

Taiwan's South China Sea-Maritime Continent (SCS-MC) Field Campaign (2017-2019)

- **Lead scientists: Po-Hsiung Lin (NTU), Yu-Chieng Liou (NCU/TTFRI)**
- The Maritime Continent (MC) and South China Sea (SCS) acts as a water vapor pathway connecting the Indian and East Asian–Western North Pacific monsoon during boreal summer, and connecting the powerful EA winter monsoon with the Australian summer monsoon.
- This proposed SCS-MC campaign focus on four major themes:
 - **Boreal winter monsoon: mid latitude-tropical interactions**
 - **Boreal summer monsoon and climate variability (QBWO, BSISO, MJO)**
 - **Convection Interactions in the SCS-MC area**
 - **Air-Land interaction, land use, and convection over the MC**
- Current Participating Institutes: National Taiwan University(NTU), National Central University(NCU), Academia Sinica, Chinese Culture University(CCU), Taiwan Typhoon and Flood Research Institute(TTFRI), Central Weather Bureau(CWB), Taiwan Ocean Research Institute(TORI)...

Proposed SCS-MC Field Campaign: Time and Location

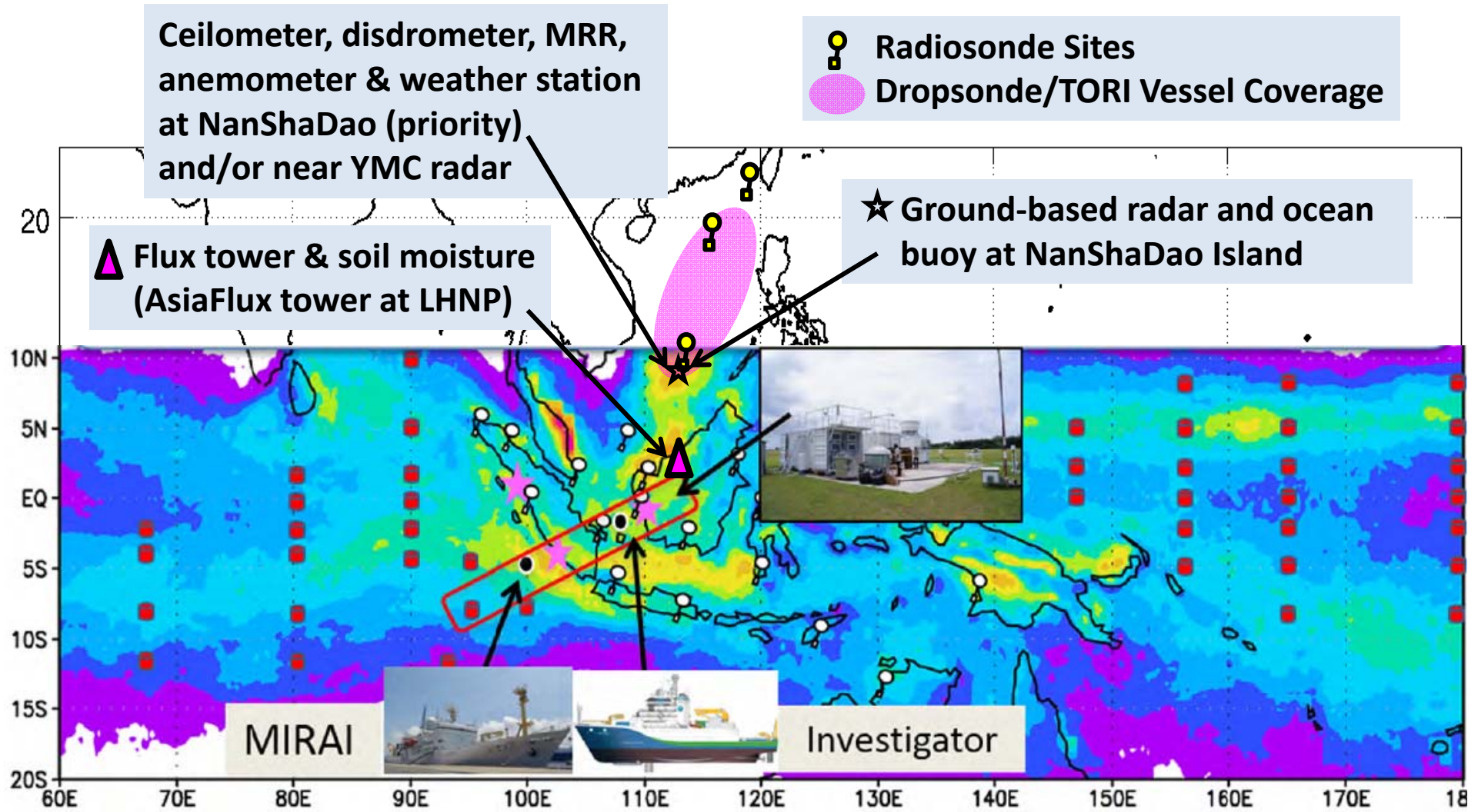
- **Pilot campaign: summer 2016**
 - 1-yr pilot proposal currently under review
 - Mainly in South Taiwan and nearby islands
- **SCS-MC field campaign: May 2017-Jul 2019**
 - 3-yr full proposal to be submitted Dec 2015
 - **Winter IOP: Jan-Feb, 2018**
 - **Meiyu IOP: May-Jun, 2018**
 - **Supersite: NanShaDao Island (南沙島 WMO stn #59997)**
(backup: DongShaDao Island 東沙島)

