WHY

What is the current skill for aerosol in global models and for aerosol retrievals of satellites?
Simulations of the aerosol climatic impact in global models have many degrees of freedom. An intermediate product, here the attenuation of sunlight by aerosol (*the aerosol optical depth*) is compared to demonstrate skill. For a complete yearly cycle, monthly aerosol optical depth averages of **8 models** (all models distinguish among five different aerosol types) are compared to satellite retrievals and data from a ground-based network.

Monthly averages of aerosol properties
global fields for aerosol optical depth [model vs. measurements]

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MODELS

Models	Resolution	Simulation	Authors
♦ EC - ECHAM4 (GCM)	3.8/3.8deg	50yr avg	Feichter/ Lohmann / Schulz
♦ GR - Grantour (GCM)	5.0/5.0deg	1yr avg	Herzog / Penner
♦ NC - NCAR (GC/TM)	1.9/1.8deg	(95-00)	Collins / Rasch
♦ GO - GOCART (CTM)	2.0/2.5deg	(90, 96, 97)	Chin / Ginoux
♦ CC - CCSR (CTM)	2.8/2.8deg	(90)	Takemura / Nakajima
♦ GI - GISS (GCM)	4.0/5.0deg	3yr avg	Koch / Tegen
♦ MI - MIRAGE (GC/TM)	2.8/2.8deg	(6/94-5/95)	Ghan / Easter
♦ UL - ULAQ (GCM)	10/22.5deg	3yr avg	Pitari

[separate processing of *sulfate, organic carbon, black carbon, dust, sea-salt*]

DATA

Satellite-data

	Method	Data-Period	Authors
Mt - 1.choice: MODIS (.55µm)	VIS/n-IR refl.	(2001)	Chu / Kaufman
2.choice: TOMS (.55 µm)	UV-reflect.	(1979-2001)	Torres

Ground-data

	Method	Data-Period	Authors
Aer -100 sites: AERONET (.55µm)	attenuation	(1998-2001)	Holben/Tanre

geo-locationdata presentation
X-axis : 180W to 180E longitude
Y-axis : 90S to 90N latitude

Month by Month