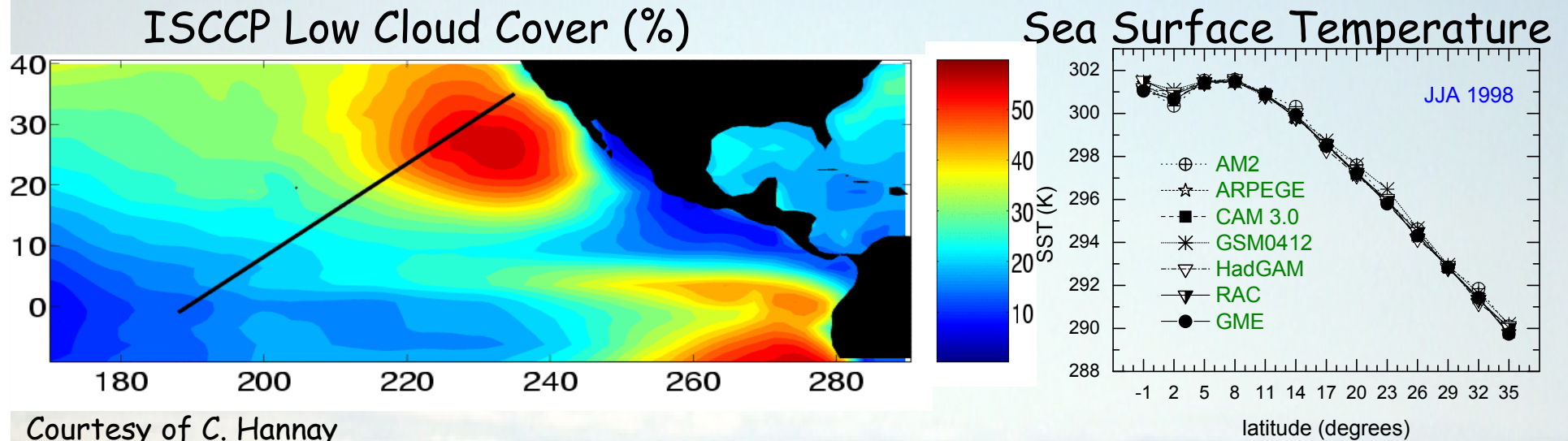


# GCSS/WGNE Pacific Cross-section Intercomparison (GPCI)



Courtesy of C. Hannay

GPCI is a working group of the GEWEX Cloud System Study (GCSS)  
- partially funded by the NASA MAP Program

Models and observations are analyzed along a Pacific Ocean cross-section from the stratocumulus regions, across the shallow cumulus areas, to the deep convection regions

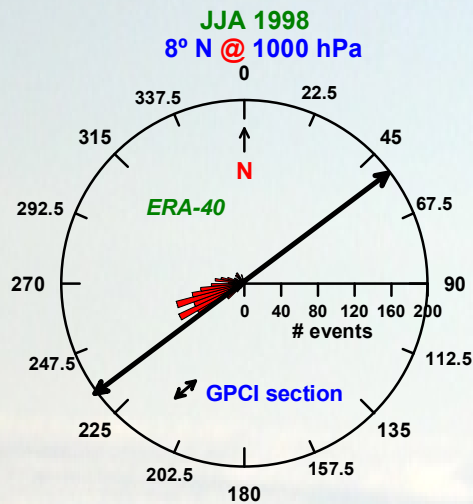
# GPCI Motivation

- To study important physical regimes and transitions: stratocumulus, shallow cumulus and deep convection
- To evaluate models and observations in the tropics and sub-tropics in terms of the atmospheric hydrologic cycle
- To utilize a new generation of satellite datasets
- To help the development of new cloud, convection and turbulence parameterizations in climate/weather models
- To create a database of models and observations for future studies of the tropics and sub-tropics

