



**GSMaP**  
GLOBAL SATELLITE MAPPING OF PRECIPITATION

# Notes for reprocessing in GSMaP version05/Algorithm version8

**Japan Aerospace Exploration Agency (JAXA)  
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# Notes for reprocessing in GSMaP version05/Algorithm version8



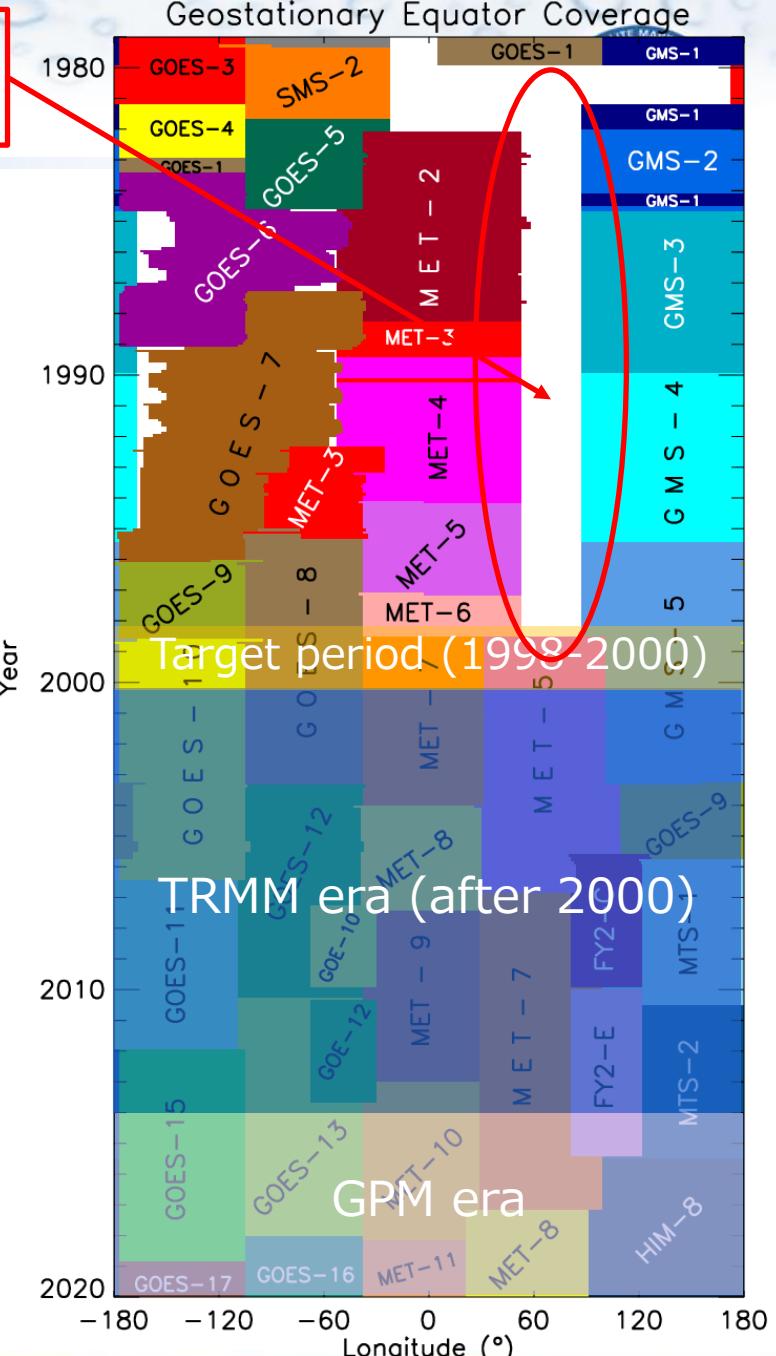
- GSMAp had a major update in Dec. 2021 (version05/Algorithm version8), and re-processing of the GSMAp products was completed in July 2023.
- Past GSMAp products did not cover the first 2 years of TRMM era (1998-Mar. 2000) due to lack of CPC-4km Global IR dataset (Janowiak et al. 2001).
- In the new version of the GSMAp, GridSat-B1 data (Knapp et al. 2011) were used to fill the lack of period as follows (Kubota et al. 2023).
  - GridSat-B1 during a period from Jan. 1998 to Jan. 2000
  - GridSat-B1 & CPC-4km during Feb. 2000
  - CPC-4km after Mar. 2000
- GSMAp data using the GridSat-B1 (1998-2000) have not been fully evaluated yet, and users need to be cautious about them.

