Supporting Information for

Coastal and orographic effects on extreme precipitation revealed by weather radar observations

Francesco Marra[1], Moshe Armon[2], Efrat Morin[2]

[1]National Research Council of Italy, Institute of Atmospheric Sciences and Climate (CNR-ISAC), Bologna, 40129, Italy
[2]The Fredy & Nadine Herrmann Institute of Earth Sciences, the Hebrew University of Jerusalem, Jerusalem, Israel

Correspondence to: F. Marra (f.marra@isac.cnr.it), Via Gobetti, 101, 40129, Bologna, Italy, *Phone*: +39 0516398084

Content

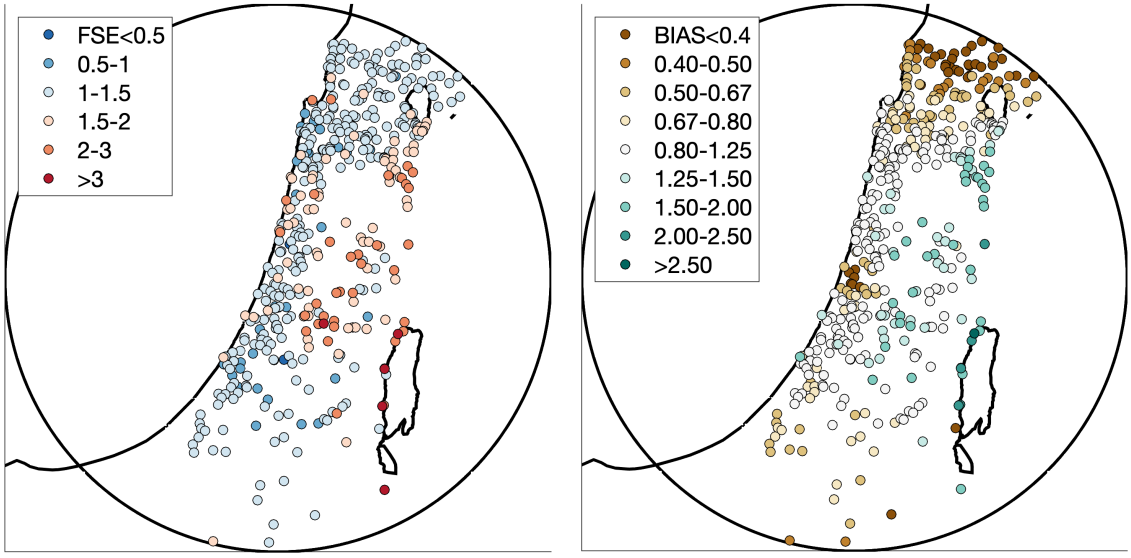

Figure S1. Maps of the validation statistics (Fractional Standard Error – FSE, and multiplicative bias defined as the total radar amount divided by the total rain gauge amount – BIAS) of the radar archive. Statistics are computed for daily rainfall amounts in days for which at least 22 hours of radar data are available; at least 6 radar volume scans with no more than 15-minute gaps are required for an hour to be defined as available.

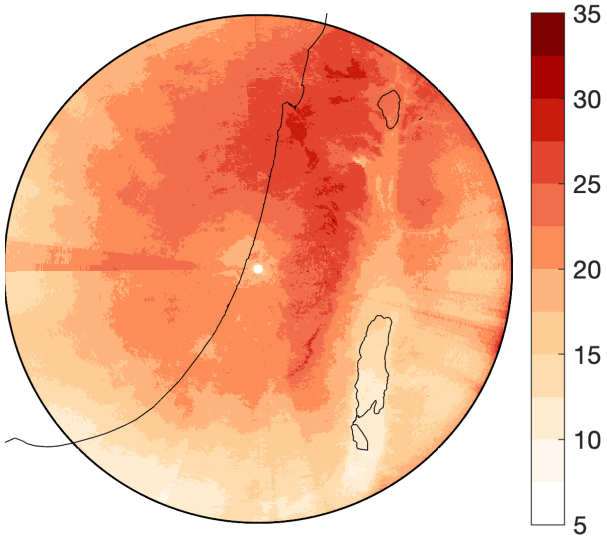

Figure S2. Spatial distribution of the average yearly number of storms (parameter n, which is the same for all durations) as derived combining weather radar archive and rain gauges using the here-proposed method. Some residual radar errors can be noticed, such as the over-estimated beam west of the instrument.

