

# New Perspectives on Water Availability in Africa:

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## Abstract

Water use and supply is a topic of universal concern as the interactions between humans and the environment intensify. In addressing the ever-expanding needs of humans, new and more comprehensive perspectives of the environmental are needed. This is a challenge is particularly acute in regions with limited data and increased needs for water resources development, such as Africa.

Hydroclimatic indicators can principally be categorized as streamflow regimes, climate regimes, or those which relate the two aspects. Hydroclimatic regimes are an attempt to expand upon the current hydroclimatic assessments and fit under the later of these categories. The use of this indicator also addresses the limitations of the classical view of water availability by including the portion of rainwater that is transpired from plants, or green water (Falkenmark, 2004).

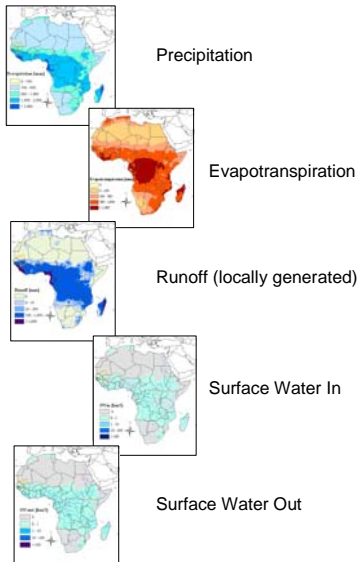
To date, many studies have strived to classify hydroclimatic conditions of basins, countries, and regions (Vörösmarty et al., 2000 and Shiklomanov, 1996). This generalization can often be misleading, particularly in regions of high spatial variability. As a means to address this, a 6-min geospatial dataset is used to generate the hydroclimatic regimes.



## Objectives

- Expand upon current methodologies for viewing water availability in Africa.
- Use the Senegal Basin as a case study to implement hydroclimatic regimes in order to examine the nature of water availability in the region.

[ Traditional Perspectives on Water Availability ]



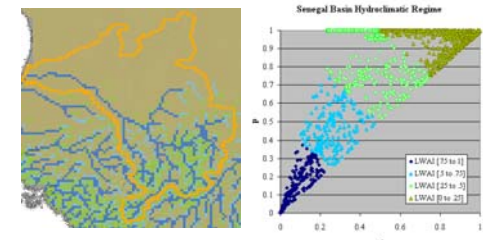
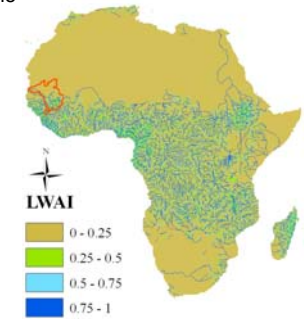
# hydroclimatic regimes in the senegal basin



## Results

The hydroclimatic regime of the Senegal Basin shows:

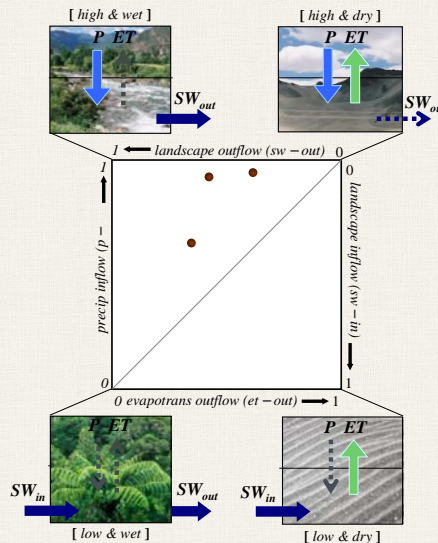
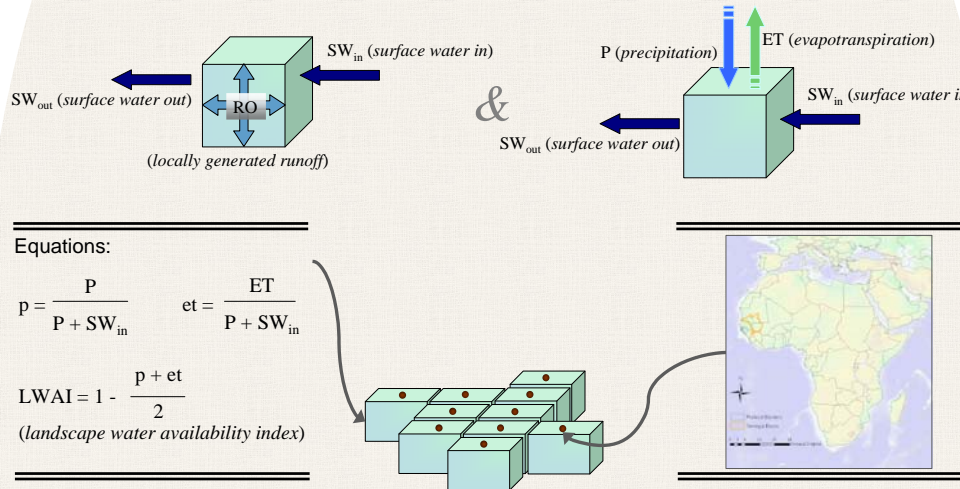
- High range of aridity in the headwaters of the basin
- Terminal flow areas coincide with the surface water channels
- It may prove beneficial to consider 'green water' development strategies in regions dominated by this flow regime



It is important to note that this study based on the assumption of negligible inter-annual storage and variation. Seasonal regime variability should be studied in future work.

## Methodology

1. Variables derived based on a general water balance for each 0.1 degree grid cell.
2. Indicators were calculated using the raster calculator.
3. Hawth's Tools used to define cell centered points.
4. Data layer values extracted to the point files.
5. Hydroclimatic regime x-y plots generated from the point file for the Senegal Basin



## References

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