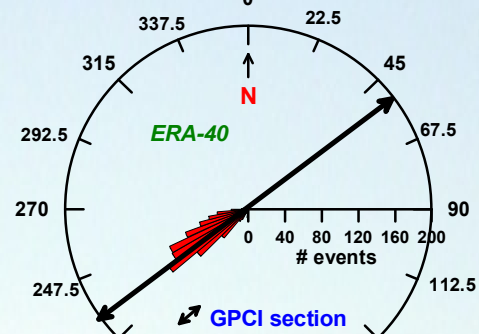
## GPCI - 23 participating models

<b>Model Results</b>		
<b>Organization</b>	<b>Model</b>	<b>Type</b>
BMRC (Aus)	BAM 4.0.21	Global
CCC (Can)	CCCma	Global
CMC (Can)	GEM	Regional
CSU/BUGS (US)	BUGS	Global
CSU/MMF (US)	MMF	Global/MMF
DWD (Ger)	GME	Global
ECMWF (UK)	ECMWF	Global
ETH / MPI (Ger)	ECHAM5	Global
GFDL (US)	AM2p12b	Global
GKSS (Ger)	CLM	Regional
JAMSTEC (Jap)	AFES2	Global
JMA (Jap)	GSM0412	Global
KNMI (Ned)	RAC	Regional
LMD (Fra)	LMDZ4	Global
MeteoFrance (Fra)	ARPEGE	Global
NASA/GISS (US)	GISS III 3.3	Global
NCAR (US)	CAM 3.0	Global
NCEP (US)	GFS&MOM3	Global Coupled
NCEP (US)	GFS	Global
UCLA (US)	UCLAtm7.3	Global
UCSD (US)	RSM	Regional
UKMO (UK)	HadGAM	Global
UQM (Can)	CRCM	Regional

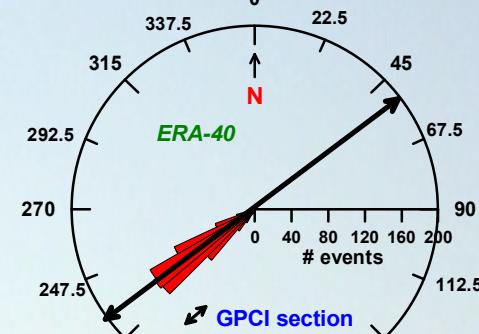
# PBL winds in the Pacific Cross-section



