

Improving the Scaling and Impact Metrics of Pan-Atlantic Atmospheric Rivers

Venugopal Thandlam^{1,2,3,*}, Anna Rutgersson^{1,2}, and Erik Sahlee¹

¹Air, Water and Landscape Science (LUVAL), Department of Earth Sciences, Uppsala University, Uppsala, Sweden

²Centre of Natural Hazards and Disaster Science (CNDS), Uppsala University, Uppsala, Sweden

³The Center for Environment and Development Studies Research Forum (CEFO), Uppsala University, Uppsala, Sweden

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Supplementary information

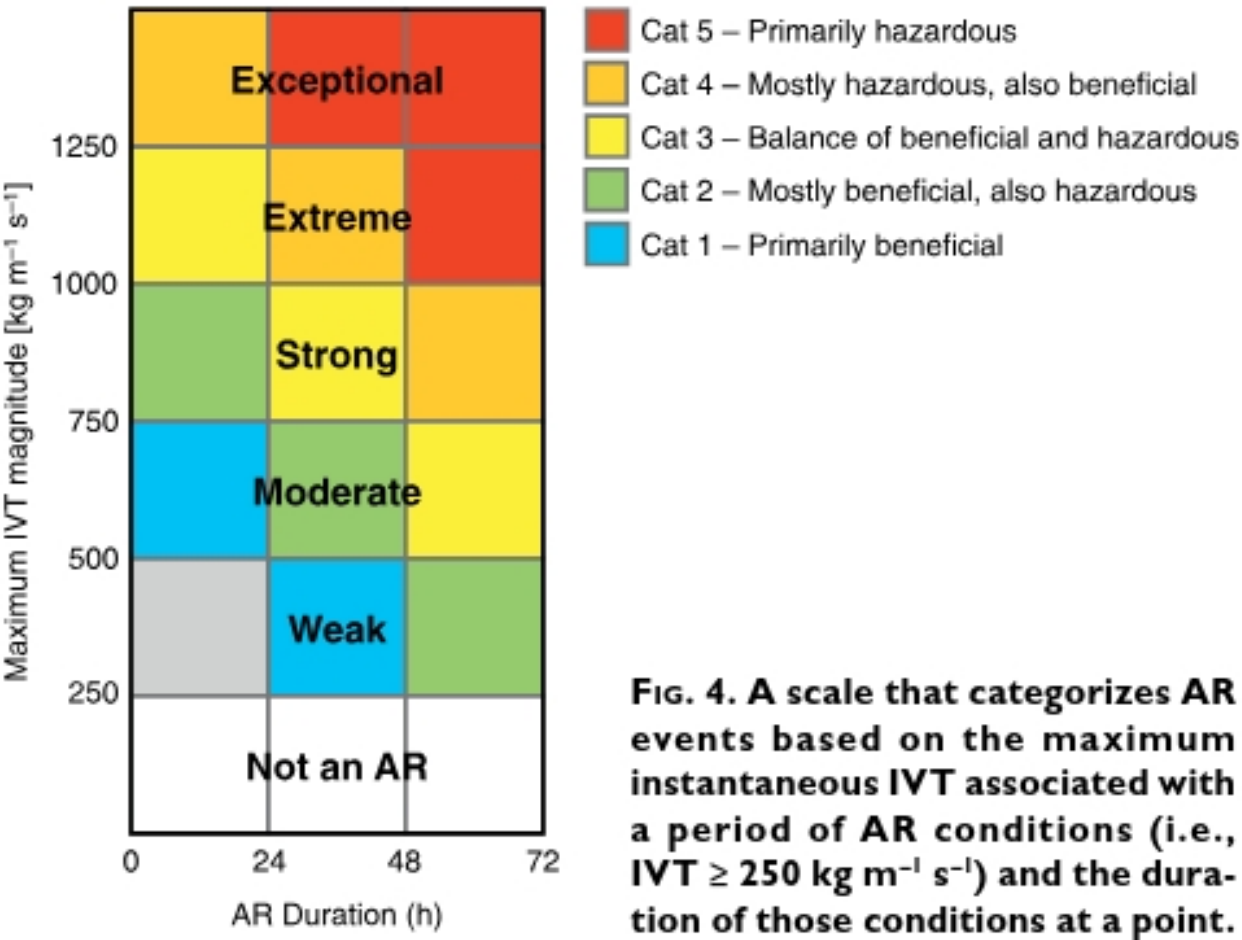


Figure S1: The original AR scale developed by Ralph et al.,[1]

