**Answers-sheet** **Computer exercise Drought risk:**

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| Name: | Student-number: |
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Points from questions : 37

Clarity of document : 5

Total points : 42

# Drought risk part 1: ENSO impact on drought hazard for Kenya

## 2: Loading and inspecting Precipitation data

**Question 1**: Plotting the climatological mean value is often one of the first things to do when analyzing a dataset. Why do you think we need more years to get a robust climatology compared to other variables? Tip: perhaps revisit this question after you finished section 3 once you've had a closer look at the distribution. (3pt)

**Figure 1:**

**Question 2:** Briefly explain what you can learn/observe in figure 1. (2pt)

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## 3: SPI for a single gridcell in Kenya

**Question 3:** Discuss whether the presented p-value is sufficient. What hypothesis does the K-S test actually tests?*(3pt)*

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**Question 4:** Explain in words what information you can learn from these two figures? For example, why is the Gamma distribution increasing sharply at low values compared to the standard normal distribution? *(4pt)*

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**Question 5:** Without any calculation, what will now be the climatological value of SPI. Check by calculating and plotting the climatology like was done above in Section 2a. *(1pt)*

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## 6: Link between ENSO and Kenya drought?

**Question 6:** Explain in your own words why the conversion from gamma to standard normal distribution is desirable when quantifying drought. *(4pt)*

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Figure 2:

**Question 7:** What is your interpretation of the results of 7a and 7b? (3pt)

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**Question 8:** Find out if ENSO is indeed significantly influencing drought in Kenya? (3pt)

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Screenshot of code:

# Drought risk part 2: ENSO impact on drought hazard for Africa

## 2: ENSO impact on African continent

**Question 9:** What do you think that would happen if we calculate SPI using very long or short aggregation time windows? Re-run the code starting from Step 5. Calculate the correlation coefficient (r) and the p-value for SPI-1 and SPI-24. Explain in words why there is a drop in the correlation coefficient when using SPI-1 or SPI-24. *(4pt)*

Figure 3:

Question 10: Interpret the spatial map with correlation coefficients. (5pt)

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## 3: Seasonal dependence of ENSO impact.

**Question 11:** Where do you observe the strongest seasonal dependence? (5pt)

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Figure 4: