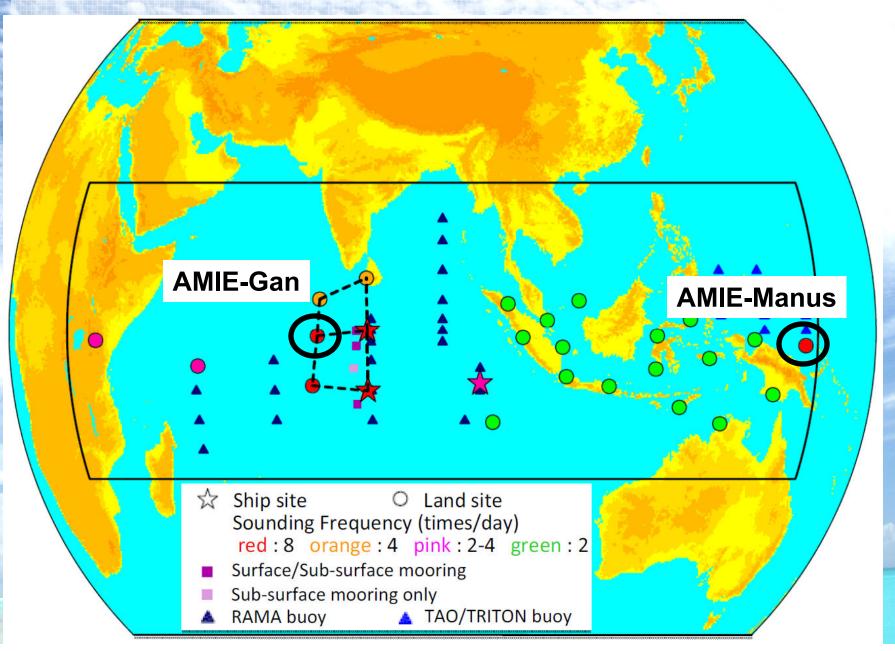# Overview of ARM observations during the ARM MJO Investigation Experiment (AMIE)

S.A. McFarlane; C.N. Long; Z. Feng; J.M. Comstock; C. Sivaraman;

N. Bharadwaj; K.L. Johnson;

B.W. Orr; M. Ritsche; S.M. Collis;

C. Schumacher; S. Ellis; S. Powell

AMIE/DYNAMO/CINDY Sites

Project Timeline

OCT   NOV   DEC   JAN   FEB   MAR   APR

EOP

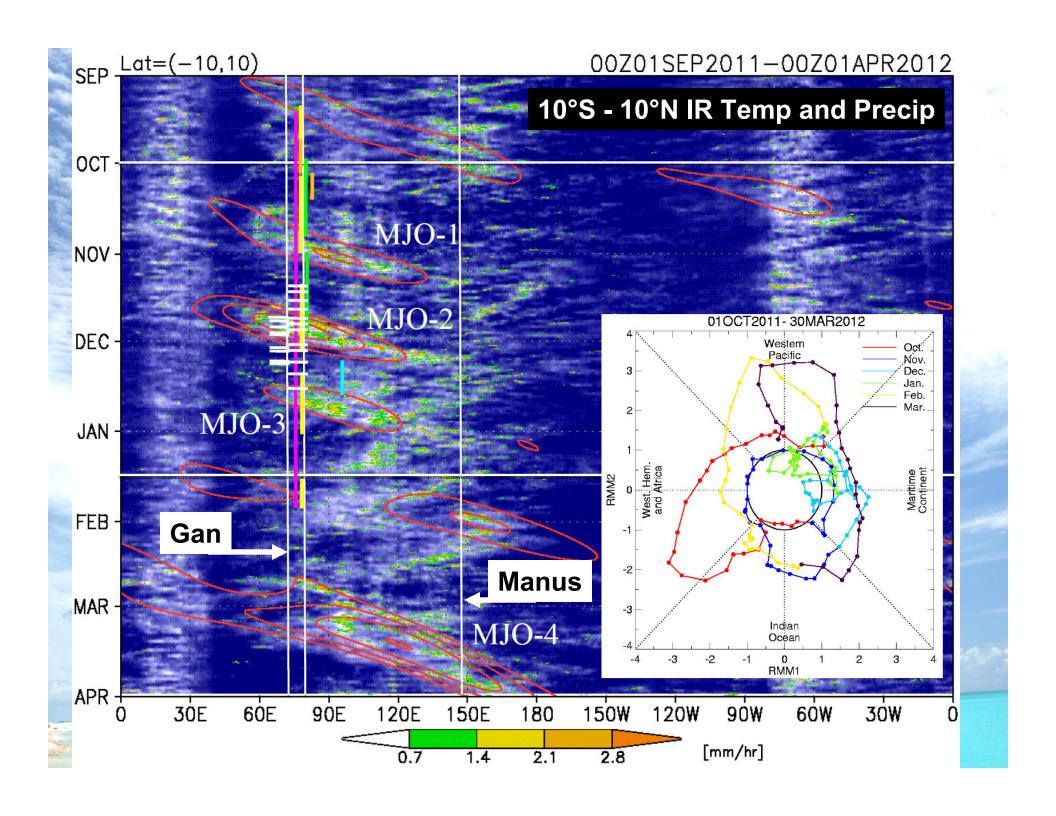**AMIE-Gan (AMF2), SMART-R, AMIE-Manus, Darwin**