- Janowiak J. E., R. J. Joyce, and Y. Yarosh, 2001: A Real-Time Global Half-hourly Pixel-Resolution Infrared Dataset and Its Applications. (*Bull. Amer. Meteor. Soc.*, vol. 82, No.3., 205-217.)
- Knapp, K. R., S. Ansari, C. L. Bain, M. A. Bourassa, M. J. Dickinson, C. Funk, C. N. Helms, C. C. Hennon, C. D. Holmes, G. J. Huffman, J. P. Kossin, H.-T. Lee, A. Loew, and G. Magnusdottir, 2011: Globally gridded satellite (GridSat) observations for climate studies. *Bulletin of the American Meteorological Society*, 92, 893-907. [doi:10.1175/2011BAMS3039.1](https://doi.org/10.1175/2011BAMS3039.1)
- Kubota, T., M. K. Yamamoto, and M. Yamaji, 2023: Reprocessing of Global Satellite Mapping of Precipitation (GSMAp) Product, AOGS2023, AS02-A019, Singapore.

# Data Specifications

No Indian Ocean Data Coverage  
(~Jul. 1998)

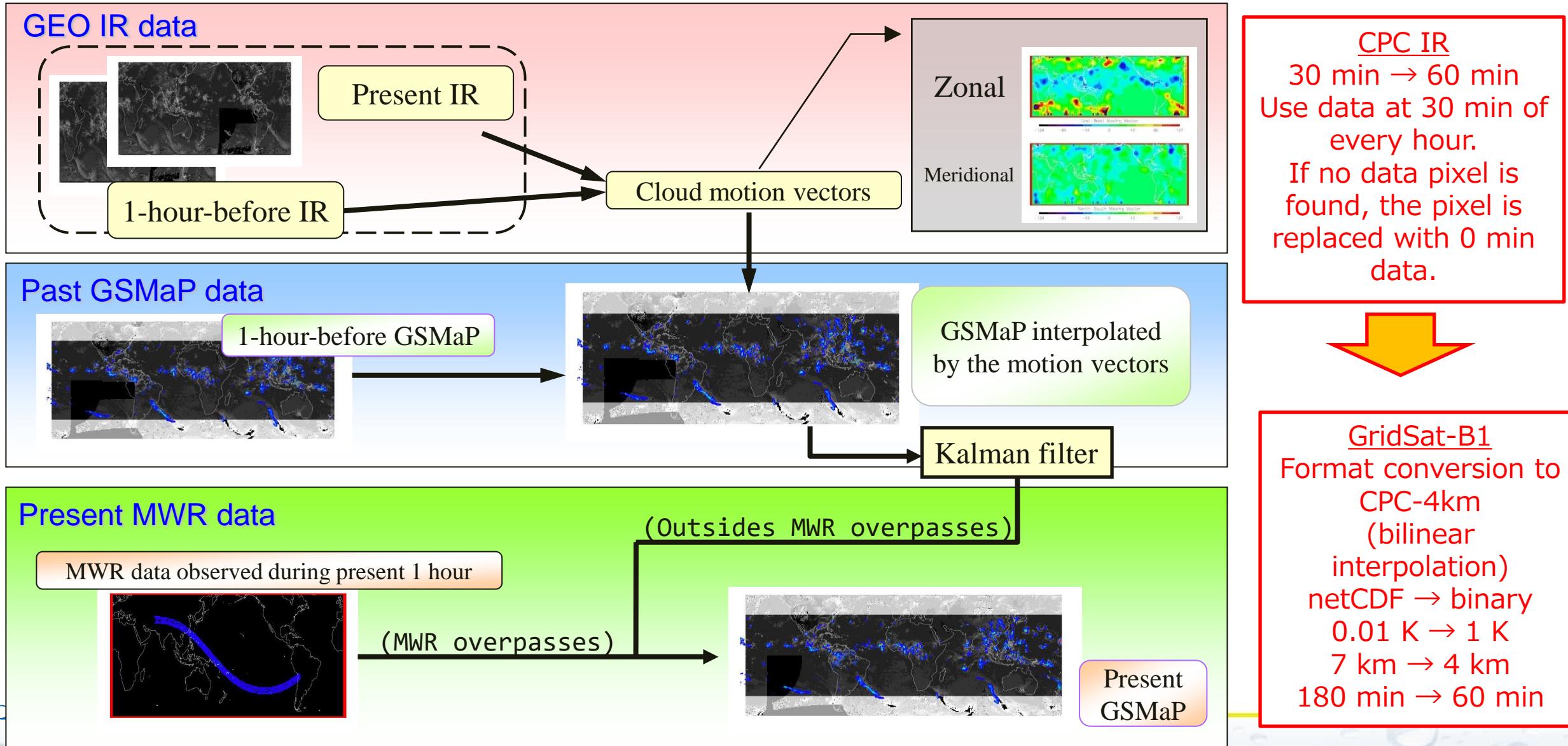
	CPC-4km	GridSat
Spatial Resolution	0.036 deg (~4 km)	0.07 deg (~8km)
Temporal Resolution	30 min	180 min
Channels	IR (11 $\mu\text{m}$ )	IR (11 $\mu\text{m}$ ) WV (6.7 $\mu\text{m}$ ) VIS (0.6 $\mu\text{m}$ )
Period of record	Early-Feb. 2000-present	Jan. 1981-present
Coverage	60N to 60S	70N to 70S
Scale	1 K	0.01 K
Intersatellite normalization	Yes	Yes (ISCCP & HIRS calibration)
Temporal normalization	No	Yes
Format	Unformatted binary	netCDF
Reference	Janowiak et al. (2001, BAMS)	Knapp et al. (2011, BAMS)



