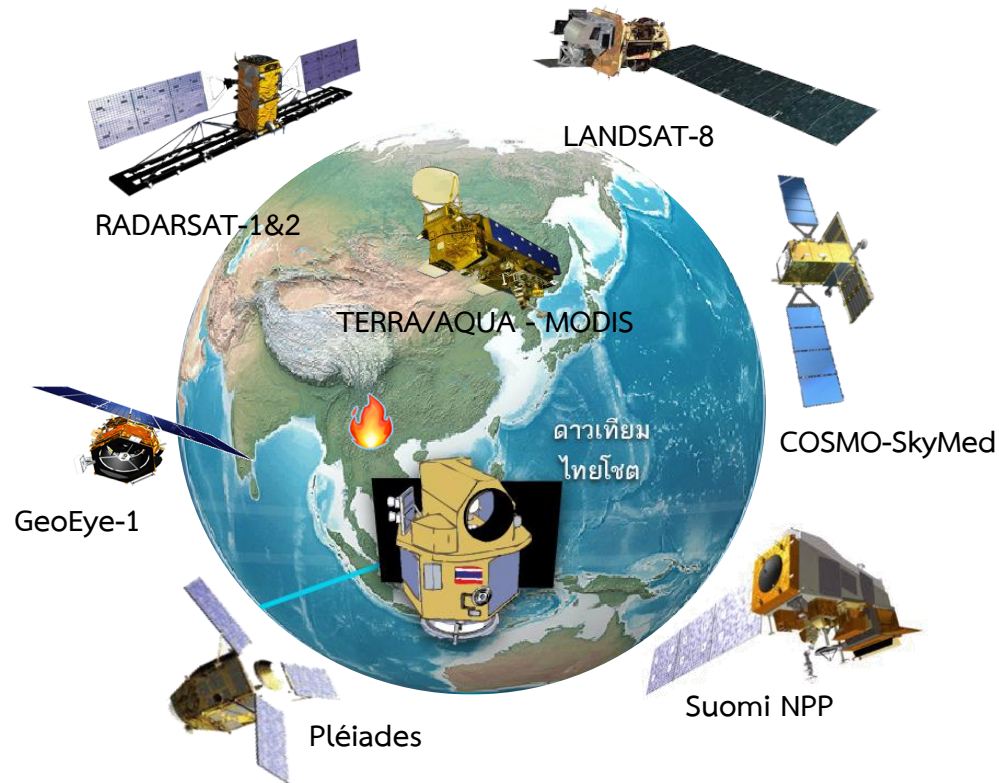


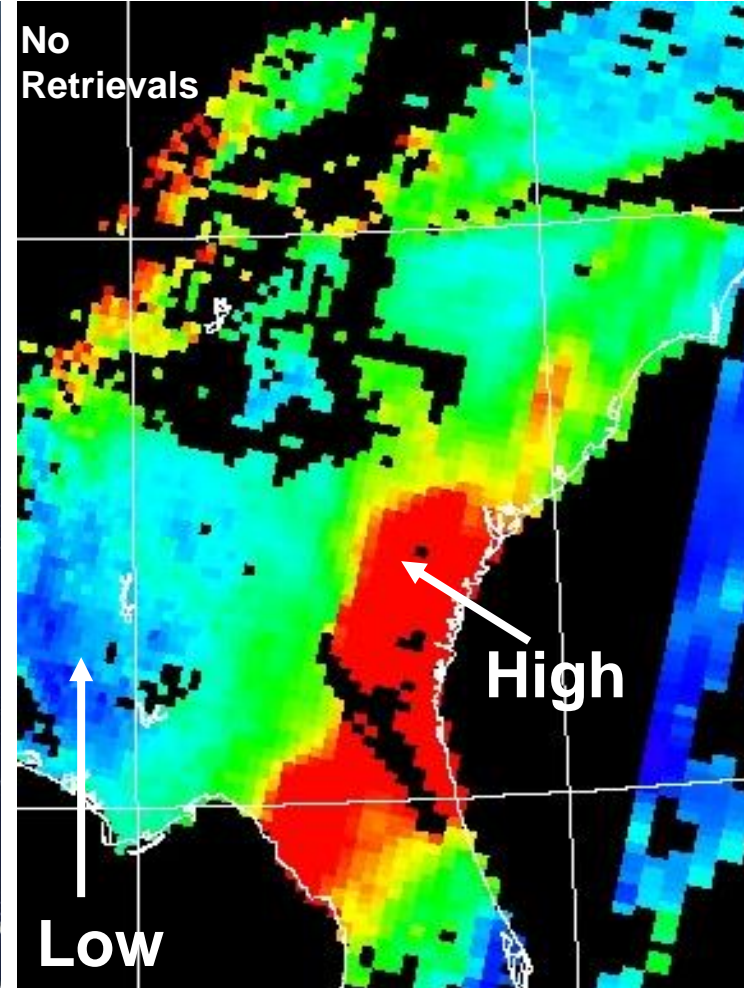
