Grant RDCNO87GC1

from

**ADEOS-II RA Office**
**Earth Observation Center (EORC)**
**National Space Development Agency of Japan (NASDA)**
**Tokyo, 106-0032 JAPAN**

entitled:

**Surface Radiation Budget (SRB) Algorithms:**
**Support of**
**GLI, ADEOS-II Activity**

**R. T. Pinker, P. I.**

**Presenter:**

**Dr. Itaru Okada**

**ADEOS-II GLI Workshop**
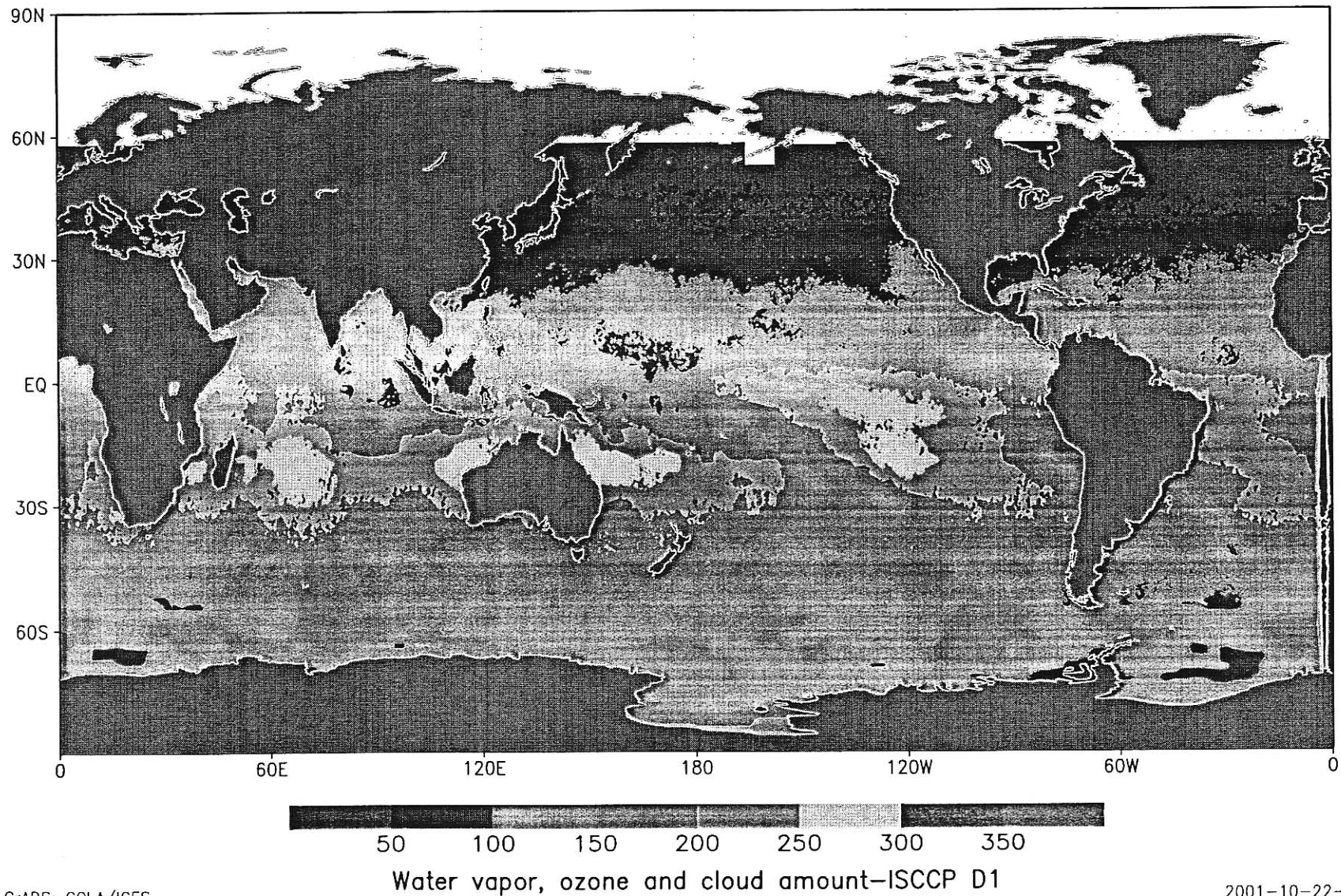**November 14-16, 2001**
**Tokyo, Japan**

## Objective

Support and participate in validation of GLI products

## Before launch of ADEOS II

- Work on Research Shortwave Algorithm

- Provide data on surface albedo and temperature at a semi-arid site for GLI validation

