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Videosonde Observation

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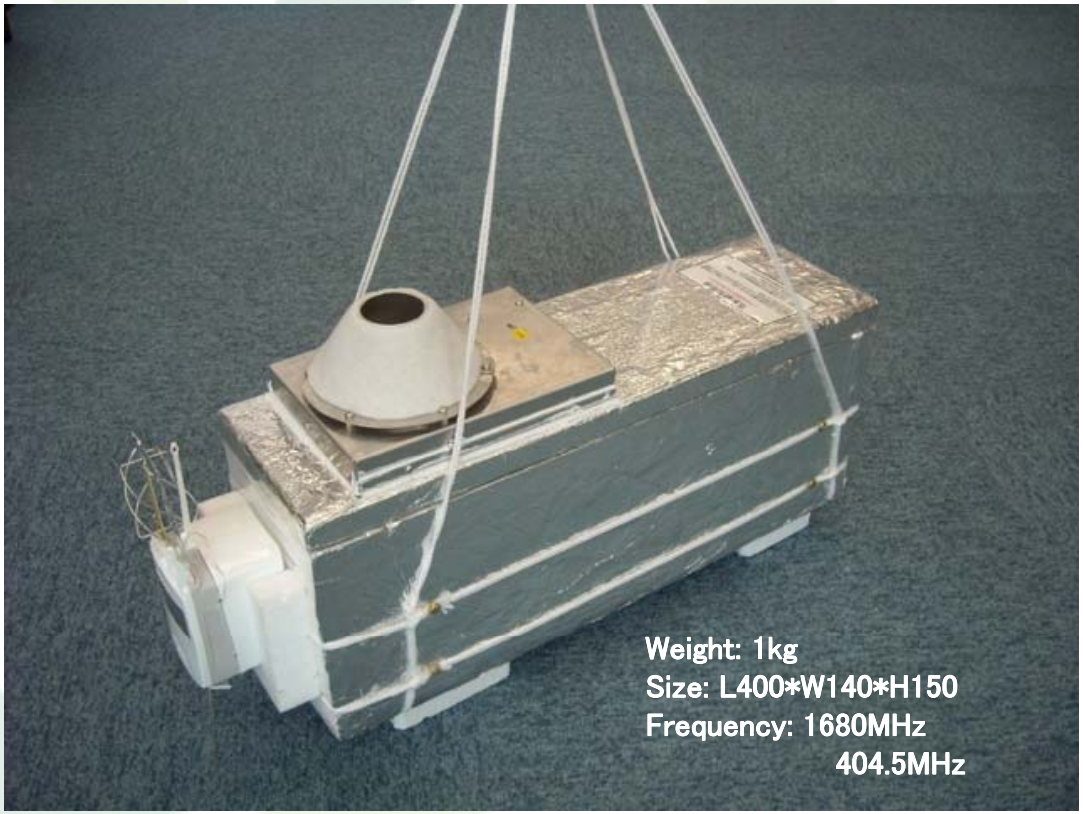
Motivations

- Microphysical structures of precipitating clouds associated with the MJO convection
- Cloud microphysics over the open ocean
- Follow-on to the MISMO project, MR04-08 cruise

Videosonde

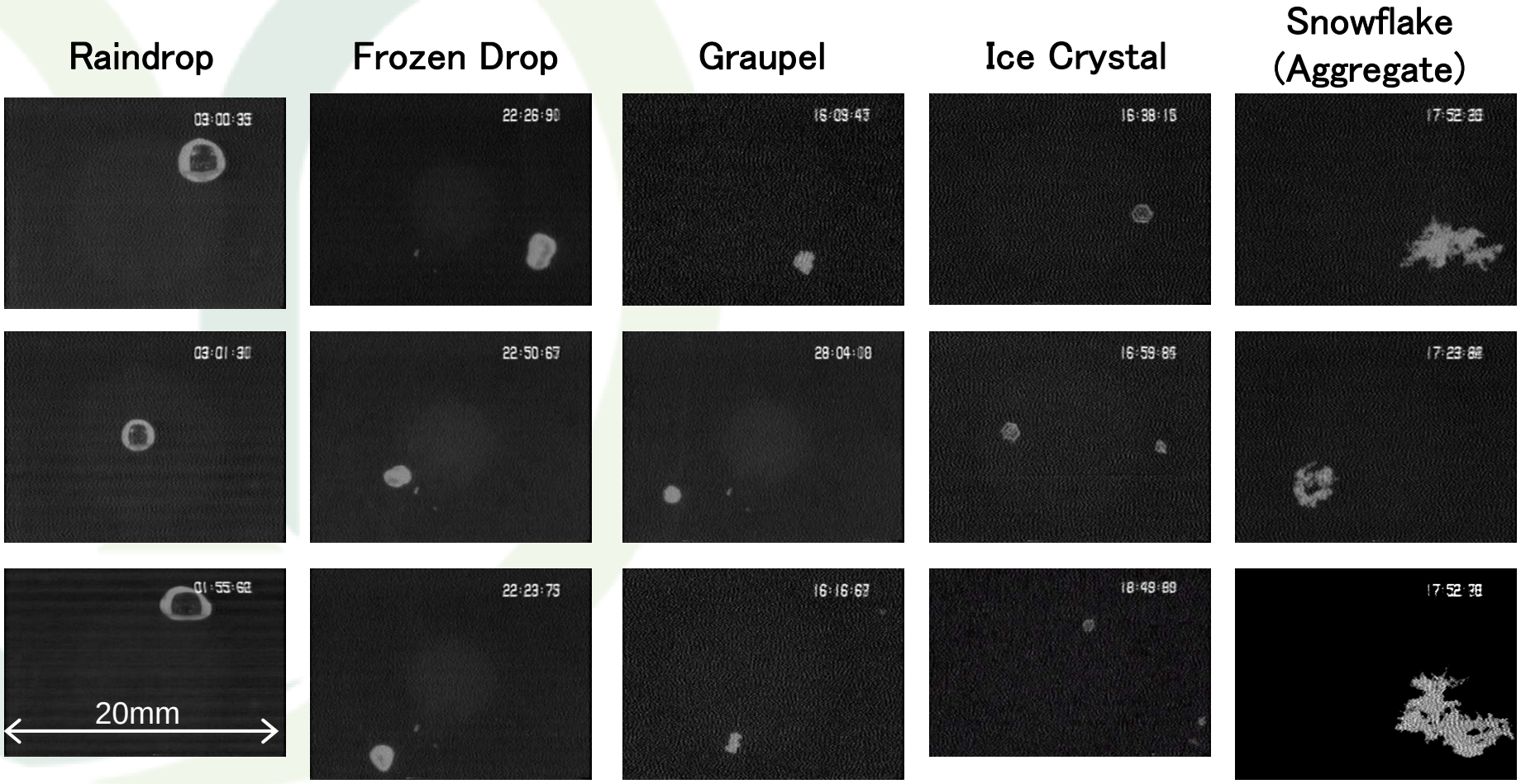
a balloon-borne radiosonde that acquires images of precipitation particles via a CCD camera, developed by Takahashi (1990)