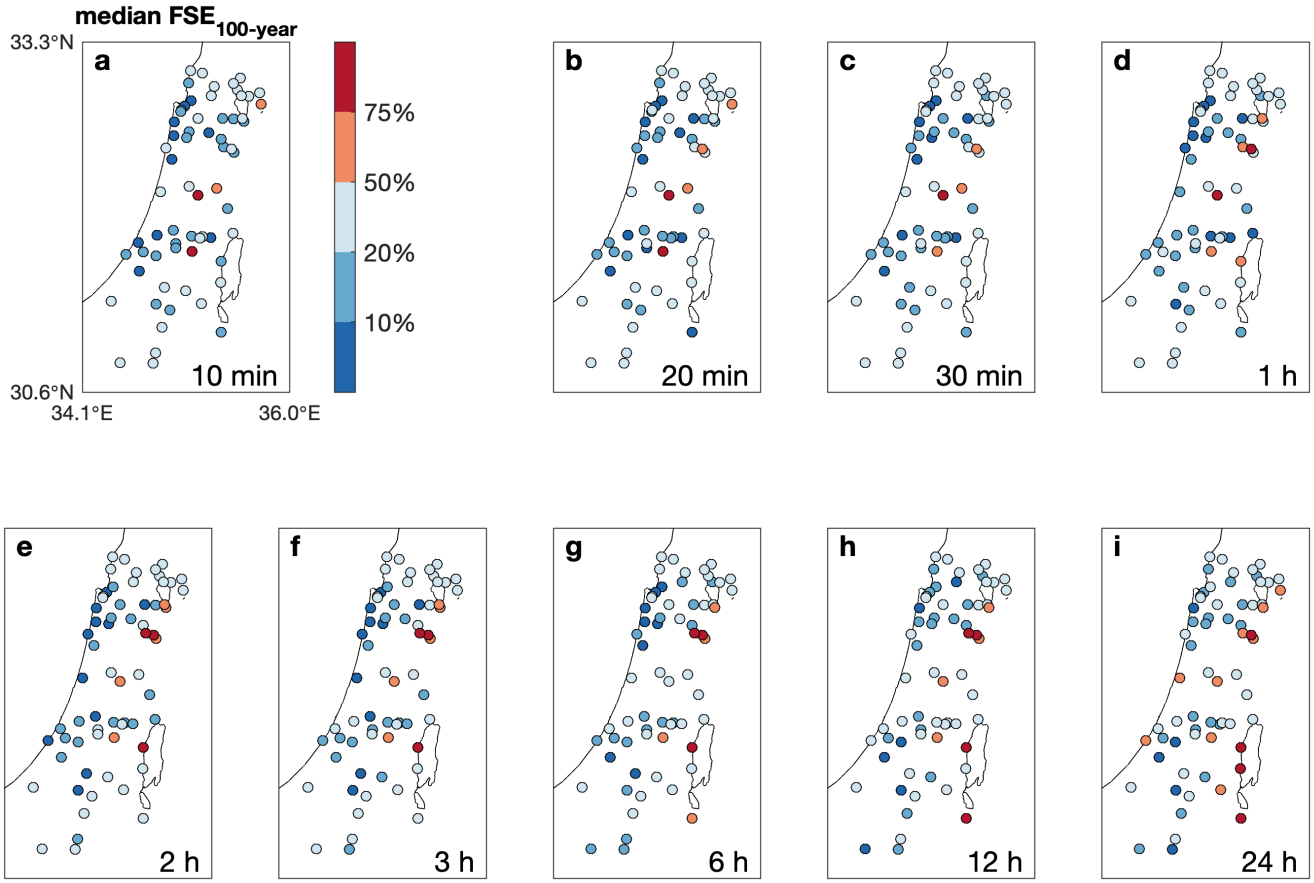

Figure S3. Spatial distribution of the median Fractional Standard Error (FSE) for the 100-year return levels at different durations estimated using SMEV on the radar archive.