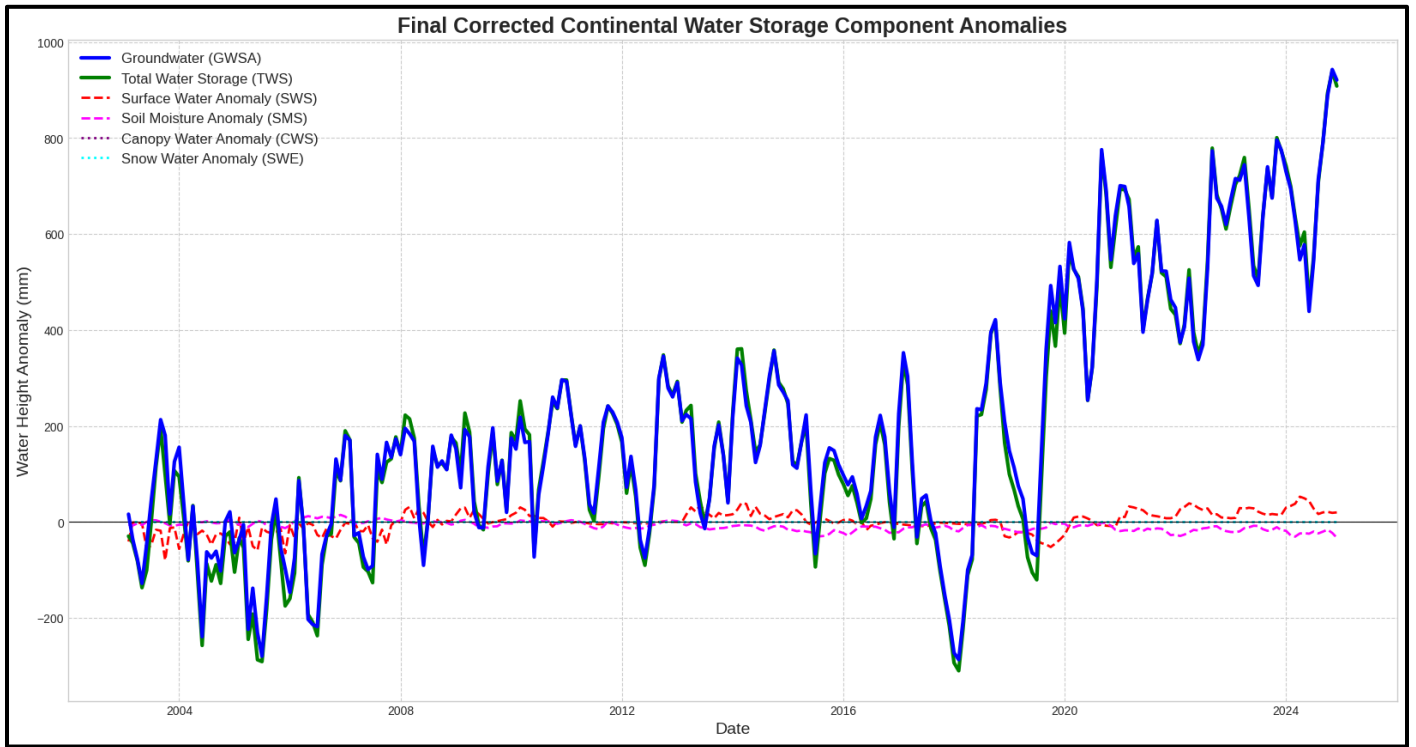
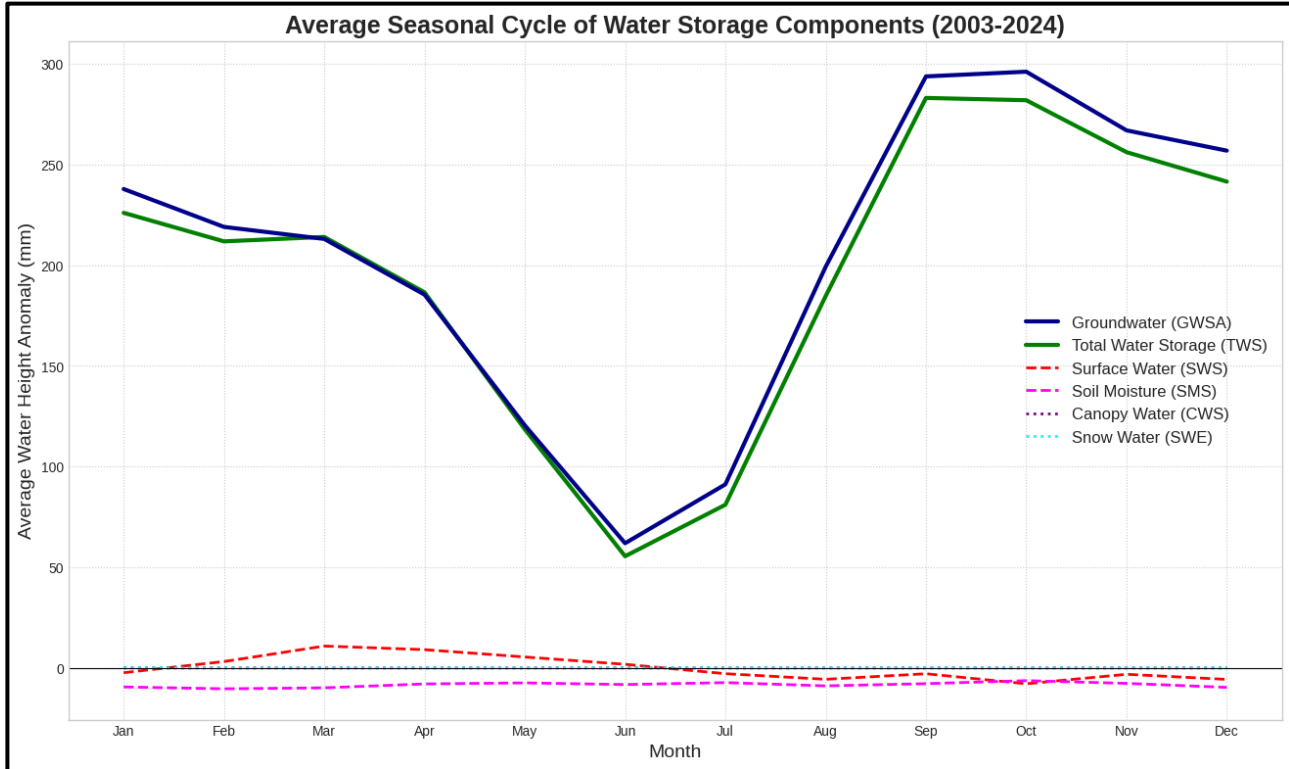


