Staying happy and motivated in the face of modest inherent climate predictability

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Earliest interests in weather/climate:

- Weather vs. climate scale – both interesting
- 1959: Winter storms in Connecticut; Namias 30-day forecasts

Squaring interests with abilities

- Good, but not superior, ability in math
- Geography vs. meteorology
- Masters vs. doctoral level
- Dynamical vs more applied (or statistical) meteorology

Perception of climate forecast skill, potential for skill increases

- Bob Dixon's retirement speech in 1980s
- Richover Foundation student's comment
- Comments of weather forecasters regarding climate forecasts
- Working under Livezey, Van den Dool, Leetmaa, then at IRI
- Large role of ENSO, importance of ENSO predictions

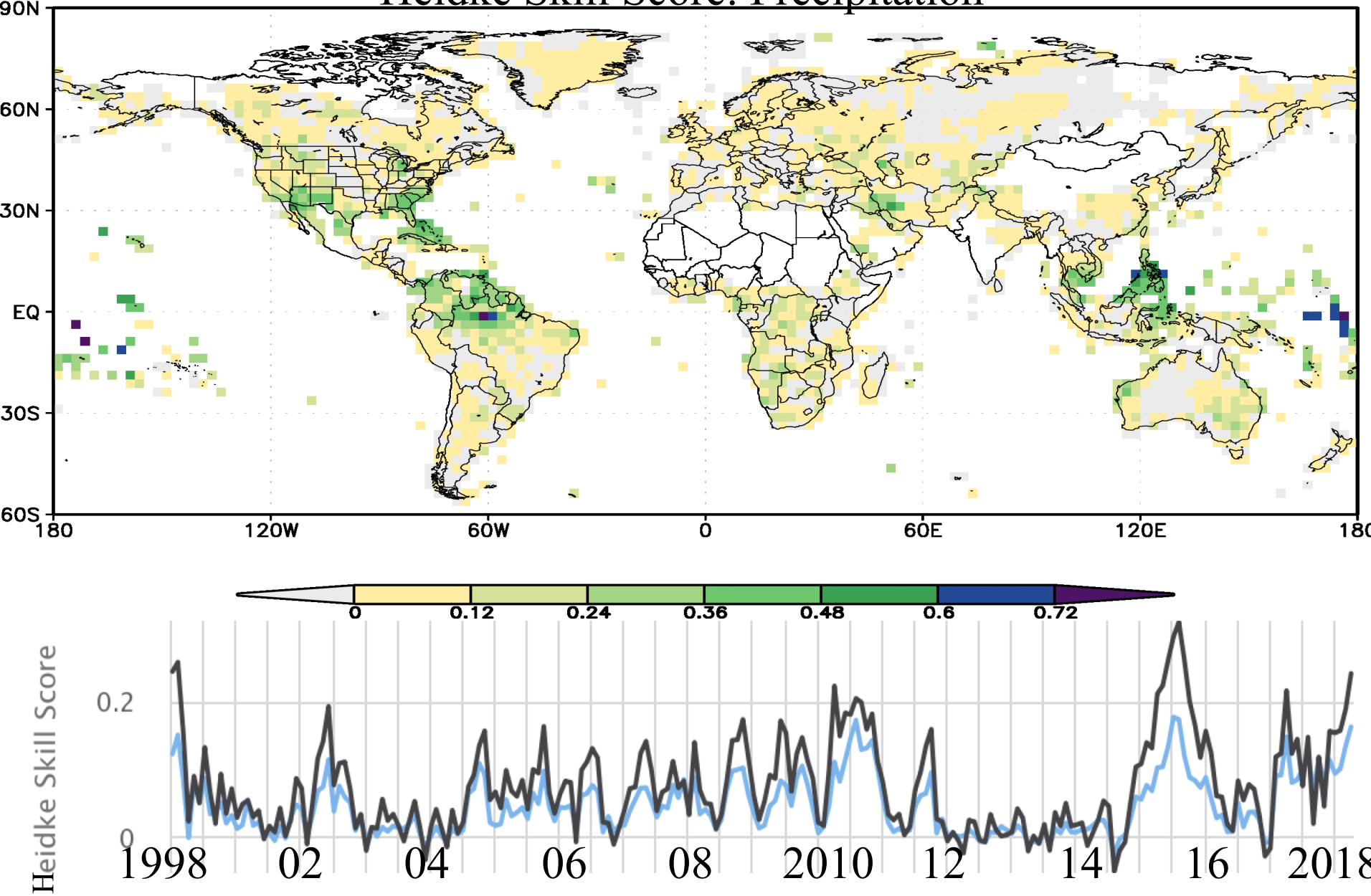
How accurate are seasonal climate forecasts?
How accurate could they ever be, ideally?

Suppose the following are true:
(1) We think we know the upper limit of predictability
(2) We think our forecasts reach >90% of that limit
(3) In many seasons/locations, this level of forecast skill (for temp and precip) is poor to fair

Then should we keep studying seasonal climate science and issuing forecasts often having weak tilts of the odds?

