



GEWEX Cloud System Study

Data Integration for Model Evaluation

[NASA Cloud Modeling and Analysis Initiative \(CMAI\)](#)

<u>BOUNDARY LAYER CLOUD WORKING GROUP</u>	<u>CIRRUS CLOUD WORKING GROUP</u>	<u>EXTRATROPICAL LAYER CLOUD WORKING GROUP</u>	<u>DEEP CONVECTIVE WORKING GROUP</u>	<u>POLAR CLOUD WORKING GROUP</u>
<u>FIRE Marine Stratus</u> <u>ASTEX</u> <u>ARM-1997 SGP IOP</u> <u>ATEX</u> <u>DYCOMS-II</u> <u>CROSS-PAC (EUROCS)</u> <u>EPIC 2001</u>	<u>FIRE I Cirrus</u> <u>FIRE II Cirrus</u> <u>ICE-89</u> <u>EUCREX-93</u> <u>EUCREX-94</u> <u>ARM-1994 SGP IOP</u> <u>CRYSTAL-FACE</u>	<u>ARM-2000 SGP IOP</u> <u>WISP</u> <u>CFRP III</u> <u>CASP II</u> <u>FRONTS 92</u> <u>FASTEX</u> <u>GALE</u> <u>BALTEX</u>	<u>GTE/TRACE-A</u> <u>TOGA/COARE</u> <u>ARM-1997 SGP IOP</u> <u>CROSS-PAC (EUROCS)</u> <u>LBA</u> <u>CRYSTAL-FACE</u>	<u>ARCMIP</u> <u>BASE</u> <u>SHEBA</u> <u>CEAREX</u> <u>LEADEX</u> <u>AOE 2001</u> <u>M-PACE</u>

