



Aerosol optical depth retrieval over eastern China using the data of the Directional Polarimetric Camera

Rufang Ti ^{a,b,*}, Xiaobing Sun^{a,b}, Jin Hong ^{a,b}, Honglian Huang ^{a,b}, Yizhe Fan^{a,b}, Yi Wang ^{a,b}

^a*Anhui Institute of Optics and Fine Mechanics, Chinese Academy of Sciences*

^b*Key Laboratory of Optical Calibration and Characterization, CAS, Hefei*

Email: tirufang@aifom.ac.cn

Lille, France

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Outline

- ◆ Technical parameters of DPC
- ◆ L1 product data format
- ◆ Chinese aerosol model
- ◆ Aerosol optical depth(AOD) retrieval
- ◆ Conclusion

Technical parameters of DPC

Item	Parameters
Multi-band	443nm, 20nm 490nm (P) , 20nm 565nm, 20nm 670nm (P) , 20nm 763nm, 10nm 765nm, 40nm 865nm (P) , 40nm 910nm, 20nm
Polarization	Line polarization, 0° 、 60° 、 120°
Field of view	-50° ~+50°
Multi-angle	9 angles along track
spatial resolution at nadir	3.5km
Orbit	sun sync orbit
Orbit height	705km



L1 product data format

- Each band data is saved as individual H5 format file
- Quick view
- xml file contain the auxiliary information

名称	类型	大小
GF5_DPC_20180727_001151_L10000003039.jpeg	JPEG 图像	1,230 KB
GF5_DPC_20180727_001151_L10000003039.xml	XML 文档	2 KB
GF5_DPC_20180727_001151_L10000003039_B443.h5	H5 文件	334,678 KB
GF5_DPC_20180727_001151_L10000003039_B490.h5	H5 文件	444,720 KB
GF5_DPC_20180727_001151_L10000003039_B565.h5	H5 文件	338,839 KB
GF5_DPC_20180727_001151_L10000003039_B670.h5	H5 文件	443,073 KB
GF5_DPC_20180727_001151_L10000003039_B763.h5	H5 文件	336,094 KB
GF5_DPC_20180727_001151_L10000003039_B765.h5	H5 文件	337,349 KB
GF5_DPC_20180727_001151_L10000003039_B865.h5	H5 文件	439,626 KB
GF5_DPC_20180727_001151_L10000003039_B910.h5	H5 文件	334,344 KB

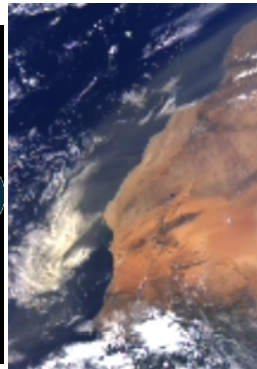
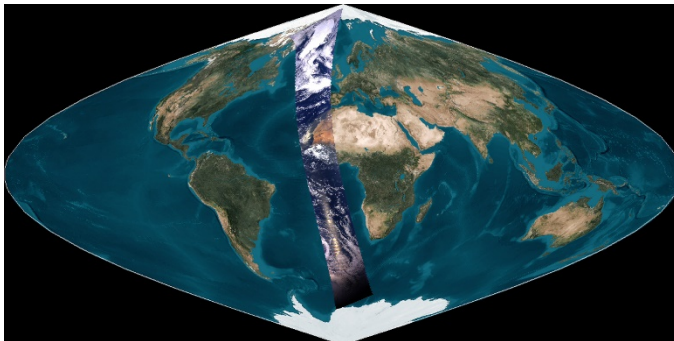
HDFView 2.13

File Window Tools Help

Recent Files: C:\Users\Administrator\Desktop\GF5_DPC_20180727_001151_L10000003039_B670.h5

Q670P at /Data_Fields/ [GF5_DPC_20180727_001151_L10000003039_B670.h5]