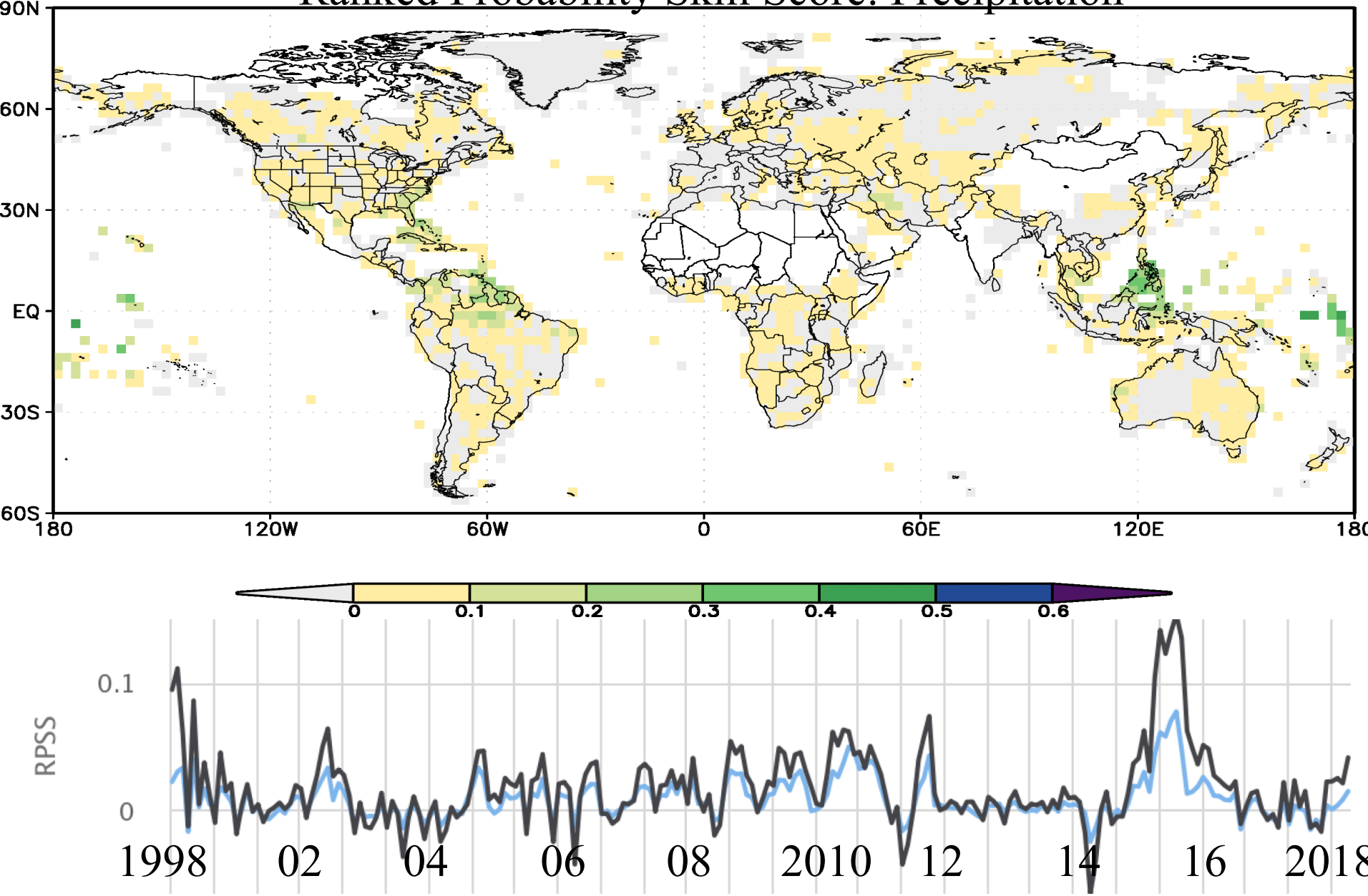
IRI seasonal precipitation forecast skill 1997-2018