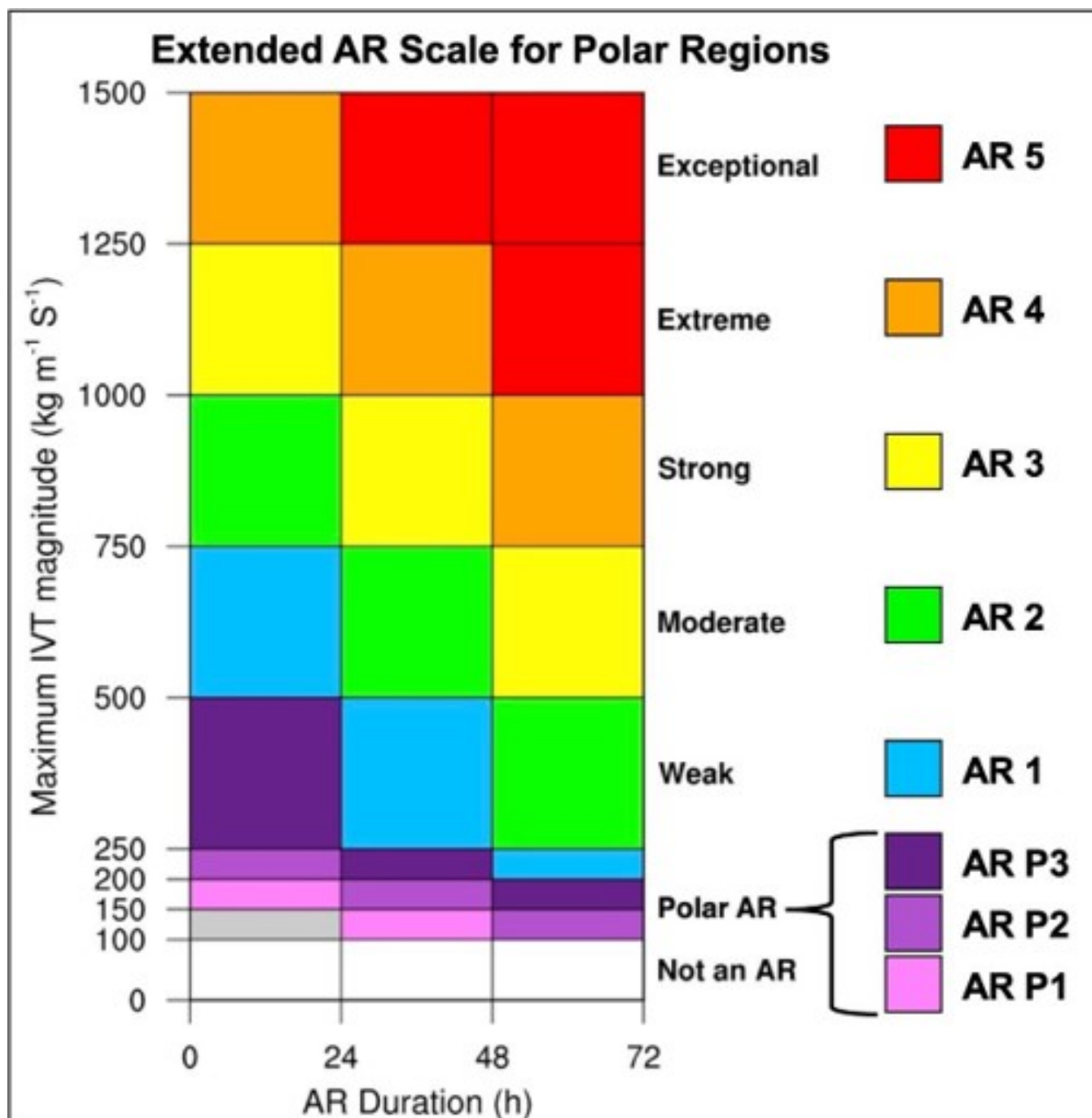


Figure S2: Extended AR scale for polar regions [2]

