Outline of Climate Change Analysis

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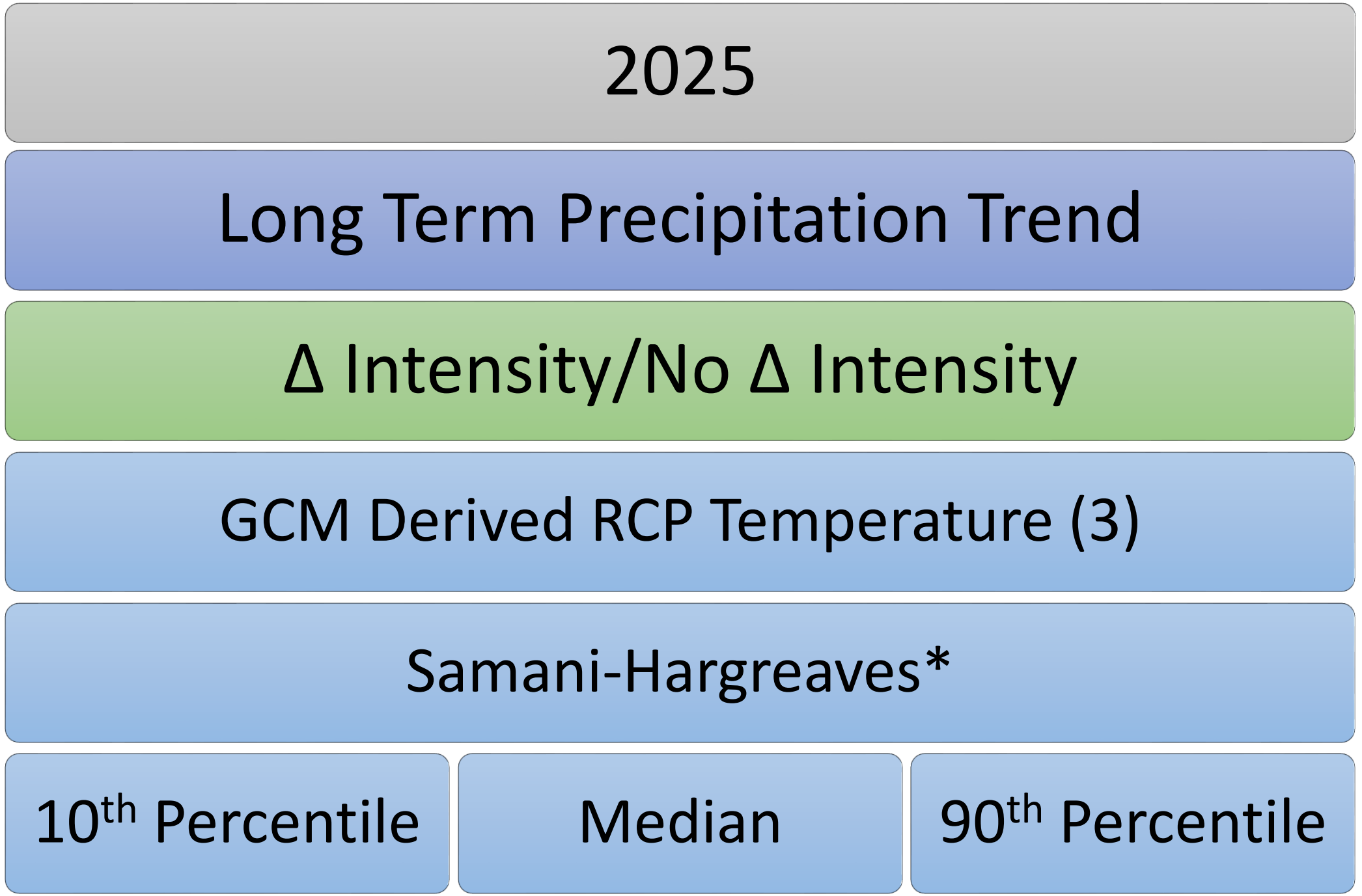
Updates

- Documentation for the climate approach is in review, the technical documentation is also being refined for reproducibility
  - Will be used to help guide questions used for the STAC review
  - Timeline for STAC review: March 2017?
- GCM decile comparisons of intensity are underway
- Outline of future scenarios

18 Possibilities



2025 Long Term Precipitation Trend

No Δ Intensity

Δ Intensity

RCP 2.6 Temp	RCP 4.5 Temp	RCP 8.5 Temp	RCP 2.6 Temp	RCP 4.5 Temp	RCP 8.5 Temp
10th Percentile	Median	90th Percentile	10th Percentile	Median	90th Percentile	10th Percentile	Median	90th Percentile	10th Percentile	Median	90th Percentile	10th Percentile	Median	90th Percentile	10th Percentile	Median	90th Percentile