Heidke Skill Score: Precipitation



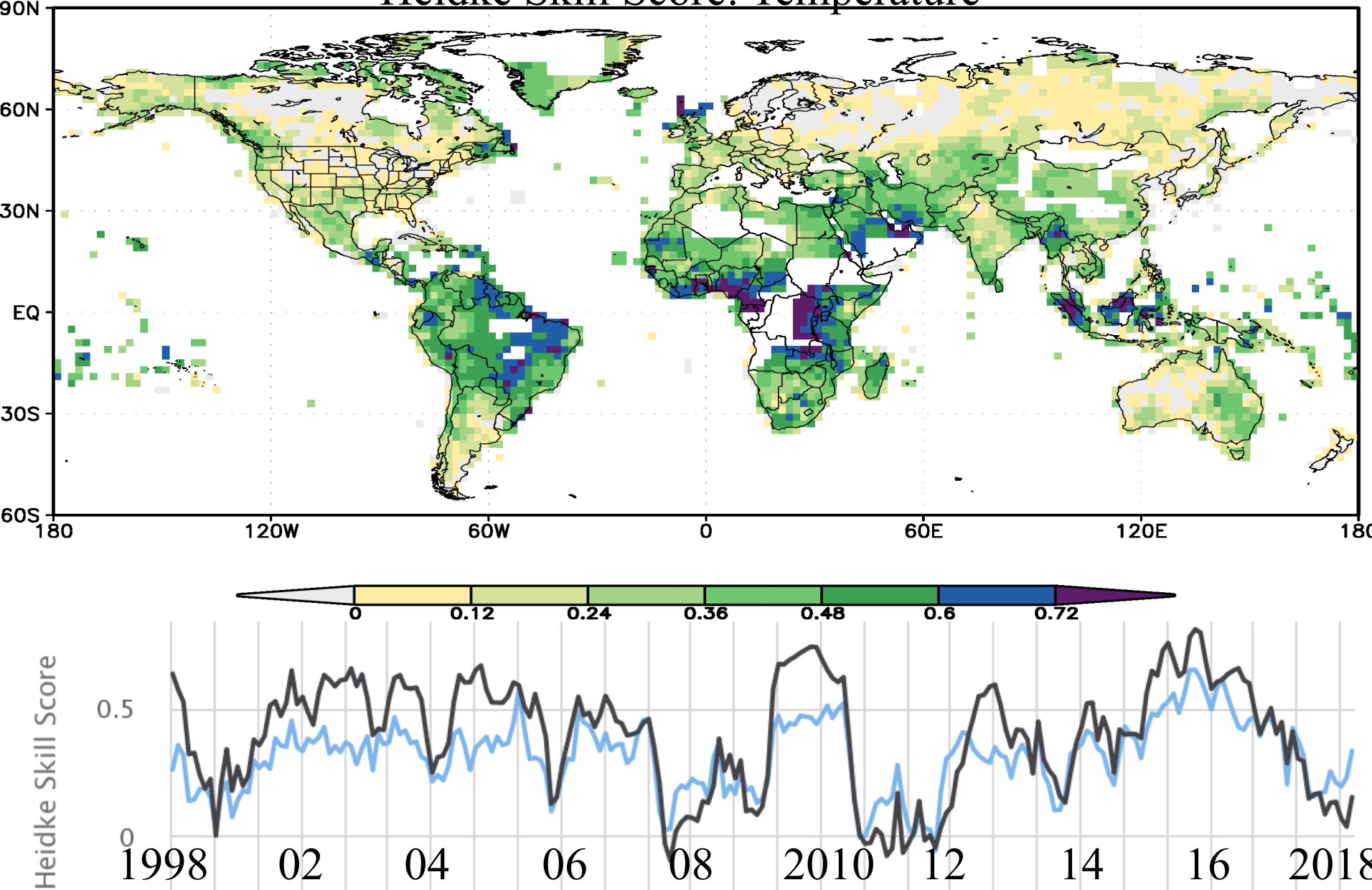
IRI seasonal precipitation forecast skill 1997-2018