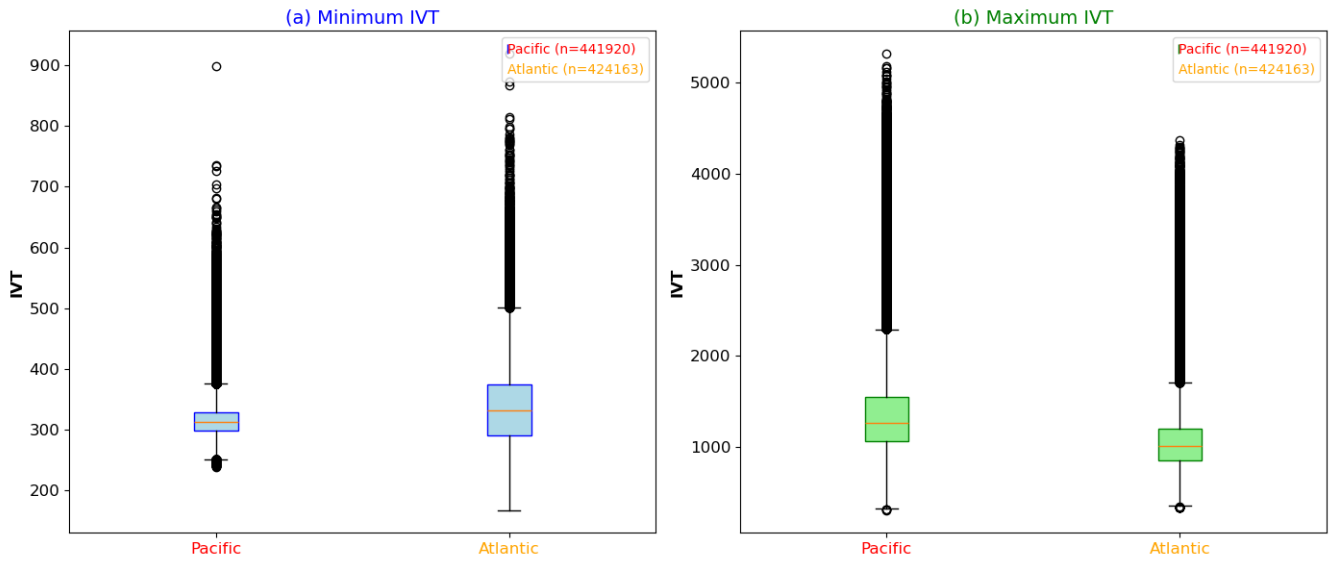


Figure S3: Comparison of (a) minimum, and (b) maximum IVTs observed in each AR during the study period in the Pacific and Atlantic.

