

Tokyo Node Report

Masaki Satoh

23UTC (8JST), May 15 (Thu) 2025

Pan Node Sync

Tokyo science theme groups

- Team Joint
 - Climatology
 - Intraseasonal variabilities & equatorial waves, or convective organization
 - Extreme precipitation or winds
 - Mid-latitude disturbances
 - Variability in mountainous regions and complex terrain
 - Upscale phenomena: impacts of small-scale features (e.g., convection) on waves and the large-scale circulation (jets, monsoons, ITCZ, blocking, etc.)
- Team TC
 - Tropical cyclones
- Team Land
 - Land-atmosphere interactions
- Team Data
 - Data handling, visualization

Kei Yoshimura

Professor, Institute of Industrial Science, U-Tokyo
Director, Global Hydrological Prediction Center
Deputy Director, UT Center for Climate Solutions
Also: Prof., GSRC, Civil Dept., Dept. of Nat. Environ., Atmos. Ocean Res. Inst., One-Health One-World, Data Commons

[Main Employment]

- 2000: B.Eng., 2002: M.Eng.
- 2001: Business Admin. in Durham U.
- 2002~: Japanese Sci. Tech.
- 2004~: Res. Assoc. In IIS.
- 2006: Thesis Ph.D.
- 2006~2010: SIO/UCSD
- 2010~2016: AORI (IIS)
- 2016~2017: IIS@Komaba
- 2017~: IIS@Kashiwa

[Main Research]

- Modeling and monitoring of water isotopic cycles
- Climatic and hydrological responses on land surface
- Prediction of hydrological extremes and early and efficient information dissemination for disaster prevention
- Relationship between historical events and climate change
- Estimation and prediction of extreme hydrological events



Chie Yokoyama (AORI, The University of Tokyo) Global Precipitation Measurement (GPM) and mesoscale convective systems

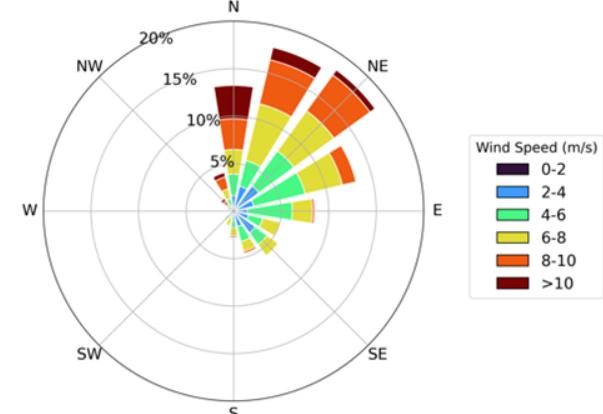


Kei Yoshimura (IIS, The University of Tokyo) Global km-scale terrestrial hydrological modeling

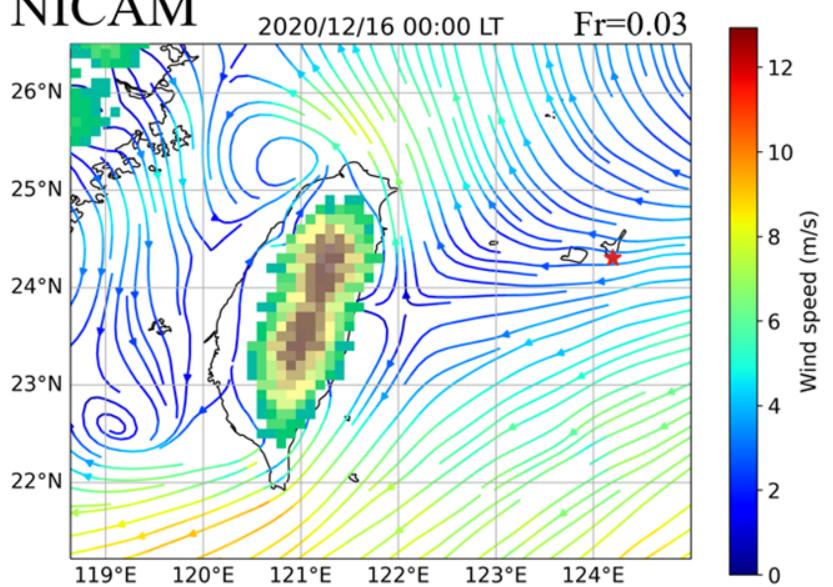


- 23% of weak easterly weather conditions were calculated based on wind data upstream of Taiwan (Ishigakijima, Japan)
- NICAM simulates a similar lee-vortex structure to the results from TaiwanVVM.