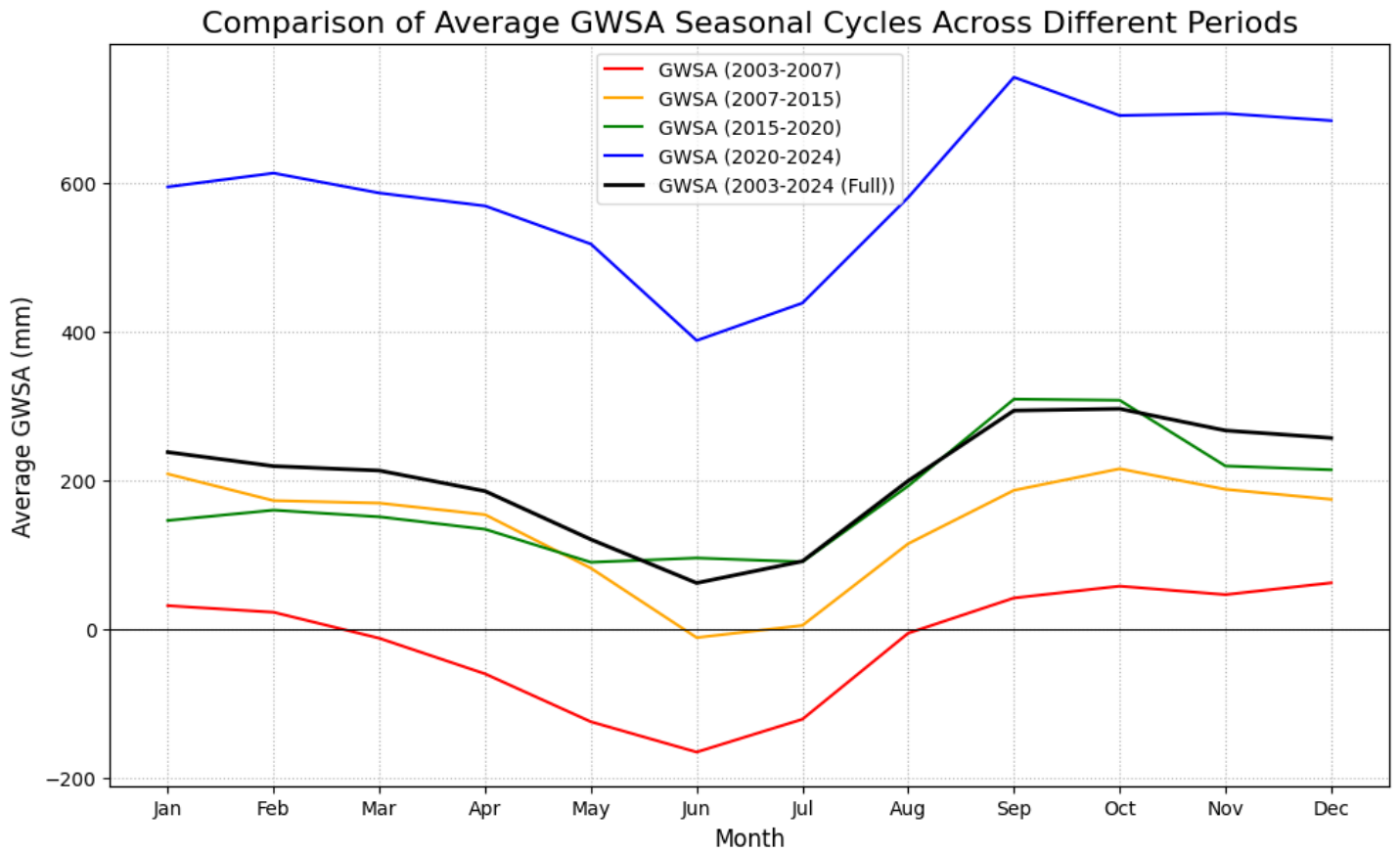
## Main Figures



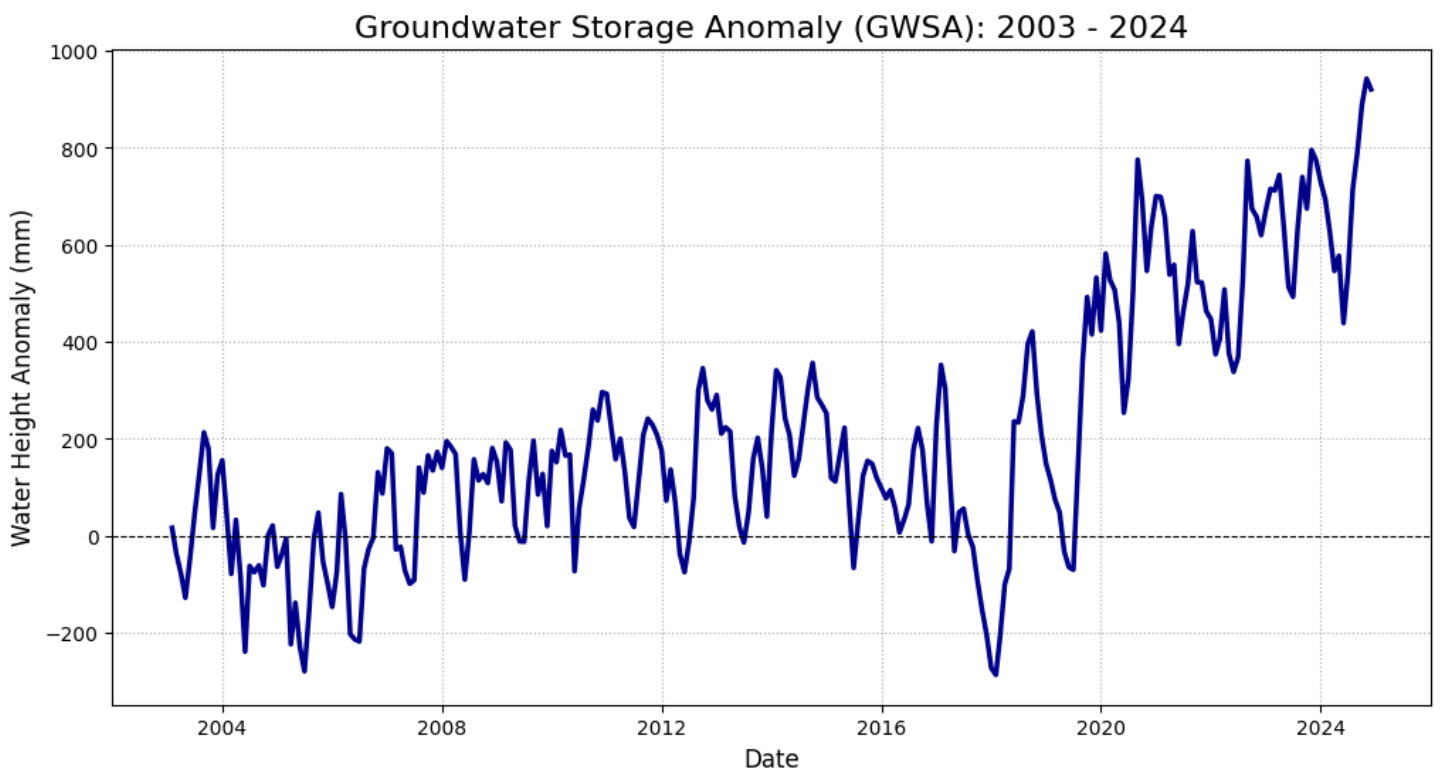
**Figure 1. Long-Term Trend of Continental Water Storage Components**



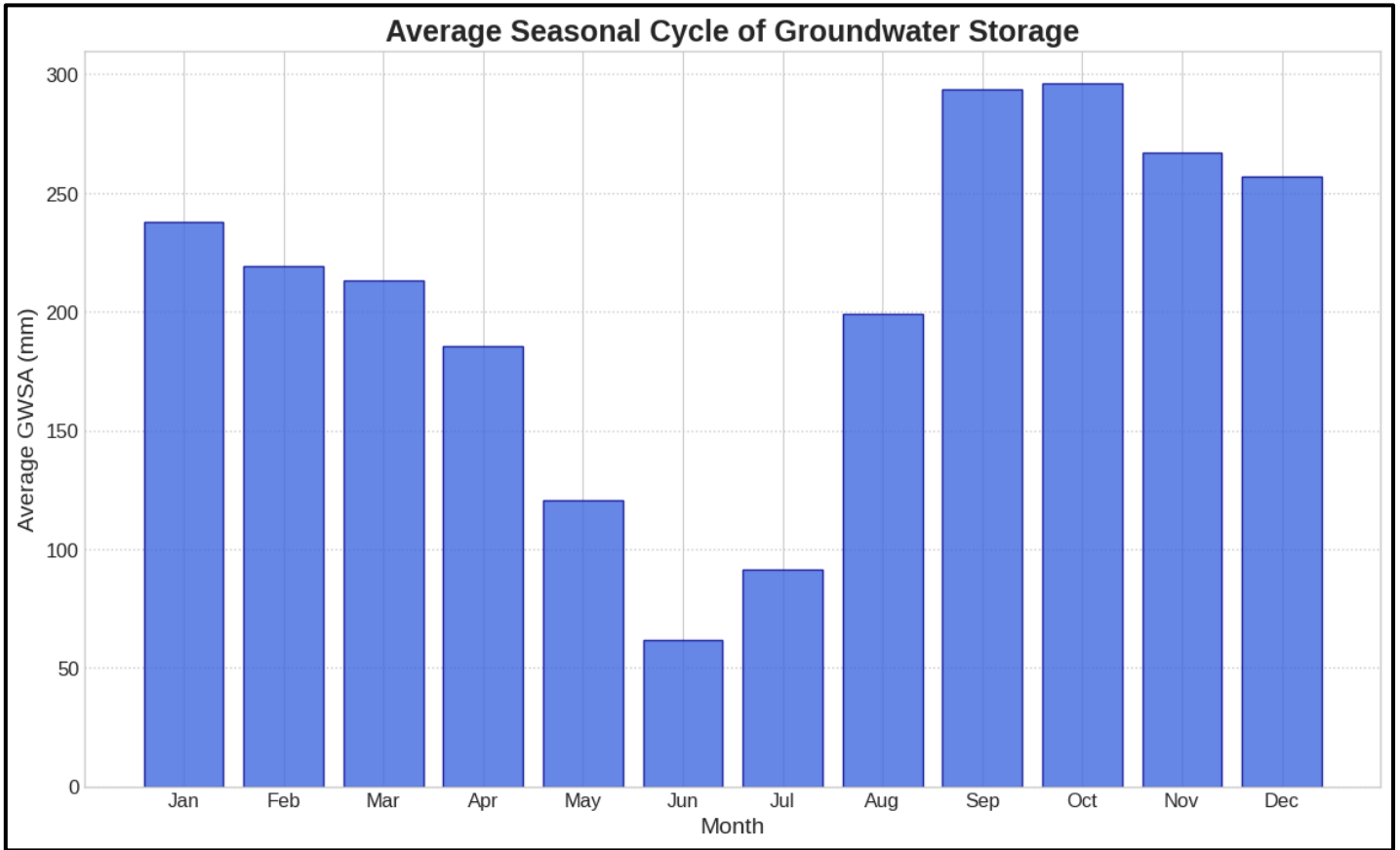
**Figure 2. Long-Term Seasonal Average of Continental Water Storage**