- Monitor aerosols with the PREDE instrument in the framework of SKYNET (Professor T. Takamura)

# GLI Version of GEWEX/SRB Model: Surface SW Fluxes(W/m**2)
## Cloud and Aerosol Optical Depths: Takashi Nakajima and Akiko Higurashi
### November,1996



50     100     150     200     250     300     350

Water vapor, ozone and cloud amount—ISCCP D1

GrADS: COLA/IGES

2001-10-22-11:59

## *Work Accomplished (1)*

- The GLI version of a satellite algorithm for Shortwave Radiation Budget ("Atsk13") was implemented at 1 degree with aerosol properties (T. Nakajima and A. Higurashi) and cloud properties (Takashi Nakajima), derived from AVHRR, as proxy to GLI parameters.
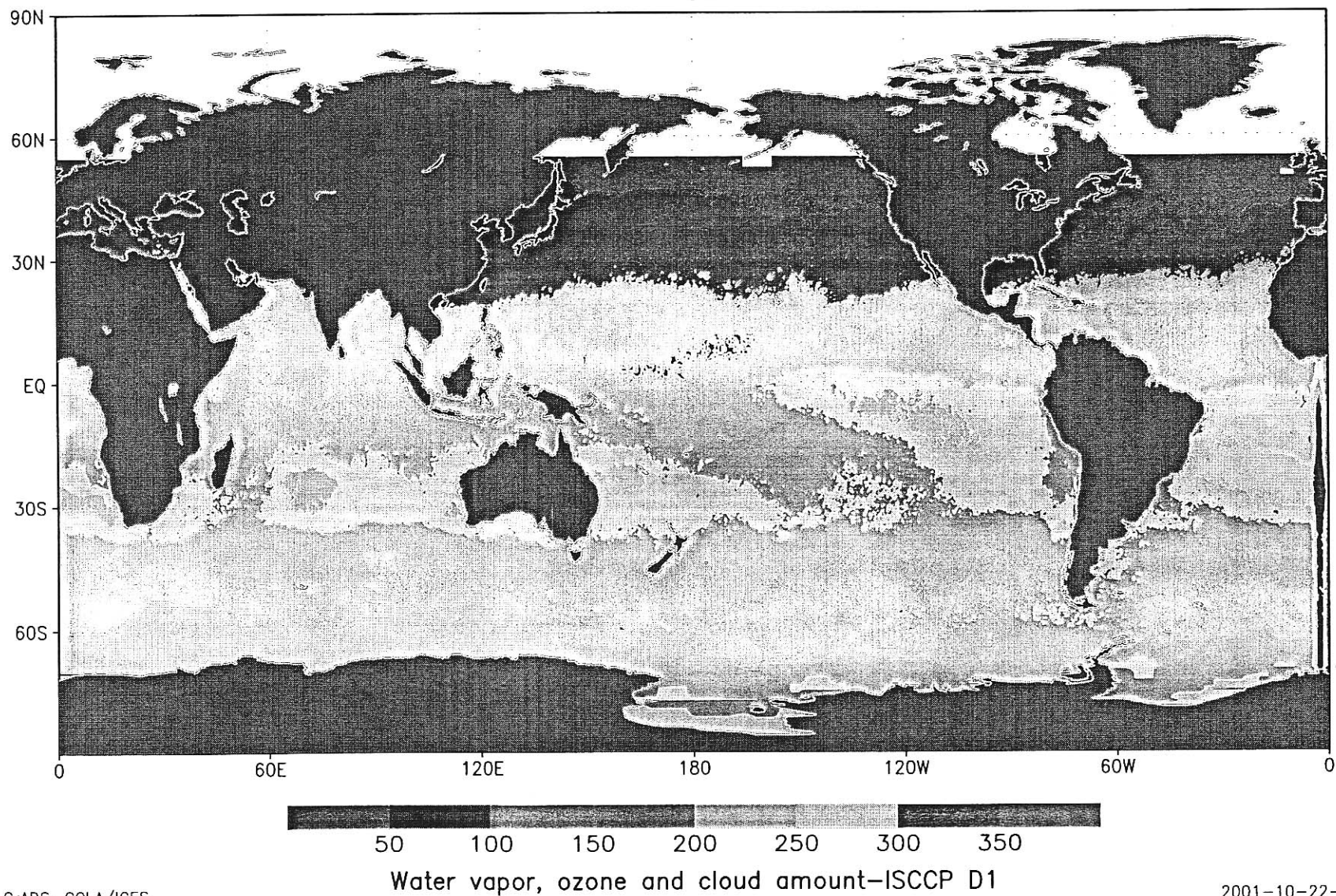
## Results