	3854	3855	3856	3857	3858	38
2081	187	189	193	204	204	187
2082	177	185	191	198	183	174
2083	167	175	179	184	181	181
2084	165	172	187	196	202	183
2085	166	177	188	190	182	168
2086	170	180	172	161	154	149
2087	181	180	160	146	141	148
2088	178	167	152	148	146	150
2089	177	163	150	148	150	151
2090	175	158	150	150	149	148
2091	159	155	154	154	148	148
2092	160	153	157	155	152	156
2093	151	148	153	154	156	158
2094	148	145	149	151	160	162
2095	150	144	149	153	166	155
2096	141	144	163	181	176	158
2097	145	144	165	171	164	153



Chinese aerosol model

AERONET stations in China

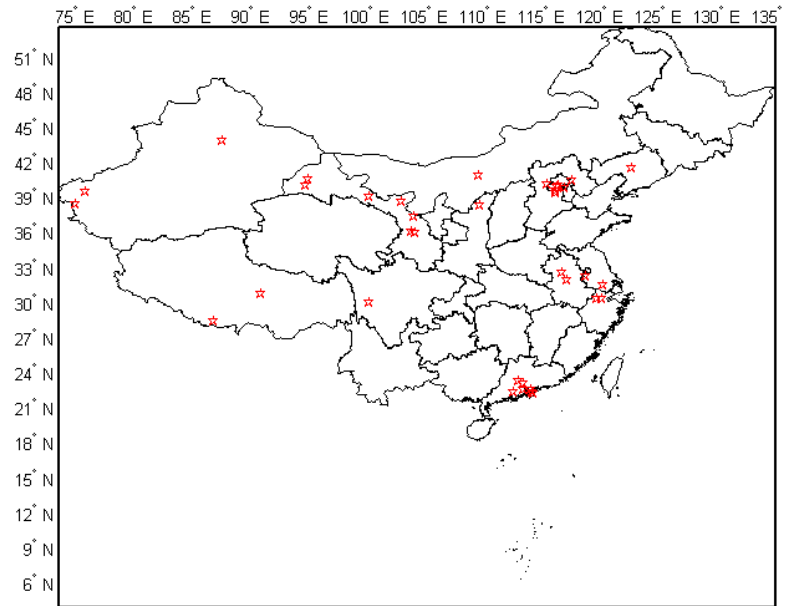
36 AERONET stations
2001-2018



Chinese aerosol models



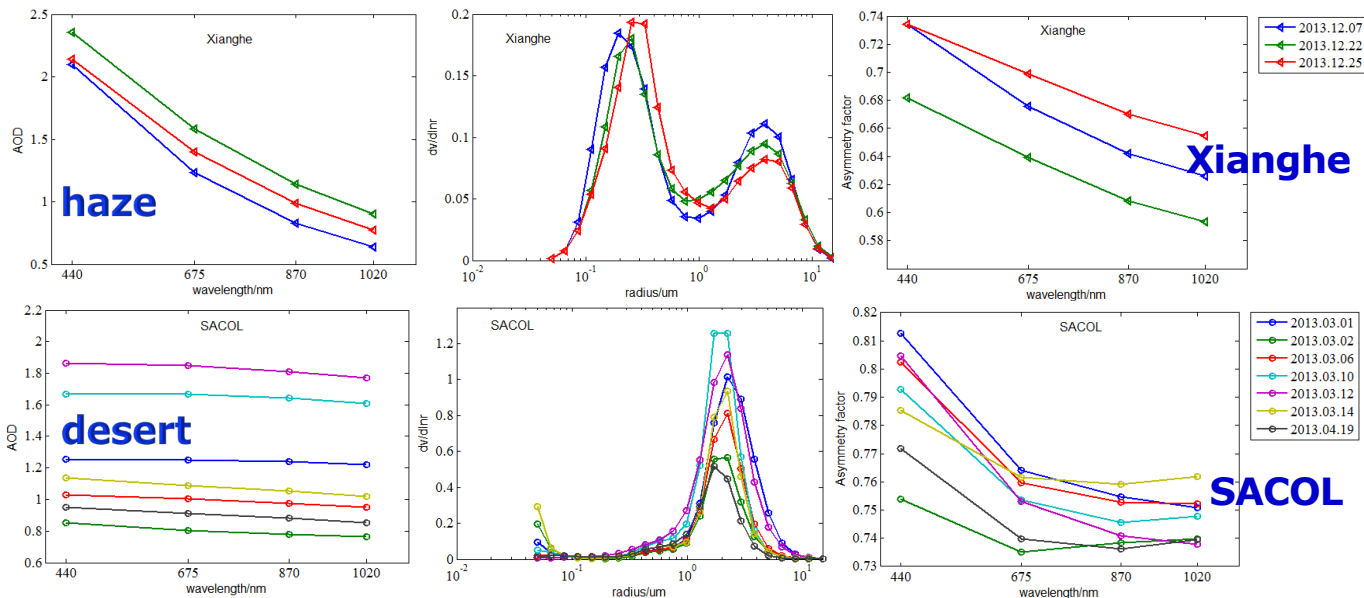
aerosol LUT



Chinese aerosol model

haze and desert aerosol

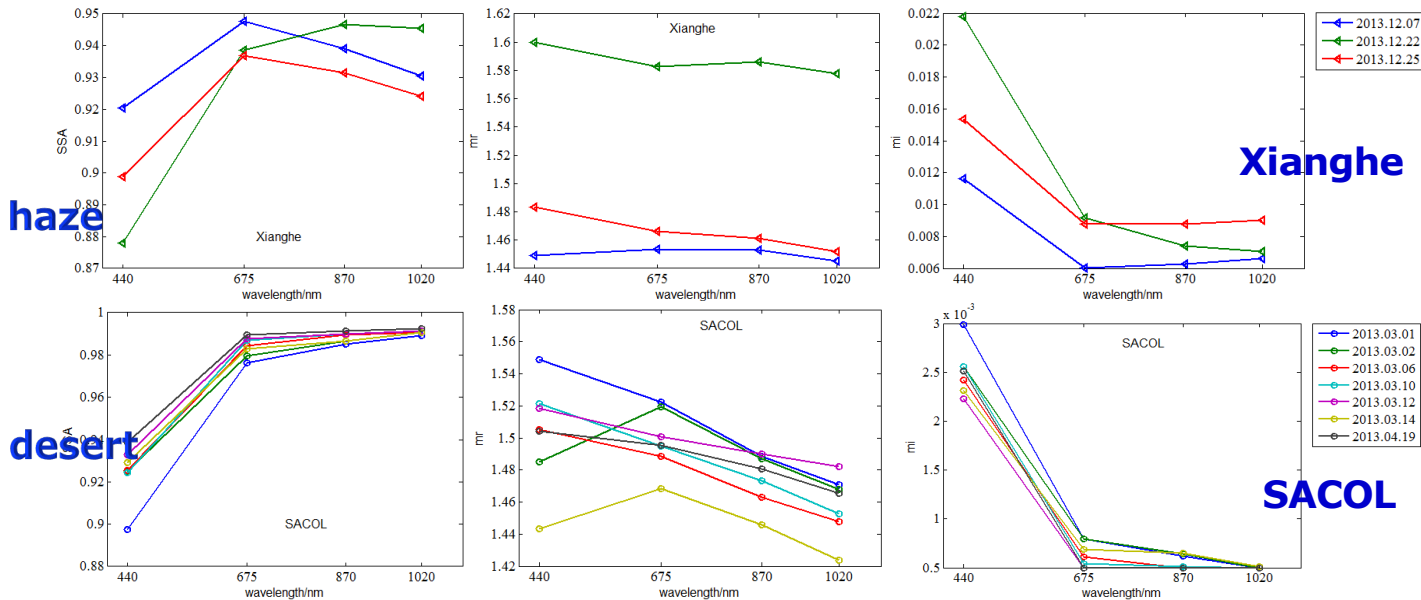
- Xianghe station (Beijiing) : winter data to study on the haze aerosol
- SACOL station (Lanzhou, semi-arid region) : spring data to study on the desert aerosol