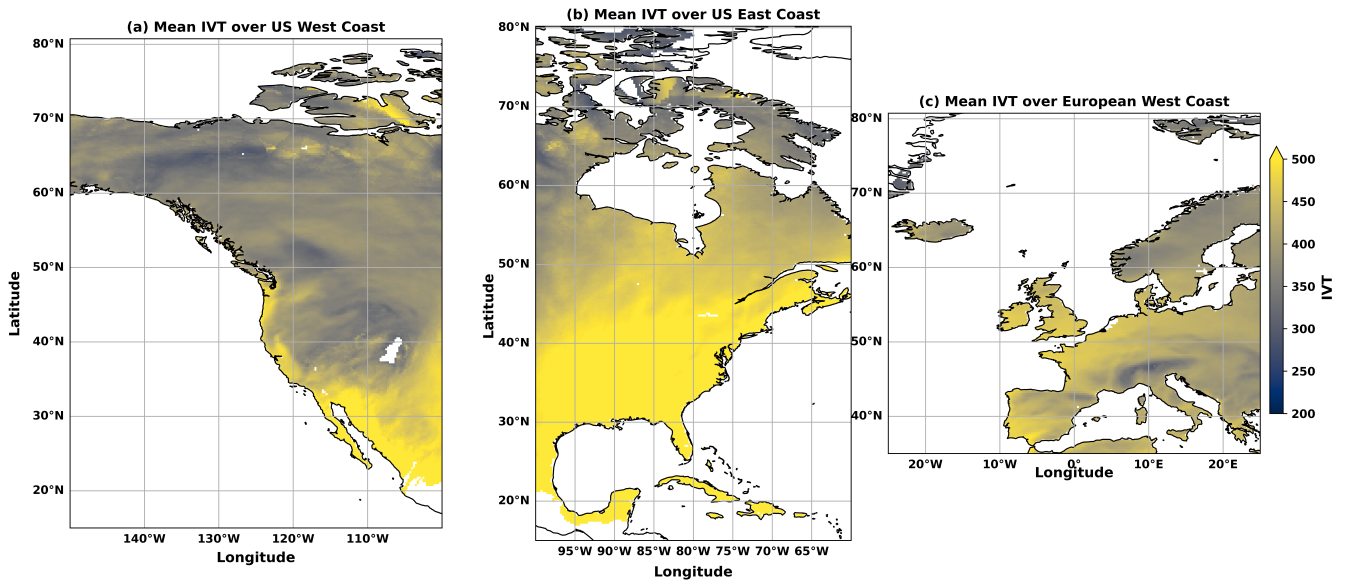


Figure S4: Mean AR IVT between 1970-2022 over (a) The western north American coast, (b) Eastern north American coast, and (c) Europe.

Maximum IVT over land

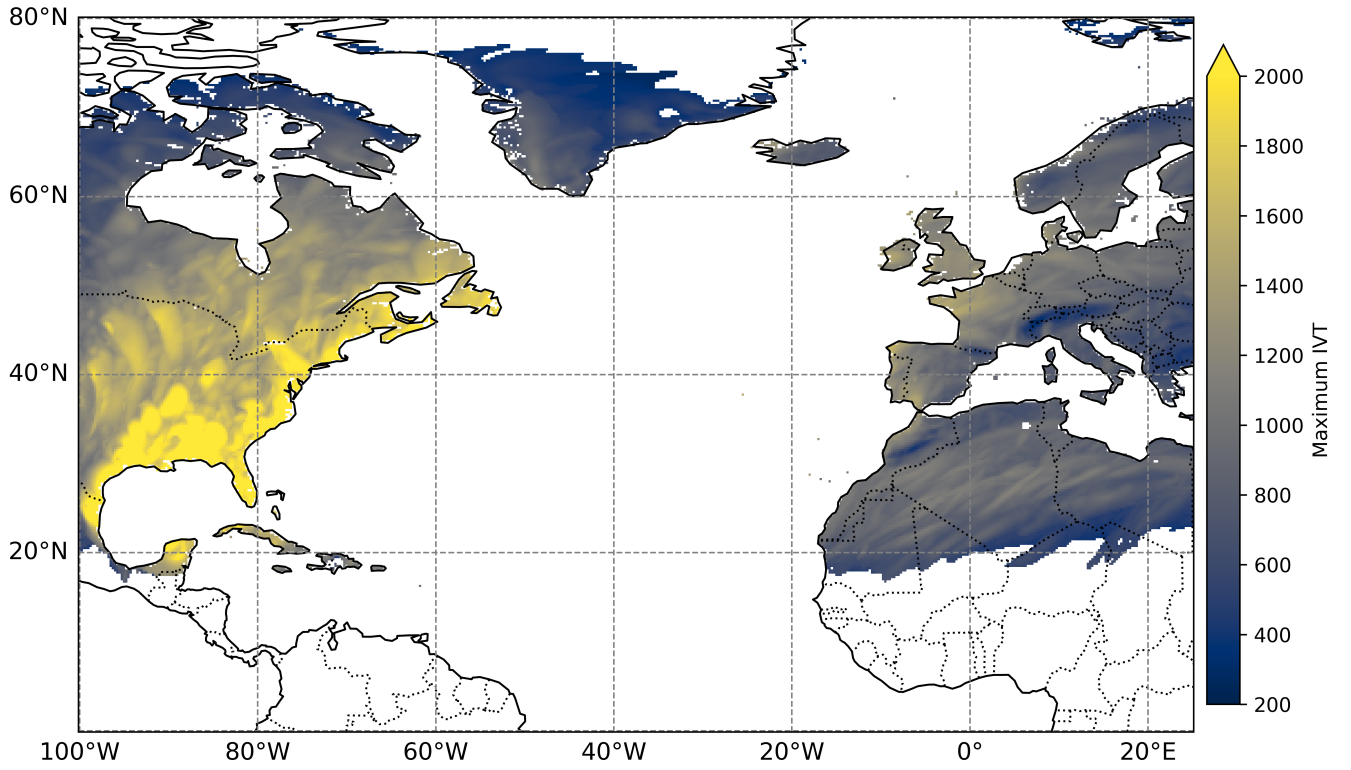


Figure S5: Maximum AR IVT over land in the study region during 1940-2022.

