

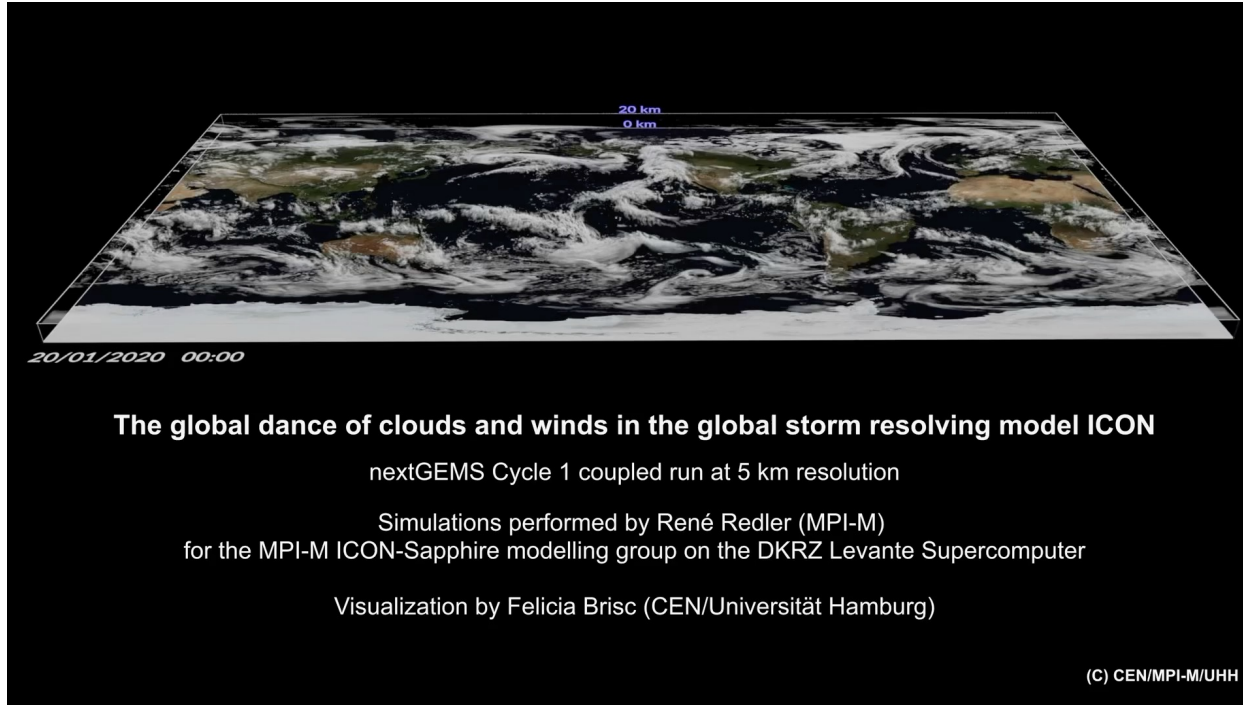
A rainfall of opportunities: The tropical rainbelt in global-coupled ICON at 5km

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vi CPCMW
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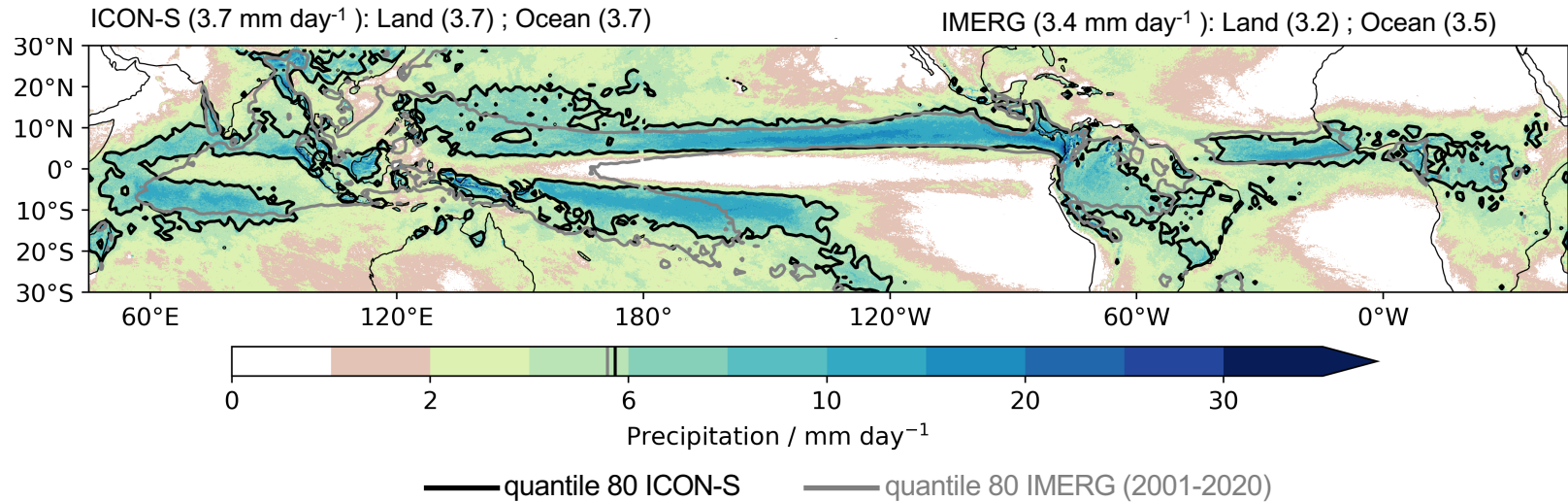
1. The global-coupled ICON-Sapphire (ICON-S)