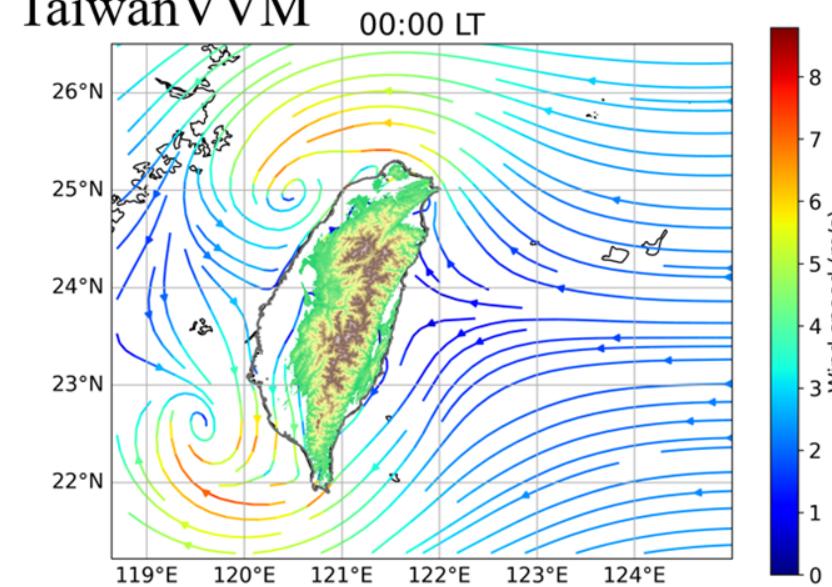
NICAM Wind Rose Diagram (DJF)



NICAM



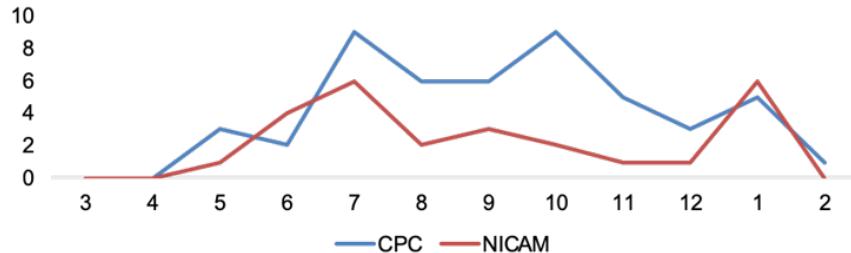
TaiwanVVM



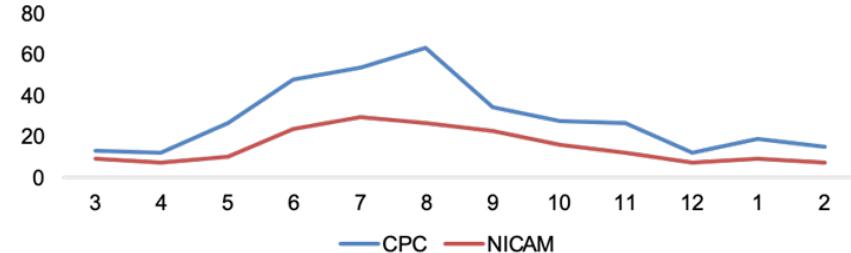
Extreme Precipitation Event Occurrence

Pin-Yu Chao

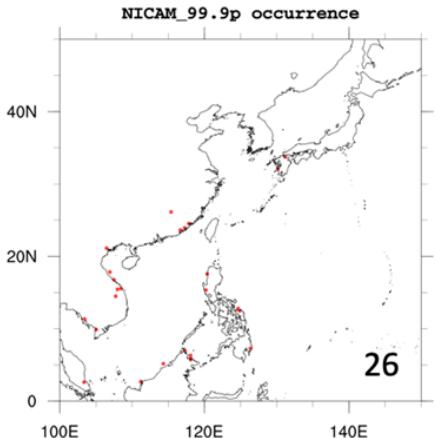
WNP extreme precipitation event occurrence (99.9p)