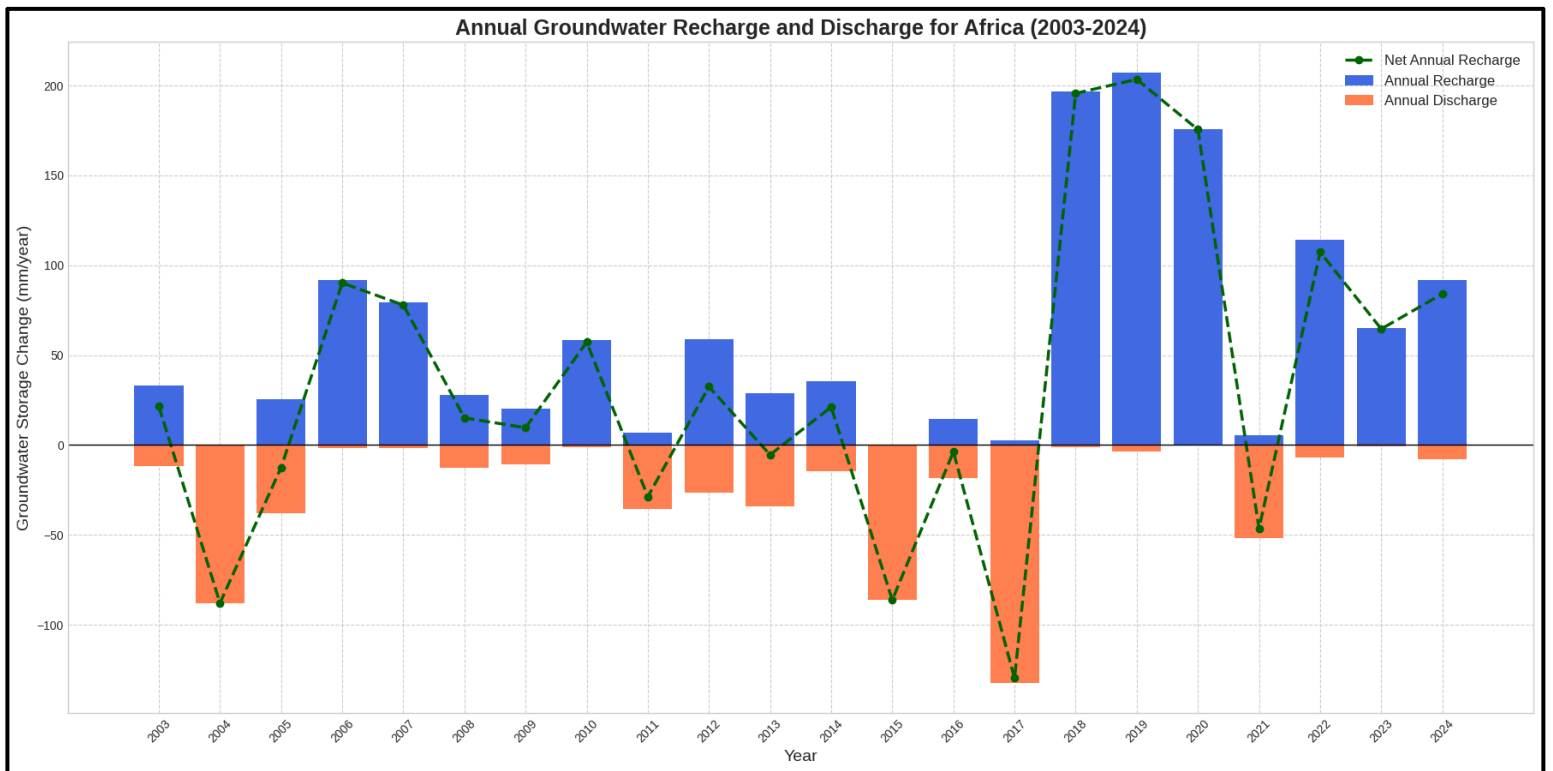
**Figure 3. Year-Based Comparison of GWSA**



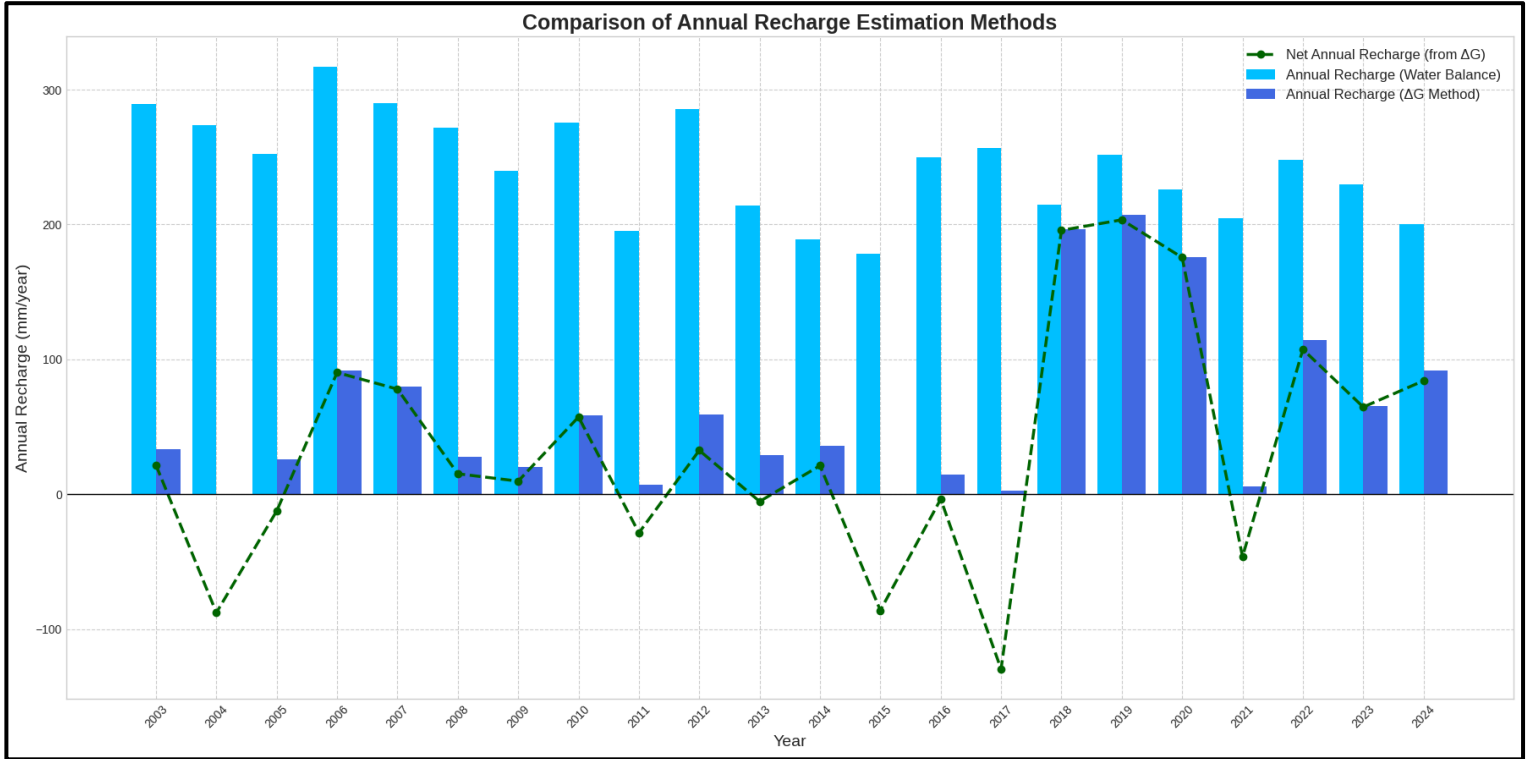
**Figure 4. Long Term Groundwater Storage Anomaly (GWSA)**



