

Climate Change Methods and Impacts

- Enrichment session upcoming April 8
 - Bruce Daniels
 - Shawn Chartrand
 - Joel Smith
- Various approaches
 - Extending long term trends (Daniels)
 - Applying results from Global Climate Models (GCMs)



Applying GCMs (Top Down Approach)

1. Select GCM and emissions forecast
(CalAdapt provides CA-approved list)
2. Downscale GCM results to local level
(BCSD approach, results available from CalAdapt)
3. Interpret BCDS data
 - a. Calculate change between hindcast and forecast
 - b. Apply “deltas” to historical data
4. Run forecast precip and temps through hydrology
5. Run CC-impacted streamflows thru *Confluence*

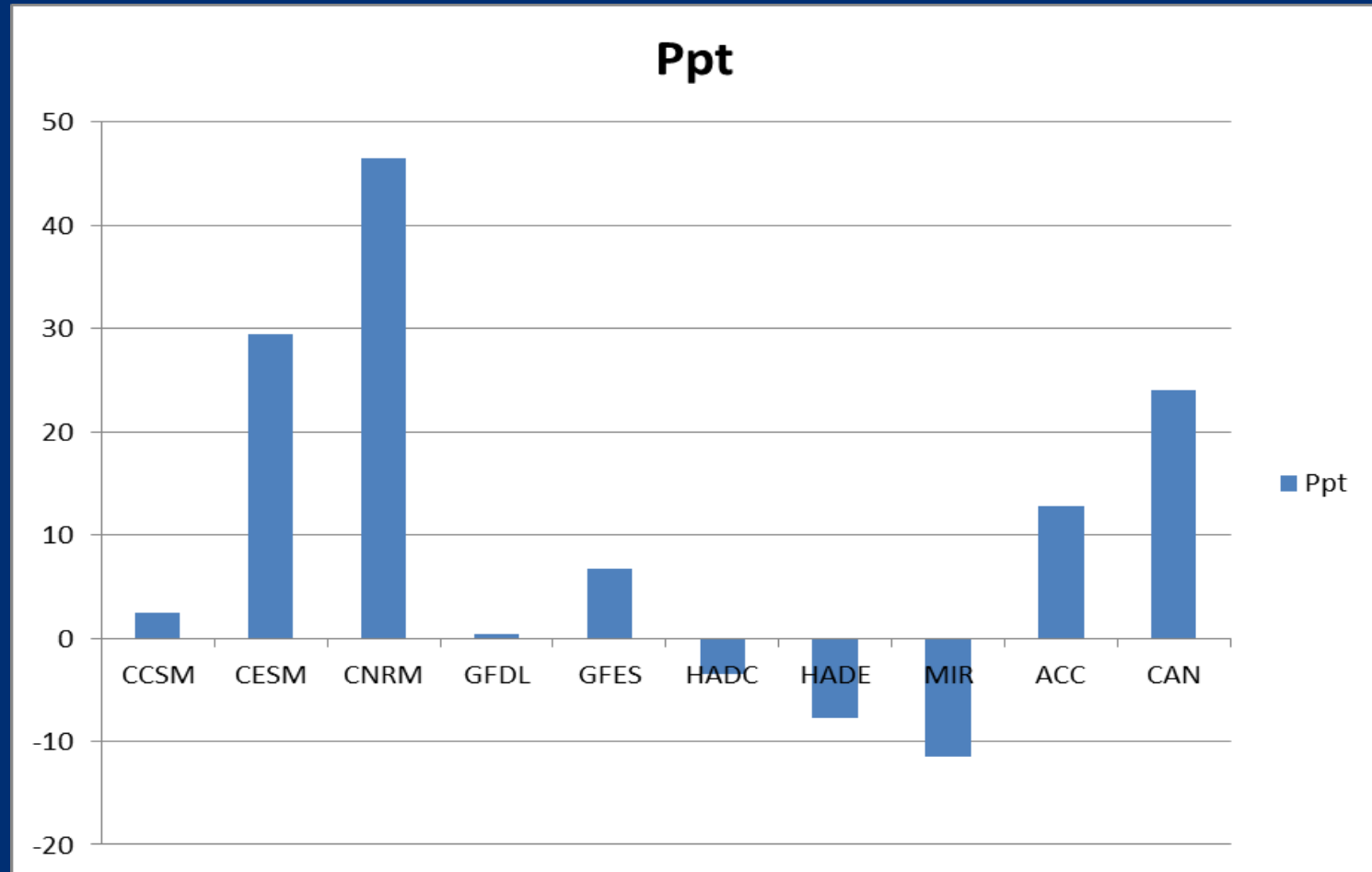


Flint and Flint (USGS, 2012)

