TRMM/TMI&PR SUBSET

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### REMOTE SENSING TECHNOLOGY CENTER

EORC&RESTEC

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Background

Phase 1a	
Work Period	June 2002 – Nov. 2002
Participants	NASDA, UT, EUMESAT(TBD)
Data Period	July – Sept. 2001
Data & Area	■ TRMM/TMI, PR (NASDA) and DMSP/SSM-I (UT) for the all CEOP Reference Sites (CRSs). ■ GMS(UT), GOES(TBD), Meteosat(EUMESAT(TBD), ancillary (other data centers) for the all CRSs. ■ Terra/MODIS, NOAA/AVHRR (UT) for the CRS in Asia
Prototyping	[#1] NASDA and UT to deliver the satellite subsetting data to CSDIC [#2] NASDA and CSDIC will prototype 4D product visualization [#3] NASDA and CSDIC will evaluate the need for 4D product interoperability, data access capabilities, catalog interoperability.
Evaluation	WGISS SG/EOGEO (dry run), WGISS, CEOS Plenary GEWEX SSG, WCRP JSC

TRMM Instruments
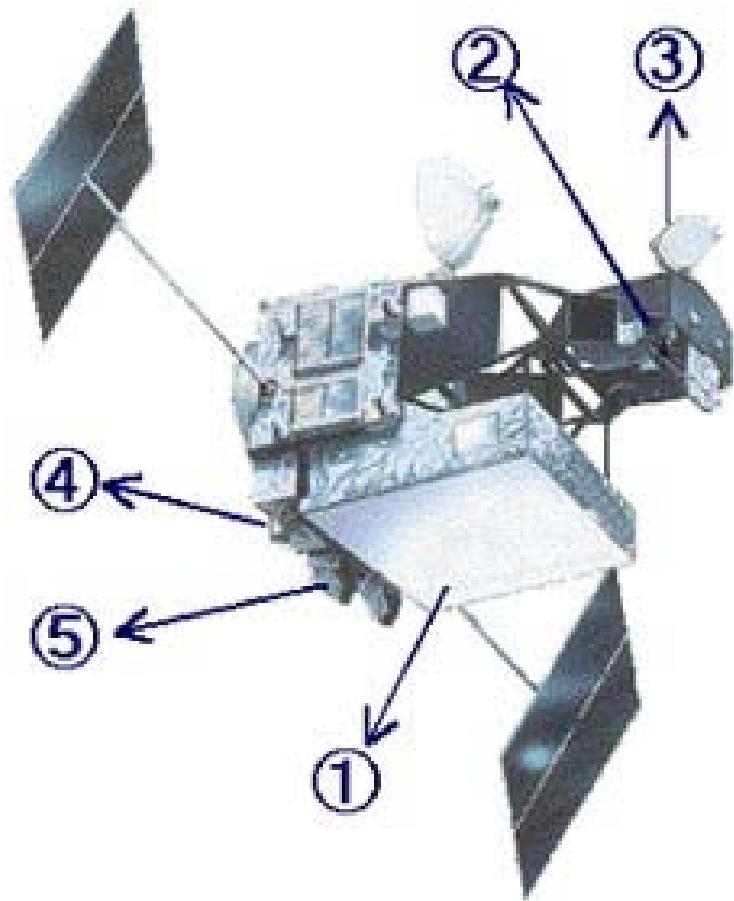

PR

VIRS

TMI

LIS

CERES

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Subset Outline

Subset data

Cut off and Gridded

at 2.5 × 2.5 deg. map

CEOP Reference sites

TRMM Original data(Example of TMI)
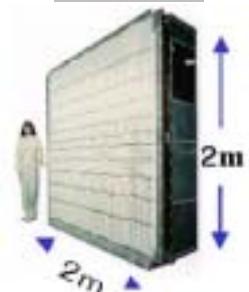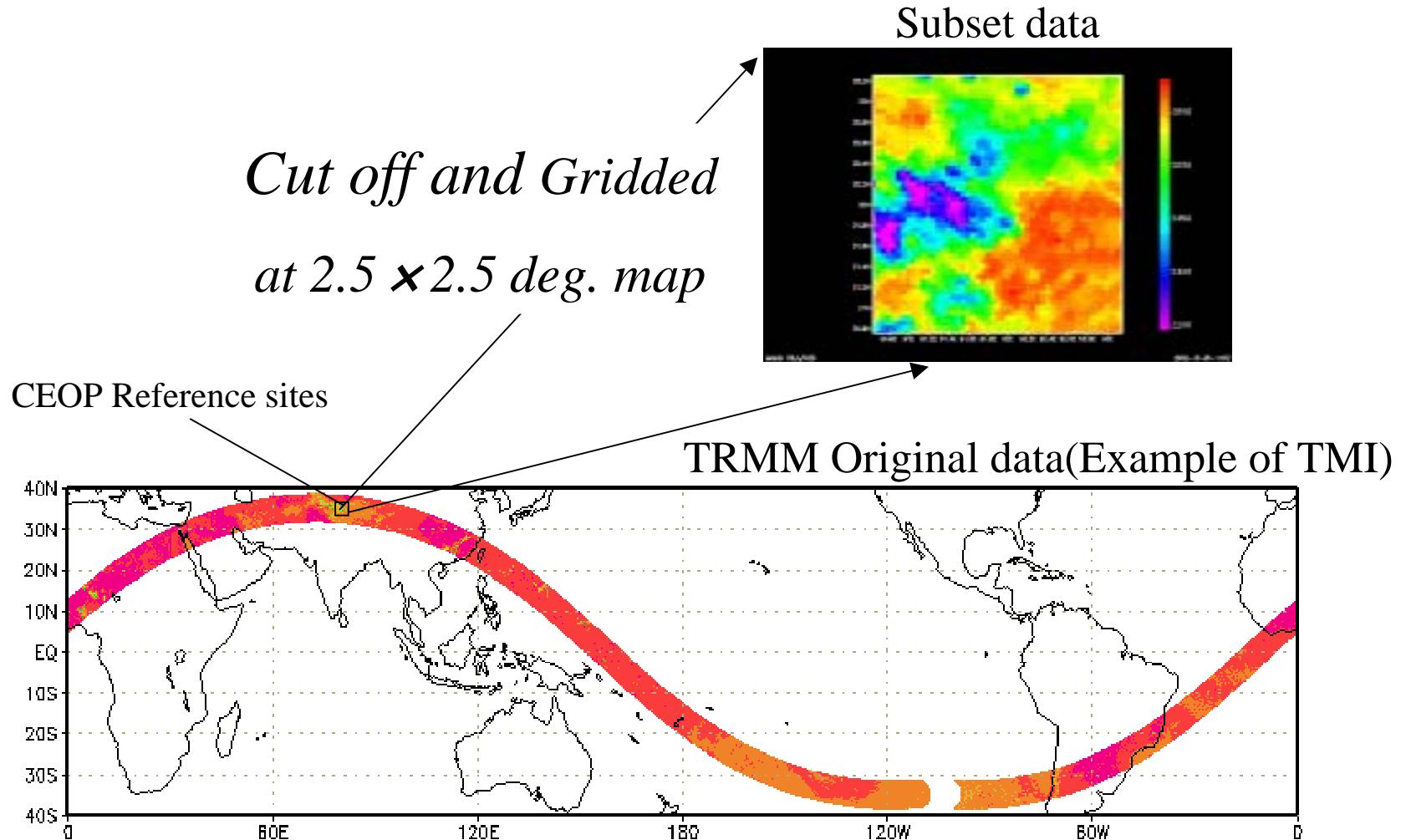
Subset processing step

- Processing system for CEOP in EORC

Machine Model:SUN BLADE2000

OS:Solaris8

CPU:Ultra SPARC　Cu

　　　　　　　　900MHz× 2

MEMORY:2048MB

Disk:713GB

Device: DLT8000 Tape Storage

　　　　Mammoth 8mm Tape Drive

Subset processing step

- Subset Data Format(tentative)