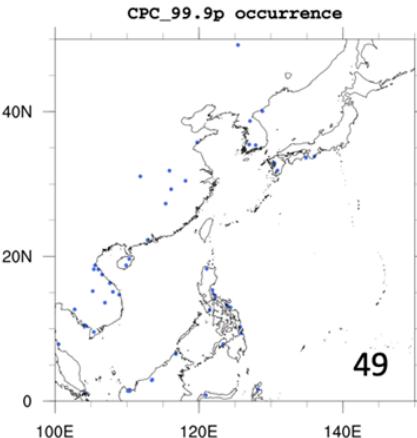
WNP extreme precipitation event occurrence (99p)



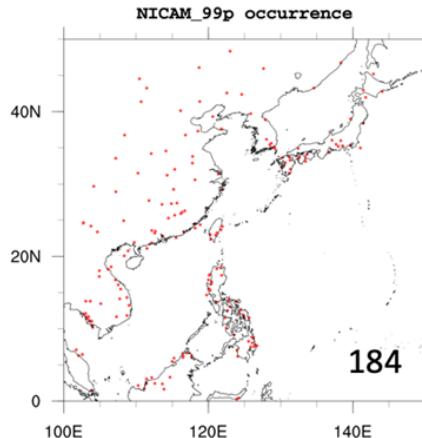
NICAM_99.9p occurrence



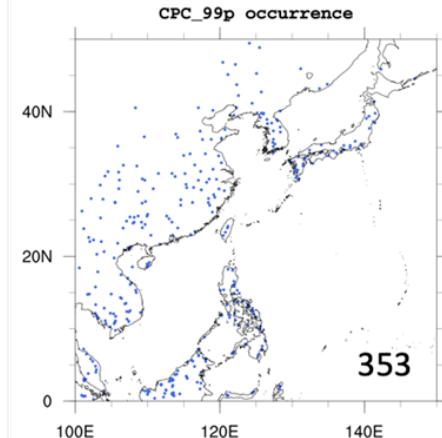
CPC_99.9p occurrence



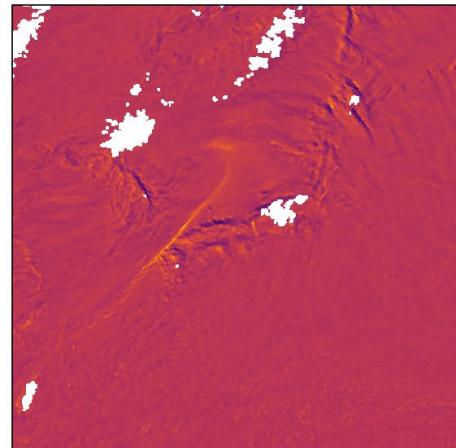
NICAM_99p occurrence



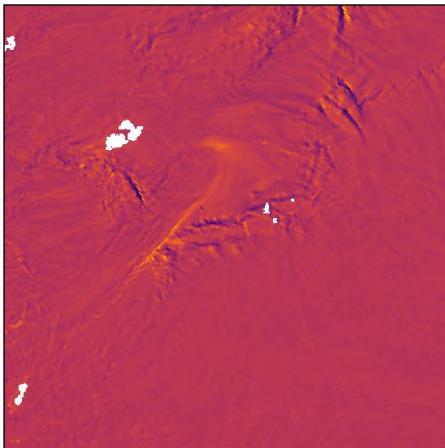
CPC_99p occurrence



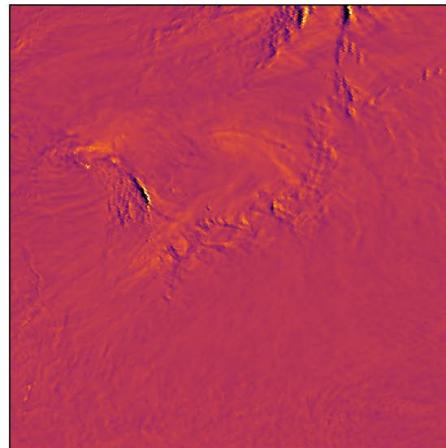