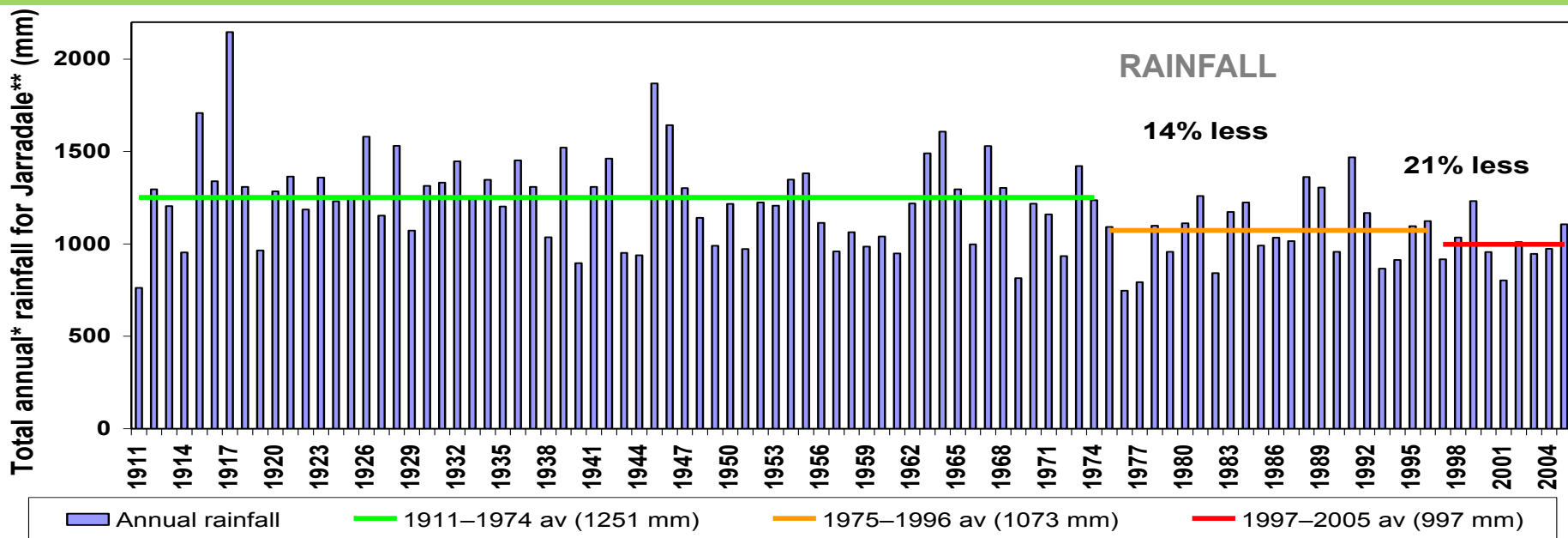
- Reduced early and late wet season runoff => extended dry season
- Longer and drier summers regardless of precip. trends (i.e., even wetter is drier)
- Higher ET, and climatic water deficit (CWD) increasing up to 30% => **up to 200 mm added water needed to maintain soil moisture**
- Potential for extended drought and unprecedented precipitation events



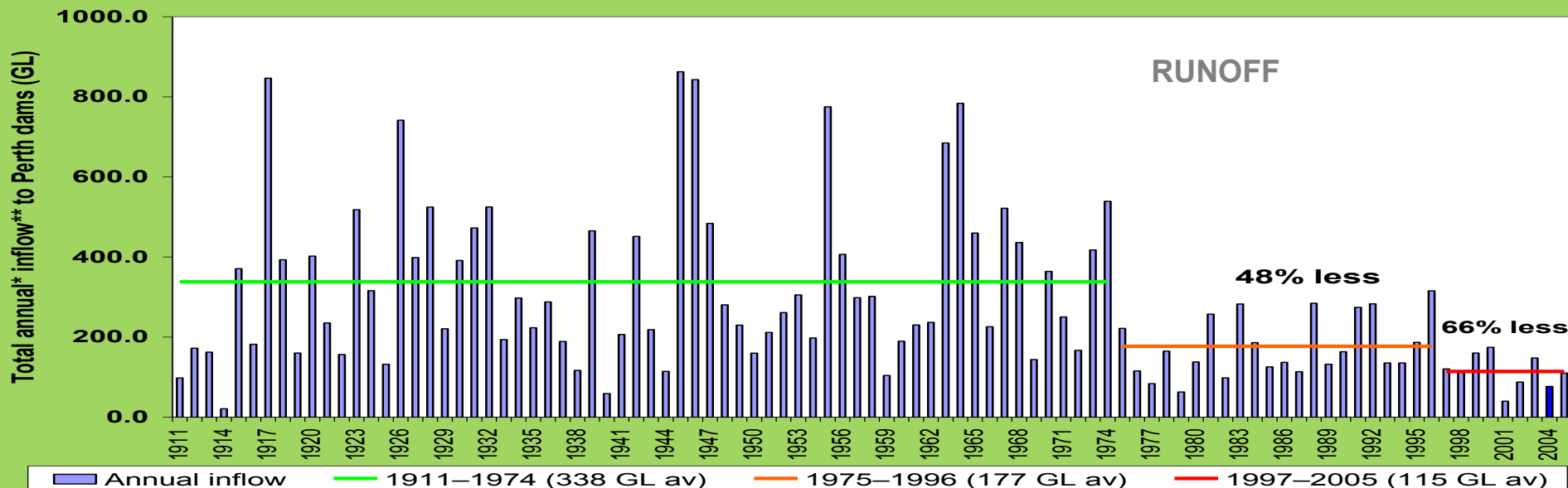
Range of GCM Results: precip in SC (10 CMIP5 models recommended for CA)



Perth's Watersheds – Climate (Rainfall) and Reliability (Runoff)



Notes: * year is taken as May to April and labelled year is beginning (winter) of year
 ** some rainfall filled from other stations, 2004 & 2005 are estimates



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 ** inflow is simulated based on Perth dams (excluding Stirling & Samson)