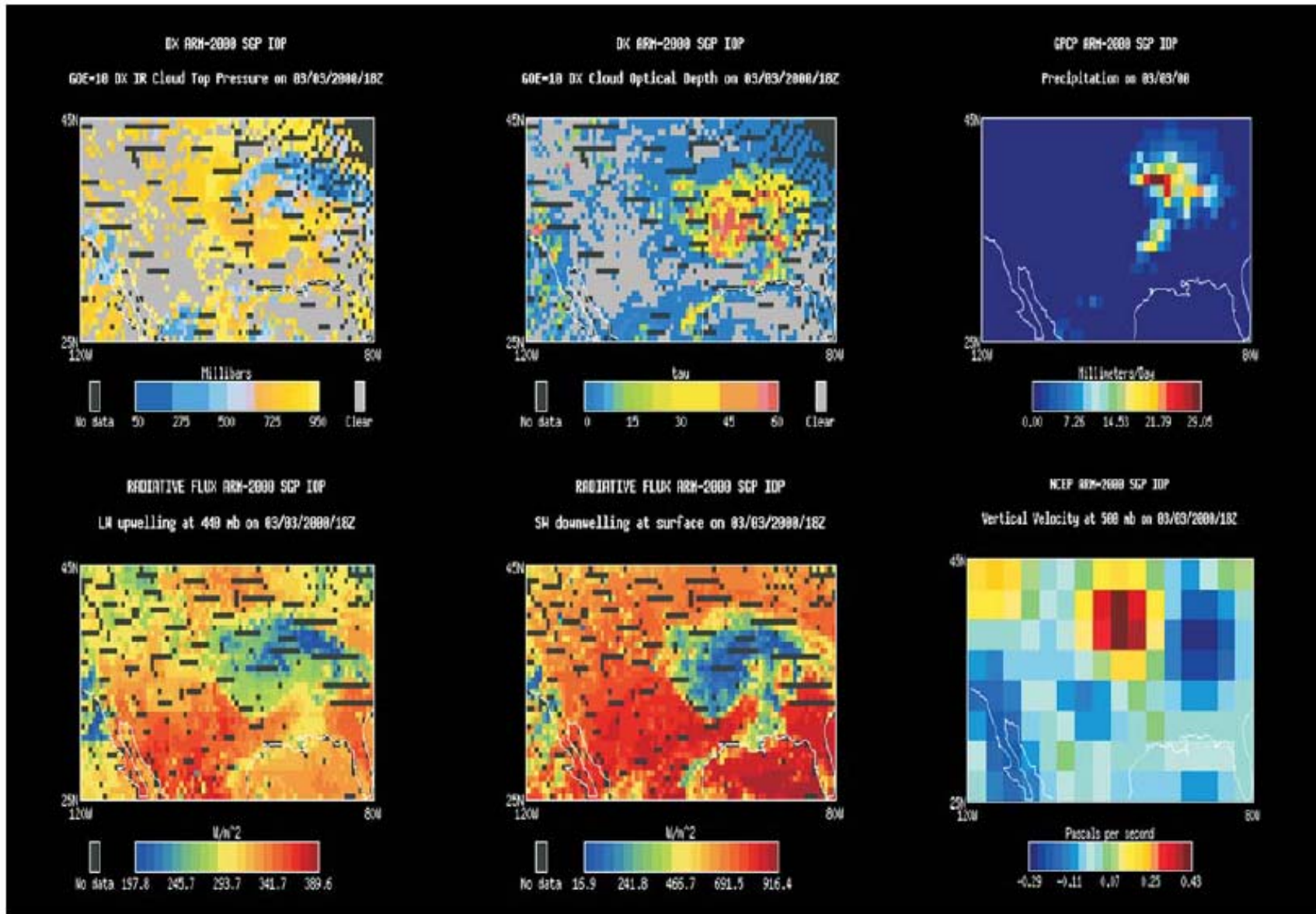


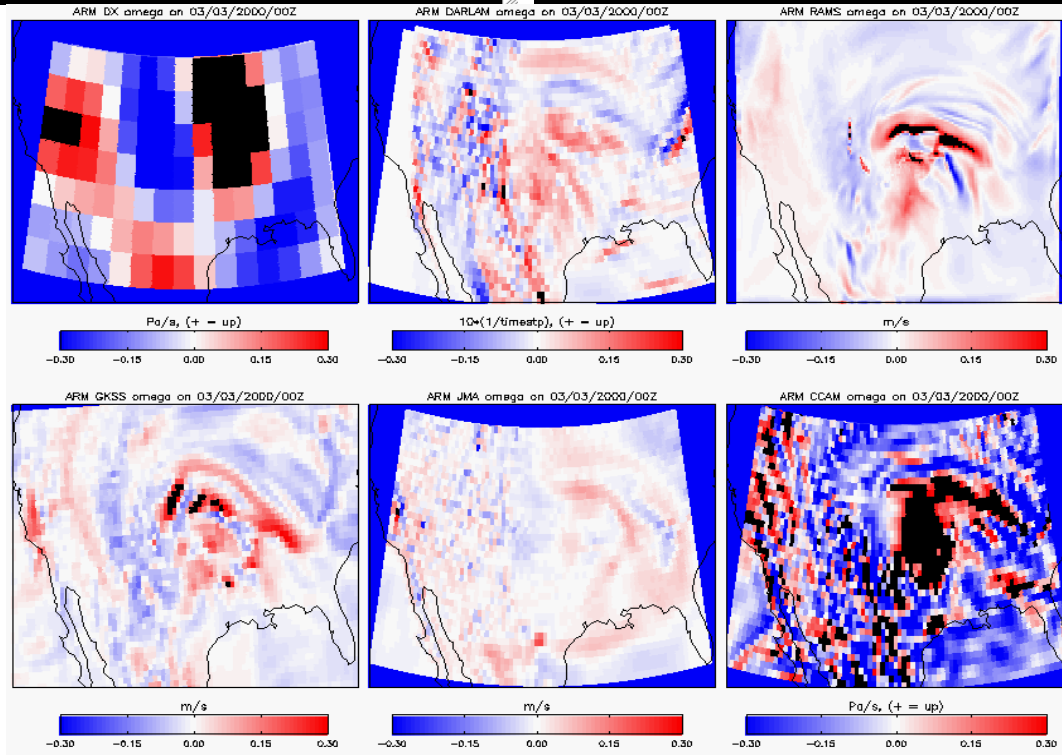
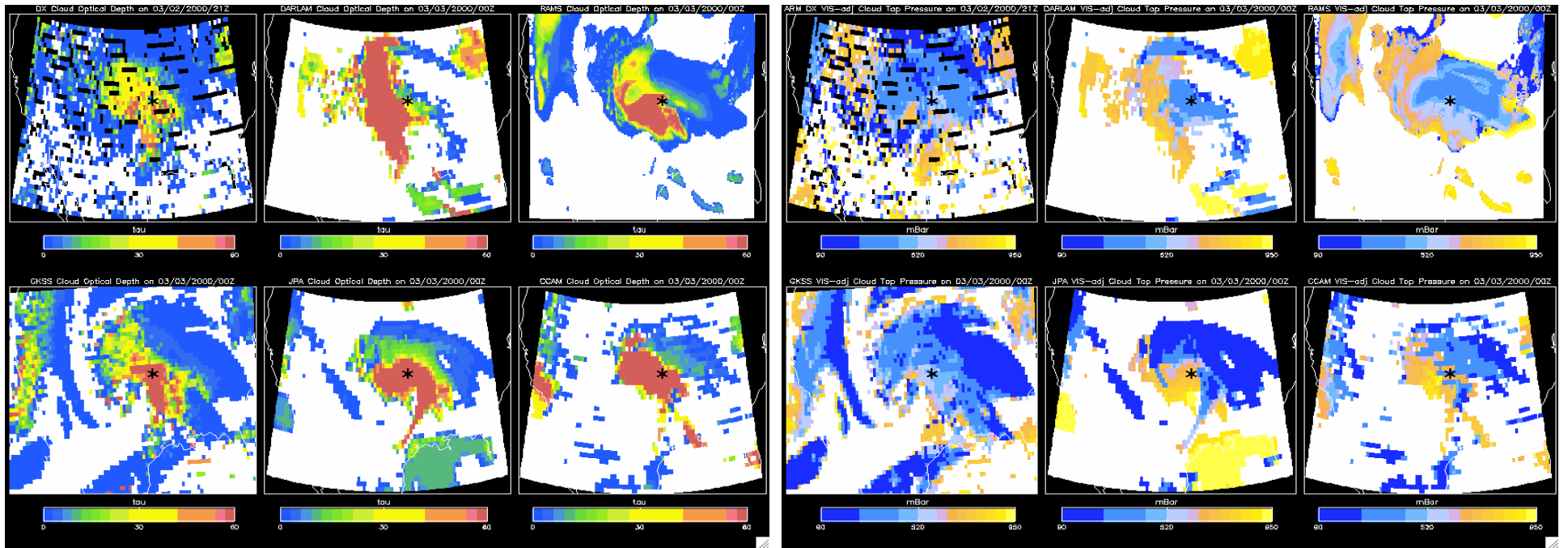
[ISCCP HOME](#)
[ISCCP Analysis Software](#)