Sensor		Products	Image size	Grid size (deg)	Num of	Data type	Scale factor
TM	Low Freq. CH.(*1)	Brightness Temperature	26× 26	0.1	7	2int	× 0.1
	High Freq. CH.(*2)		51× 51	0.05	2	2int	× 0.1
PR		Radar Reflectivity (Z-factor)	51× 51	0.05	1	2int	× 0.1

*1) 10GHz-V, 10GHz-H, 19GH-V, 19GHz-H, 21GHz-V, 37GHz-V, 37GHz-H
*2) 85GHz-V, 85GHz-H

➤ Subset 2.5× 2.5 degree area centered at reference site.

# Subset processing step

- Necessity of interpolation

Simple gridding process causes subset-data with non-filled grid boxes shown below.   Interpolation needed.
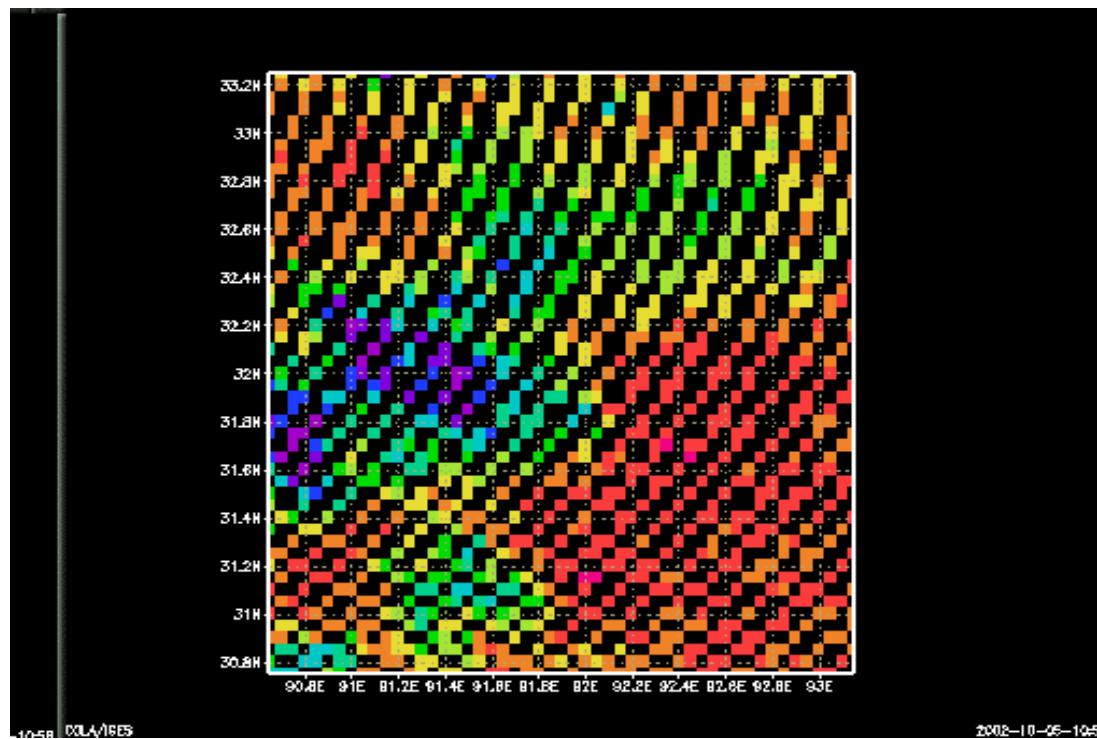
Subset processing step