wa at 900 hPa — 2020-03-01T06:00:00



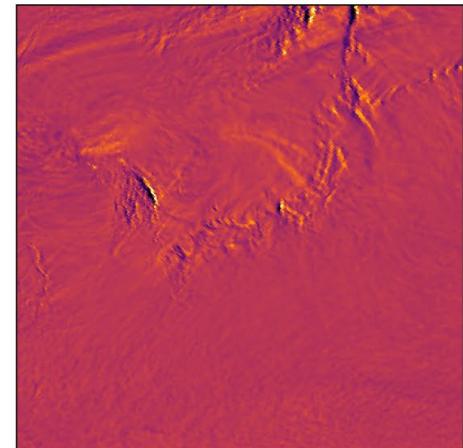
wa at 850 hPa — 2020-03-01T06:00:00



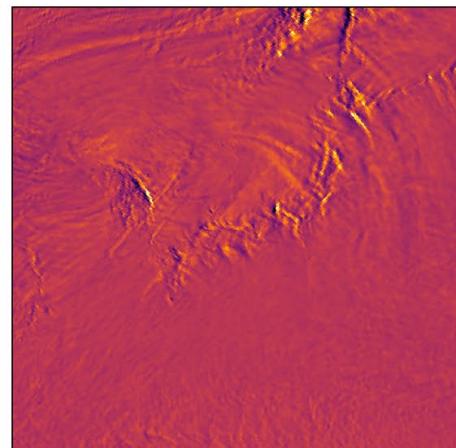
wa at 700 hPa — 2020-03-01T06:00:00



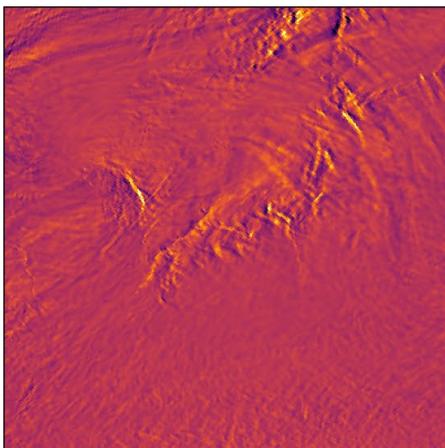
wa at 600 hPa — 2020-03-01T06:00:00



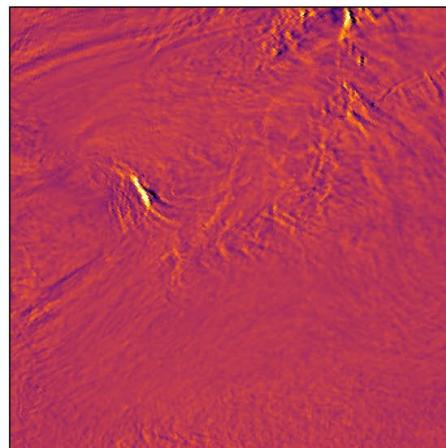
wa at 500 hPa — 2020-03-01T06:00:00



