4. Mapping of biases can identify problem regions and can help future forecasting decisions.

3. Forecaster calibration can be grouped: forecasters 6-8 (best), 2-7 and 1-4.

1. Low probability threshold is 8% in summer, only 2% in winter (overforecasting medium probability)

Conclusions

- Individual forecasts can only be verified in the spatial domain: In reality, forecast probability is approximated by the regional coverage of storms. In this sense, it is clear that the top left forecast was practically almost perfect, while the bottom forecast, although not missing any event, does not reflect the occurred clustering of storms so well. Here we only looked at the relative frequencies at the storm grid point, and ignored the relatively large areas of medium probability.

- To verify forecasts, one needs to slowly gather more statistics, i.e., more forecasts.

- Most of the storms were caught within the 3-9 grid point (9 points).

- Each forecast category should be evaluated separately, as the medium probability area observed frequency distribution is usually used to express uncertainty about the expected coverage, but at times one can be certain about a relatively low or high probability.

- The graphs show the fraction of times a storm point surrounded by a 9-point regional coverage (low 1/9, medium 2-4/9, or high 5-9/9) was correctly forecast in each category. The frequency of points in each probability category can also be plotted as a map.

- The correct forecast performance is represented by the blue bars in the right column of the map, indicating the forecast probability. The red bars show the number of storms not predicted, while the light blue bars show storms that were missed.

- The majority of brown circles represent just single thunderstorm appearances.

- Several features can be noticed:
  - In winter, surprise misses concentrate along the north coast of the western Mediterranean Sea. Also downstream of the Adriatic storms, the western Mediterranean Sea show most surprises.
  - In contrast, the eastern Mediterranean Sea is free of surprises. Surprise misses concentrate along the north coast of the eastern Mediterranean Sea. Also downstream of the Adriatic storms, the western Mediterranean Sea. Also downstream of the Adriatic storms, this in the autumn months, which is active there.
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