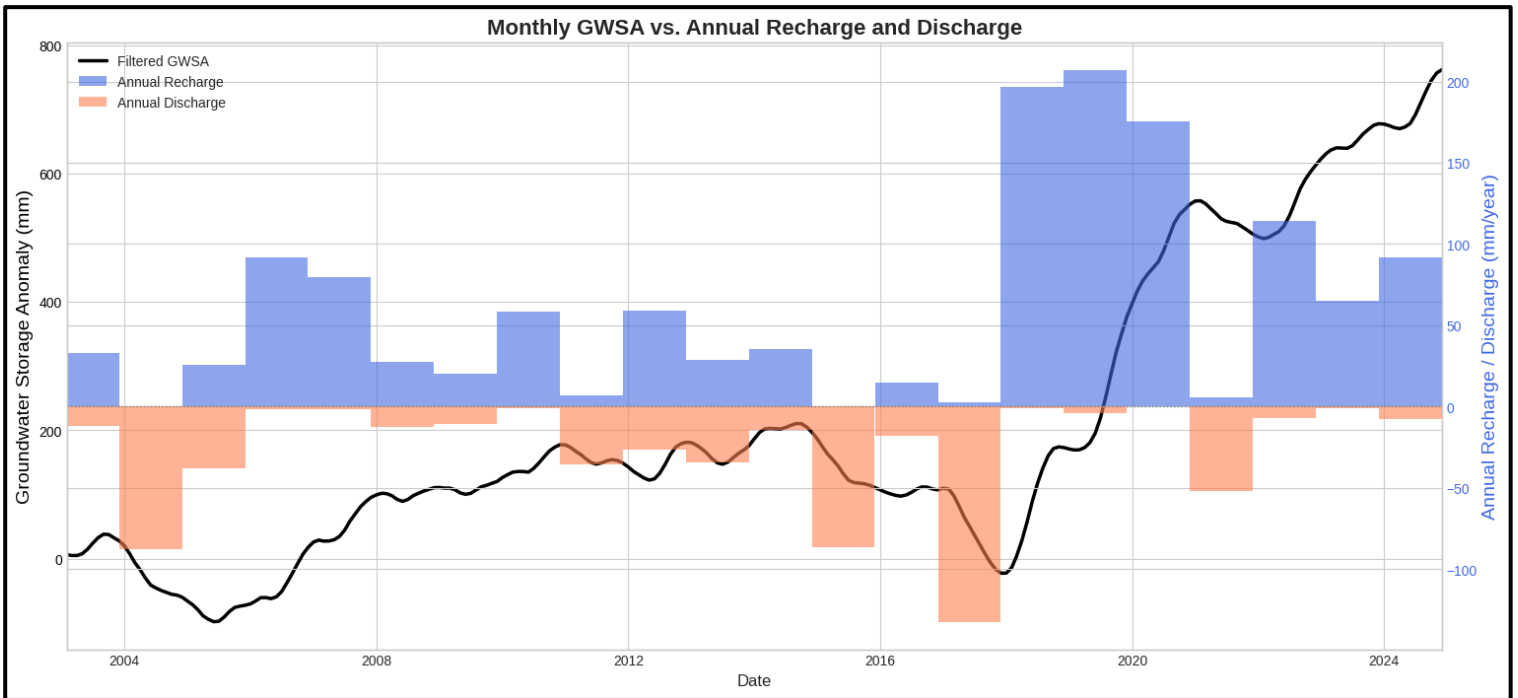
**Figure 5. Long Term Seasonal Average of (GWSA)**