Processed 3-months:

1.   November 1996
2.   December 1996
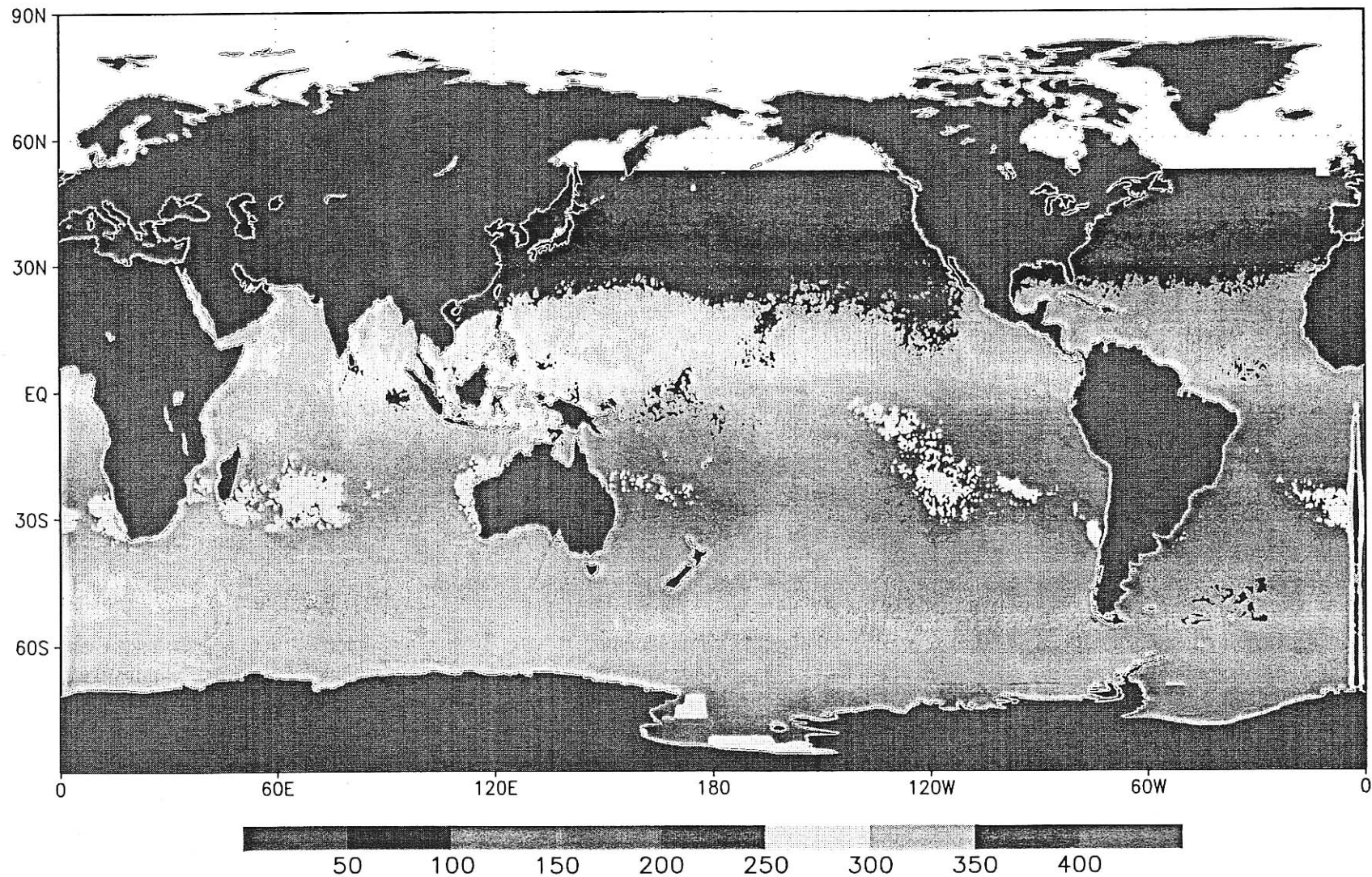3.   January 1997

## For comparison:

ISCCP D1 for same months in 1992 processed with working version of SRB algorithm (will be redone when ISCCP 96 and 97 becomes available)