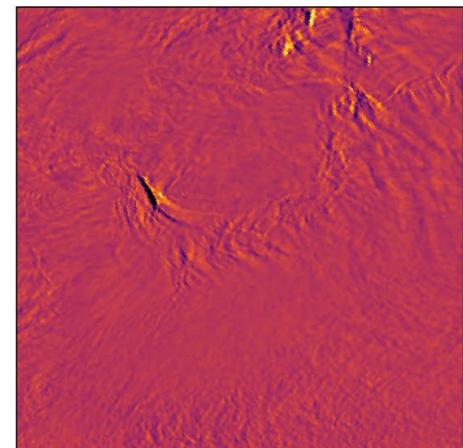
wa at 400 hPa — 2020-03-01T06:00:00



wa at 250 hPa — 2020-03-01T06:00:00

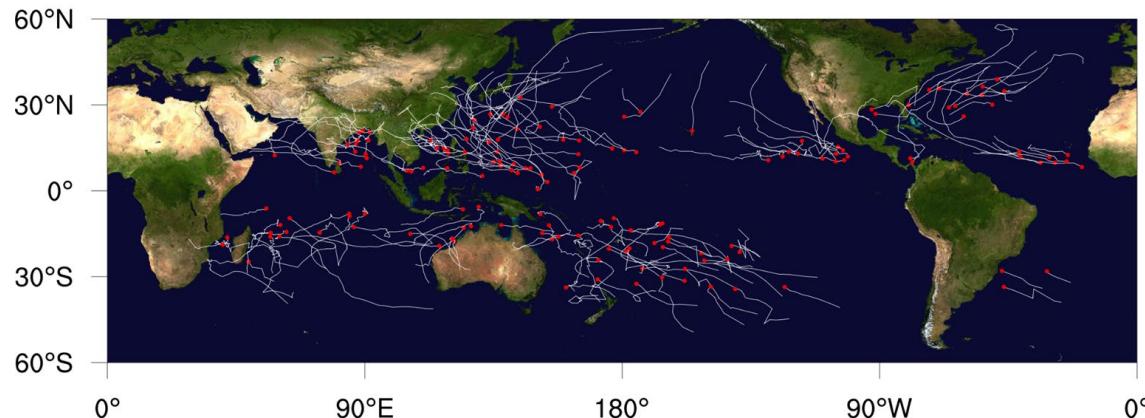


wa at 100 hPa — 2020-03-01T06:00:00



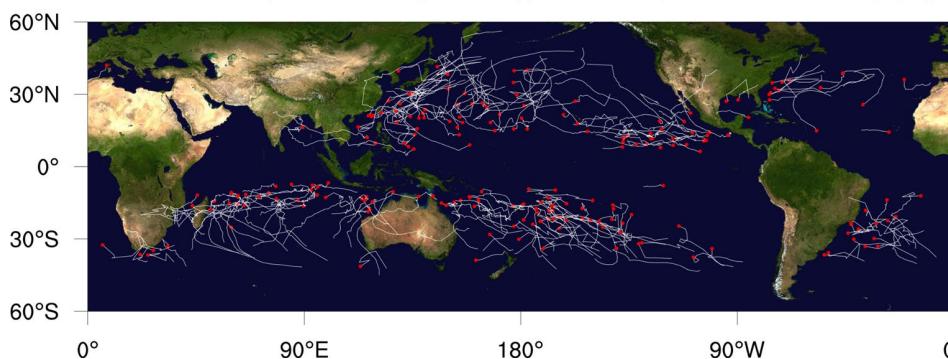
NICAM_gl11_TempExt GB Typhoon Tracking

2020-2021



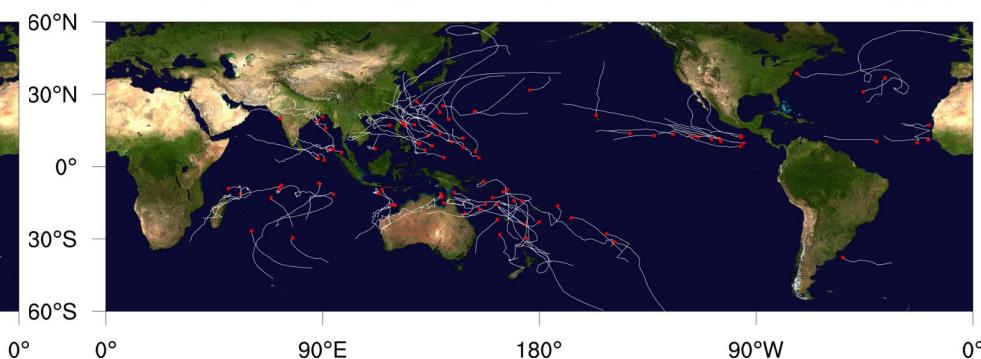
IFS_2.8-FESOM_5-production_TempExt GB Typhoon Tracking