**Figure 6. Long Term Annual Groundwater and Discharge (Derived from GWSA)**

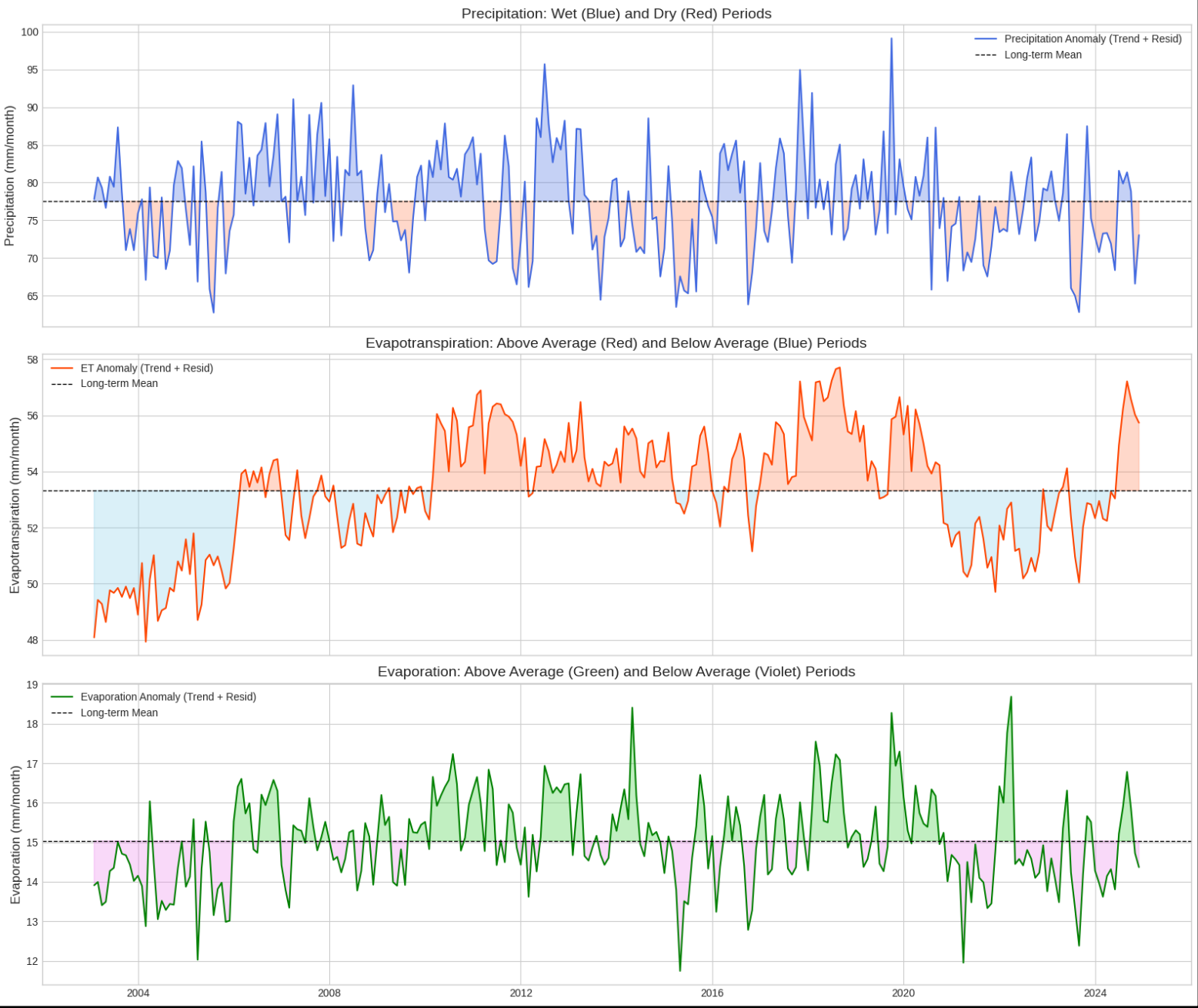


**Figure 7. Comparison of Annual Groundwater and Discharge (Derived from GWAS and Water Balance:  $R=P-Q-ET$ )**

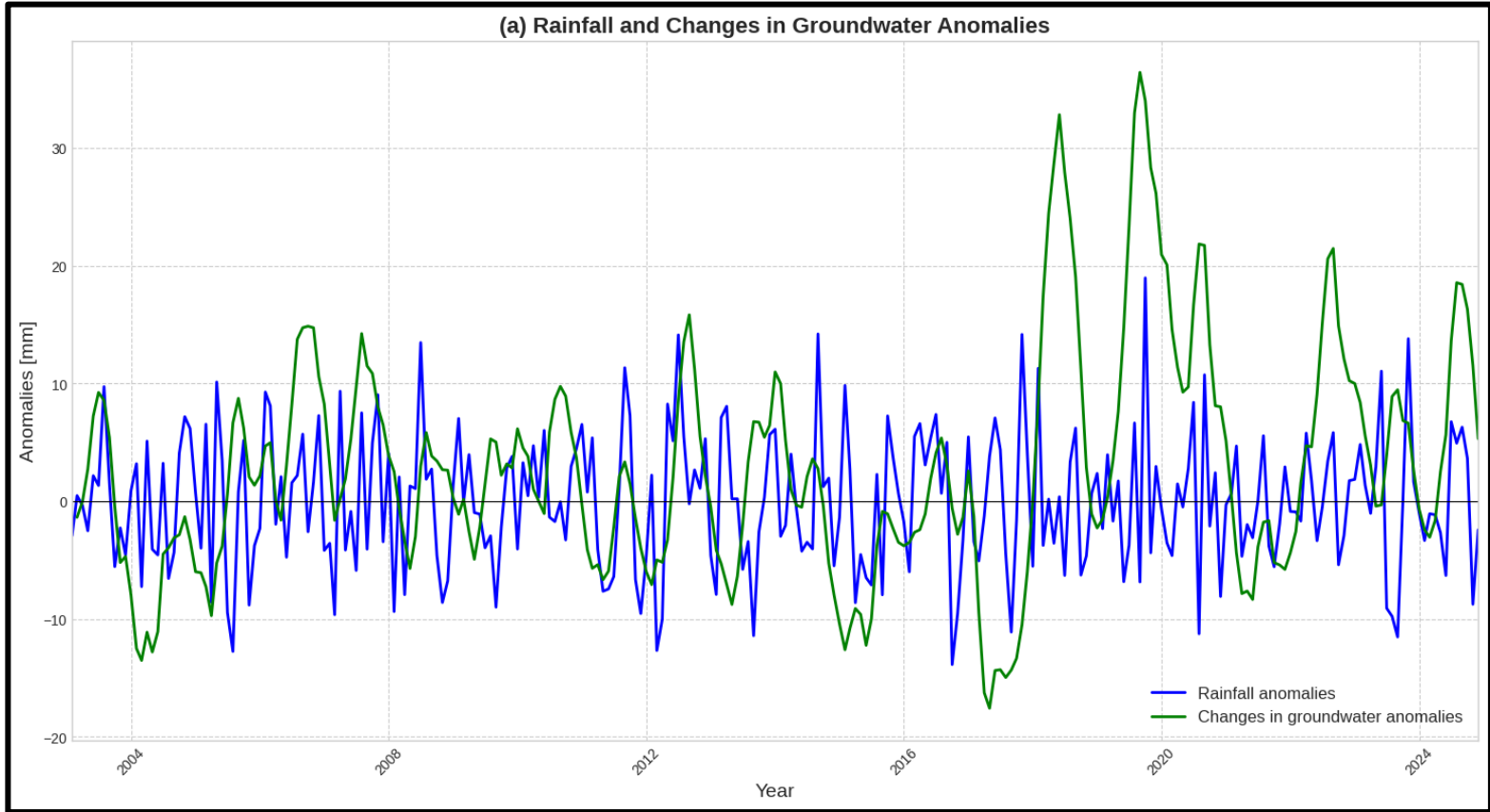


**Figure 8. Smoothed GWAS and Annual Groundwater and Discharge (Derived from GWAS)**

### Continental Climate Anomalies (Seasonal Cycle Removed)



**Figure 9. Long Term Climate Variable Anomalies**



**Figure 10. Long-Term Comparison of GWSA and Precipitation**

# Comprehensive Analysis: Precipitation, Recharge, and Groundwater Storage

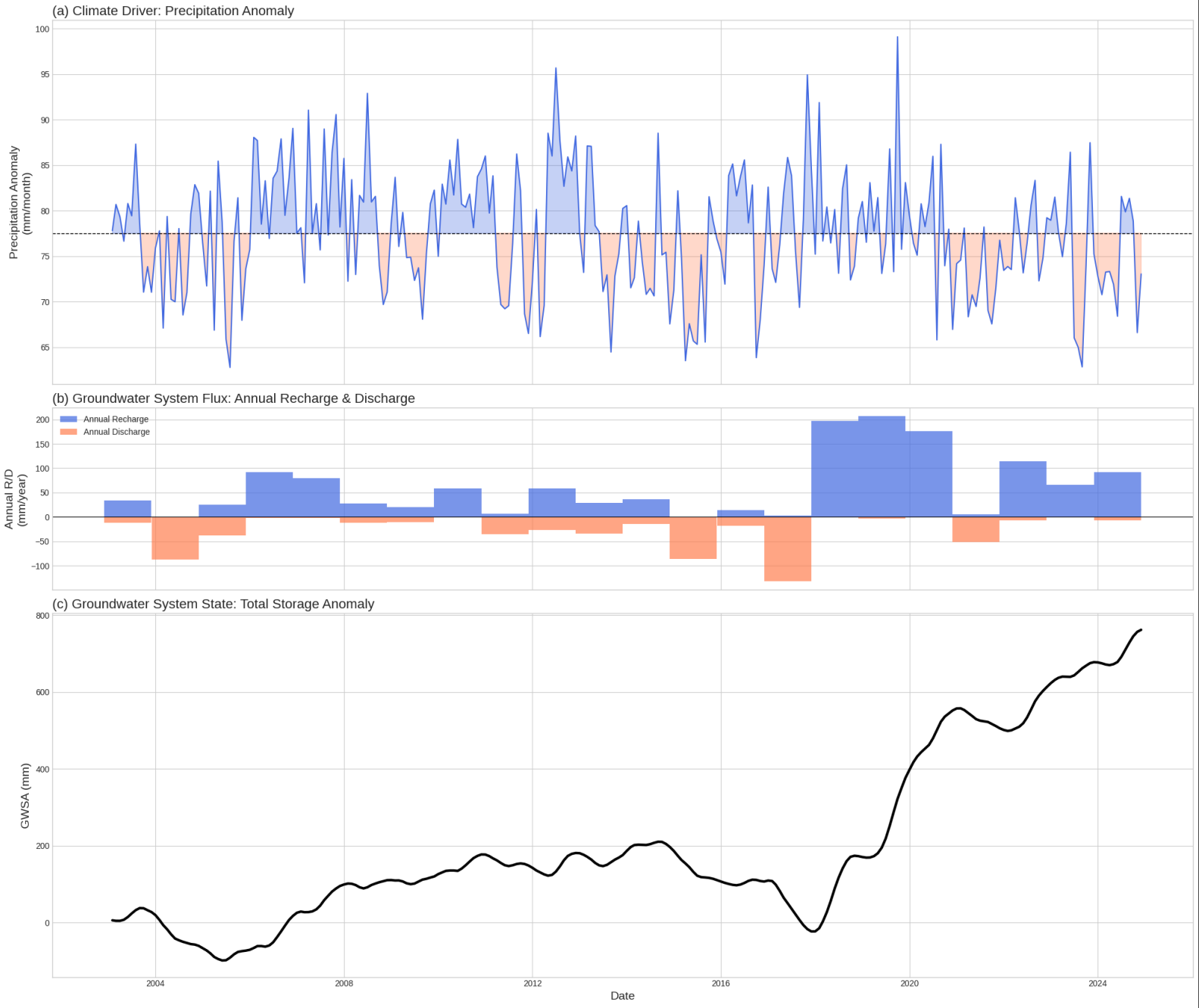
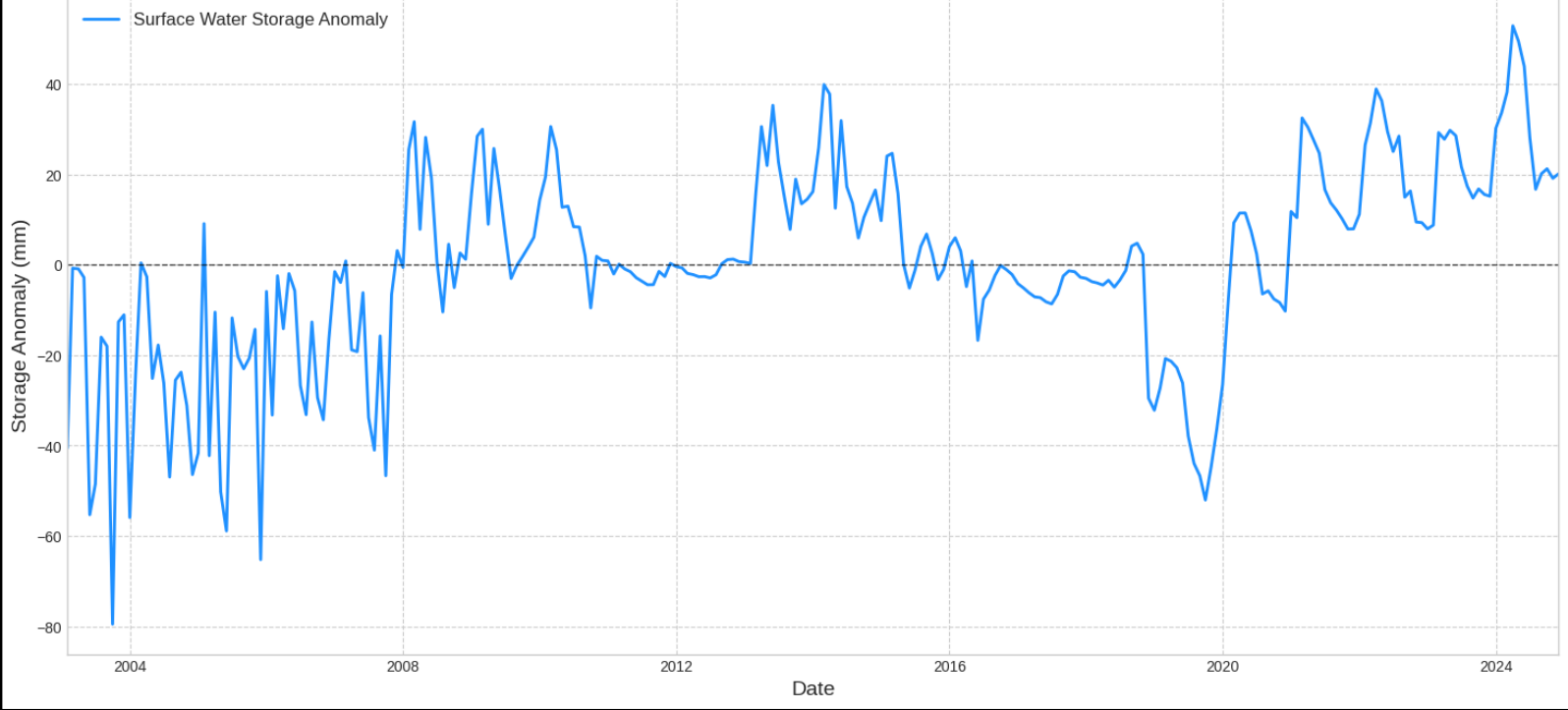