# GLI Version of GEWEX/SRB Model: Surface SW Fluxes(W/m**2)
## Cloud and Aerosol Optical Depths: Takashi Nakajima and Akiko Higurashi
### January,1997



50    100    150    200    250    300    350

Water vapor, ozone and cloud amount-ISCCP D1
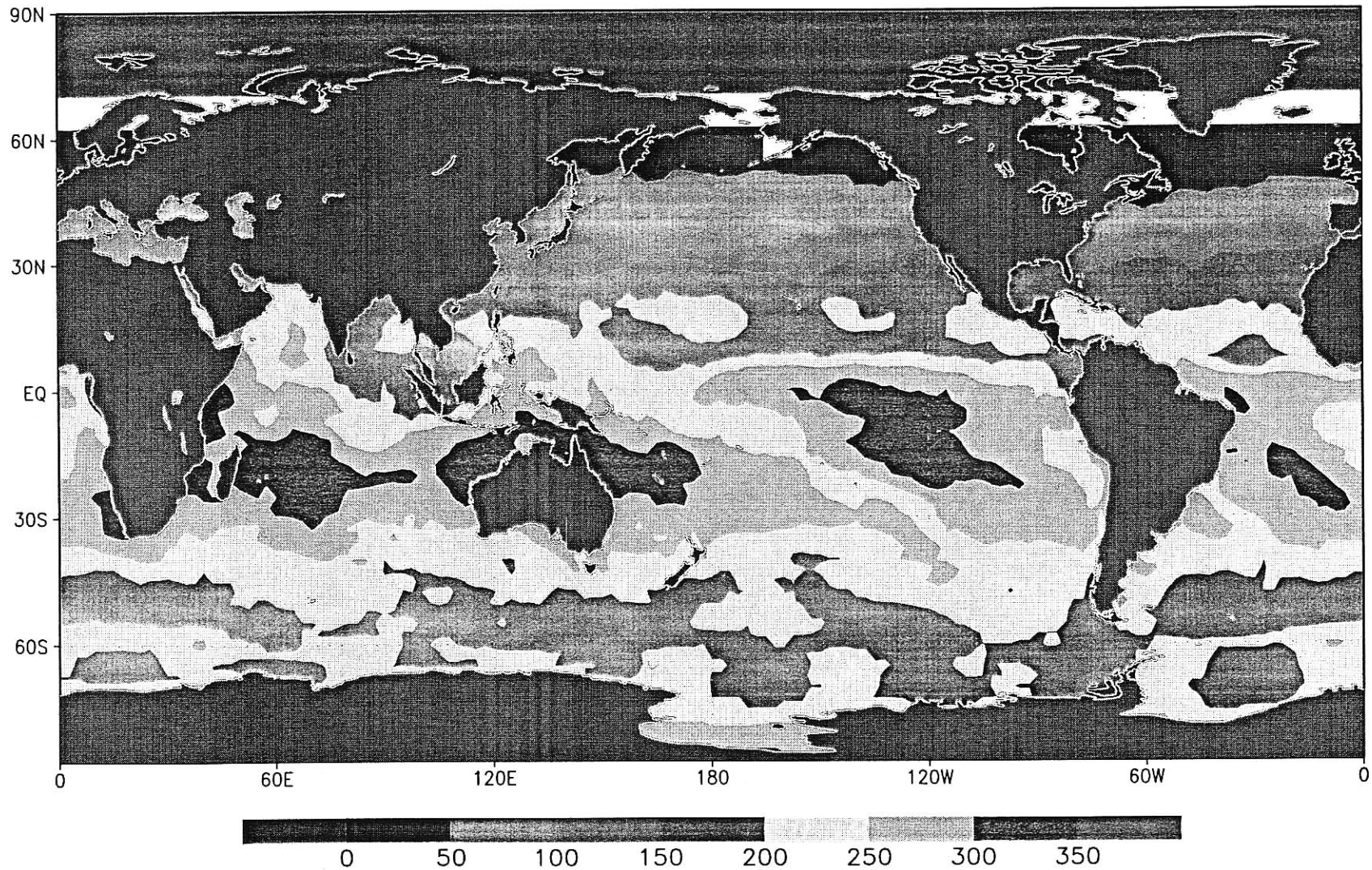
GrADS: COLA/IGES

2001-10-22-12:04

# GLI Version of GEWEX/SRB Model: Surface SW Fluxes(W/m**2)
## Cloud and Aerosol Optical Depths: Takashi Nakajima and Akiko Higurashi
## December,1996