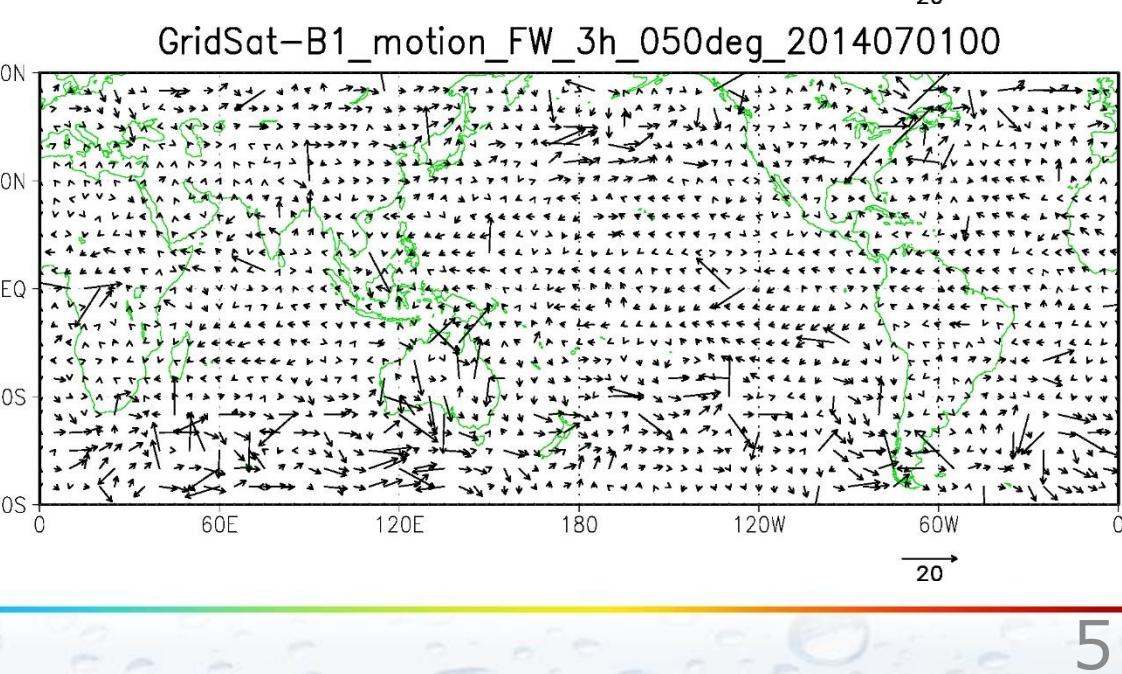