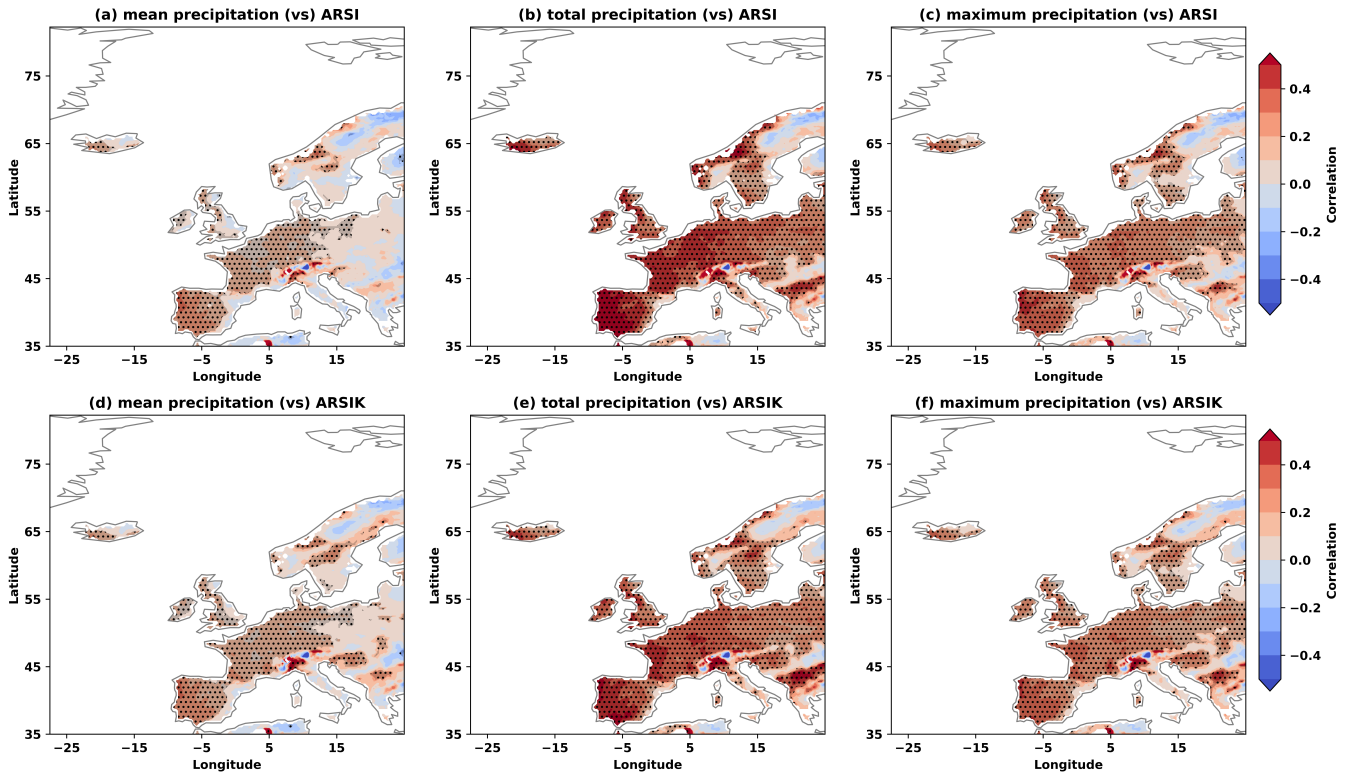


Figure S6: Correlations of 3-day ARSI (1st row), and ARSIK (2nd row) with 3-day mean precipitation, 3-day total precipitation, and 3-day maximum precipitation over Europe during 1950-2022. Black hatches show the areas with a significance of 95%.

References

- [1] F Martin Ralph, Jonathan J Rutz, Jason M Cordeira, Michael Dettinger, Michael Anderson, David Reynolds, Lawrence J Schick, and Chris Smallcomb. A scale to characterize the strength and impacts of atmospheric rivers. *Bulletin of the American Meteorological Society*, 100(2):269–289, 2019.
- [2] Zhenhai Zhang, F Martin Ralph, Xun Zou, Brian Kawzenuk, Minghua Zheng, Irina V Gorodetskaya, Penny M Rowe, and David H Bromwich. Extending the center for western weather and water extremes (cw3e) atmospheric river scale to the polar regions. *The Cryosphere*, 18(11):5239–5258, 2024.