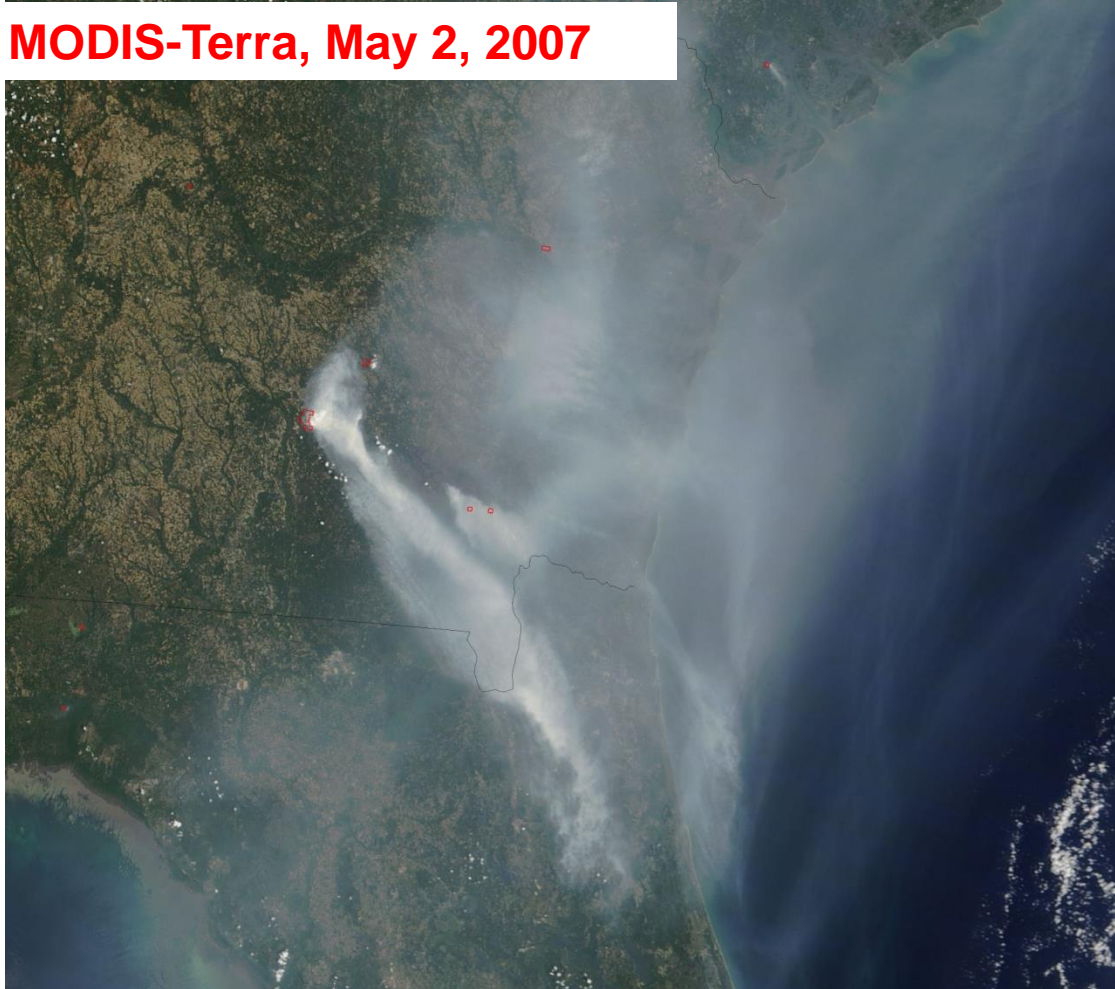
Application on Forest Fire (PM 2.5) using satellite image and GIS data