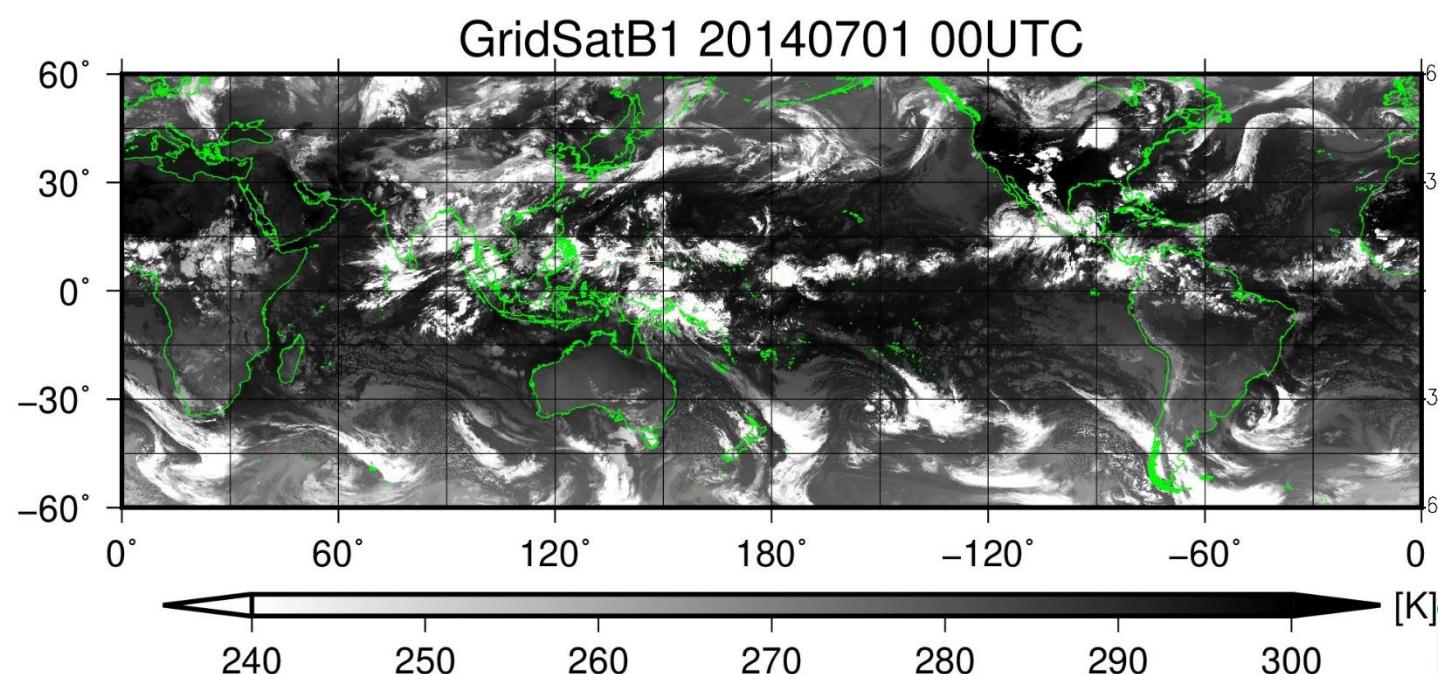
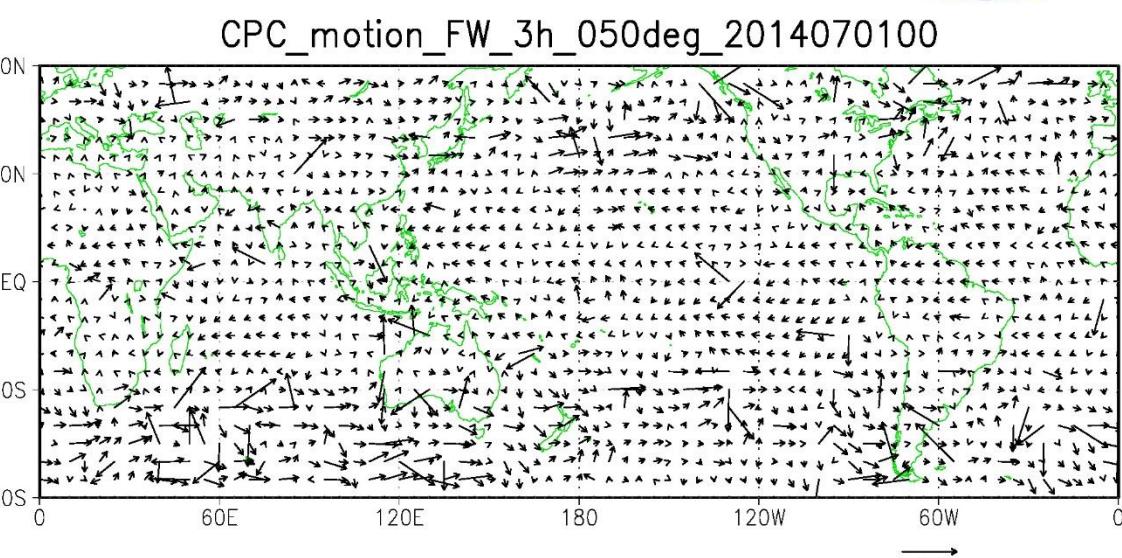