Chinese aerosol model

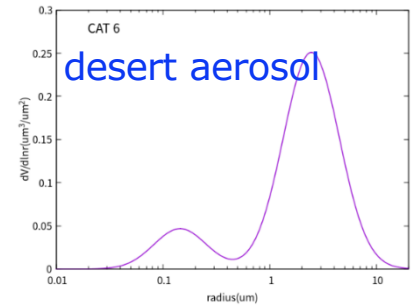
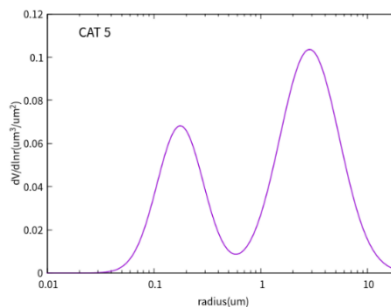
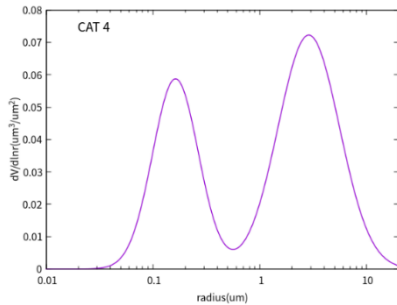
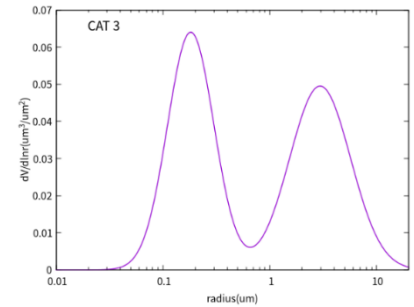
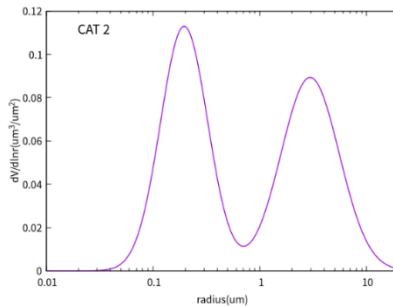
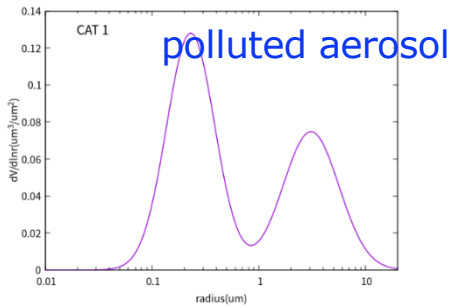
haze and desert aerosol

- SSA of haze and desert have different changing trend with wavelength
- The desert has lower image refractive index than haze, desert aerosol absorption capacity is weak