50   100   150   200   250   300   350   400

Water vapor, ozone and cloud amount—ISCCP D1

GrADS: COLA/IGES

2001-10-22-12:03

# Surface SW Downward Fluxes from ISCCP D1
## November,1992



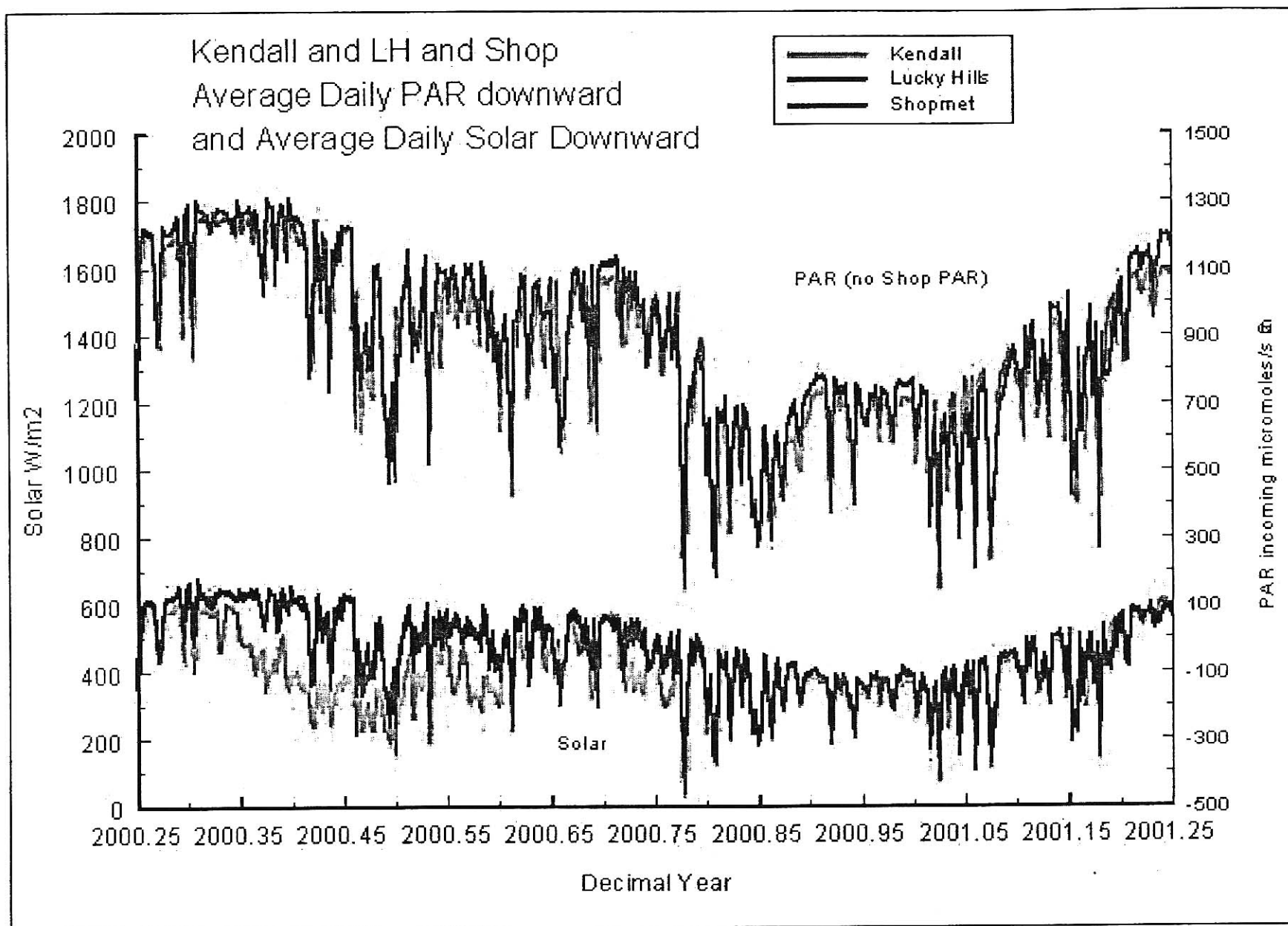| | 0 | 50 | 100 | 150 | 200 | 250 | 300 | 350 |
|---|---|---|---|---|---|---|---|---|