2020-2021



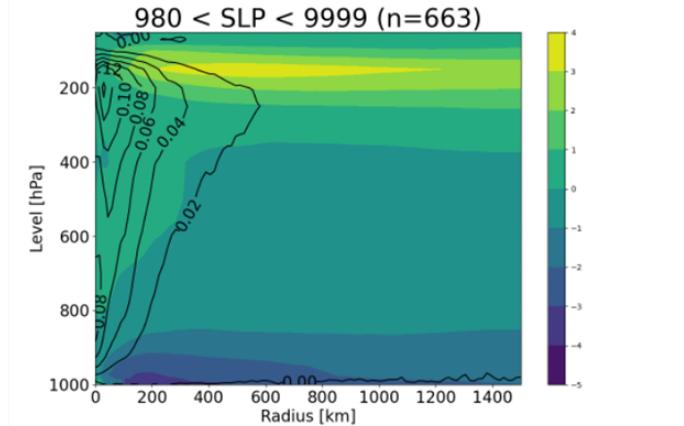
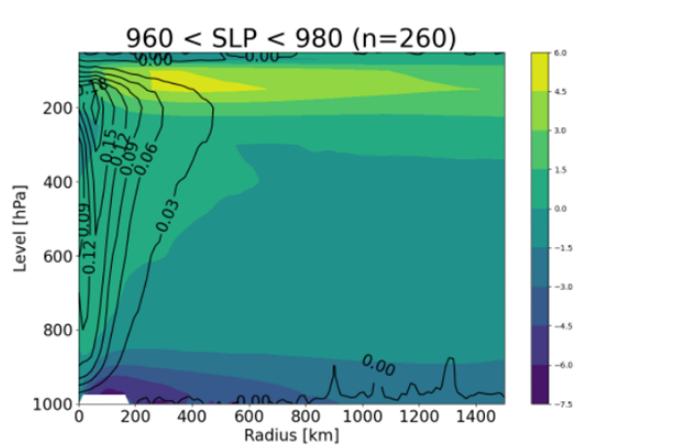
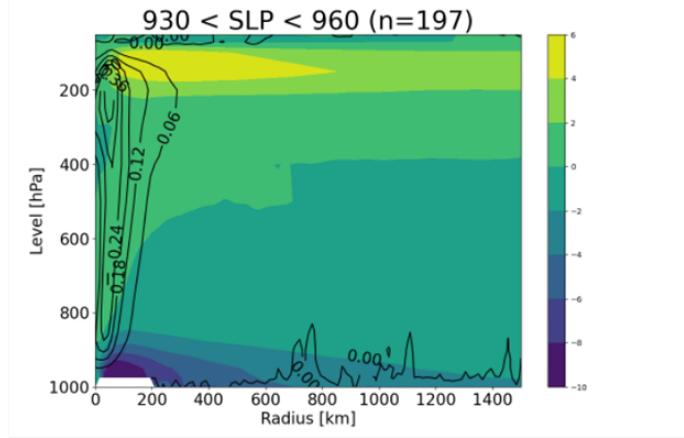
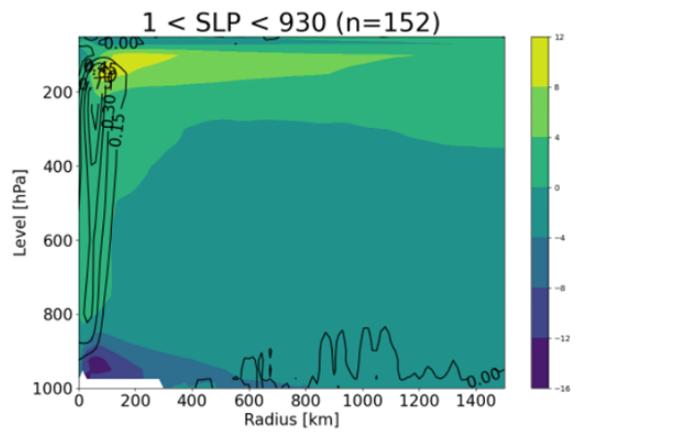
ICON_d3hp003_TempExt GB Typhoon Tracking