TABLE 1. Summary of datasets and software packages provided in the DIME Web site for the ARM 2000 IOP.

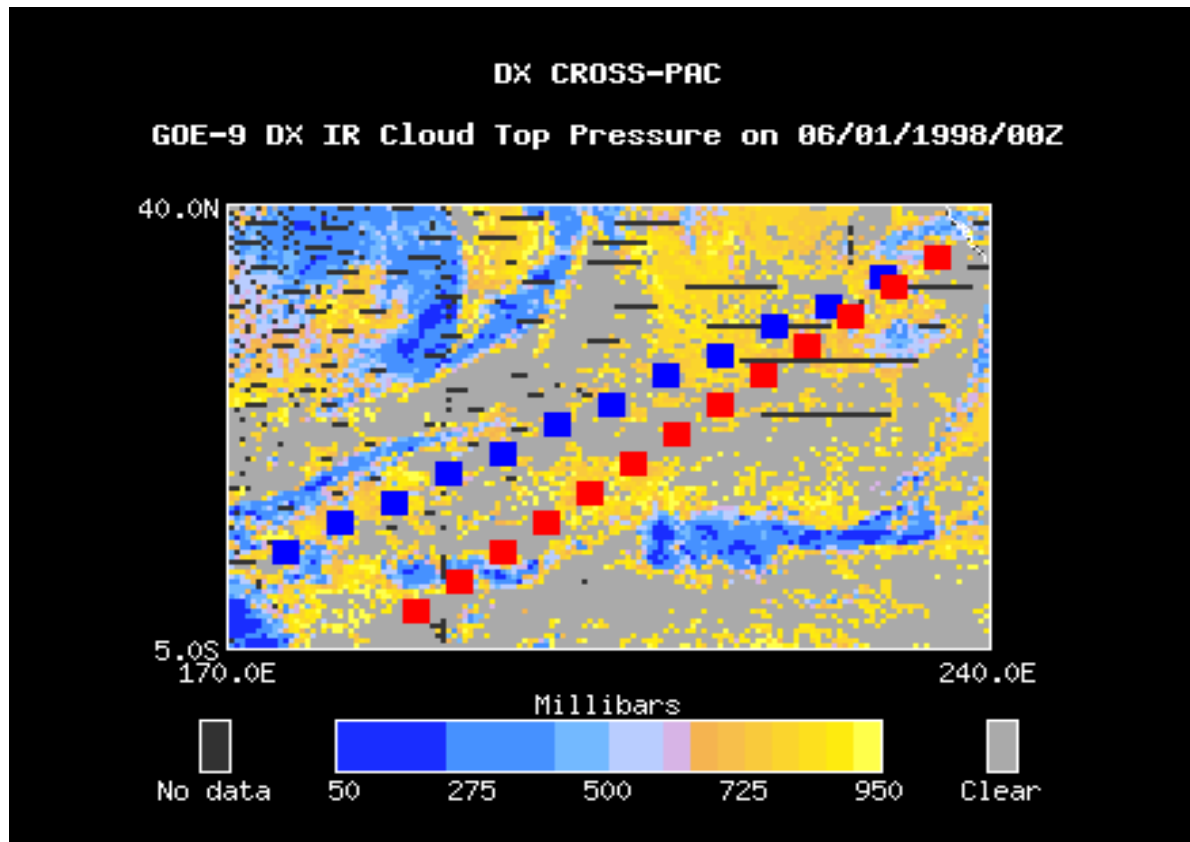
<p>Model forcing datasets</p> <ul style="list-style-type: none"> • <i>Limited area models</i> (NCEP/ECMWF reanalyses and regional model data assimilations) • <i>Single column models</i> (Variational analysis products) 	<p>Large scale observations</p> <ul style="list-style-type: none"> • <i>Gridded data</i> <ul style="list-style-type: none"> – ISCCP DI/DX – SSM/I – TOVS – GPCP – NCEP/ECMWF reanalyses – ISCCP radiative fluxes • <i>Point data</i> • <i>Rawinsonde observations</i> 	<p>Field study observations</p> <ul style="list-style-type: none"> • <i>Links to the field study Web pages</i>
<p>Statistical composites</p> <ul style="list-style-type: none"> • <i>Climatological composites from ISCCP and other data sources</i> 	<p>Data simulator software</p> <ul style="list-style-type: none"> • <i>ISCCP simulator</i> • <i>Convection collocator</i> 	