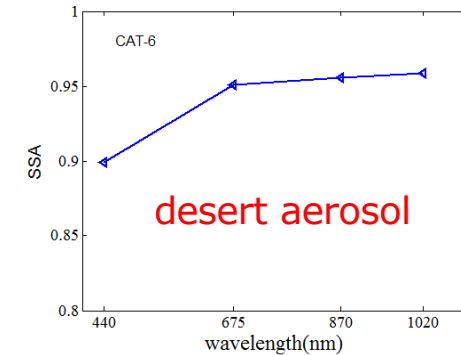
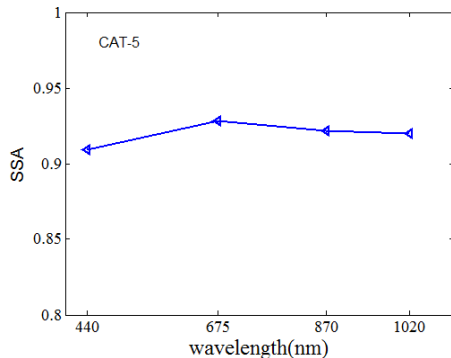
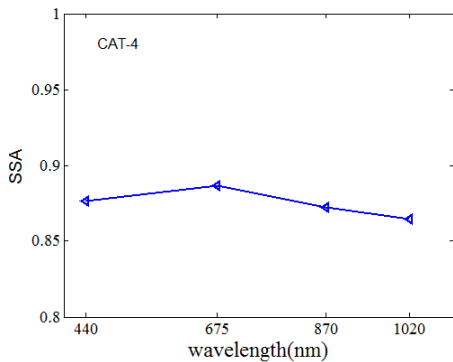
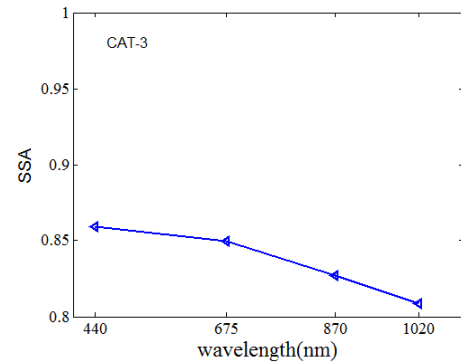
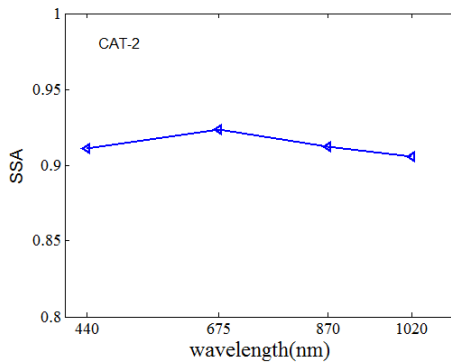
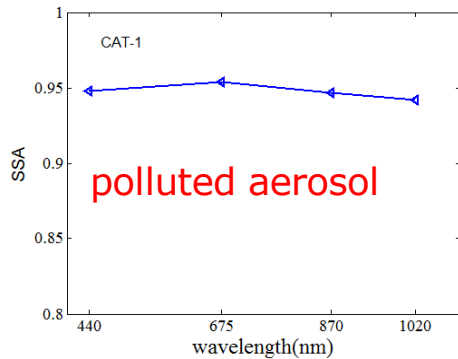
Chinese aerosol model