2020-2021



Corrected May 16

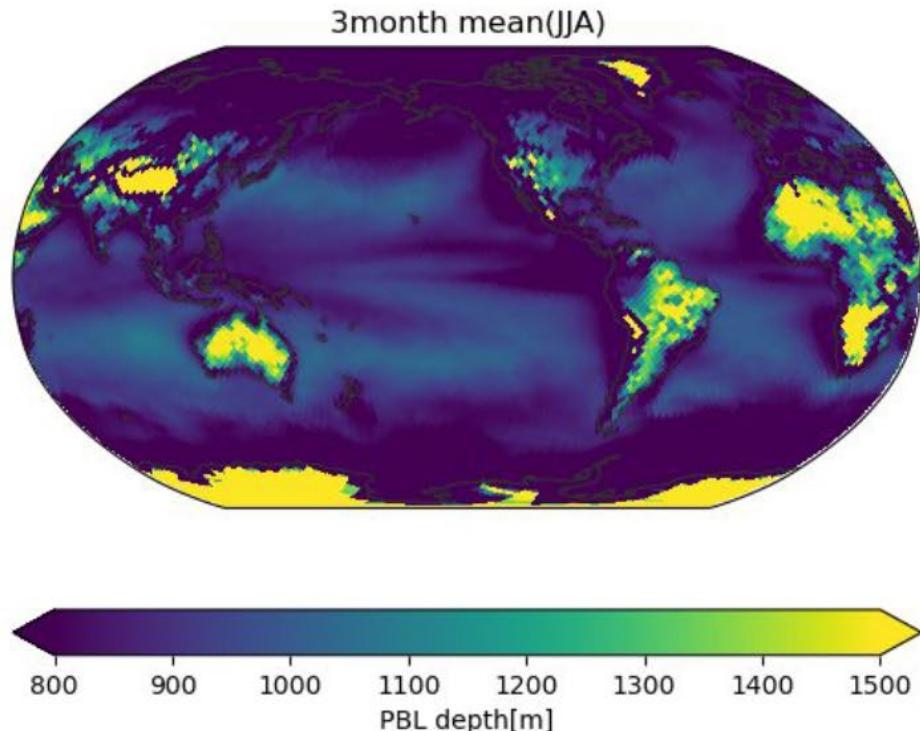
Radial wind & vertical velocity



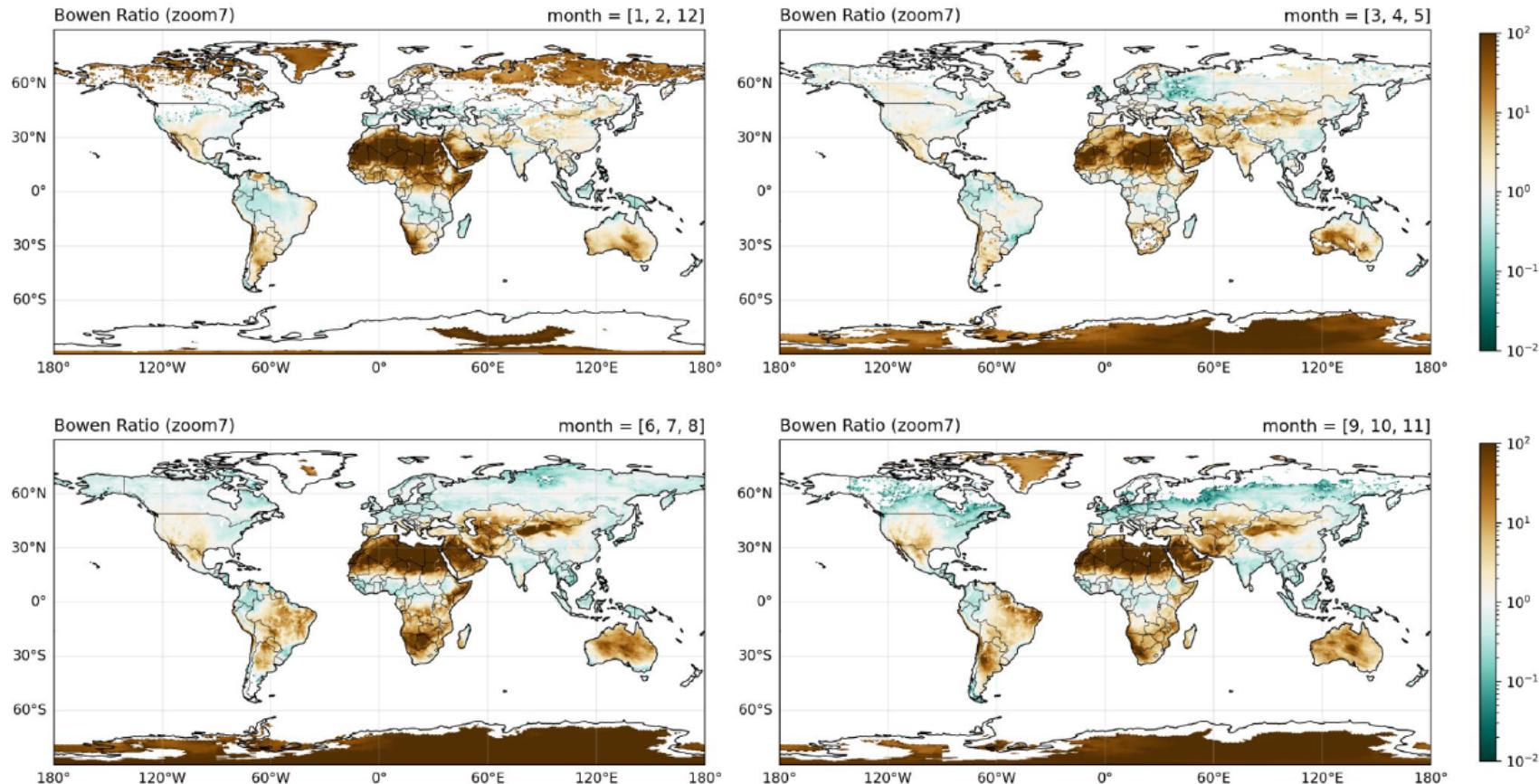
Preliminary Results - Diagnostic PBLH

Update of diagnosis of boundary layer depth

- Fixed yesterday's problem near high mountains.
- Reasonably reproduced the large depths in China, Africa and so on.
- Problem: Too large depth in Antarctica

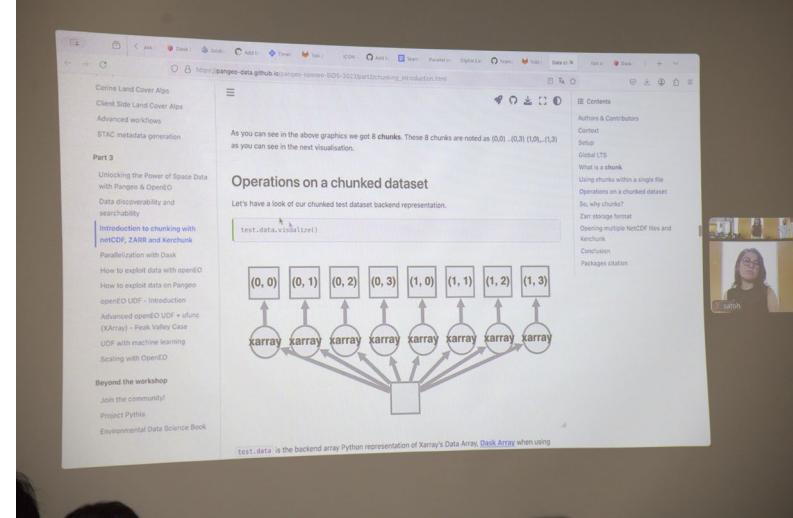


- Bowen Ratio seasonality in healpix, zoom = 7



Data handling team

Lecture on the concept of Chunking



Team coordination for Data interoperability (EOPF_DGGS) – Google Docs

https://docs.google.com/document/d/1JRF15a90_M6wDX_PfSt8Jkf9TzN8SCNUtBHd7mmyY-o/edit?tab=t.0#heading=h.ynwft4sm8muv

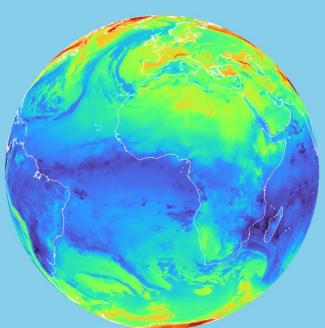
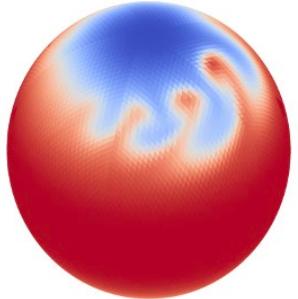
Team Data (Data handling and visualization)

Team coordination for Data interoperability (EOPF_DGGS)

🌐 EOPF_DGGS – Data Interoperability Team Coordination Doc (Hackathon 2025)

Team Leader: Tina Odaka, Tokyo Team Leader: Tomoki Miyakawa

- Playing with my new toy, pyNICAM, with help from Toby to brush up Zarr output (Tomoki).



Live Collaboration result with Yoshimura lab

Hacking issues

- Calculation of length of contour lines, for fractal dimension
- Some problems in Chunk? Overload of memories.
- Do not use .load() and .compute()
- Tobias Kölling & Tina Odaka on Understanding Chunks in HEALPix (219)
- About 9:40 JST , May 14, 2025, Tokyo Node
- 18:00-19:00 JST, May 14, 2025
- Kei Yoshimura (IIS, The University of Tokyo) Global km-scale terrestrial hydrological modeling (TBA)