WG3 ARM2000 - One success story (internal)



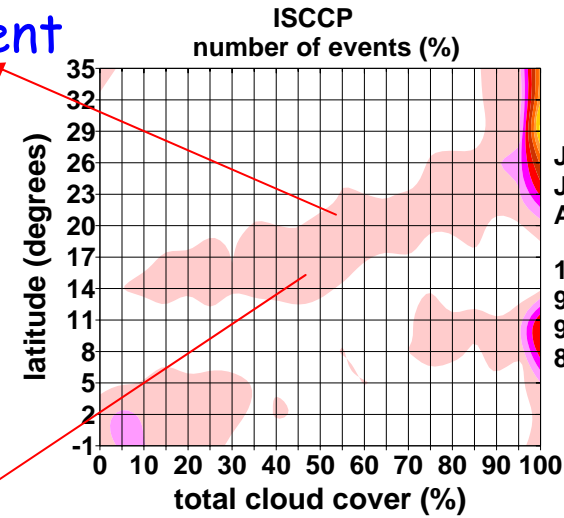
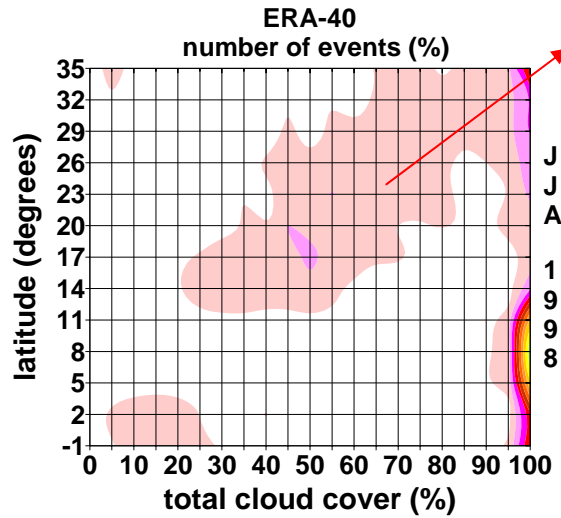


[PAC Cross Section Another success story \(external\)](#)

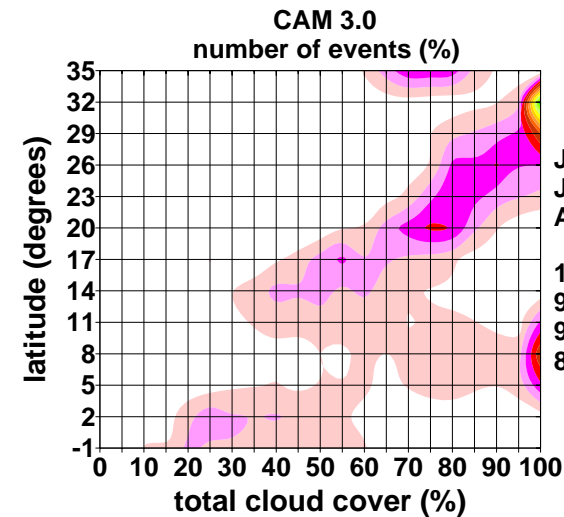
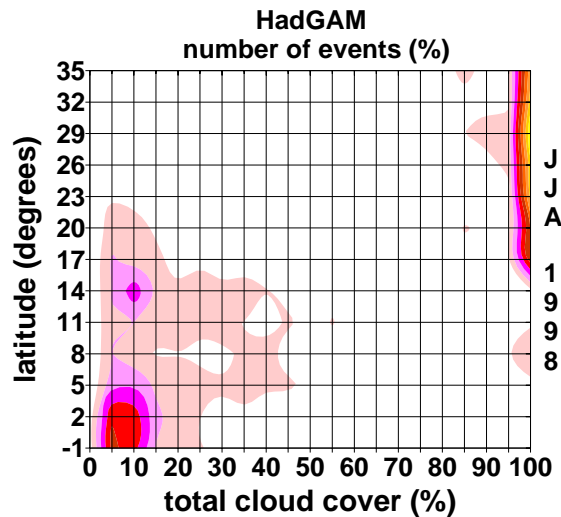