- Interpolation method
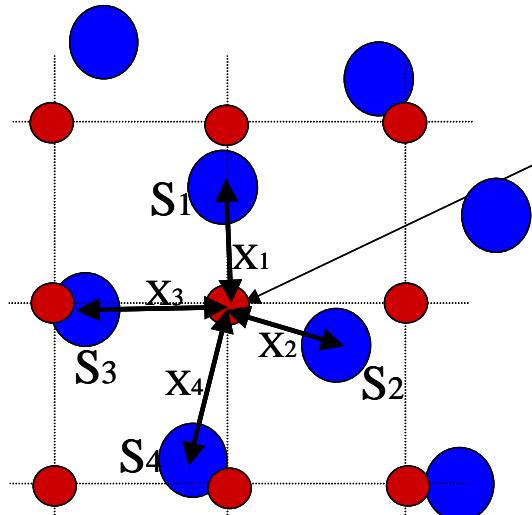
$$V = \frac{\sum Si \cdot Wi}{\sum Wi} \qquad (i=1,2,\,,\,)$$

$$Wi = \frac{1}{1 + \exp(\dfrac{A \cdot Xi}{B} - A)}$$

Weighting function
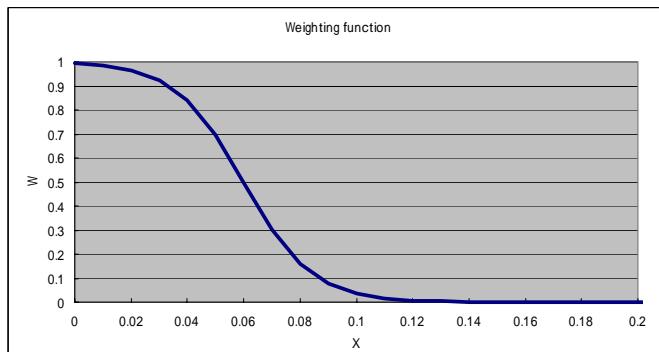
- ● Sampled satellite data
- ● Output coordinates

Where
  V is the interpolated value
  X is the Distance between ● and ●
 Wi is the Weighting coef.
  A,B is the optional coef.

Subset processing step

## - Subset output criterion

No-output Subset-file
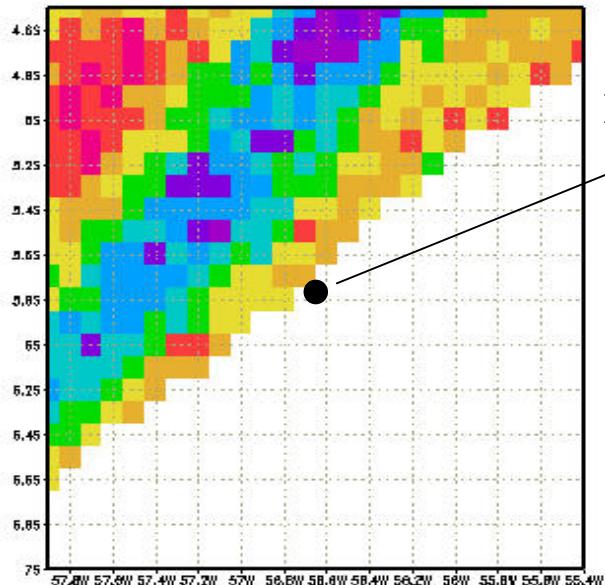
Output Subset-file

