3.5 Sand and Dust Monitoring

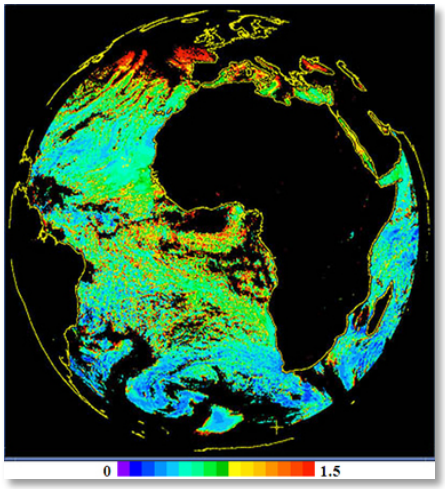
- An overview of operational sand and dust monitoring satellite products
- User Requirements

An overview of operational sand and dust monitoring satellite products

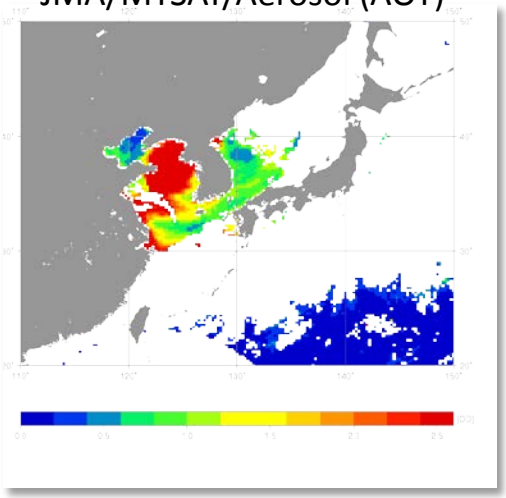
Organization	Instrument	Product Name	Feature	Frequency	User	Reference for Algorithm
CMA	FY-2/S-VISSR	Dust Strom Monitoring (DST)	• optical thickness • particle radius • density	Full disk every 30min + Rapid scan area.	(TBC)	(TBC)
EUMETSAT	MSG/SEVIRI	Aerosol Properties over Sea	• optical thickness • Ångström coefficients (for clear sky over sea)	(TBC)	(TBC)	(TBC)
JMA	MTSAT-2/ IMAGER	Aerosol Product	• optical thickness • Ångström exponent (for cloud-free sea in day time) 114 E - 160 E 52 N - 17 N	hourly (00 - 06UTC)	internal user	Okawara, et.al, 2003 *1
		Yellow Sand Index	• yellow sand index 79.75 E – 150.25 E 50.25 N – 19.75 N	hourly	internal user	Hashimoto and Okawara, 2007 *2
KMA	COMS/MI	Aerosol Index	• optical thickness	Every 15min (TBC)	(TBC)	(TBC)
NOAA	GOES-EAST,WEST/IMAGER	GOES Aerosol/Smoke Product (GASP)	• optical thickness (for cloud free pixels) CONUS	Every 30min	(TBC)	(TBC)
		GOES Biomass Burning Emission Product (GBBEP)	• Point data of emissions*3 released from biomass burning.	Every 30min	(TBC)	(TBC)

*1 T. Hashimoto and N. Okawara, METEOROLOGICAL SATELLITE CENTER TECHNICAL NOTE, No.49 March 2007
*2 N. Okawara, Y. Yoshizaki and M. Tokuno, METEOROLOGICAL SATELLITE CENTER TECHNICAL NOTE NO.4, March 2003
*3 PM2.5, CO, CH4, CO2, TNMHC, NH3, N2O, NOX, and SO2

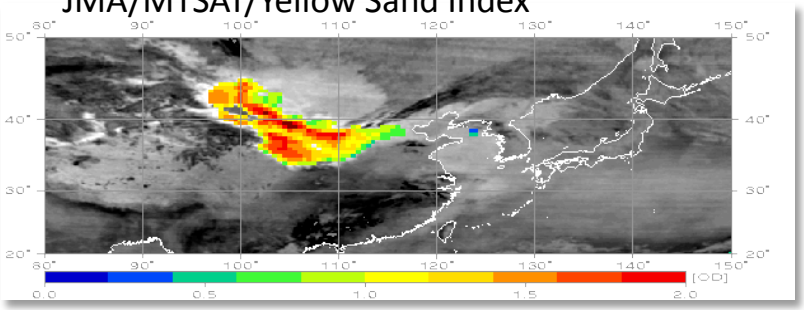
EUMETSAT/MSG/Aerosol (AOT)