Histograms of TCC: ISCCP and ERA40

Not so different

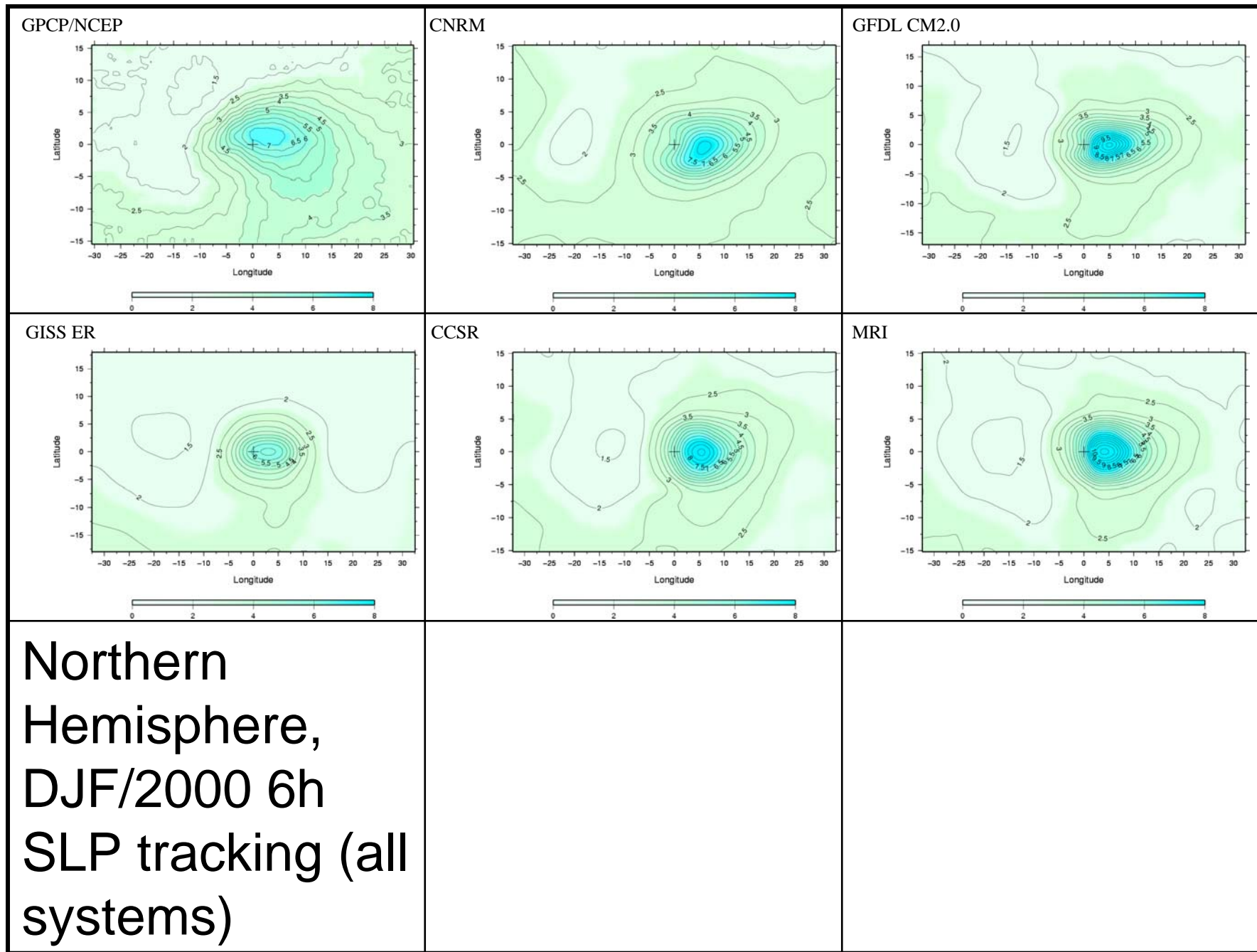


ISCCP is between continuous and bimodal

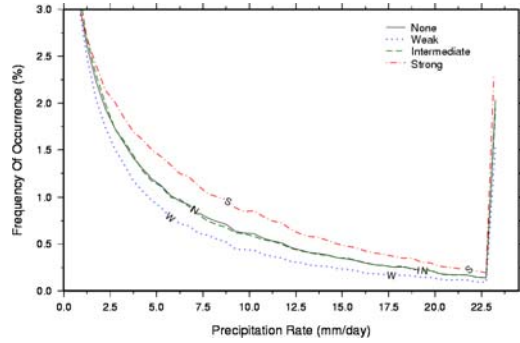


WHERE DO WE GO FROM HERE?

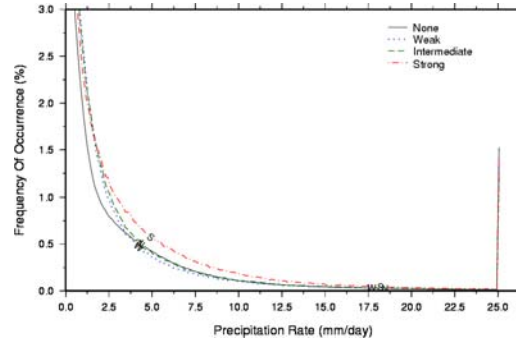
- BAU - Promote use of existing cases – Increase case numbers and available datasets
- Begin storing model output along with observational analysis
- Include standardized (e.g. IPCC) GCM evaluations as reference
- Add capabilities to accommodate problem-driven investigations