Reference site
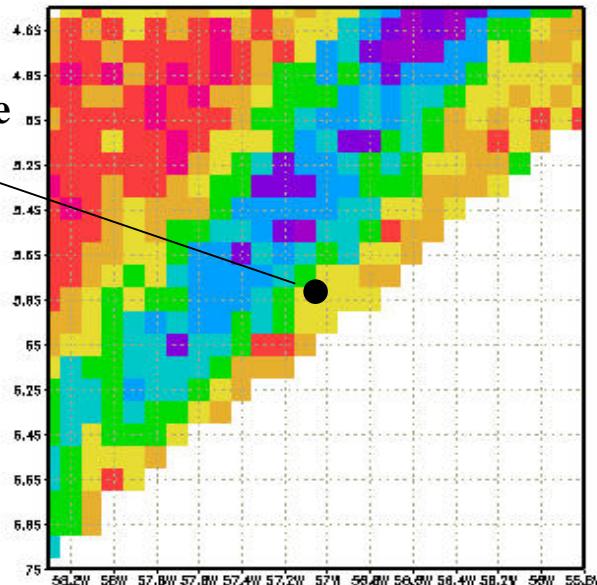
Results: TMI Subset

10GHz-V   **19GHz-H**   **85GHz-V**
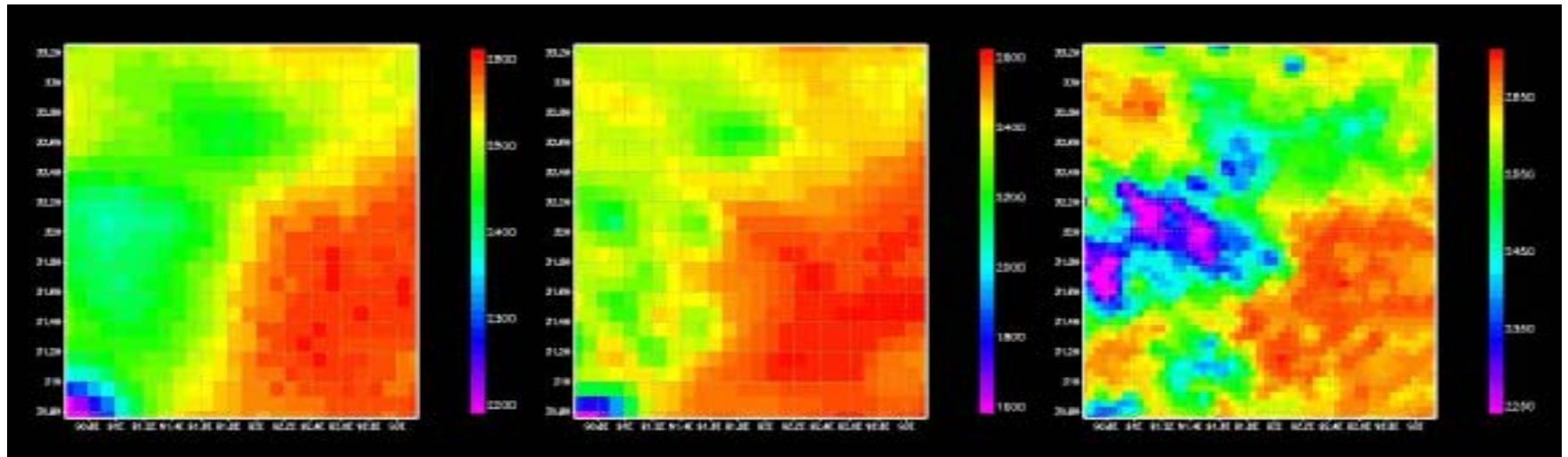
Observation date:2001/08/01