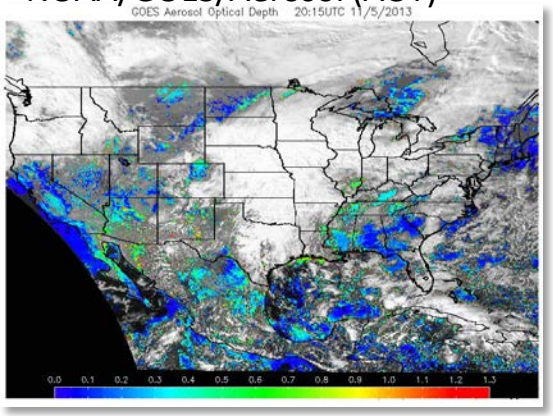
JMA/MTSAT/Aerosol (AOT)



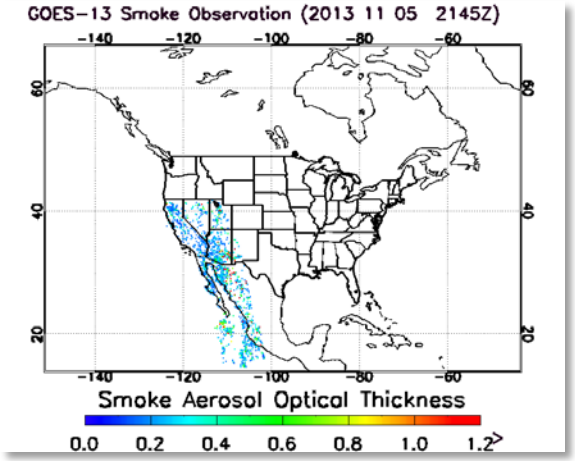
JMA/MTSAT/Yellow Sand Index



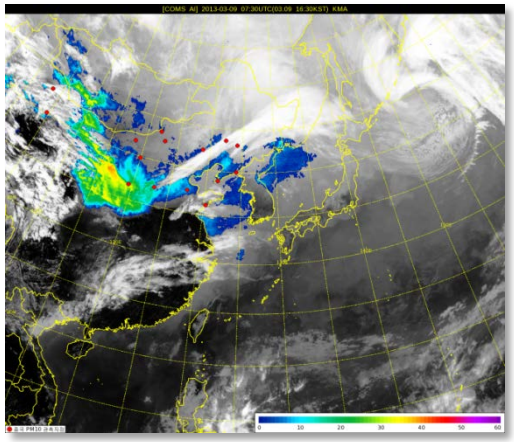
NOAA/GOES/Aerosol (AOT)



NOAA/GOES/ASDTA Smoke AOD



KMA/COMS/Aerosol Index



References

- CMA
  - http://satellite.cma.gov.cn/PortalSite/Data/DataView.aspx?SatelliteType=1&DataCategoryCode=Atmosphere&DataTypeCode=DST
- EUMETSAT
  - http://www.eumetsat.int/website/home/Data/Products/Atmosphere/index.html
- JMA
  - http://mscweb.kishou.go.jp/product/image/sand/index.htm
- KMA
  - http://nmsc.kma.go.kr/html/homepage/en/satellite/searchSatelliteImage.do?data_type=1002#none
- NOAA
  - http://www.ospo.noaa.gov/Products/atmosphere/aerosol.html
- OSCAR
  - http://www.wmo-sat.info/oscar/gapanalyses

User Requirements (as for JMA)

- For monitoring sand and dust storm to issue dust information for mitigation of risks in affected area (e.g. aviation, health impacts, etc.)
  - Qualitative/Quantitative information
    - Dust extent, AOT, Ångström coefficient, particle radius, density.
    - Clear sky (from Cloud Mask)
    - Over sea only / Over sea and land.
  - Validation
    - NRT surface observation exchange is required for improvement of sand and dust storm monitoring based on WMO/SDS-WAS（Sand and Dust Storm Warning Advisory）framework.
  - Frequency : every 1 hour
  - Latency : 15 min.
- For data assimilation in aerosol forecast models to improve accuracy of the forecast in the future.