CISESS 2023 INTERNSHIP: INVESTIGATION OF HIGH RESOLUTION SATELLITE PRODUCTS FOR MONITORING THE HYDROLOGIC CYCLE COMPONENTS ANKITH BACHHU MENTORS: DR. VELJKO PETKOVIC AND DR. HUGO BERBERY

- Objective: "See" where the water is, by looking at how it "moves" through the water cycle over the past 20 years (2000-2020)
- Hydrological Cycle: The vertical and horizontal movement of water as liquid, vapor, or solids between the Earth's surface, subsurface, atmosphere and oceans
- Analyze: Inflow Outflow = Change in Water Storage
- Datasets:
 - Precipitation Products: IMERG, PERSIANN
 - Soil Moisture: SMOPS, SMAP
 - Evaporation: GLEAM
 - Runoff: ERA5, G-RUN

OBSERVING THE WATER CYCLE





RESULTS

Global Annual Cycle

Mississippi River Basin Annual Cycle



Inflow (precipitation) – **Outflow** (runoff, evaporation, soil moisture) = **Change in Water Storage**

- Water storage variations can be attributed to snow, ice, and groundwater, which were not explored in this project so far
- Presented results suggest the variability and uncertainty in each of the water cycle components. Even though the datasets
 are derived by combining numerous sensors (both satellite- and ground-based) and models, there are still noticeable
 variations between the products measuring the same parameter.