Proposed SCS-MC Field Campaign: Facility Overview

- Various deployment plan depending on budget funded

Facility Option	Plan A (Basic)	Plan B (Deluxe)	Plan C (SuperDeluxe)
<p>Balloon radiosonde and ground-based continuous instruments at NanShaDao, DongShaDao, and/or YMC supersite</p> <p>Buoy near NanShaDao and TORI ocean vessel around SCS</p>	✓	✓	✓
Aircraft Dropsonde/mini-AXBT covering Taiwan-SCS area during the IOPs		(✓) or	✓
Ground-based Radar at NanShaDao during the IOPs		(✓)	✓

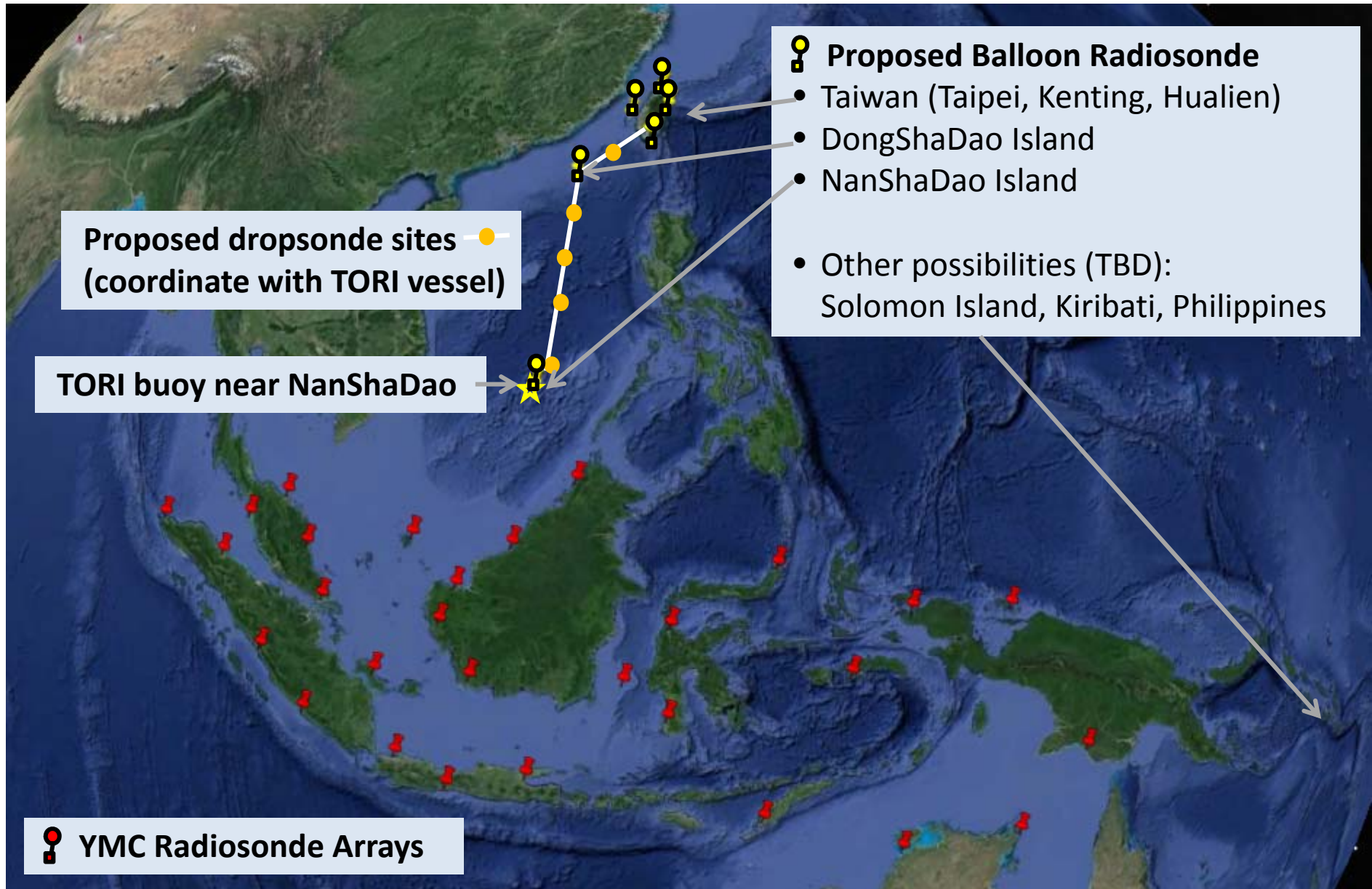
Location of Proposed SCS-MC Field Measurements



Planned YMC Sounding Observations & Buoy Arrays

- ★ Radar
- ♀ Radiosonde
- RAMA, TAO/TRITON

Radiosonde and Dropsonde Sites During the IOPs of the SCS-MC Campaign



Ground-Based Radar During the IOPs of the SCS-MC Campaign

TEAM-R (Taiwan Experimental Atmospheric Mobile-Radar)



- X-band dual-polarimetric Doppler radar installed on a moving platform
- Now managed by National Central University
- Variables available: Doppler velocity, spectral width, dual-polarimetric variables