Ranked Probability Skill Score: Precipitation



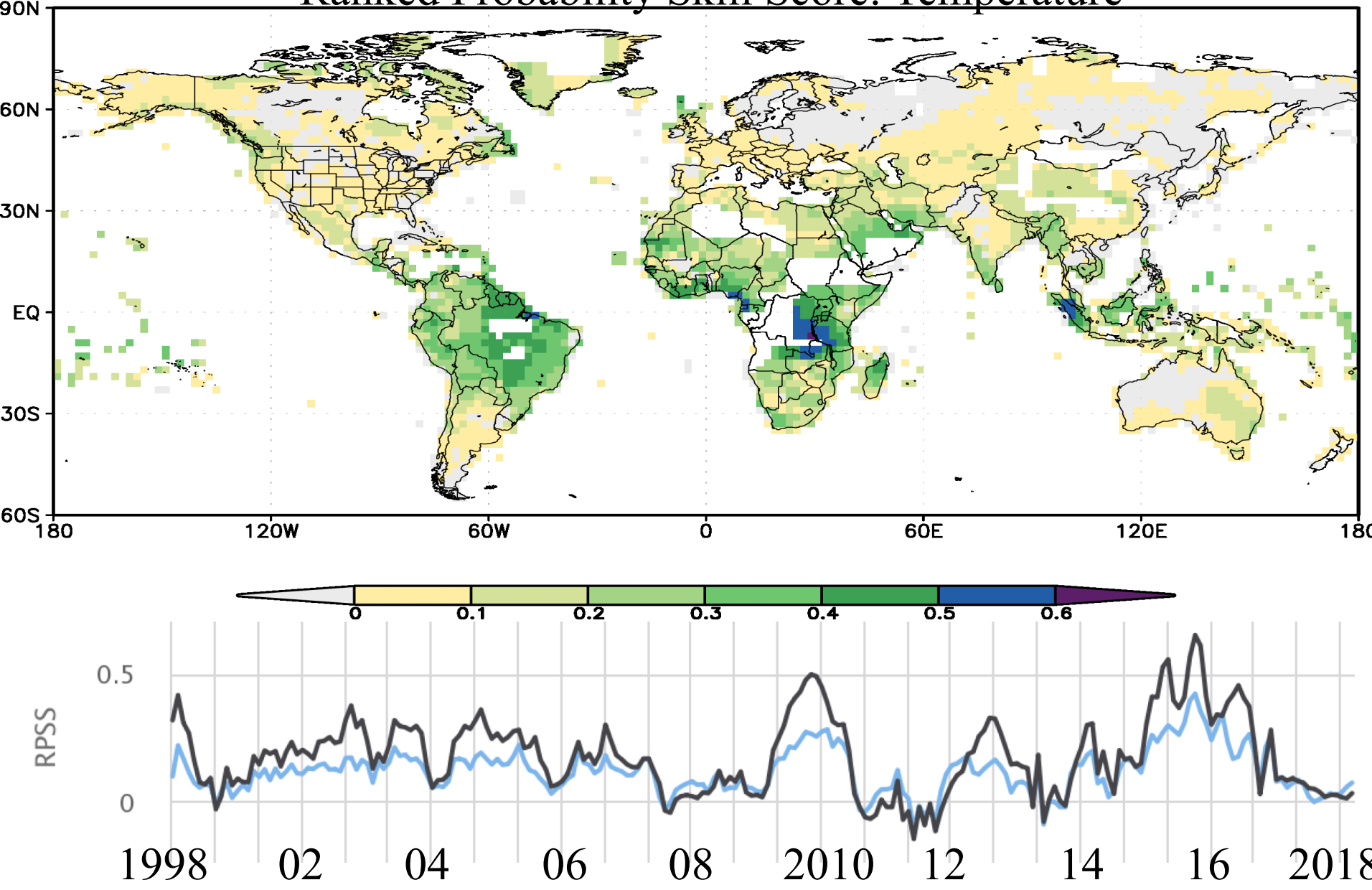
IRI seasonal precipitation forecast skill 1997-2018