IOP

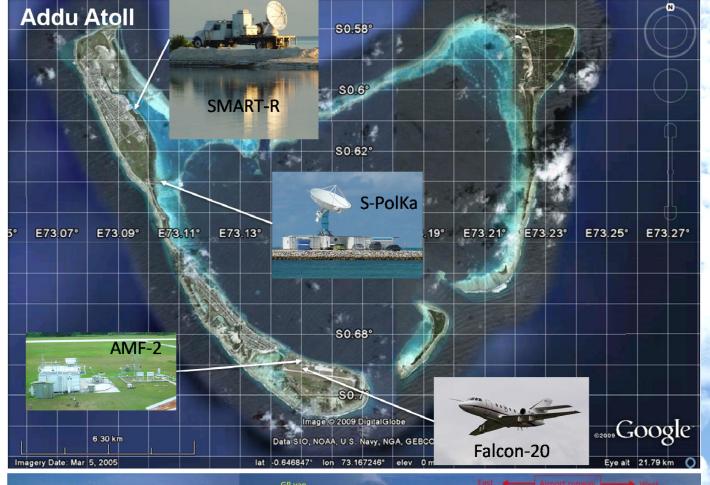**S-PolKa, RV Revelle, RV Sagar-Kenya (plus EOP observations)**

SOP

RV Mirai, RV Revelle, (plus IOP and EOP observations)

The AMIE-Gan AMF2 deployment was suspended on Feb 9, 2012 due to civil unrest in the Maldives.

AMIE-Manus continued normally through March 31.

Lat=(-10,10)

00Z01SEP2011-00Z01APR2012

10°S - 10°N IR Temp and Precip

SEP
OCT
NOV
DEC
JAN
FEB
MAR
APR

0   30E   60E   90E   120E   150E   180   150W   120W   90W   60W   30W   0

MJO-1
MJO-2
MJO-3
MJO-4

Gan
Manus

0.7   1.4   2.1   2.8   [mm/hr]

01OCT2011- 30MAR2012

Oct.
Nov.
Dec.
Jan.
Feb.
Mar.

Western Pacific

West. Hem. and Africa

Maritime Continent

Indian Ocean

RMM2
RMM1

4   3   2   1   0   -1   -2   -3   -4

-4   -3   -2   -1   0   1   2   3   4

Gan "Super Site"

AMF2

Radars:
- KAZR
- S-PolKa
- SMART-R
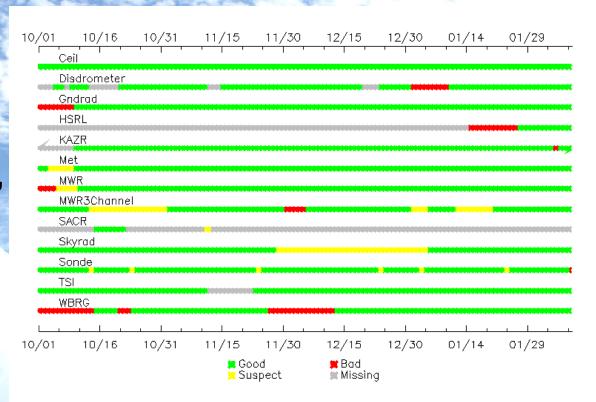
AMF2 Main Site