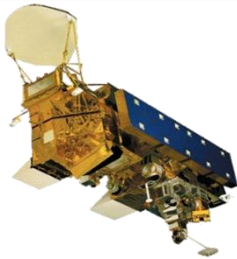
AOD from Satellite

Radiance -to- Aerosol Products

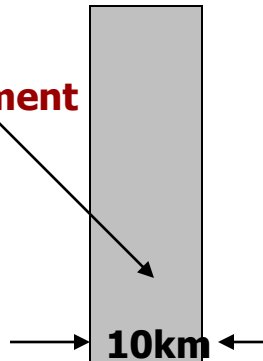
MODIS-Terra, May 2, 2007



Satellite



**Column
Satellite
Measurement**



TEOM

Ground Surface

**Point
Measurement
PM2.5 mass**

AOD to PM

- Point vs Area Averaged
- Surface vs Column
- Mass vs Optical

AOD to PM_{2.5} - Theoretical

$$AOD = PM_{2.5} H f(RH) \frac{3Q_{\text{ext,dry}}}{4\rho r_{\text{eff}}} = PM_{2.5} H S$$

- AOD – Aerosol Optical Depth
- H – Height of well-mixed boundary layer
- f(RH) – ratio of ambient and dry extinction coefficients
- ρ – aerosol mass density
- Q – Mie extinction efficiency
- r – particle effective radius
- PM_{2.5} – PM_{2.5} mass concentration