By Felicia Brisc

- One year of simulation
(January 20, 2020 to February 28, 2021)
- More detail ICON-S:
(Hohenegger et al. 2022 in discussion:
<https://doi.org/10.5194/gmd-2022-171>)

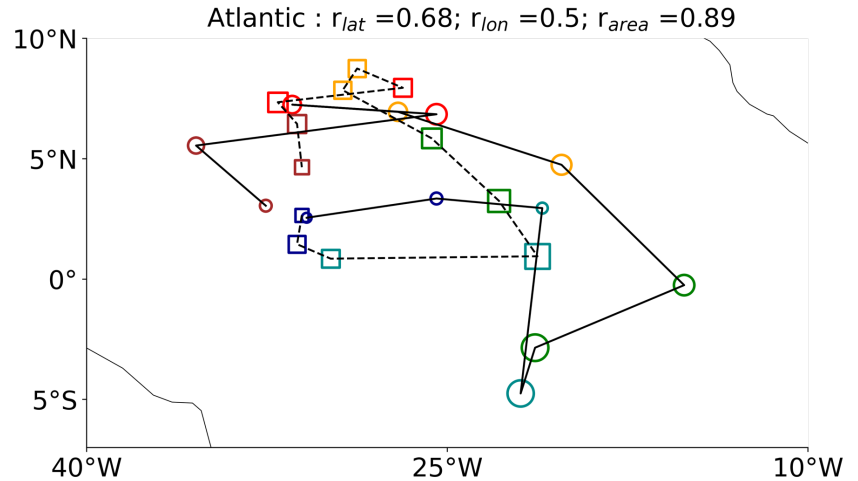
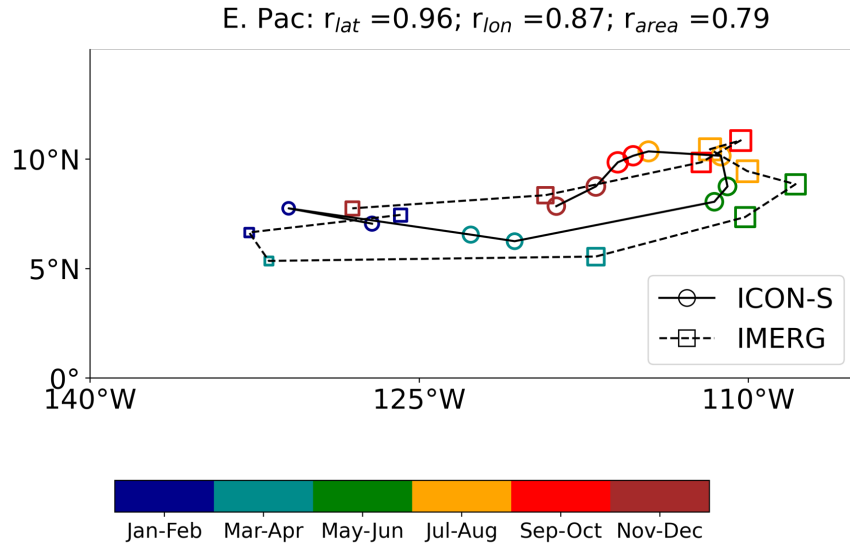
2. Tropical precipitation : Yearly structure



- ICON-S reproduces the large structure of precipitation but struggles in the Eastern Hemisphere.
- The ratio of precipitation land/ocean (~ 1) is captured by ICON-S, similar to (Hohenegger and Stevens 2022)
- Positive bias of precipitation and double band of precipitation in the Indo-Pacific region