AMIE featured 8/day sondes for entire campaign, both Manus and Gan

Similar ARM instruments at both sites

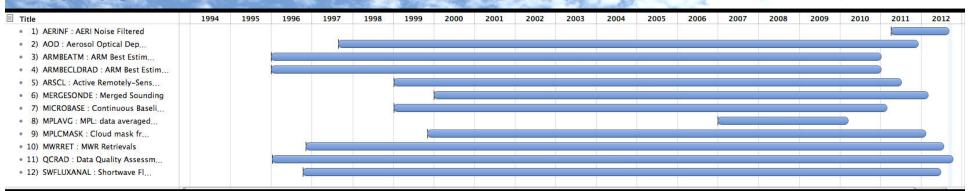# Measurements availability

- **Most of the base instruments at both sites performed well**
  - **KAZR, MPL, VCeil, MWR, Met, Rad, TSI, Precip**

- **Allows for many VAPs**
  - **ARSCL, Merged sonde, Microbase, MWRRet, AOD, etc.**
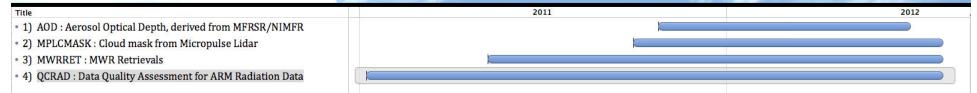
Gan Data Stream Status

ARM VAPs Availability to date

Manus

Title	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
1) AERINF : AERI Noise Filtered																			
2) AOD : Aerosol Optical Dep...																			
3) ARMBEATM : ARM Best Estim...																			
4) ARMBECLDRAD : ARM Best Estim...																			
5) ARSCL : Active Remotely–Sens...																			
6) MERGESONDE : Merged Sounding																			
7) MICROBASE : Continuous Baseli...																			
8) MPLAVG : MPL: data averaged...																			
9) MPLCMASK : Cloud mask fr...																			
10) MWRRET : MWR Retrievals																			
11) QCRAD : Data Quality Assessm...																			
12) SWFLUXANAL : Shortwave Fl...																			

Gan

Title	2011	2012
1) AOD : Aerosol Optical Depth, derived from MFRSR/NIMFR		
2) MPLCMASK : Cloud mask from Micropulse Lidar		
3) MWRRET : MWR Retrievals		
4) QCRAD : Data Quality Assessment for ARM Radiation Data		

ARM PI Products and VAPs

- **VAPs**
  - Micro-ARSCL, Merged Sonde, MicroBase, QCRad, BE products,
  - Model forcing data sets (Xie) recently started
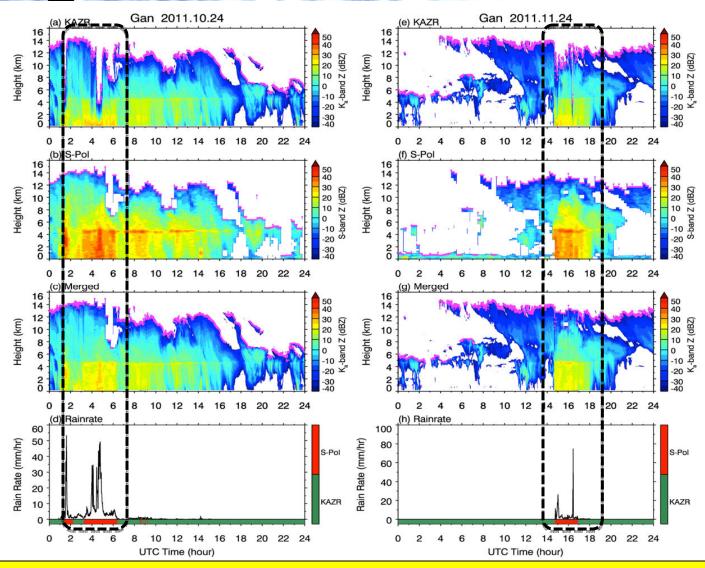- **PI Products**
  - Cloud retrievals and profiles, radiative heating rate profiles (McFarlane and Comstock) awaiting submission to Archive.
  - Radiative Flux Analysis (Long) by end of Nov.
  - Other...

Merged KAZR/S-Pol Data

KAZR

S-Pol

Merged

- **Merged dataset provides improved reflectivity profiles and cloud top heights in heavy rainfall** (Feng et al., 2013 JTECH)

PNNL Combined Cloud Retrieval

Merged Z

Cloud Water

Particle Size

Heating Rate