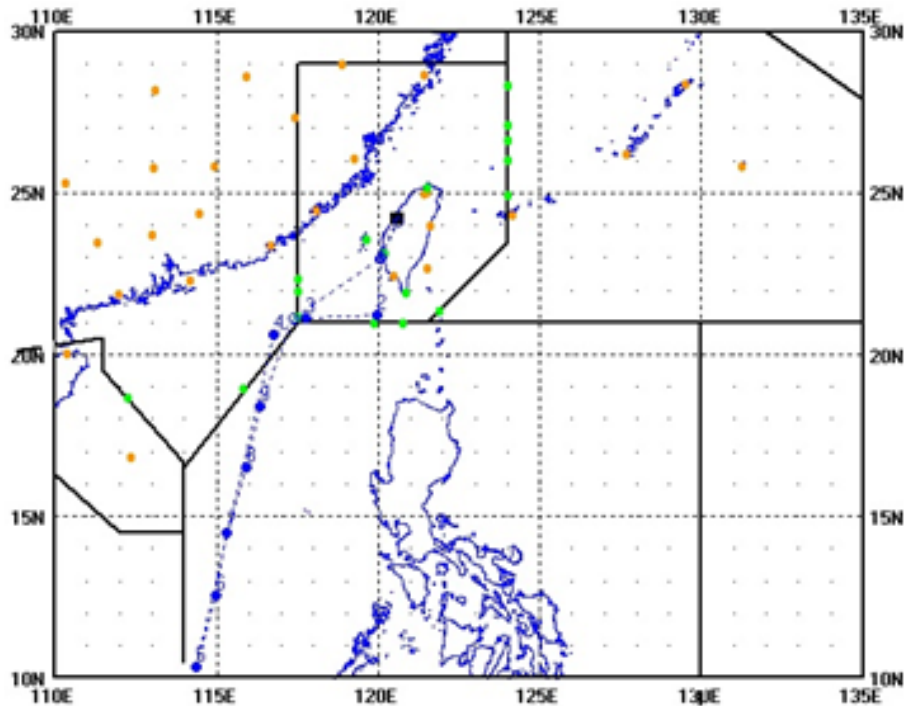
TTFRI C-band Radar



- C-band dual-polarimetric Doppler radar installed at South Taiwan (can be converted into mobile)
- Now managed by Taiwan Typhoon and Flood Research Institute
- Variables available : Doppler velocity, spectral width, dual-polarimetric variables

Aircraft Dropsonde During the IOPs of the SCS-MC Campaign

AIDC ASTRA jet drops dropsonde
cruise height ~ 41000FT



- Vaisala RD94 dropsonde
- TORI/NTU mini-AXBT



Proposed flight route from Taichung, Taiwan, through DongShaDao to NanShaDao. Filled points are the dropsondes' location

Facility List of the SCS-MC Campaign (I): Ground-based, continuous operation May 2017-Jul 2019

Instrument	Proposed Location	Requirement	Contact
Cloud Microphysics			
Ceilometer	NanShaDao and YMC super site?	110V power	NTU
Disdrometer (Parsivel) 2~3 (other) 10	NanShaDao and YMC super site?	110V power	NTU & CCU TTFRI, NCU & CCU
Micro Rain Radar 2	NanShaDao and YMC super site?	110V power	NTU & CCU
Surface and BL Meteorology			
3D sonic anemometer	NanShaDao and YMC super site?	110V power	NTU & CCU
Surface weather station 10	NanShaDao and YMC super site?	110V power	NTU, NCU & CCU
Wind profiler 1 (after 2015) 2	(1) DongShaDao (2) NanShaDao or YMC super site?	110V power	CWB TTFRI & NCU
Flux and Soil Moisture			
Water vapor/CO₂ flux	(1) LHNP (AsiaFlux tower) (2) Nansha or YMC super site?	canopy tower, power	NTU TTFRI
Soil moisture	LHNP or YMC super site (?)	110V power	NTU

Facility List of the SCS-MC Campaign (II): Sounding and Ground-based Radar, operate during the IOPs

Instrument	Proposed Location	Requirement	Contact
Sounding			
Balloon Radiosonde	(1) Taiwan, (2) DongShaDao (3) NanShaDao (TBD: Solomon Is., Kribati, Philippines)	---	NTU, CWB, NCU, TTFRI, PCCU
Dropsonde/mini AXBT with AIDC/ASTRA aircraft	Taiwan-South China Sea	---	NTU, TTFRI, TORI,CWB, NCU
Ground-based Radar			
TTFRI C-band radar	NanShaDao or DongShaDao	concrete base, power, dorm	TTFRI
TEAM-R X-band radar	NanShaDao or DongShaDao	concrete base, power, dorm	NTU & NCU

Winter IOP: Jan-Feb, 2018

Meiyu IOP: May-Jun, 2018

Location of Proposed SCS-MC Field Measurements