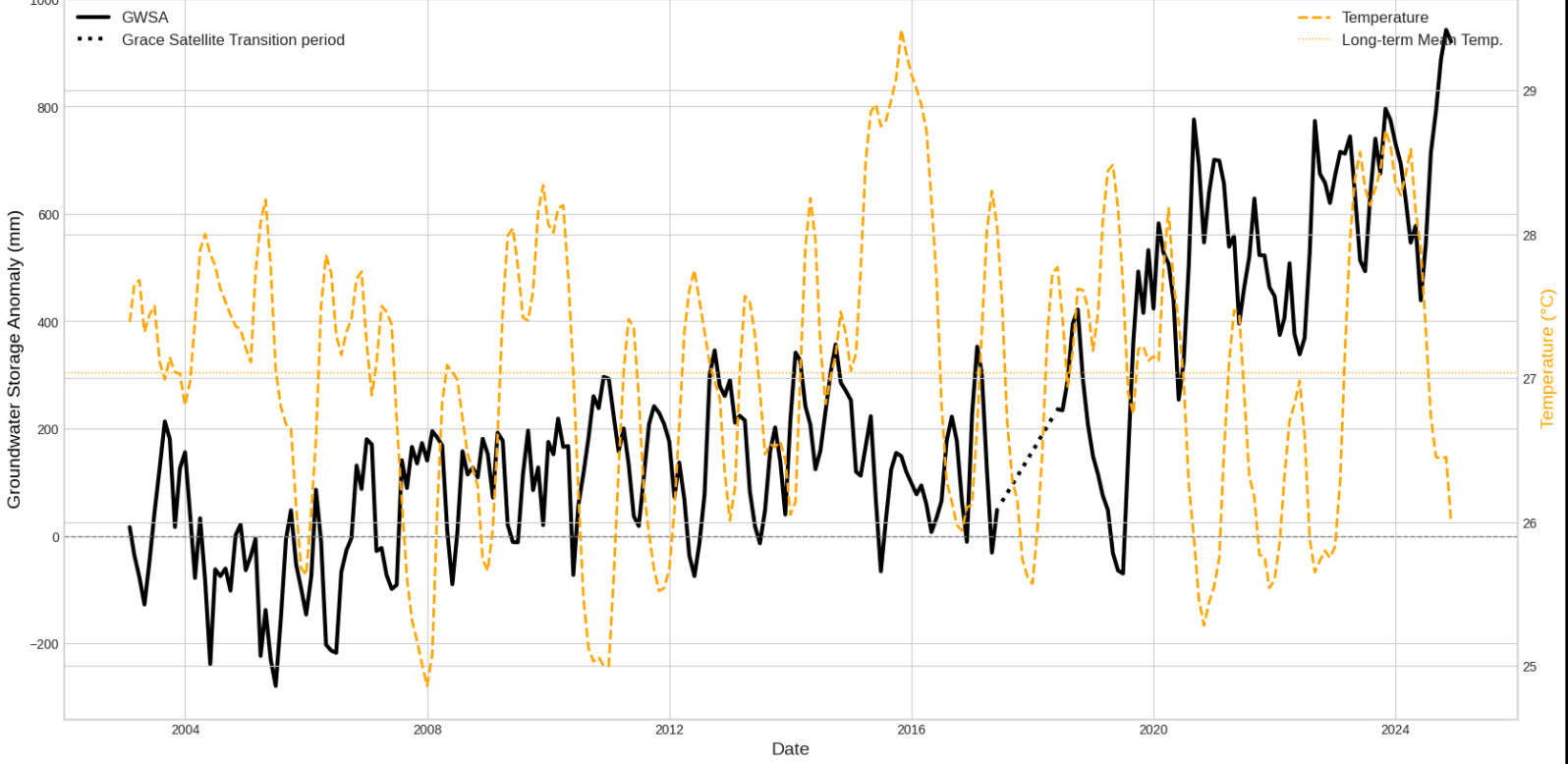
Figure 11. Long-Term Comparison of GWSA, Recharge, and Precipitation