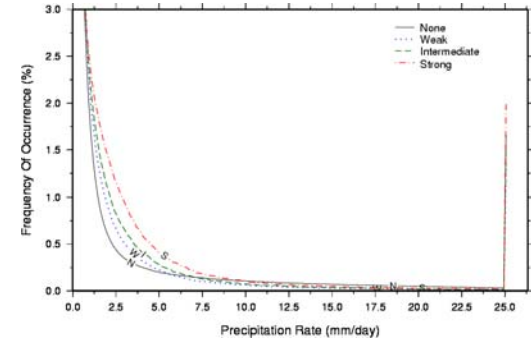
GPCP/NCEP



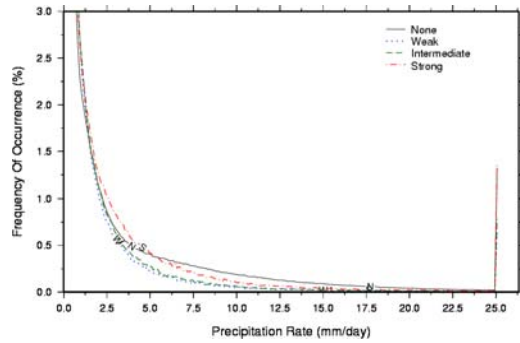
CNRM



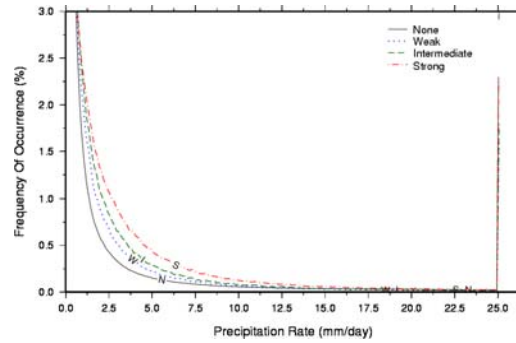
GFDL CM2.0



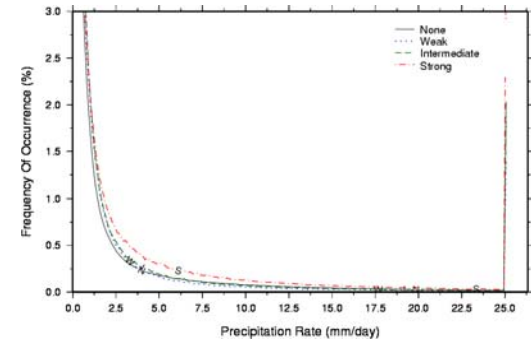
GISS ER



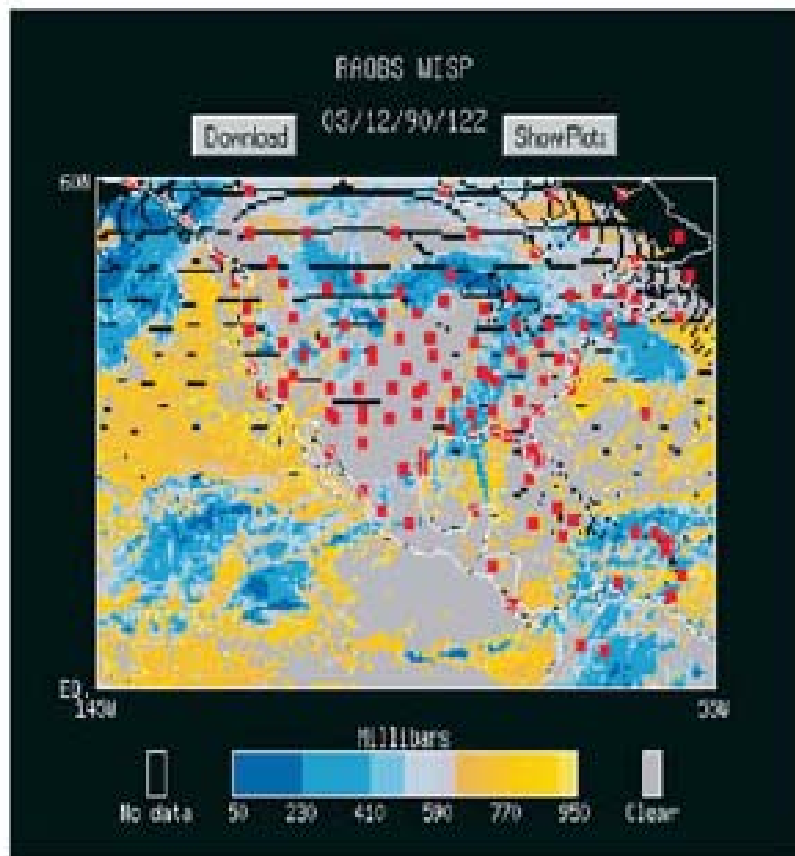
CCSR



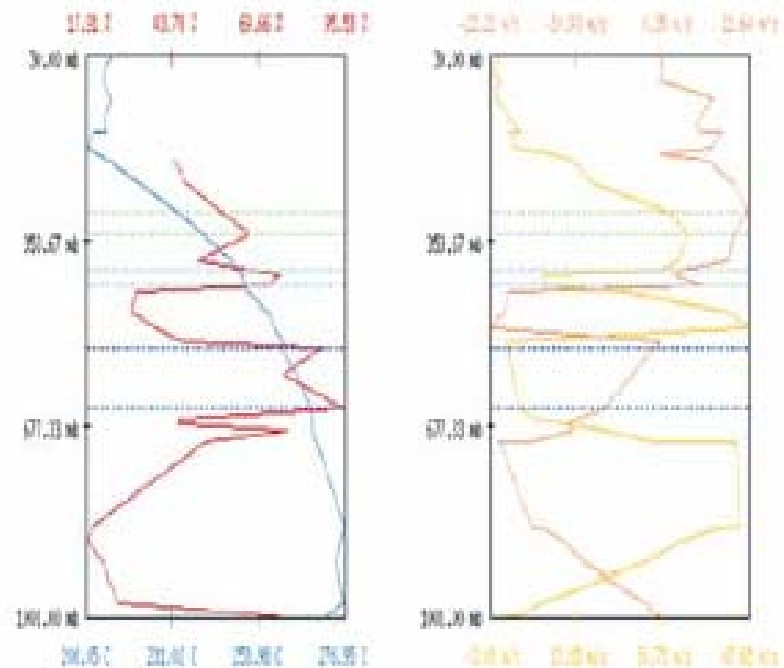
MRI



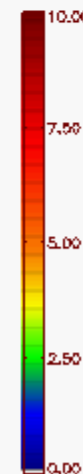
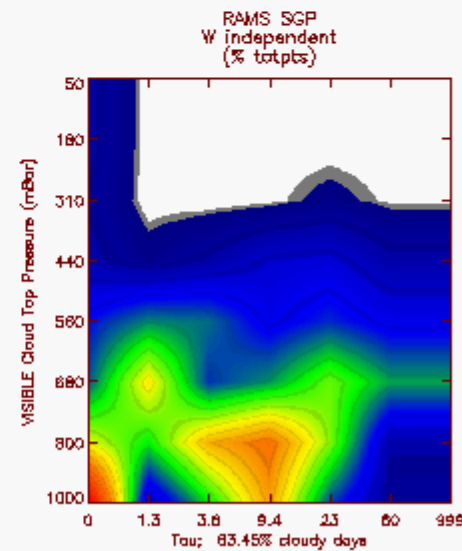
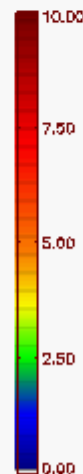