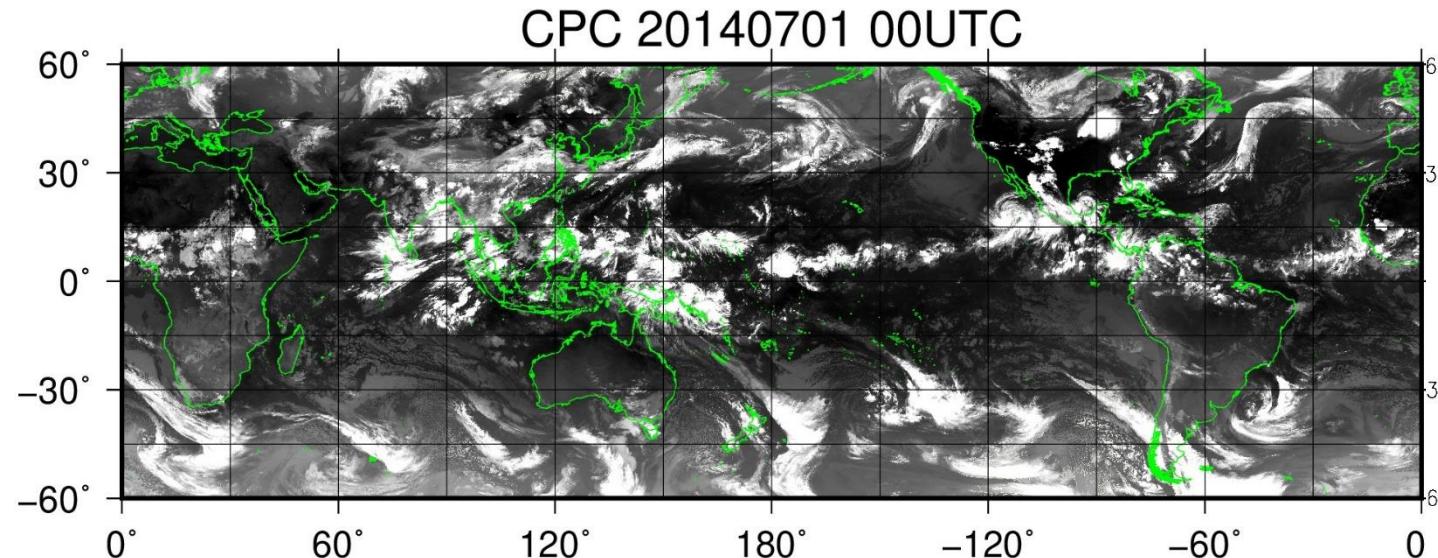