Locations:Tibet Plateau

Results: TMI Subset
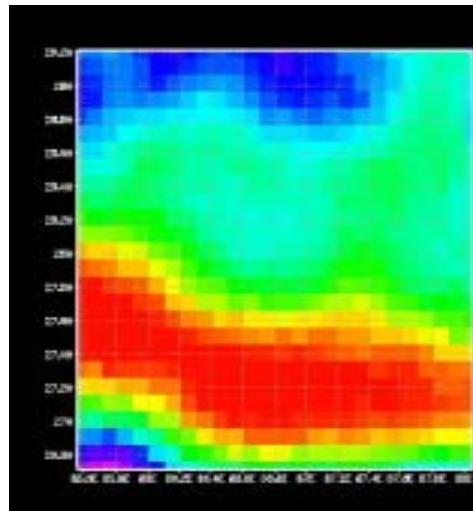
**10GHz-V**　　　　　　　**19GHz-H**　　　　　　　**85GHz-V**
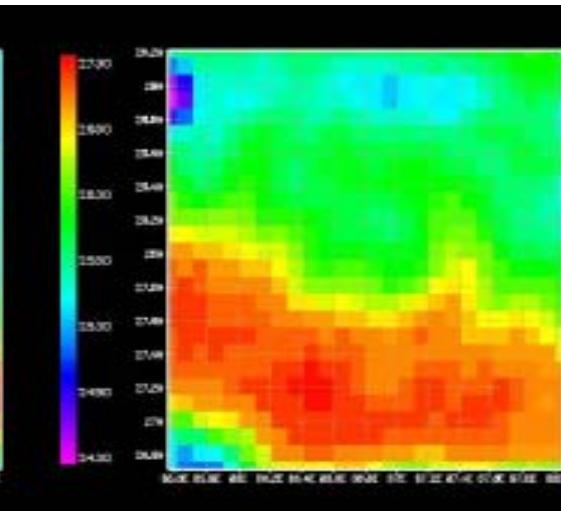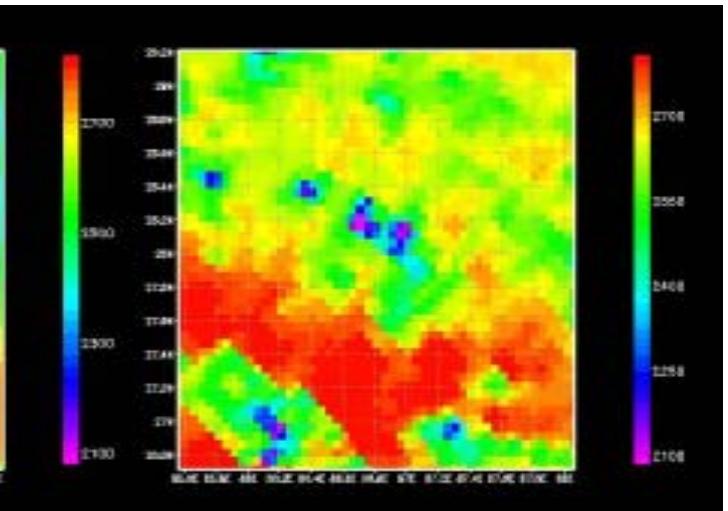
Observation date:2001/08/01

Location:Himalaya

Results: PR Subset
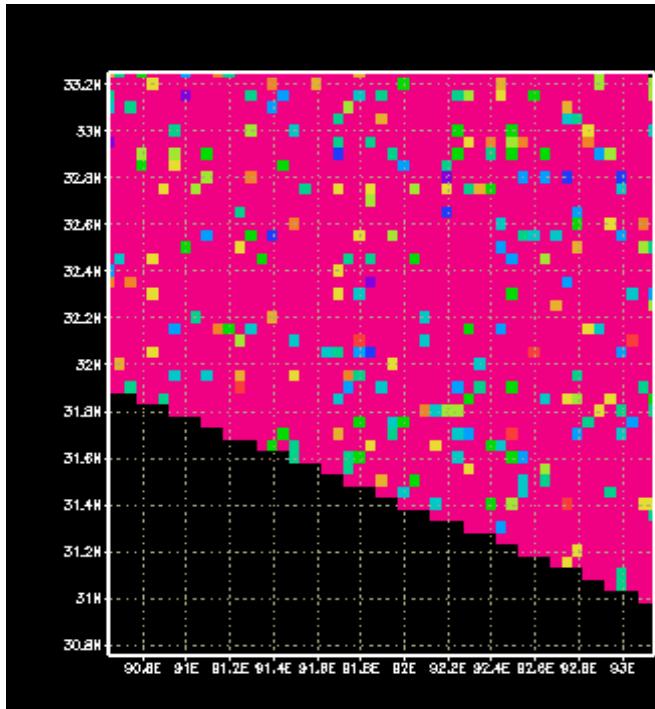
HEIGT:10km   **HEIGT:22.5km**

Observation date:2001/08/01

Location:Himalaya

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