2001-10-09-21:30
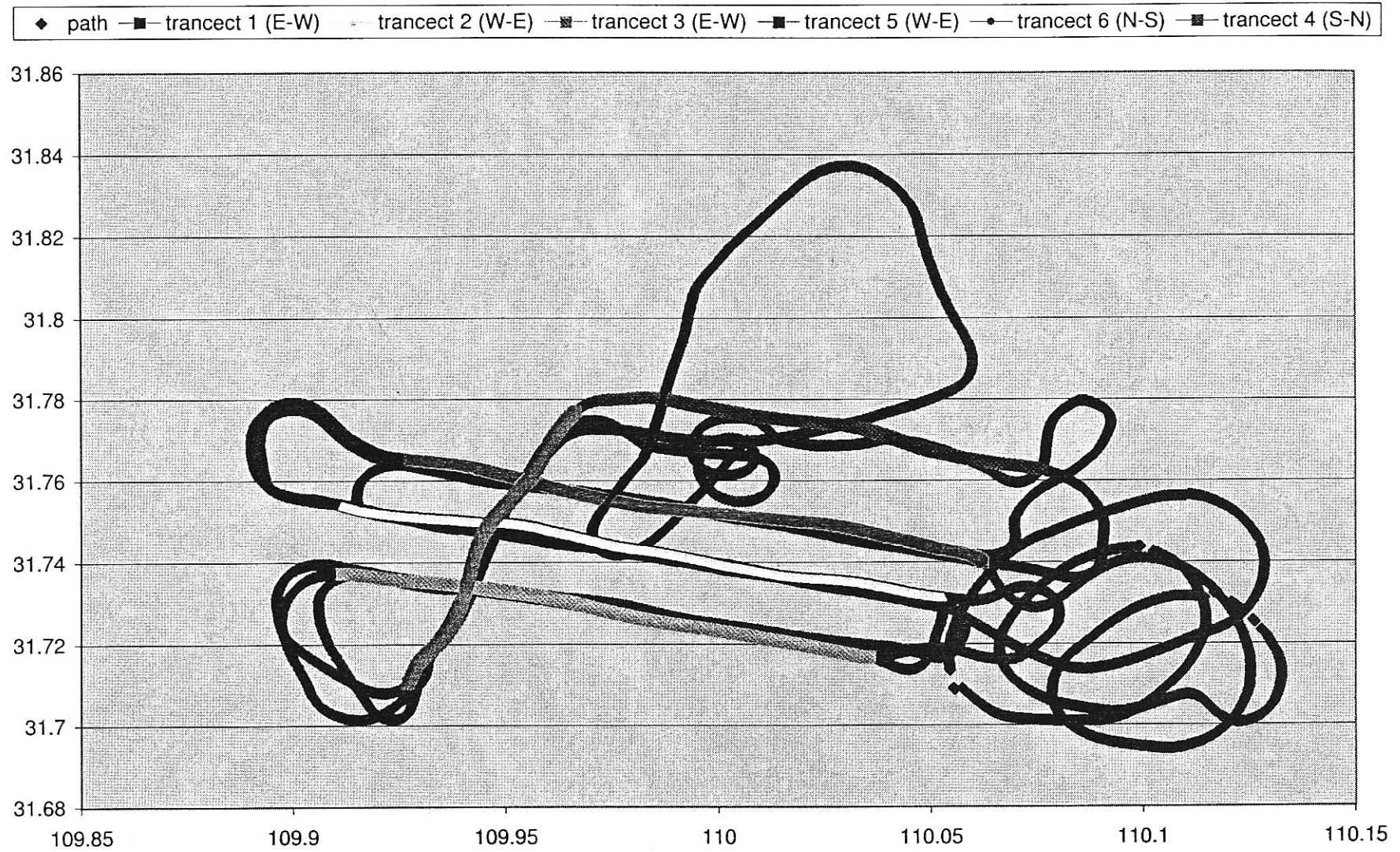
## *Work Accomplished (2)*

- Collection of data on surface downwelling and upwelling fluxes (surface albedo) in several spectral intervals continued at a semi-arid site in Arizona.