Heidke Skill Score: Temperature

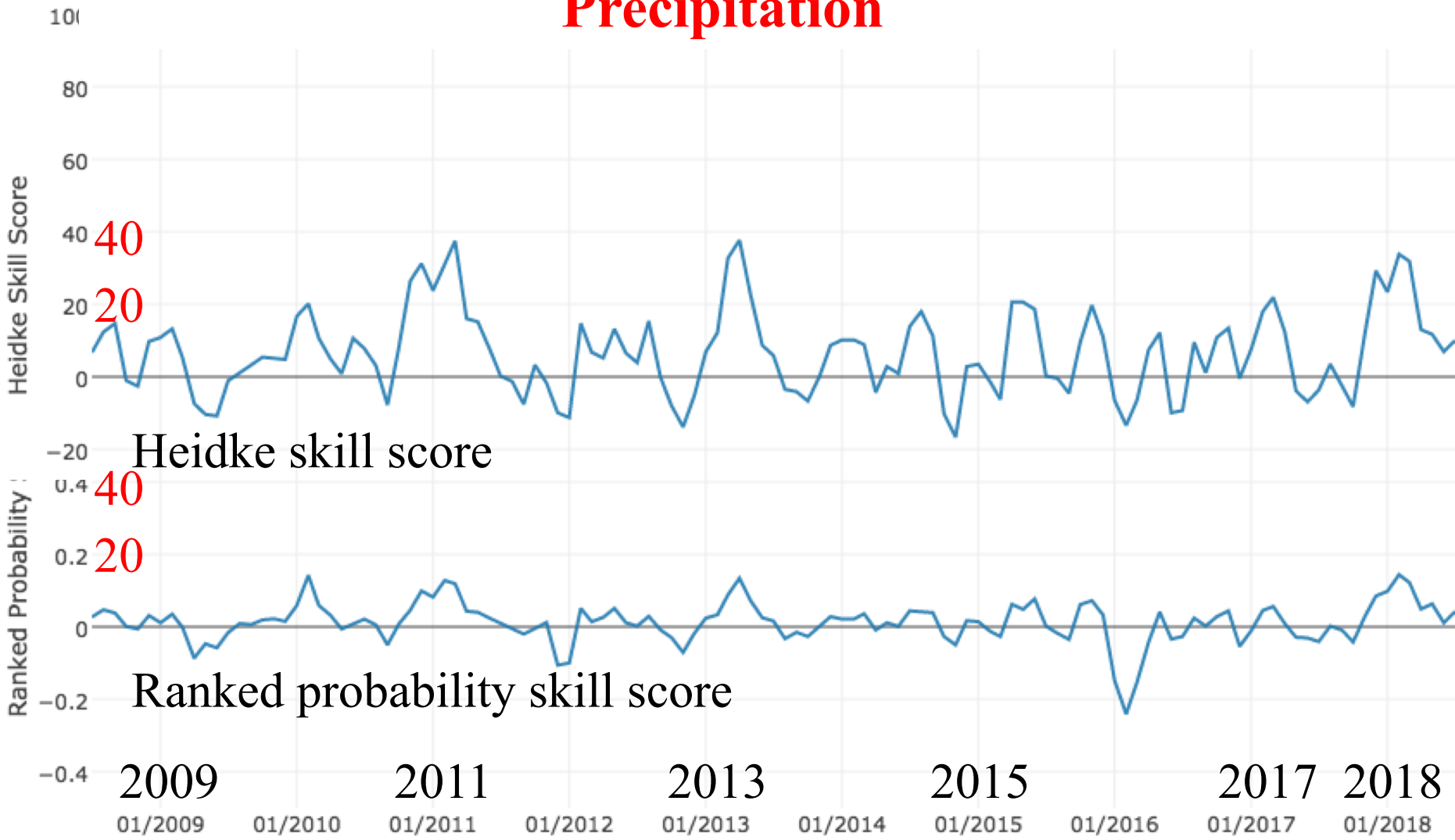


IRI seasonal precipitation forecast skill 1997-2018

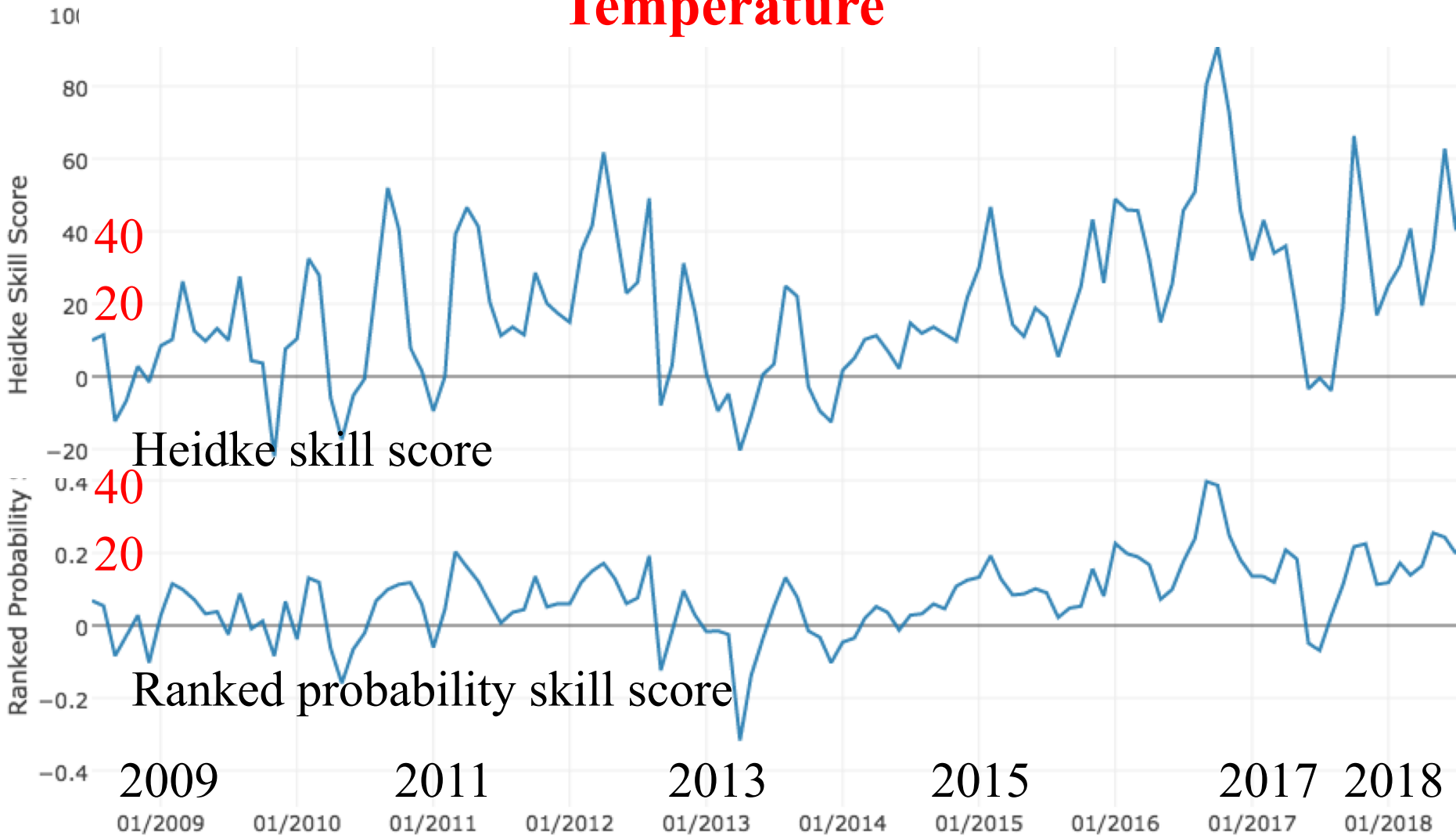
Ranked Probability Skill Score: Temperature