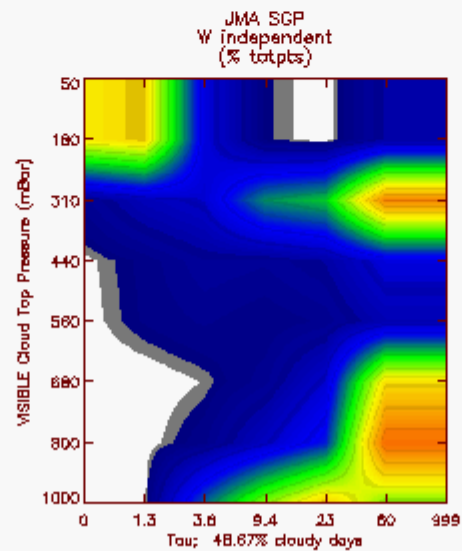
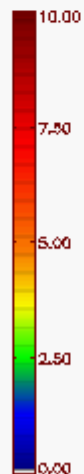
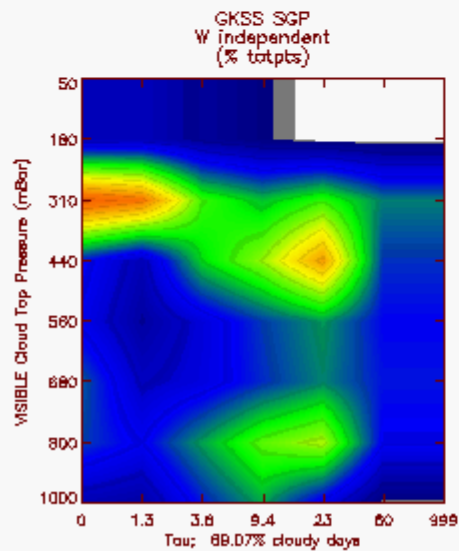
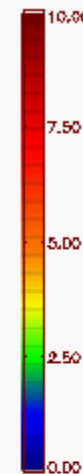
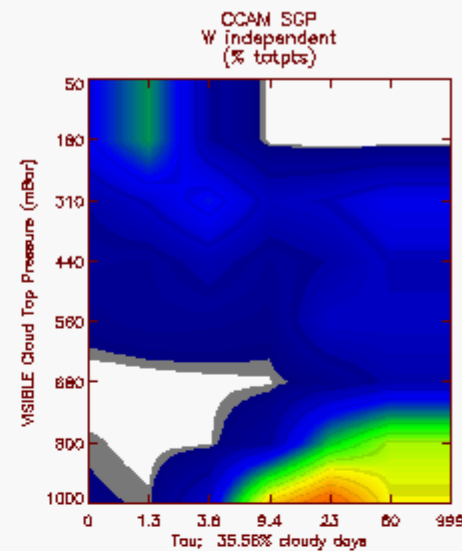
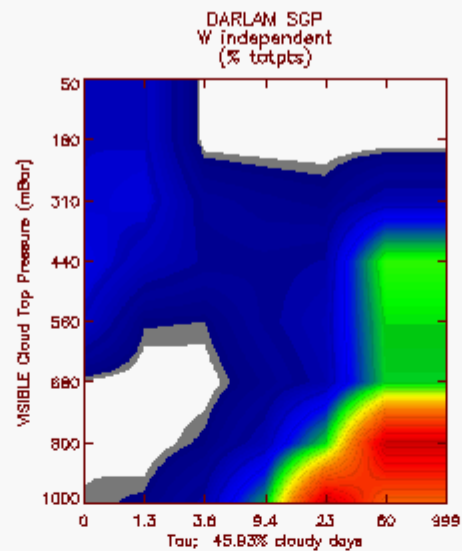
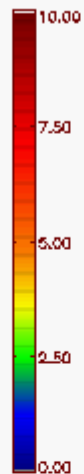
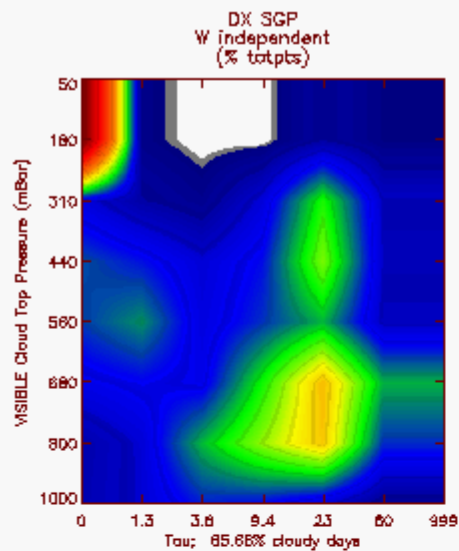
Northern Hemisphere, DJF/2000 6h SLP tracking (all systems)