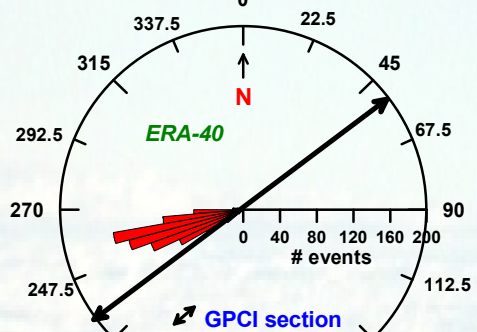
JJA 1998  
26° N @ 900 hPa



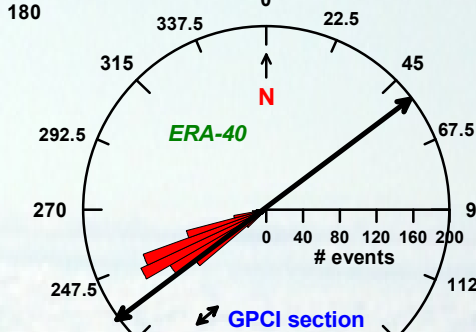
JJA 1998  
26° N @ 1000 hPa



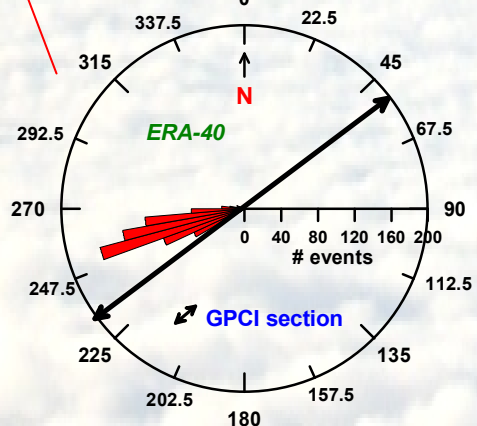
JJA 1998  
20° N @ 900 hPa



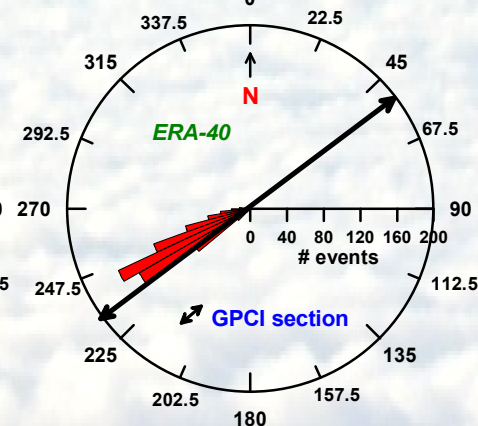
JJA 1998  
20° N @ 1000 hPa



JJA 1998  
11° N @ 900 hPa



JJA 1998  
11° N @ 1000 hPa



PBL winds are reasonably parallel to the cross-section

## GPCI latest developments

- Model results for GPCI were assembled and organized (with the help of the DIME webmaster) on the DIME website at: [http://gcss-dime.giss.nasa.gov/gpci/modsim\\_gpci.html](http://gcss-dime.giss.nasa.gov/gpci/modsim_gpci.html).
- GPCI/DIME webpage has some dynamic features (interactive selection of model data, dynamic plotting and model comparisons)
- Observations on the DIME webpage: ISCCP, TOVS, SSM/I, GPCP
- We will soon add AIRS T, q and RH profile data to web page
- A general GPCI paper is basically finished

# GPCI/DIME model data webpage - available observations

## Gridded Data

[ISCCP D1/DX](#)

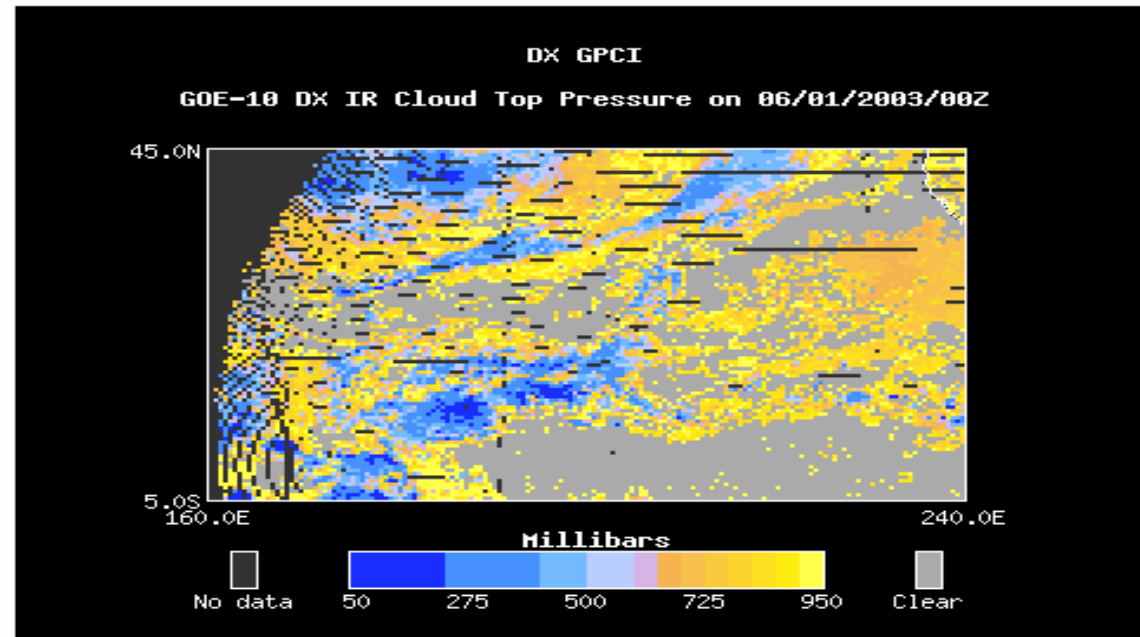
[TOVS Atmosphere  
Gridded Data  
Product](#)

[SSM/I Daily Data  
Product](#)

[NCEP Reanalysis](#)

[GPCP 1-Degree  
Daily Precipitation  
Data](#)

[Cross-section  
PCTAU Plots](#)



## Point Data

Rawinsonde  
Observations

[GCSS-DIME HOME](#) | [GPCI HOME](#)

Webmaster: [GCSS-DIME Webmaster](#)

[http://gcss-dime.giss.nasa.gov/gpci/lsobs\\_gpci.html](http://gcss-dime.giss.nasa.gov/gpci/lsobs_gpci.html)

## GPCI - the next steps

- 1) Keep adding observational data to DIME site (AIRS soon, MISR)
- 2) Interaction with CFMIP
- 3) GPCI Phase II
  - A more recent period (for CloudSat/CALIPSO): JJA 2006/2007
  - Use LES, CRM and SCM along GPCI transect forced by EC analysis
  - How many points and where? at least 3 points: Sc, Cu, deep convection
  - How long should the simulation period for LES/CRM be?
  - Eulerian versus Lagrangian
  - Collaboration between different GCSS working groups