# Flowchart of Blended MWR-IR algorithm (GSMaP\_MVK algorithm)

*Ushio et al. (2009)*



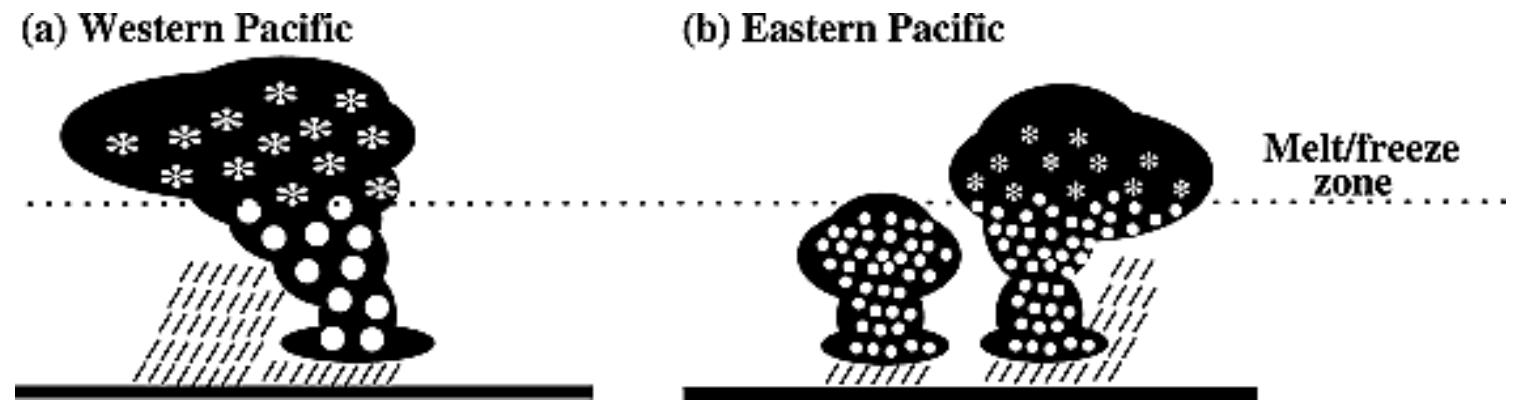
# CPC 4km and GridSat-B1 (IR Image & motion vector)



# Discussion

- There are so many papers related to large discrepancies between TRMM Precipitation Radar (PR) and TRMM Microwave Imager (TMI) (e.g., Berg et al., 2002, 2006, Robertson et al. 2003, Shige et al. 2008) during the 1997/1998 El Niño event.

Fig. 7 of Shige et al. 2008



Shige, S., Watanabe, T., Sasaki, H., Kubota, T., Kida, S., and Okamoto, K. (2008), Validation of western and eastern Pacific rainfall estimates from the TRMM PR using a radiative transfer model, *J. Geophys. Res.*, 113, D15116, doi:[10.1029/2007JD009002](https://doi.org/10.1029/2007JD009002).

- This may be also connected with a year of 1998 by the GSMP.