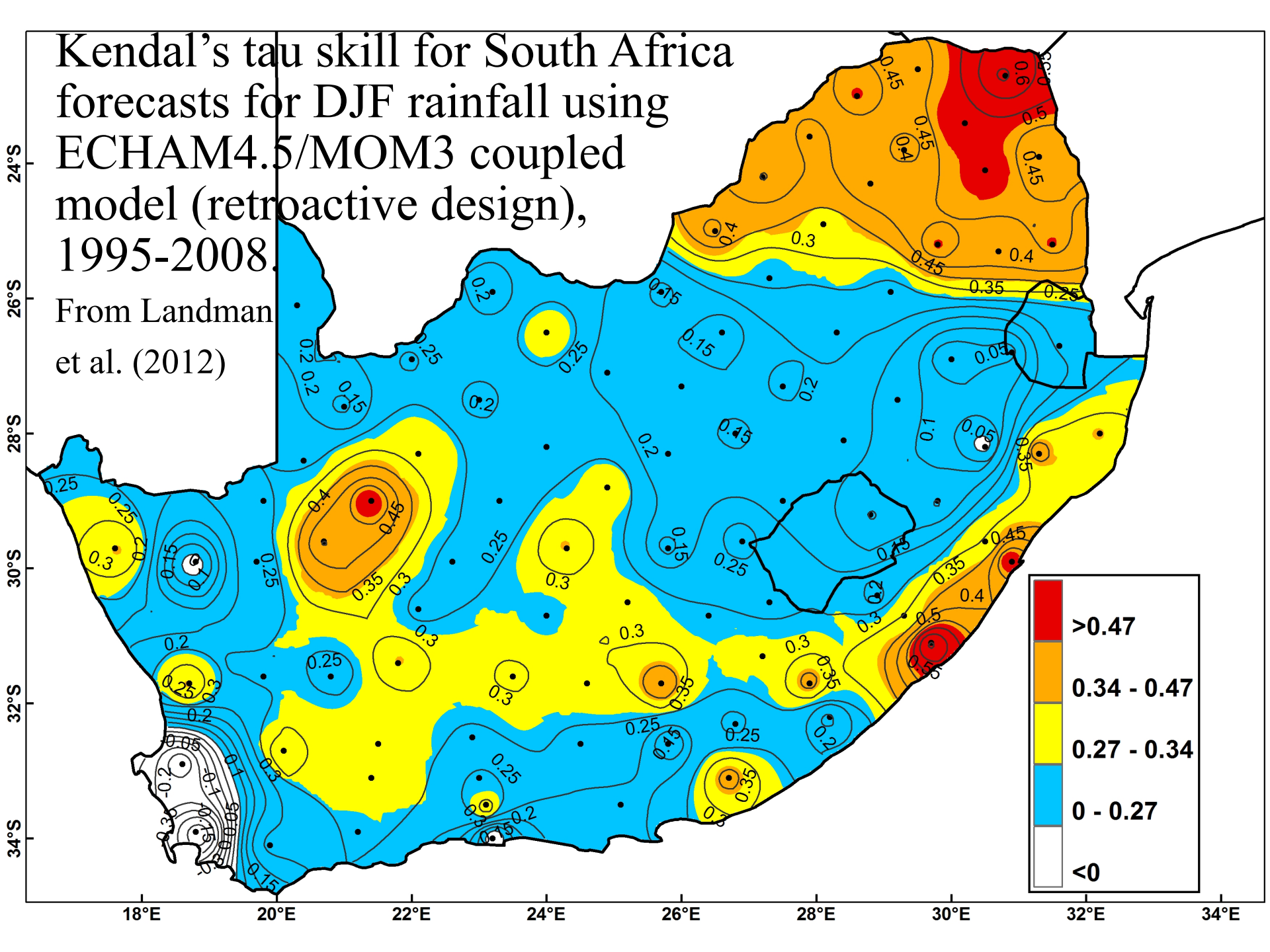


CPC seasonal forecast skill over CONUS, 2009-2018
Precipitation

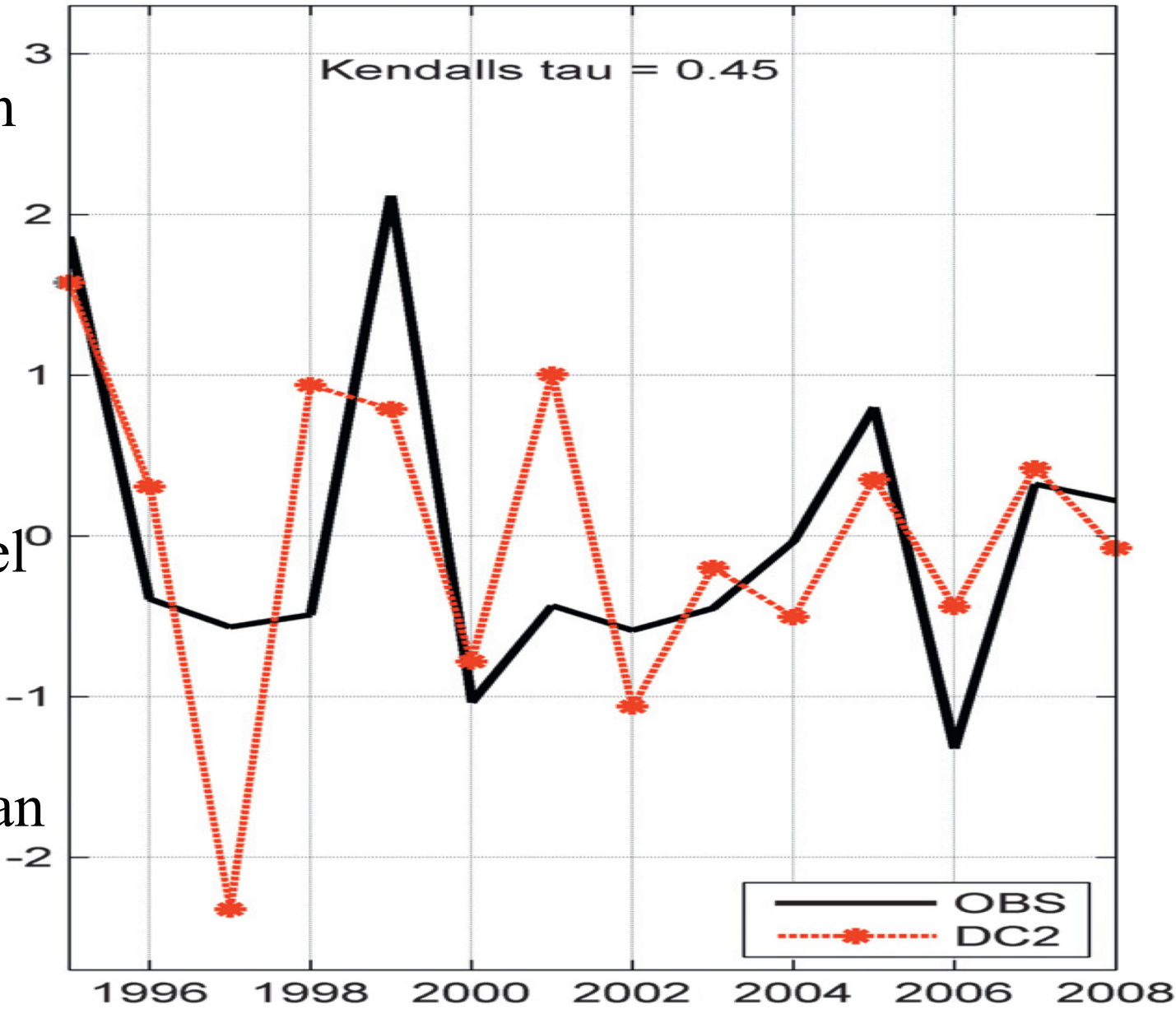