Data acquisition



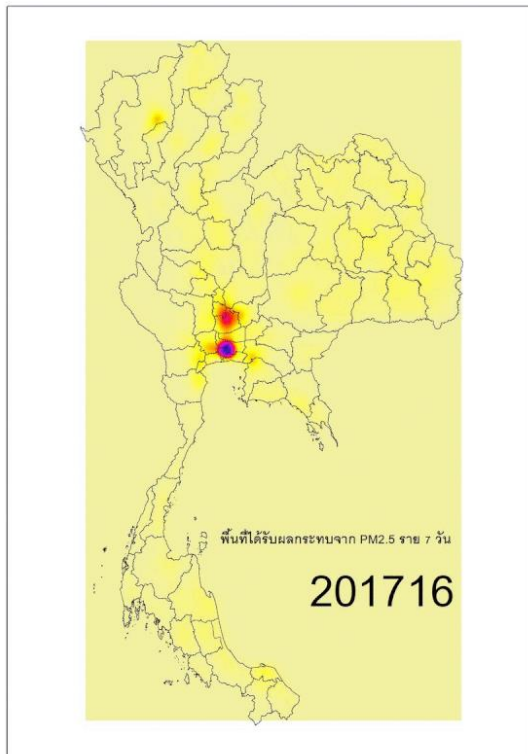
AOD



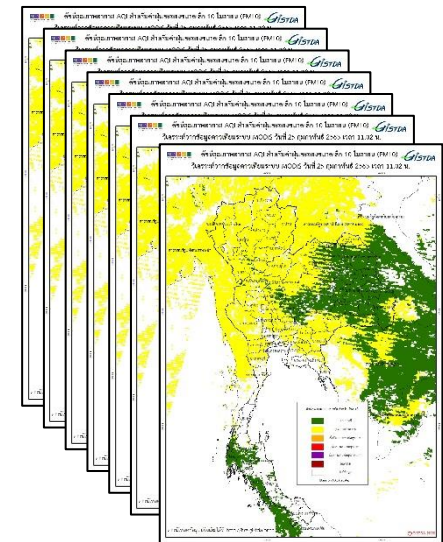
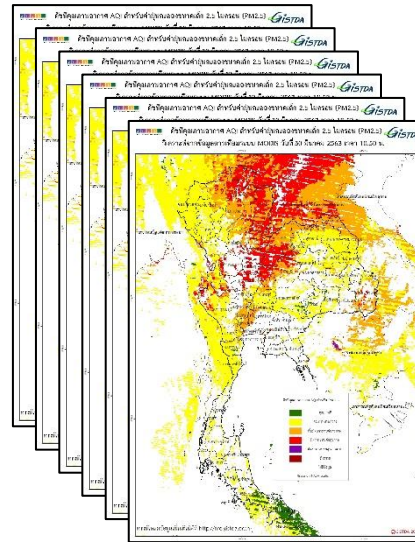
Data Processing



Crisis Area (Heatmap)from history data

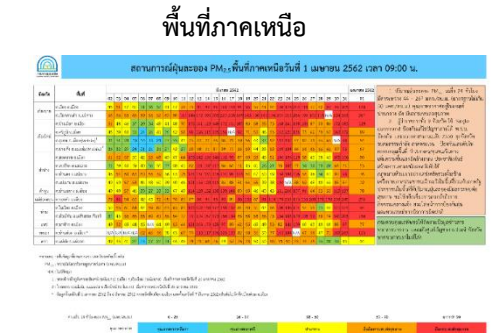
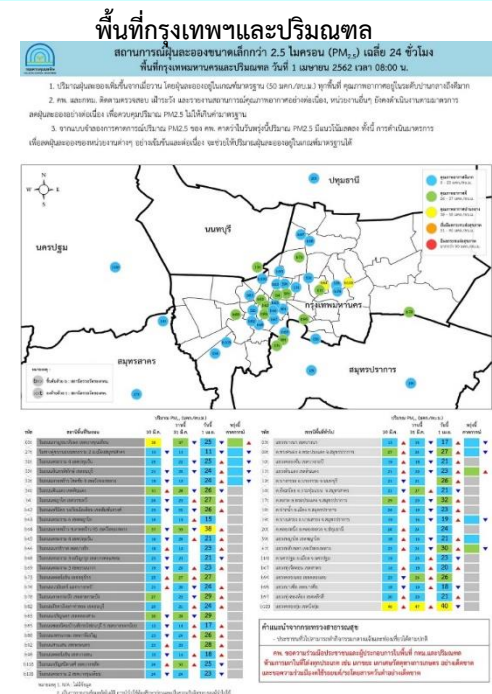