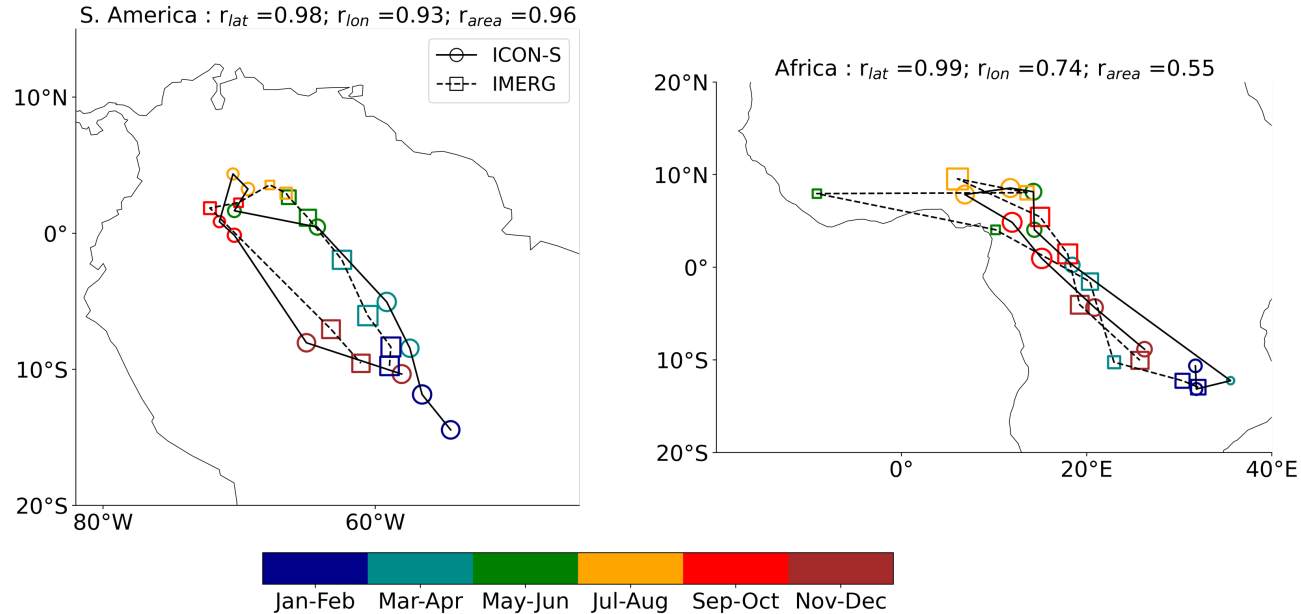


3. The rainbelt in the Western Hemisphere



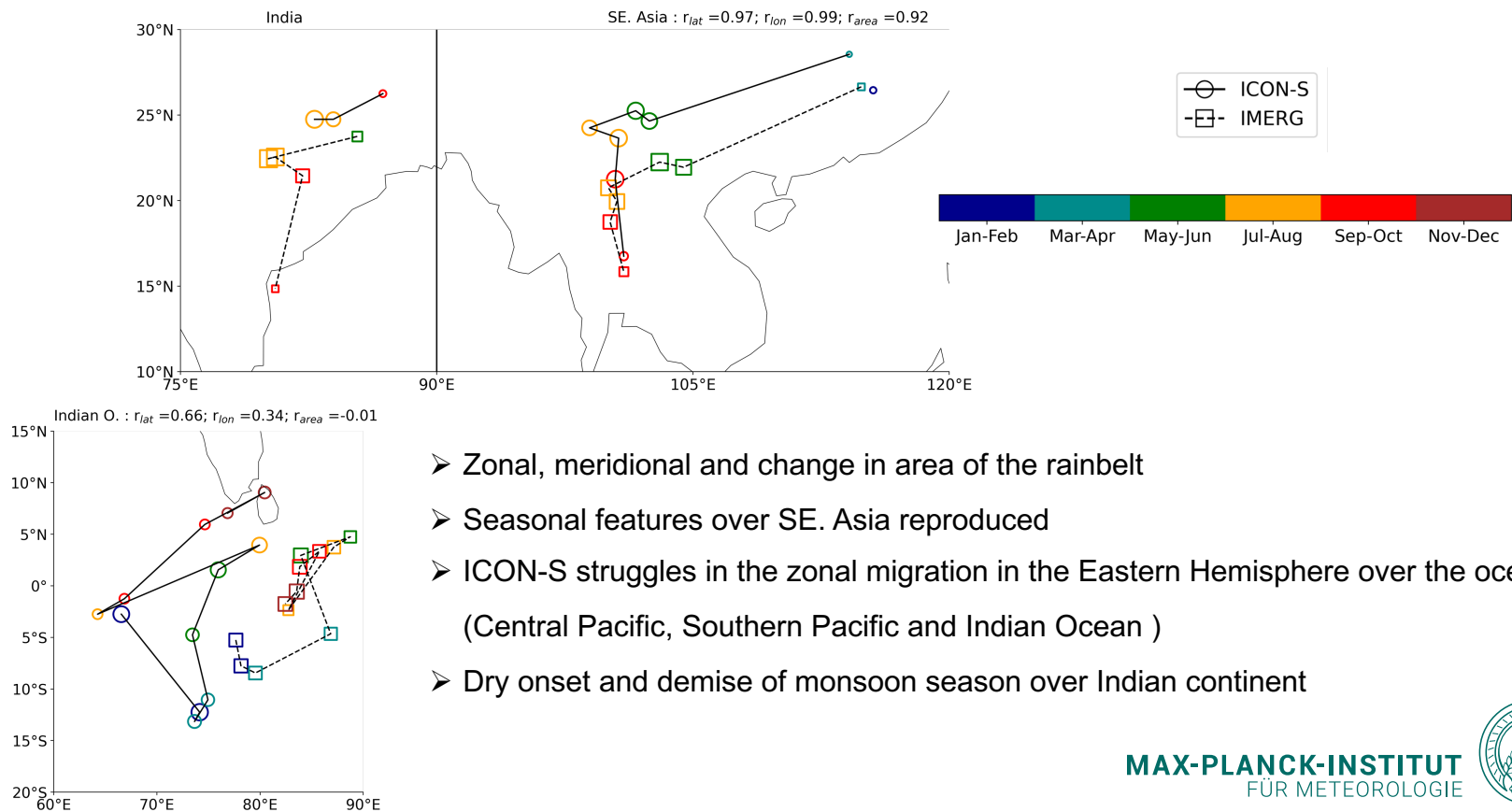
- Zonal and meridional migration and change in the structure of the rainbelt
- ICON-S captures the seasonal features of the rainbelt.