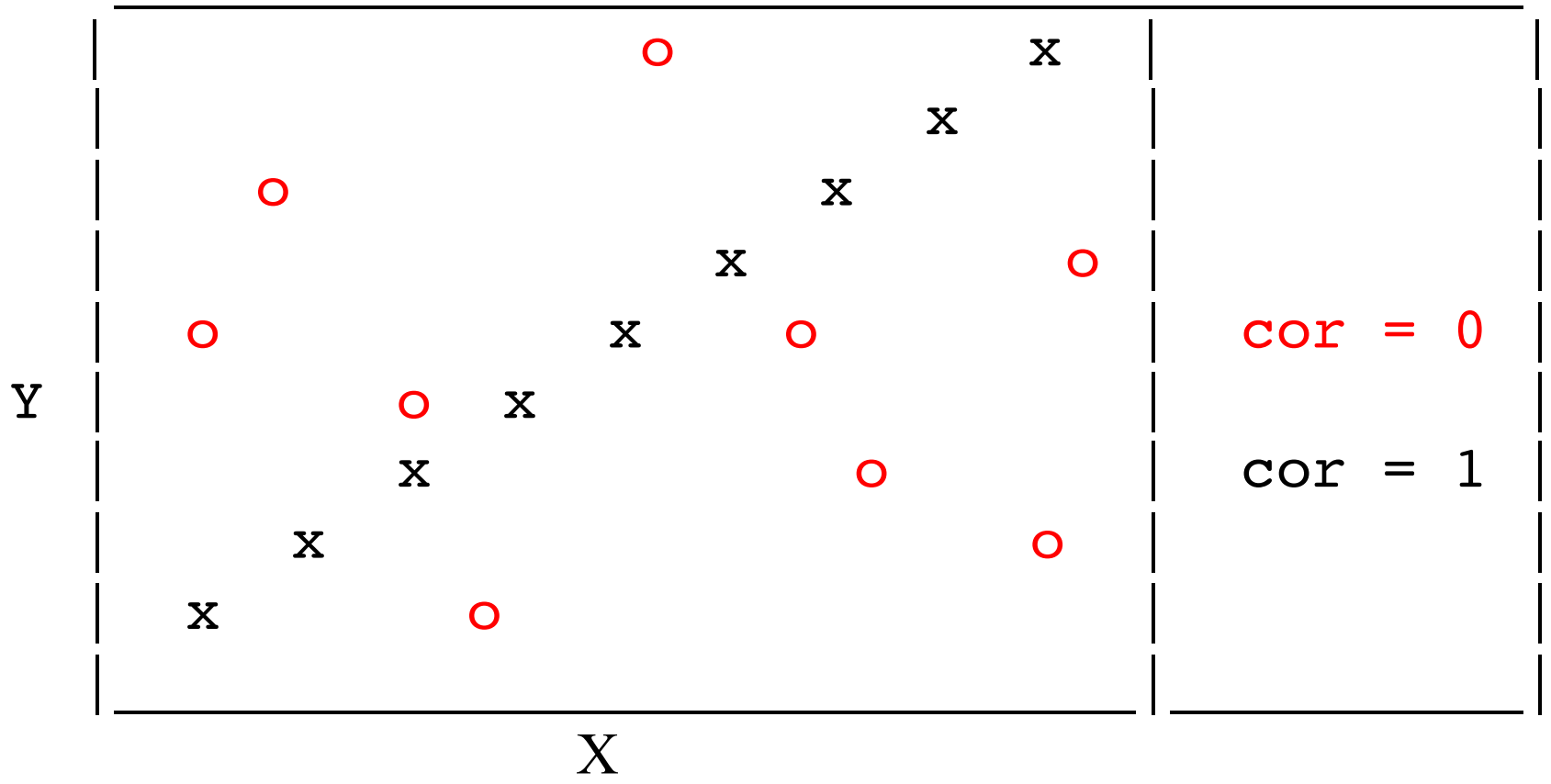
CPC seasonal forecast skill over CONUS, 2009-2018
Temperature