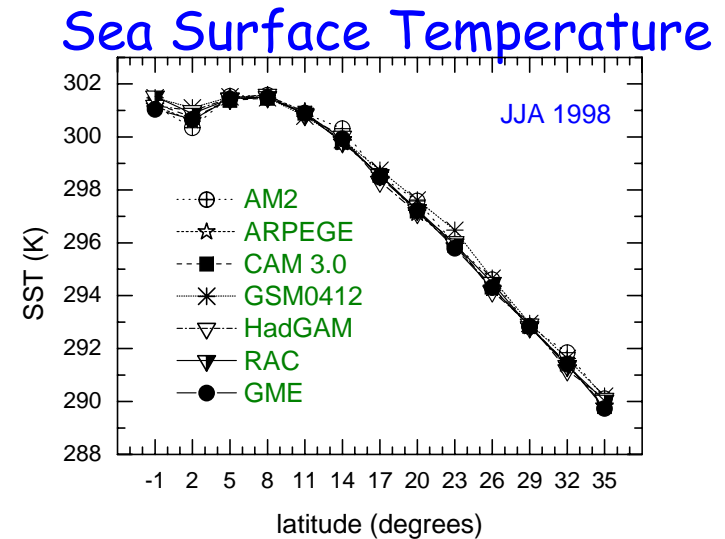
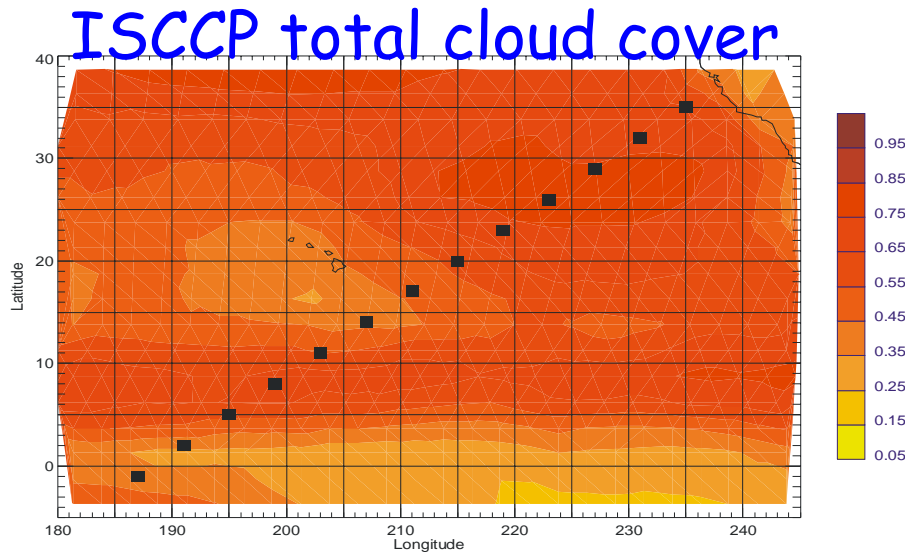
03/12/90/122
 LAT 46.36, LON -75.97



Temperature — u Wind —
 Relative Humidity — v Wind —
 Cloud Layer — Cloud Layer —



GCSS/WGNE Pacific Cross-section Intercomparison (GPCI)



GPCI is a working group of the GEWEX Cloud System Study (GCSS)

Models and data are analyzed along a Pacific Cross-section from Stratocumulus, to Cumulus and to deep convection

Models: GFDL, NCAR, UKMO, JMA, MF, KNMI, DWD, NCEP, ECMWF, BMRC, NASA/GISS, UCSD, UQM, LMD, CMC, CSU, GKSS

Alternative mean LCC: assume existence of at least 1 sharp gradient of LCC

instantaneous clouds have sharp gradients in space

GOES data