**Continental Surface Water Storage Anomaly (2003-2024)**

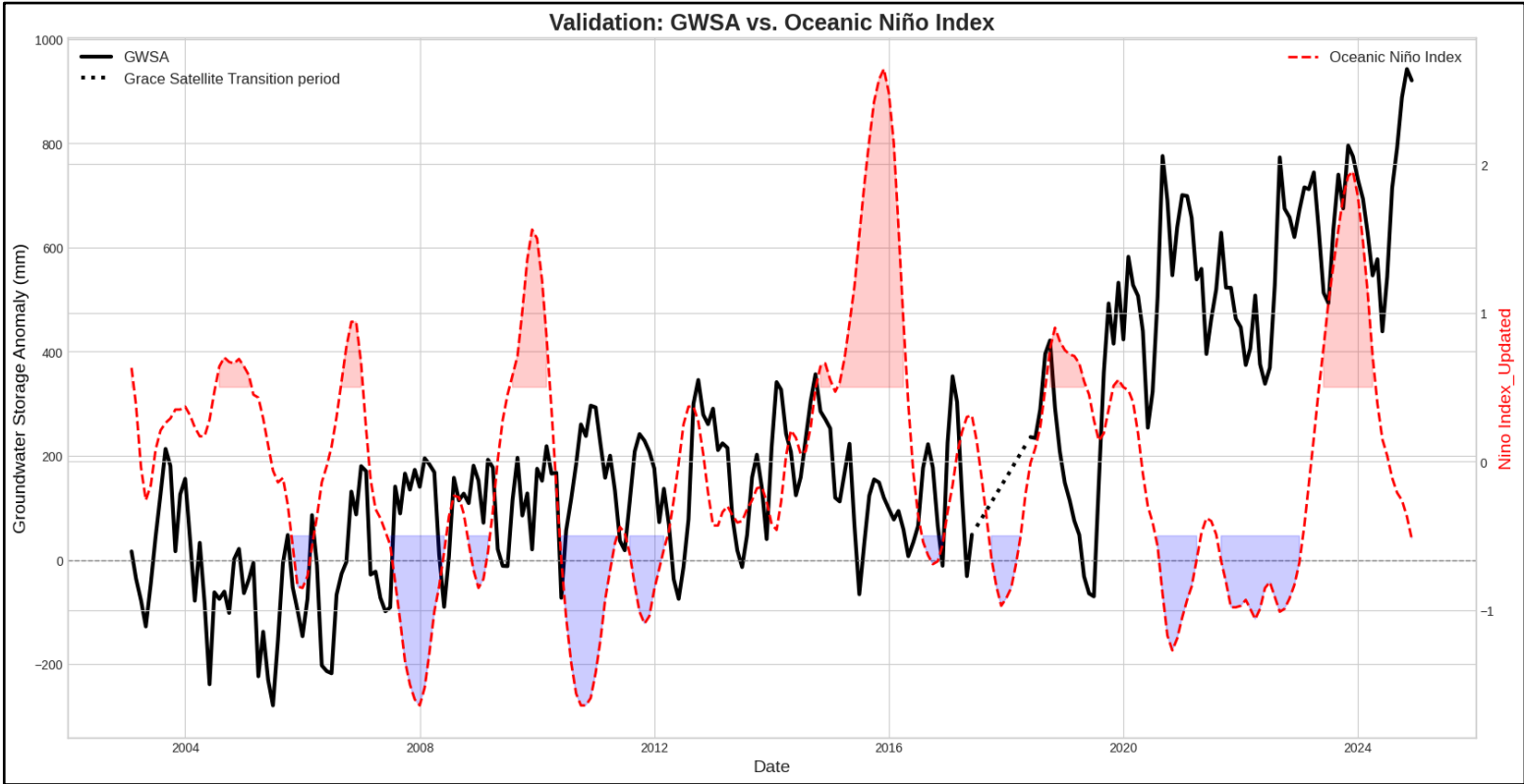


**Figure 12. Long-Term Surface Water Storage Anomaly**

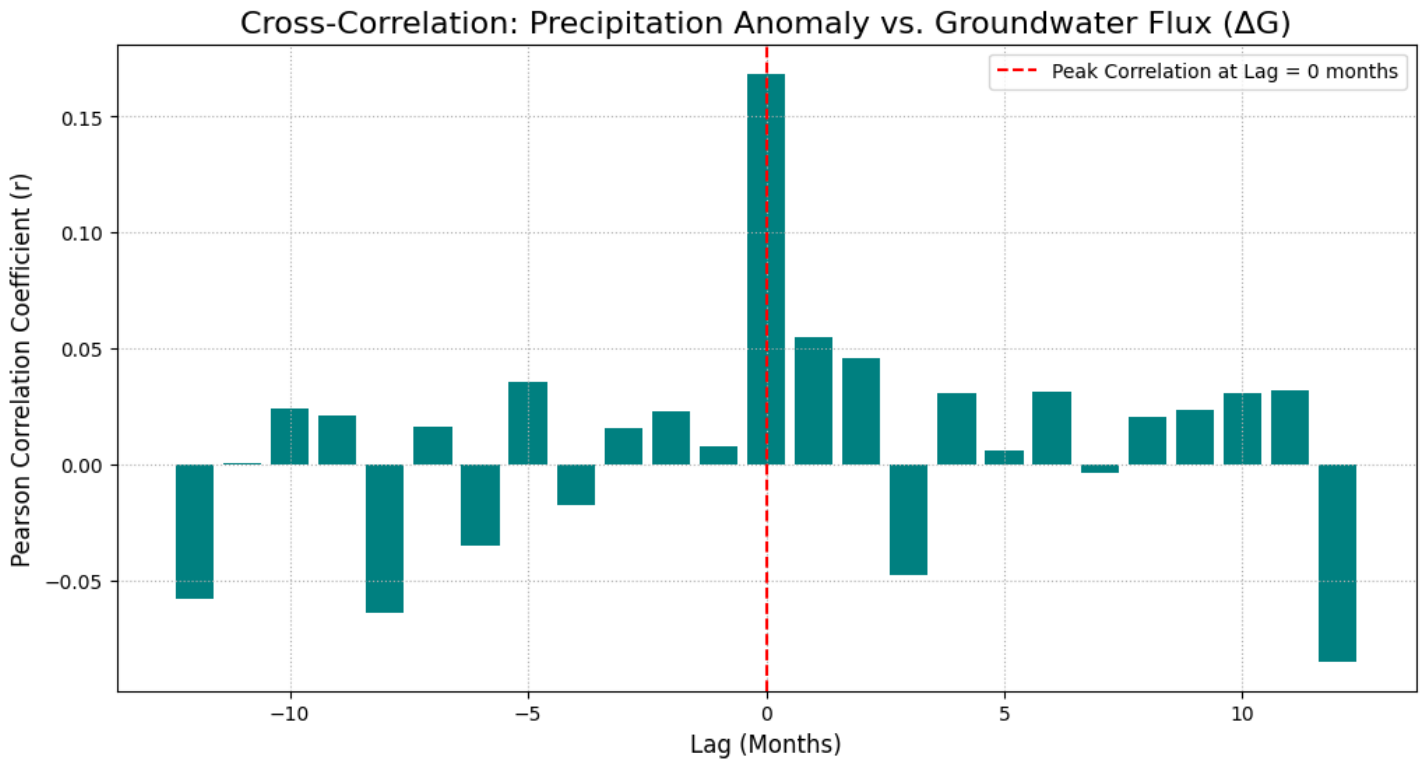
**Continental Groundwater Storage vs. Temperature**



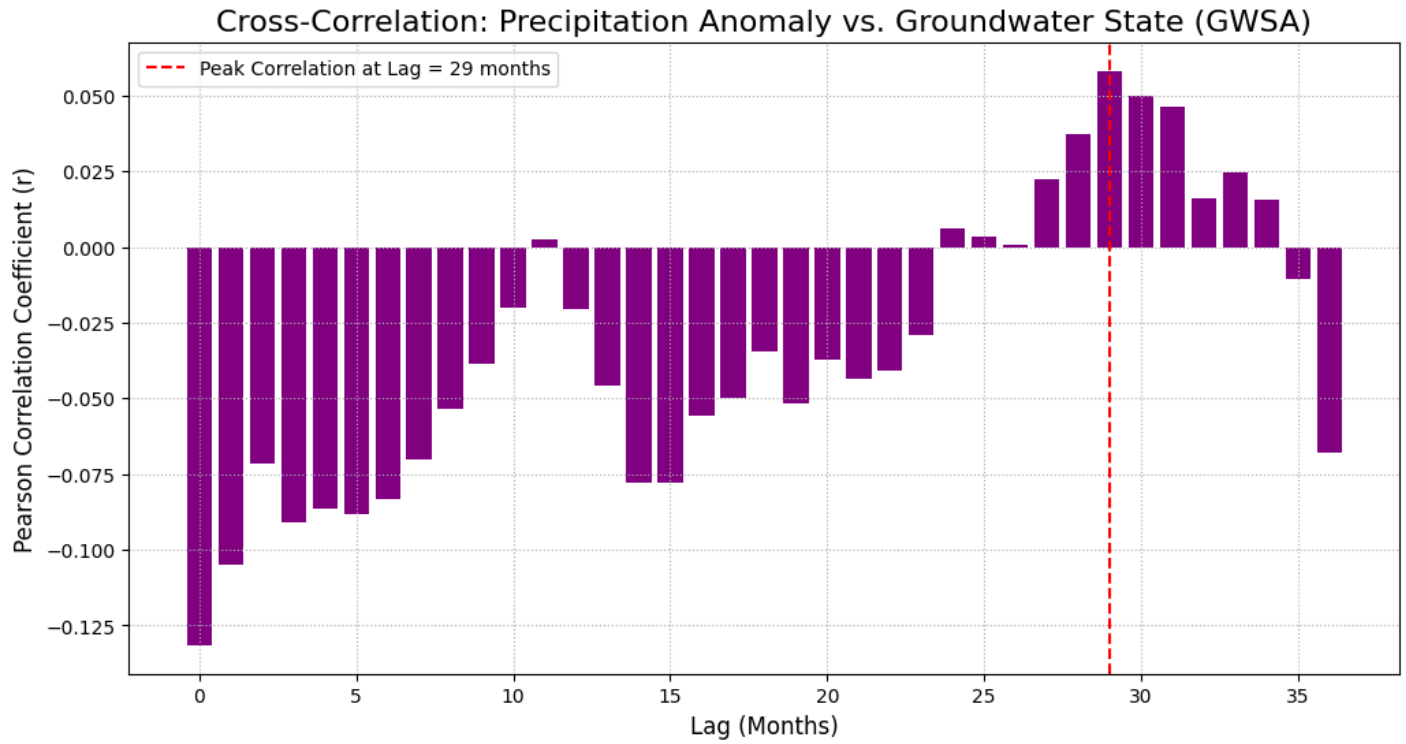
**Figure 13. Comparison of Long-Term GWSA with Independent Temperature**



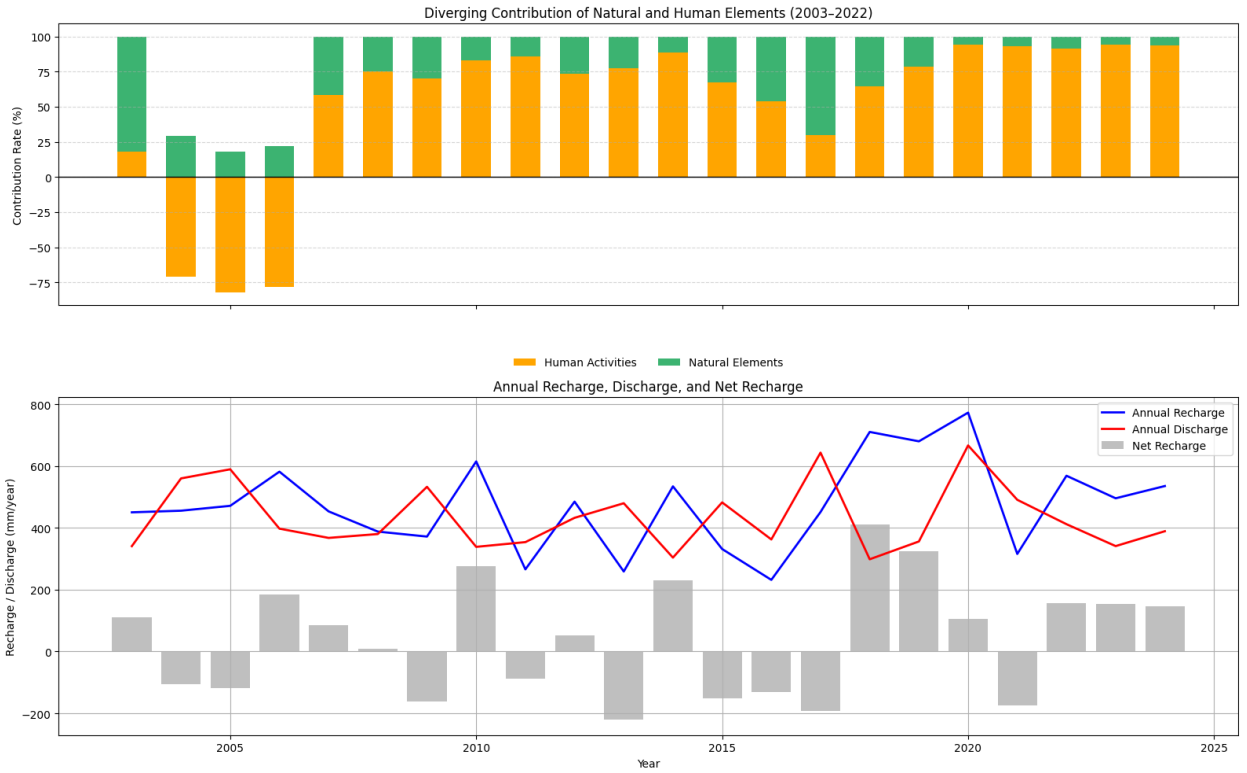
**Figure 14. Comparison of Long Term GWSA with Oceanic Niño Index (Niño Index <-0.5 is Wet period and Niño Index >0.5 is Dry period)**