Launching into the precipitating clouds with 1.2kg balloon filled with He gas

The system has a stroboscopic illumination that provides information on particle size and shape. Interruption of the infrared beam by particles triggers a flash lamp and particle images are then captured by the CCD camera.

Precipitation Particle Images



Recorded precipitation particles were classified as either raindrops, frozen drops, graupel, ice crystals, or snowflakes on the basis of transparency and shape.

Data obtained from Videosonde Observation

- Particle Images
  (Raindrop, Frozen Drop, Graupel, Ice Crystal, Snowflake)
- Diameter[mm] (long/short axis, mass etc)
- Time [1/100sec], Altitude*, Temperature*、Humidity*
- Electric Charge[pC](not installed)
- Number Concentration[/m^3]
- Mass Density[mg/m^3]
- Space Charge[pC/liter] (not installed)

*from Radiosonde attached with Videosonde

- Data Format：DVD video, JPEG image, Text Data

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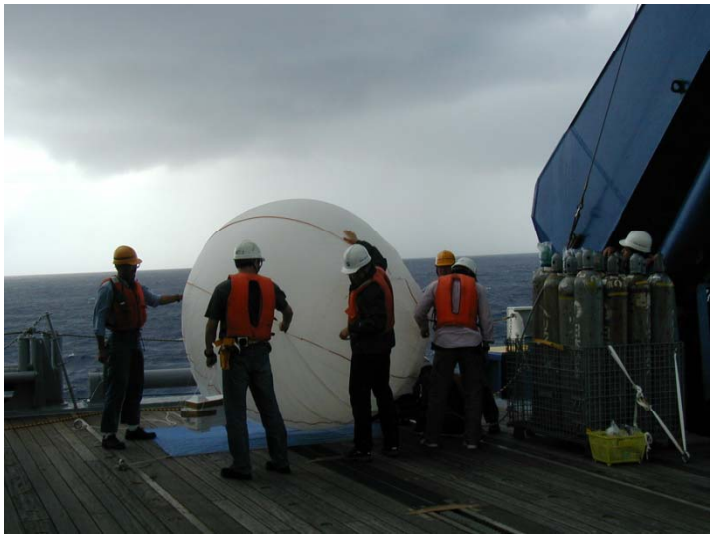
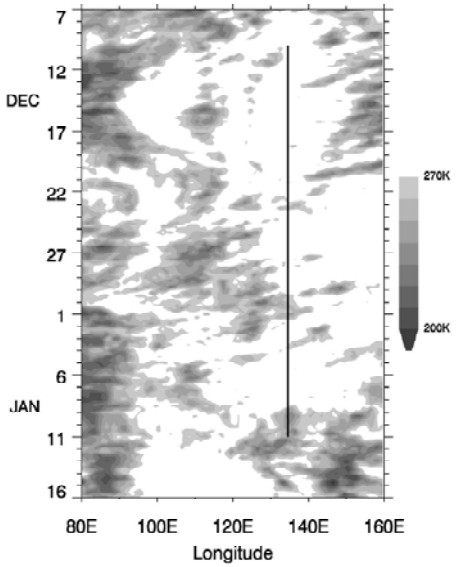
Videosonde Observation

during R/V Mirai MR04-08 Cruise



R/V Mirai MR04-08 Cruise



Sonde#	Date	Time (LST)	Remarks
4	Dec.28, 2004	1531	Developing cumulus Large raindrops, ice particles
2	Dec.30, 2004	2328	Developing cumulus with strong gust Raindrops, ice particles
6	Dec.31, 2004	1220	Mature cumulus, no gust Raindrops, many ice particles
1	Dec.31, 2004	1816	Dissipating stratiform cloud Aggregates near freezing level
5	Jan.9, 2005	0703	Thick stratiform cloud, Bright band Many ice particles above freezing level

Convective Cloud on Dec.31, 2004