Cluster the AERONET data over China into 6 categories.



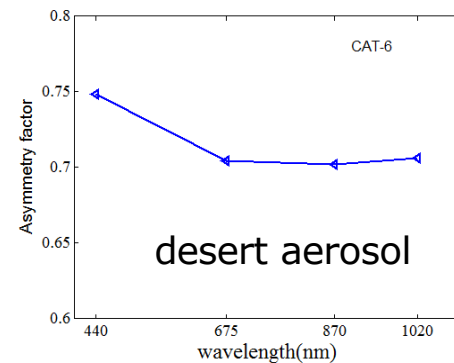
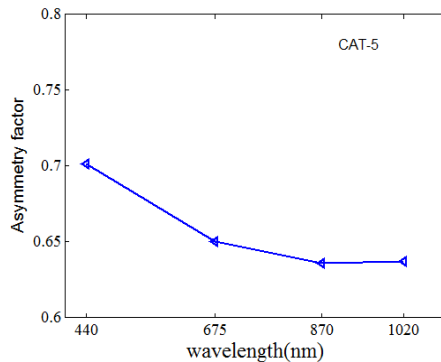
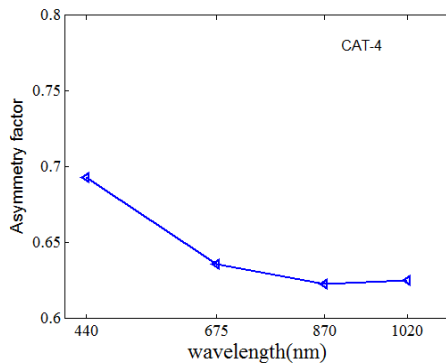
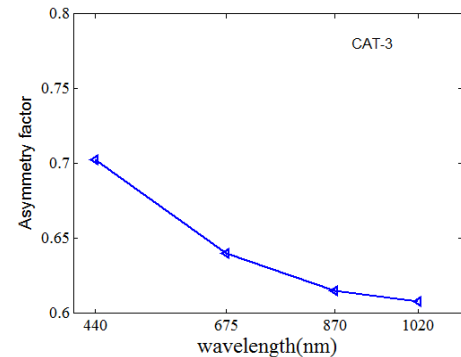
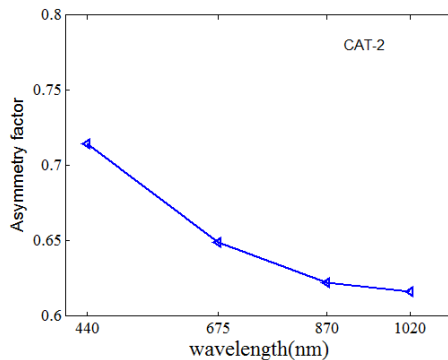
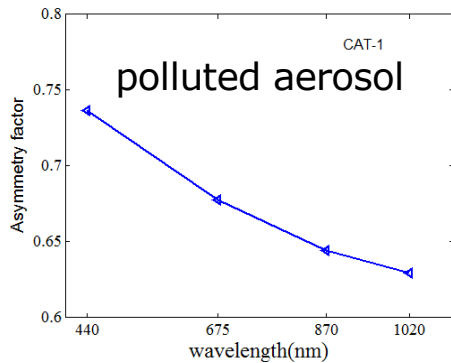
Chinese aerosol model