Time series PM 2.5 / 10 Data

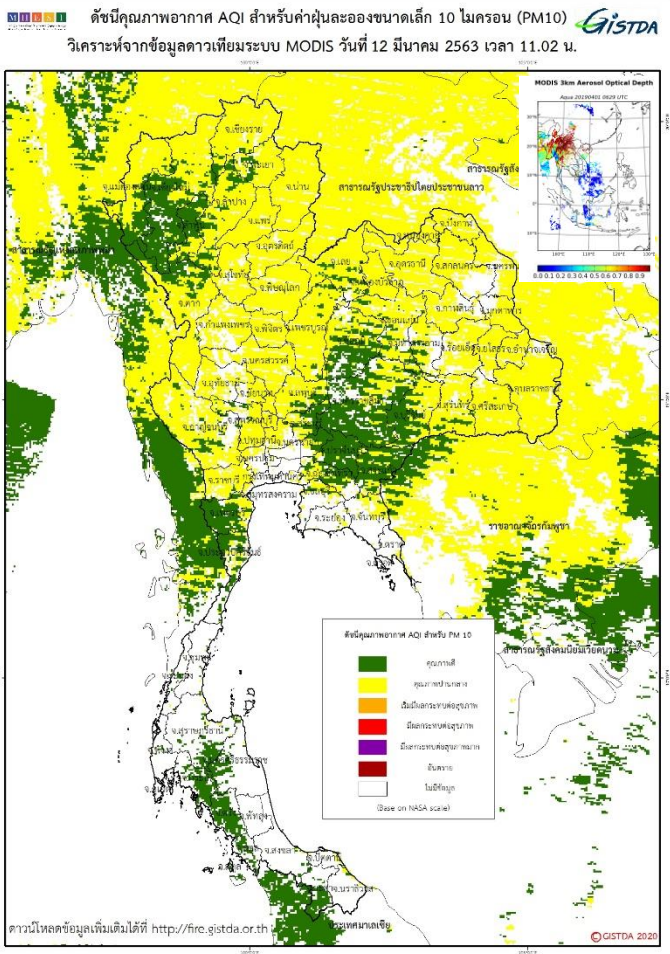
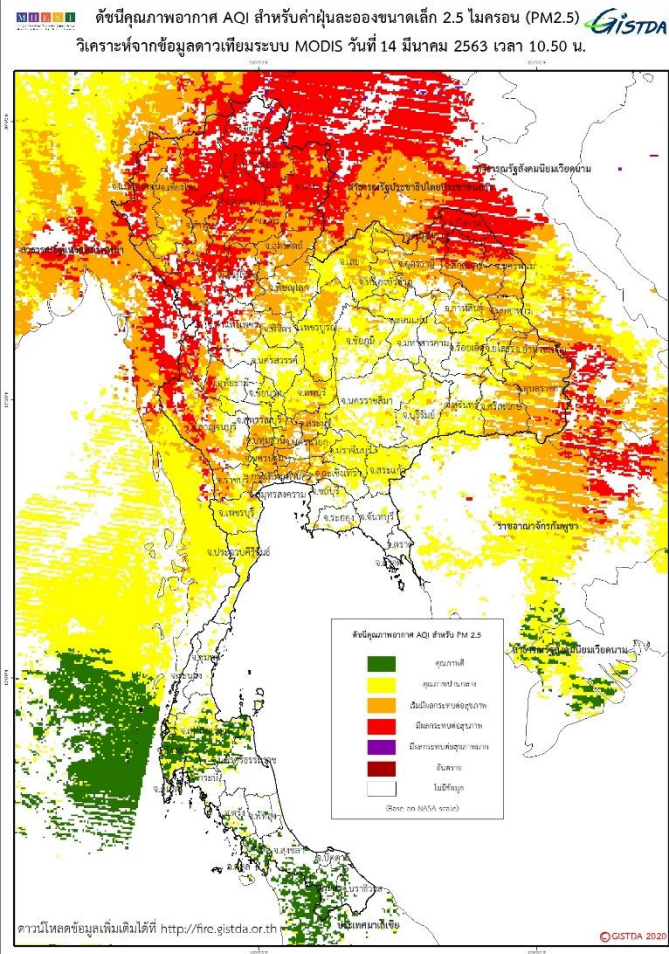


$$PM_{2.5}(d) = A_s + B_s \times AOD(d) \quad PM_{10}(d) = A_s + B_s \times AOD(d)$$

PM2.5 จากสถานีตรวจวัด กรมควบคุมมลพิษ



PM2.5 และ PM10 จากข้อมูลดาวเทียมระบบ MODIS รายวัน



Ground Stations