3. The rainbelt in the Western Hemisphere

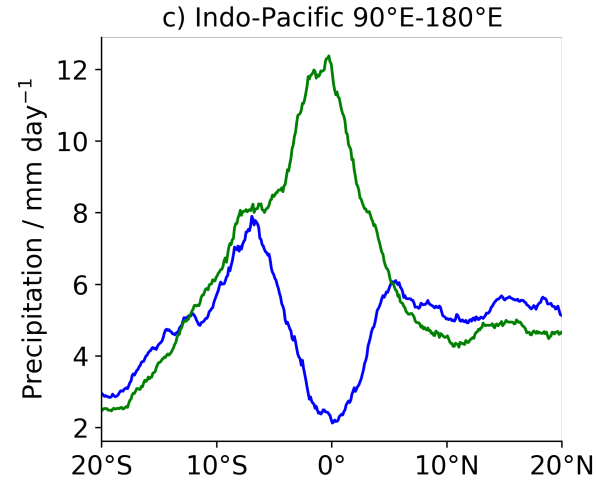
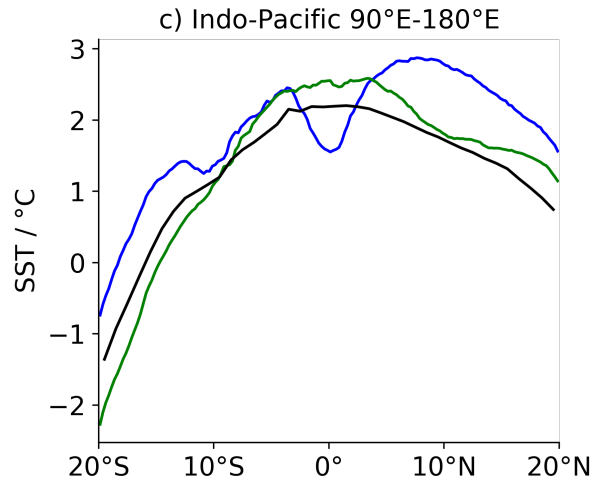


- Zonal and meridional migration and change of area (Monsoon development)
- ICON-S reproduces the seasonal features also over S. America and Africa.

4. The rainbelt in the Eastern Hemisphere



5. The rainbelt and SST



— ICON-S — ICON-S_noTau — HadISST

- Single band of precipitation over the Indo-Pacific with a warmer equatorial SST
- Indian continent also affected by the SST pattern (wetter onset and demise)



6. What did we (authors) learn?

- Zonal migration and change in the structure in the rainbelt according to seasons.
- Tropical belt better represented over the land than the ocean.
- Cold bias in the Indo-Pacific region may explain precipitation biases in the Eastern Hemisphere.

Opportunities:

- Understand the seasonal features over land (transitions, impact of deforestation)
- Oceanic rainbelt change of area and zonal location, why?
- Still challenges to work on (biases), and more to learn

Thanks!!

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Next-Gems

<http://nextgems-h2020.eu>



next
GEMS

The dance of clouds and winds

https://youtu.be/PNkD0YmEp_Y

Freshening the ocean

<https://youtu.be/l0y9sU-2pNk>

Extra slides