SSA



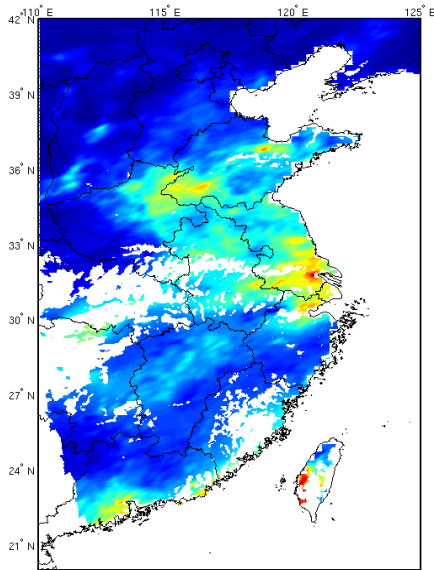
Chinese aerosol model

Asymmetry factor

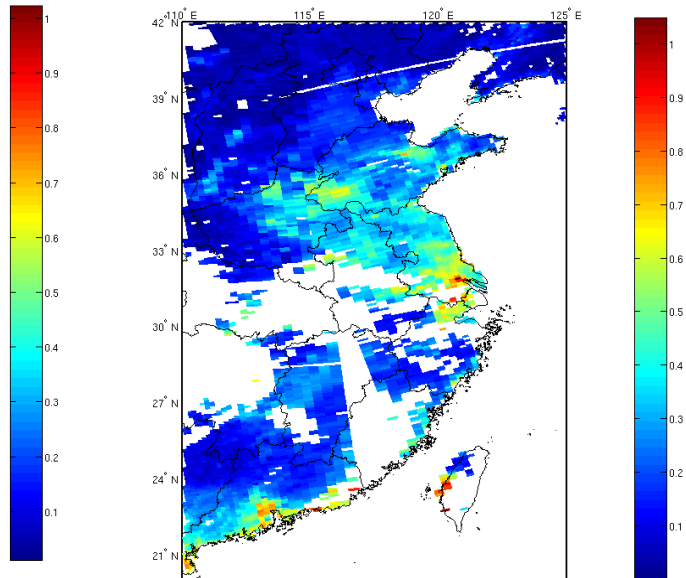


AOD retrieval result

Oct 02, 2018



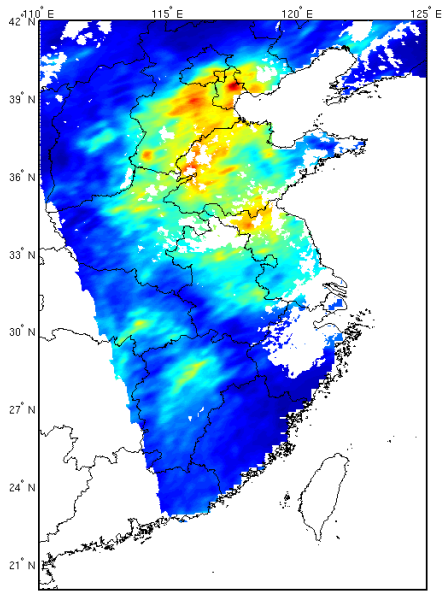
DPC



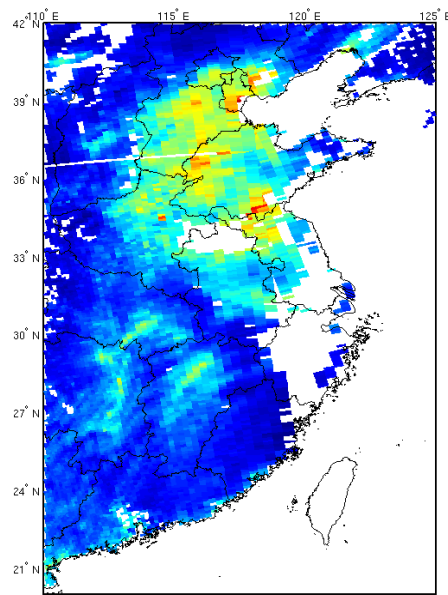
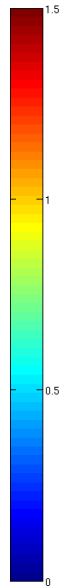
MODIS

AOD retrieval result

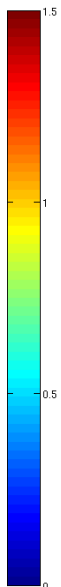
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DPC

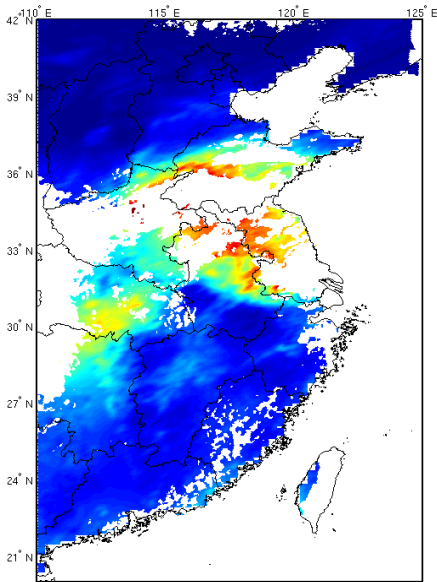


MODIS

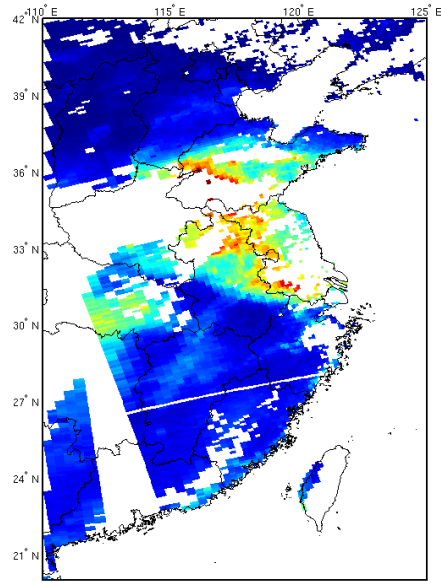
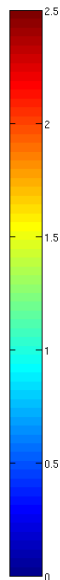


AOD retrieval result

Oct 07, 2018



DPC



MODIS



Summary

- **L1 product data format of DPC**
- **Clustering aerosols into six categories**
- **Preliminary AOD results over eastern China obtained by DPC**

Thank You for your attention !