## Results

- Continuous monitoring of downwelling and upwelling fluxes, at more than one location, in collaboration with SALSA Program

- Yearly flights are also conducted to estimate broadband albedos

- Comparisons with satellite derived albedos continued.
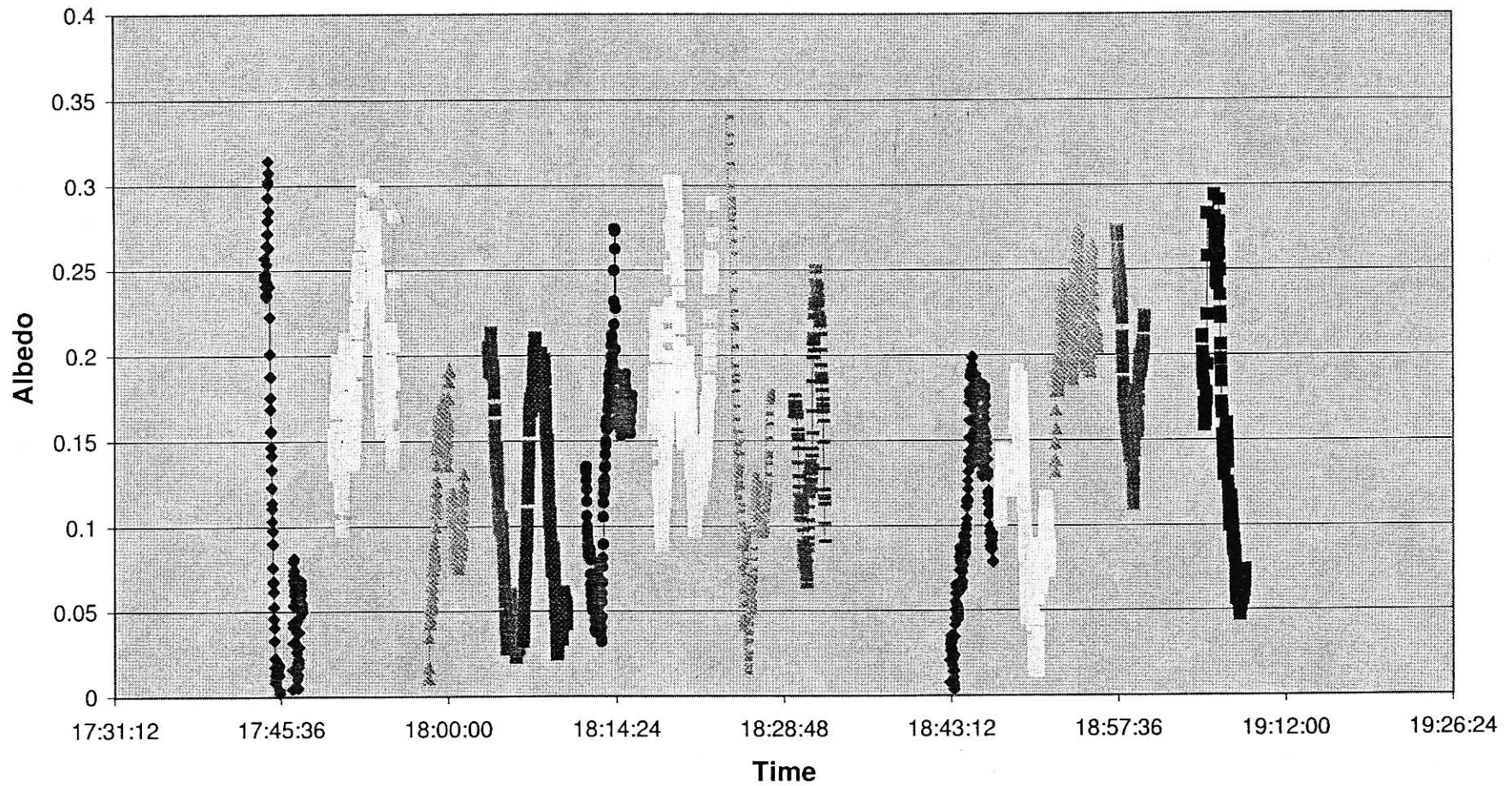
Kendall and LH and Shop
Average Daily PAR downward
and Average Daily Solar Downward

Legend:
- Kendall
- Lucky Hills
- Shopmet

PAR (no Shop PAR)

Solar

Solar W/m2 (left axis)
PAR incoming micromoles/s m (right axis)
Decimal Year (x-axis)

# Flight 08/04/2001

◆ path ─■─ trancect 1 (E-W) ⋯⋯ trancect 2 (W-E) ─▨─ trancect 3 (E-W) ─■─ trancect 5 (W-E) ─●─ trancect 6 (N-S) ─▨─ trancect 4 (S-N)

# Flight 04/08/2001



**Legend:**
- transect 1A (E-W)
- transect 2A (W-E)
- transect 3A (E-W)
- transect 4A (S-N)
- transect 5 (W-E)
- transect 1B (E-W)
- transect 2B (W-E)
- trabsect 3B (E-W)
- transect 4B (S-N)
- transect 1C (E-W)
- transect 2C (W-E)
- transect 3C (E-W)
- transect 4C (S-N)
- transect 6 (N-S)