Kendal's tau skill for South Africa forecasts for DJF rainfall using ECHAM4.5/MOM3 coupled model (retroactive design), 1995-2008.
From Landman et al. (2012)
>0.47
0.34 - 0.47
0.27 - 0.34
0 - 0.27
<0
24°S
26°S
28°S
30°S
32°S
34°S
18°E
20°E
22°E
24°E
26°E
28°E
30°E
32°E
34°E

Kendal's tau skill for South Africa forecasts for DJF rainfall using ECHAM4.5 /MOM3 coupled model (retroactive design), 1995-2008. From Landman et al. (2012)





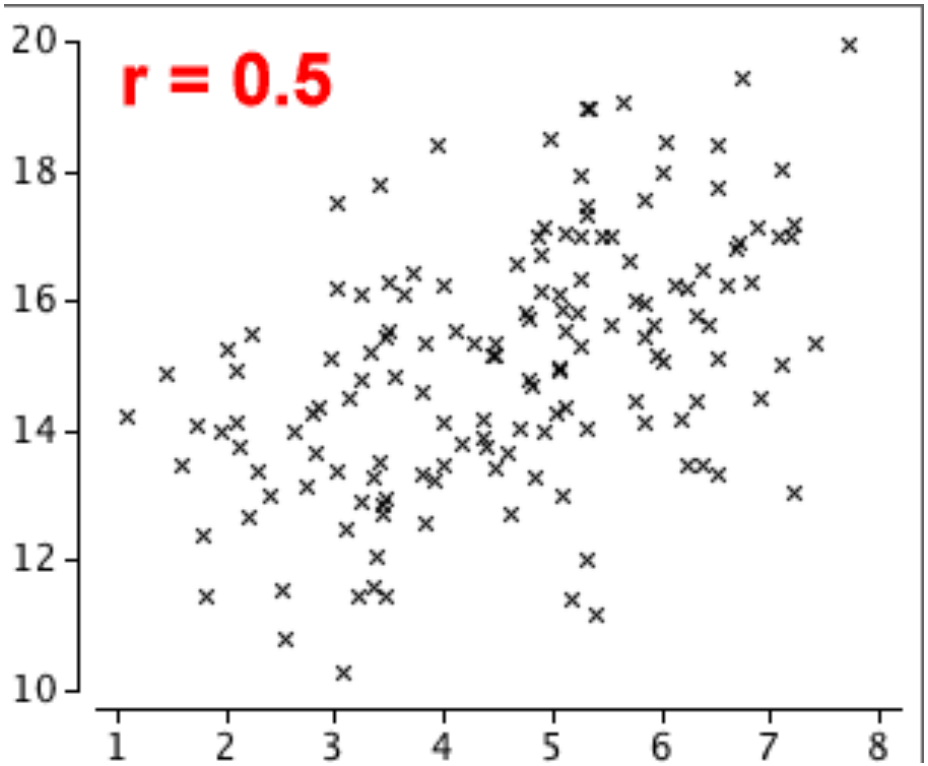
When points having a **perfect correlation** are mixed with an equal number of points having **no correlation**, and the two sets have same mean and variance for X and Y, correlation is 0.707. **The correlation number "looks" better than it really is.**

correlation for all 18 points = **0.707** correlation squared = **0.5**

Effectiveness of seasonal climate prediction:

Often not very good!! And it may never get much better!!

Must have good tolerance for uncertainty to be satisfied in this field. Maybe even enjoy it.



Summary of career in weather/climate:

Educational Phase, 1975-1977:
0 1 2 3 4 5 6 7 **8** 9 10

Early Career Stage at CPC, 1983-1990
0 1 2 3 4 5 6 7 8 **9** 10

Middle Career Stage at CPC, 1990-2000
0 1 2 3 4 5 6 7 8 9 **10**

Late-Middle Career Stage at IRI, 2000-2008
0 1 2 3 4 **5** 6 7 8 9 10

Late Career Stage at IRI, 2008-2017
0 1 2 3 4 5 6 7 **8** 9 10

Overall: **8.5 (not bad!)**