ISDAC Discussion

- What aerosol input is needed by the models?
  - CCN
  - IN
  - size distribution and hygroscopicity
  - composition
  - scattering and absorption
- Spatial/temporal resolution?
  - Vertical profile of horizontal mean

Validation Fields

- What validation fields are needed?
  - Cloud particle size distribution
  - Liquid and ice water contents
  - Precipitation
  - Cloud extinction
  - Cloud optical depth
- How to represent spatial/temporal distribution?
  - Horizontal mean(z,t)?
  - PDF(z,t)

Aircraft Instruments

Instrument	Measurements	Investigator
	Atmospheric State	
3 Rosemont 102 probes	Temperature	Mengistu Wolde
NCAR reverse flow probe	Temperature	Walter Strapp
EGG chilled mirror hygrometer	Humidity	Walter Strapp
LICOR	Water vapor and CO_2 mixing ratio	Mengistu Wolde
Rosemount 858 gust probe	Vertical velocity	Mengistu Wolde
	Liquid/Super-cooled Liquid	
Rosemount icing (RICE) probe	Detects supercooled liquid	Walter Strapp
Vibrameter	Detects supercooled liquid	S. Cober
Nevzorov LWC/TWC probe	Liquid and total condensed water concentration	Alexei Korolev
PMS CSIRO King probe	Liquid water concentration	Walter Strapp
	Cloud Microphysics	
DMT Counterflow Virtual Impactor	Total water concentration	Walter Strapp
DMT Cloud, Aerosol and Precipitation Spectrometer	T, liquid water and N_d, cloud particle size distribution (0.5 Š 1500 μm)	Greg McFarquhar
SPEC Cloud Particle Imager	Cloud particle images (15 Š 2500 μm)	Greg McFarquhar Paul Lawson
PMS FSSP-100X	Small particle spectrum (3 Š 45 μm)	Walter Strapp
PMS 2D2C	Imaging cloud particles (25 Š 800 μm)	Walter Strapp
SPEC 2DS	Cloud particle size distribution (50-1000 μm)	Paul Lawson
PMS 2DP	Imaging cloud particles (200 Š 6400 μm)	Walter Strapp
DMT CDP	Cloud droplets (2-50 μm)	Greg Kok
Korolev Cloud Extinction Meter	Cloud Extinction	Alexi Korolev

Aerosol Instruments on Aircraft

Instrument	Measurement	Investigator
Aerosol		
Condensation Nuclei Counter (TSI 3775)	Total particle concentration (> 3 nm)	Peter Liu
Ultra High Sensitivity Aerosol Spectrometer (UHSAS)	Aerosol size distribution (100-3000 nm)	Peter Liu
DMT CCN counter	CCN concentration	Alex Laskin
Continuous Flow Diffusion Chamber	Ice nucleus concentration	Sarah Brooks
Radiance Particle/Soot Absorption Photometer (PSAP)	Optical absorption	John Ogren
Nephelometer	Optical scattering	John Ogren
3 laser photo-acoustic spectrometer (PAS)	Aerosol absorption and scattering (405, 532 and 781 nm)	Manvendra Dubey
Single Particle Laser Ablation Time of flight mass spectrometer (SPLAT)	Single particle size-resolved composition (refractory and non-refractory material)	Alla Zelenyuk
Time-Resolved Aerosol Collector (TRAC)	Time-resolved substrate for lab analysis (0.1 Š 7 μm)	Alex Laskin
Aerosol Sample Collection		
Aerosol inlet	Isokinetic aerosol inlet	Peter Liu
Counter-flow Virtual Impactor	Separation of residual aerosol	Ann-Marie McDonald

Cases

- April 8 stratocumulus
- April 26 stratocumulus
- April 19 polluted