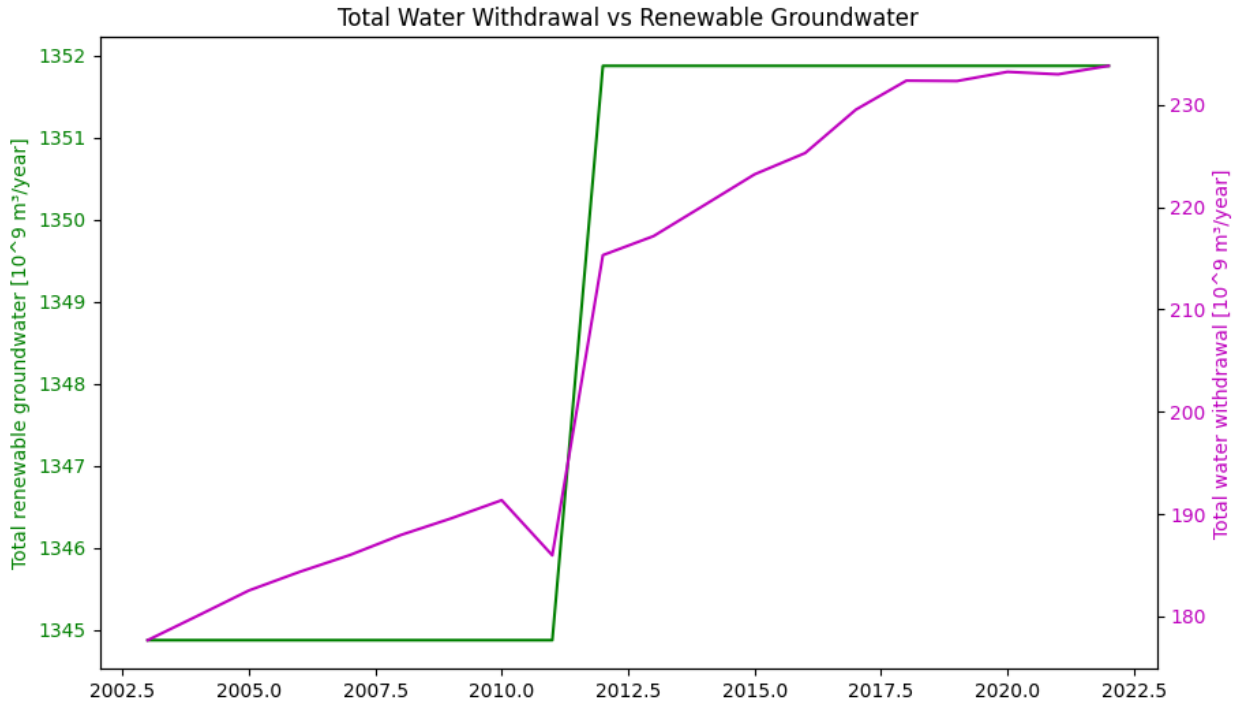
**Figure 15. Cross Validation of Precipitation Anomaly versus Groundwater Flux**



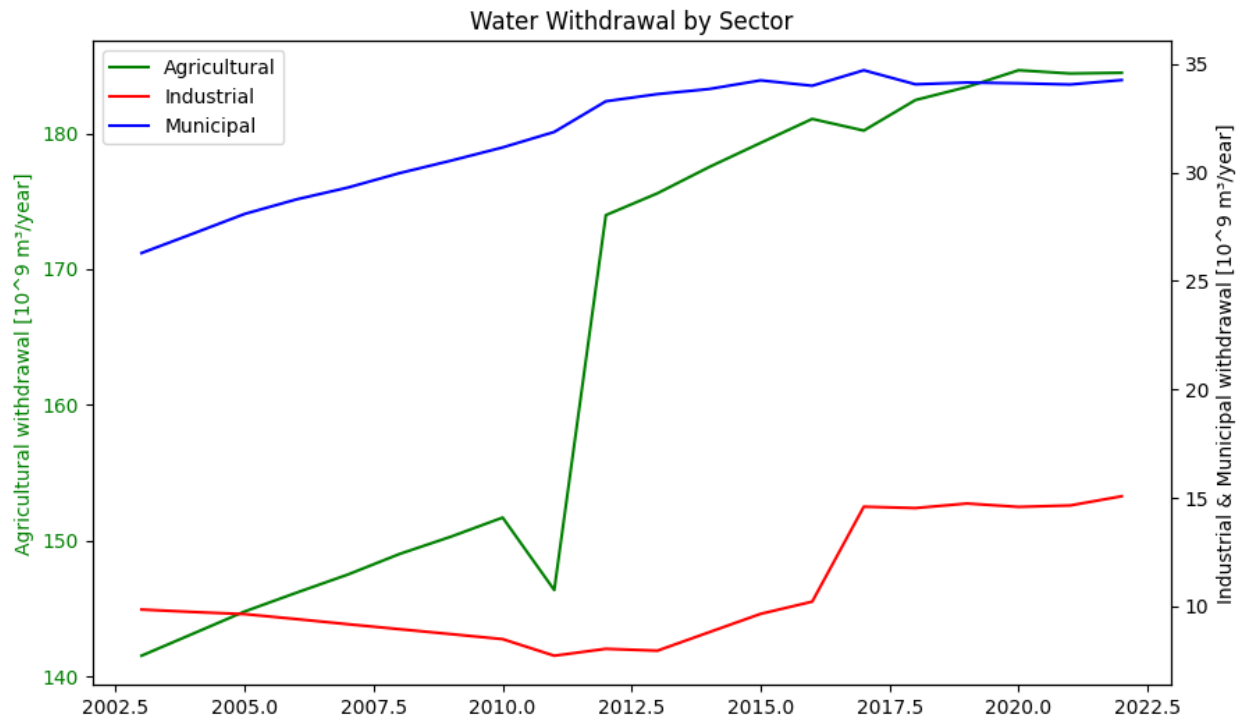
**Figure 16. Cross Validation of Precipitation Anomaly versus Groundwater State (GWSA)**



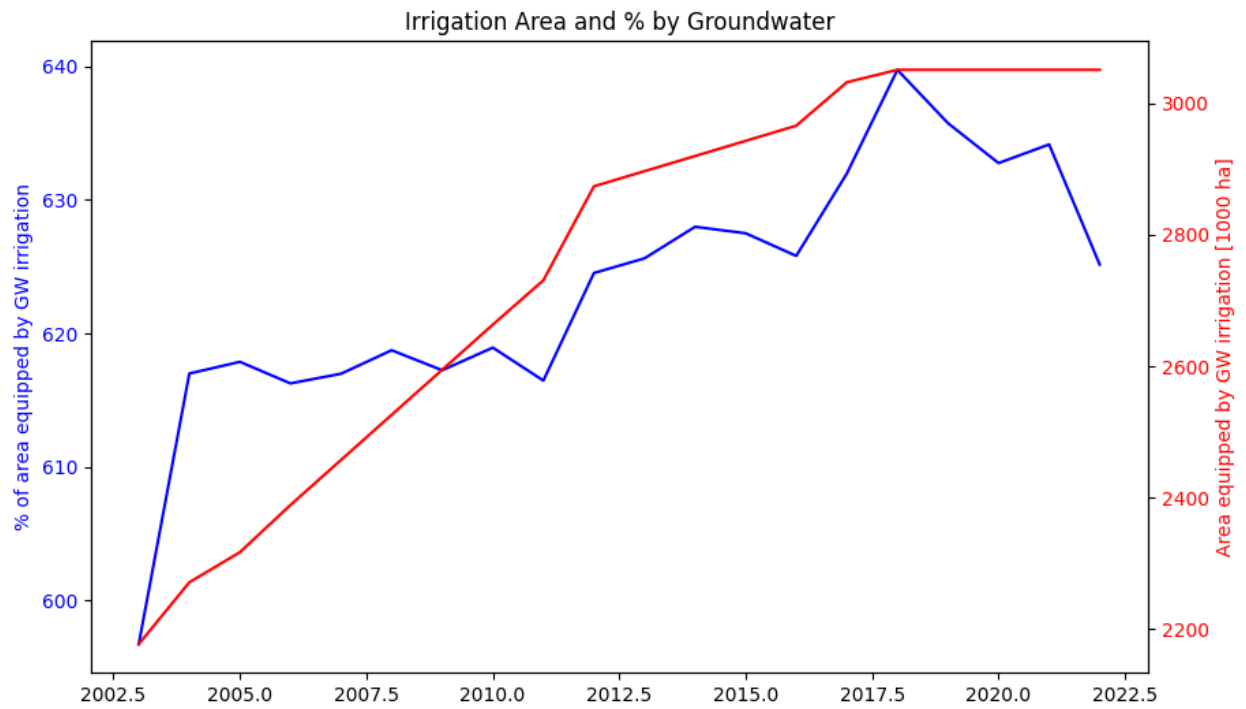
**Figure 17. Differentiation of Natural and Anthropogenic Contribution to GWSA**



**Figure 18. Total Annual Relationship of Renewal of Groundwater and Water Withdrawal**



**Figure 19. Total Annual Water Withdrawal By Sector**



**Figure 20. Long term Groundwater Utilization for Irrigation**