**Y-axis:** Albedo (0 to 0.4)

**X-axis:** Time (17:31:12 to 19:26:24)
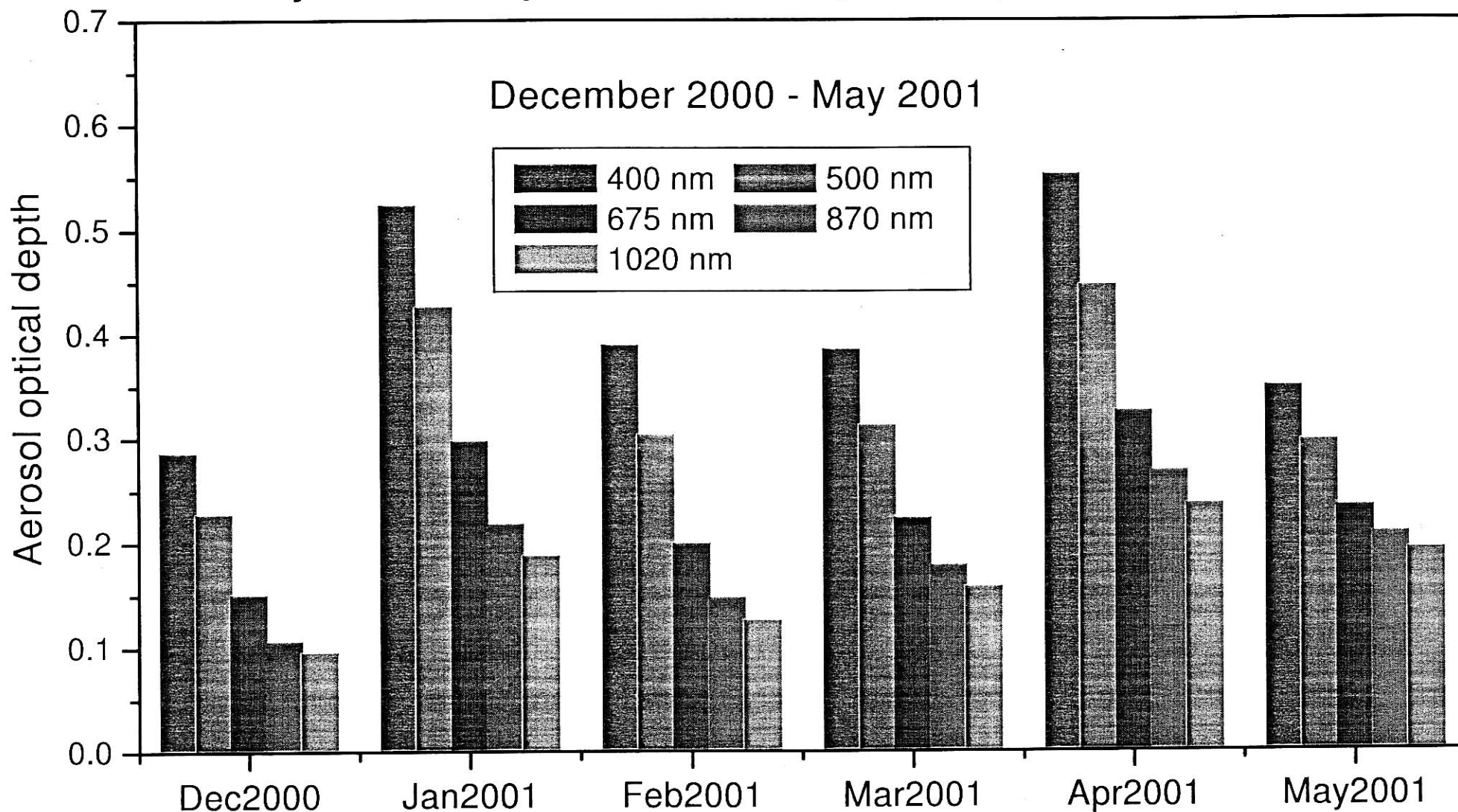
## _Work Accomplished (3)_

- New collaboration was established on measurement of aerosol radiative effects over India, in collaboration with SKYNET network.

Several months of observations, and preliminary analysis was conducted.

Monthly Means of Spectral Aerosol Optical Depth over Pune, India

## After launch of ADEOS II

- Calibrate and validate the standard algorithm

- Help revise standard algorithm

- Support NASDA in reintegrating the Standard Algorithm