Developments in Radiance Data Assimilation at DWD since ITSC-21

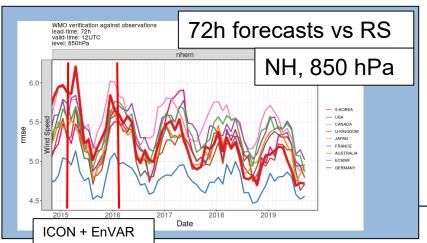**Deutscher Wetterdienst**
Wetter und Klima aus einer Hand

- ➢ Introduction of humidity radiances in ICON-EnVAR:
    - ○ MHS, ATMS-hum., IASI-hum., SSMIS, GMI
    - ○ CSRs: SEVIRI, GOES-imager, ABI, AHI

- ➢ Revisions for other instruments:
    - ○ E.g. increased density, retuned obs-errors
    - ○ IASI non-diagonal obs-err matrix, updated cloud detection
    - ○ NOAA-20 and METOP-C instruments

- ➢ Technical updates:
    - ○ RTTOV-12
    - ○ Processing of MW-imagers

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Main ongoing work:

- Adding more humidity radiances
- Hyperspectral sounders, Use of reconstructed radiances
- MW and IR data over land
- All-sky & use of VIS channels
- Seamless forecasts from nowcasting to very short range (at convective scale, SINFONY)
- Development of 4D-EnVAR

72h forecasts vs RS

NH, 850 hPa

ICON + EnVAR