27 Possibilities

2050

GCM Derived RCP Precipitation (3)

GCM Derived RCP Temperature (3)

No Δ Intensity	Karl & Knight Δ Intensity	Model Δ Intensity	Samani-Hargreaves*
10th Percentile	Median	90th Percentile	10th Percentile
			Median
			90th Percentile

2050

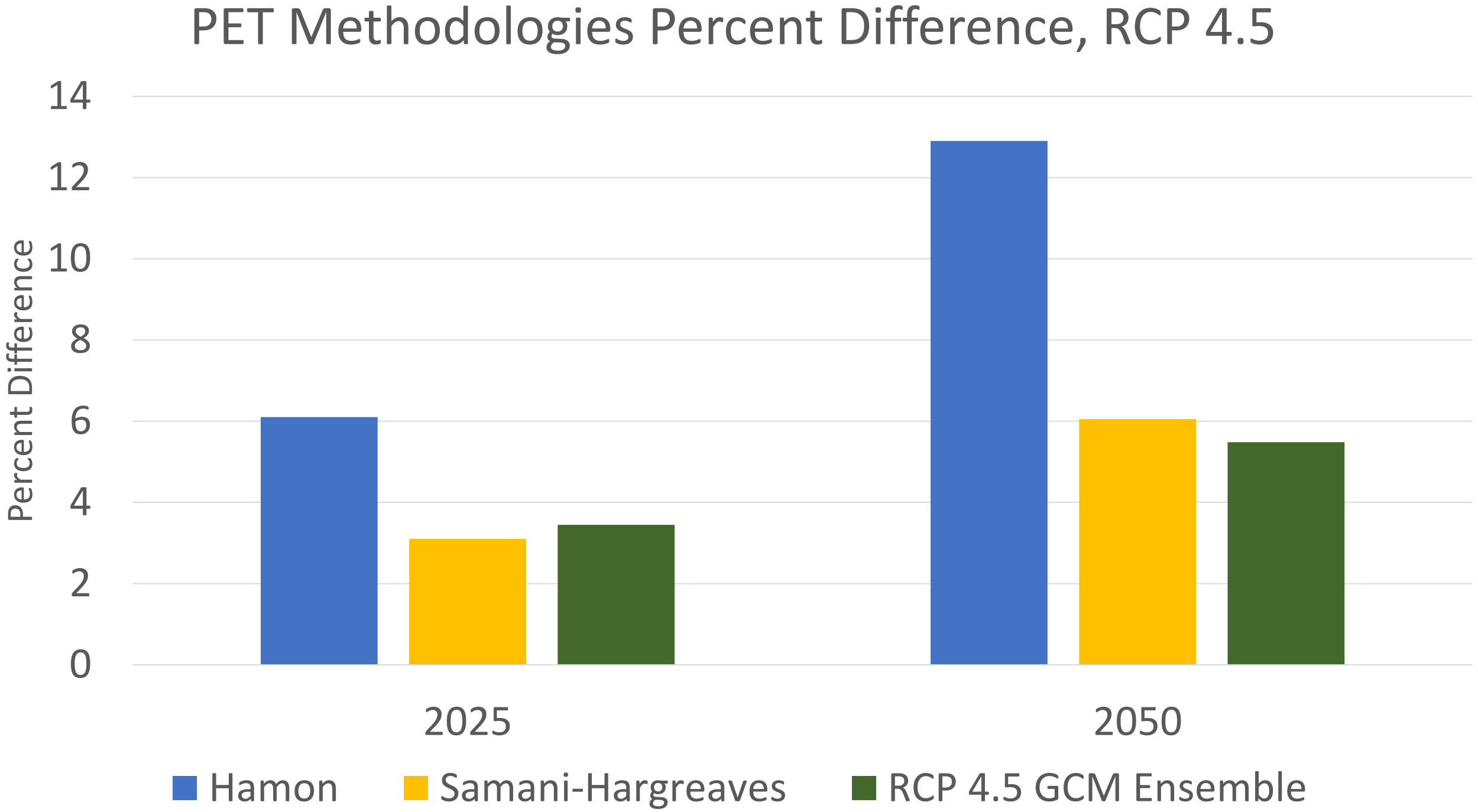
GCM Derived RCP 4.5 Precipitation

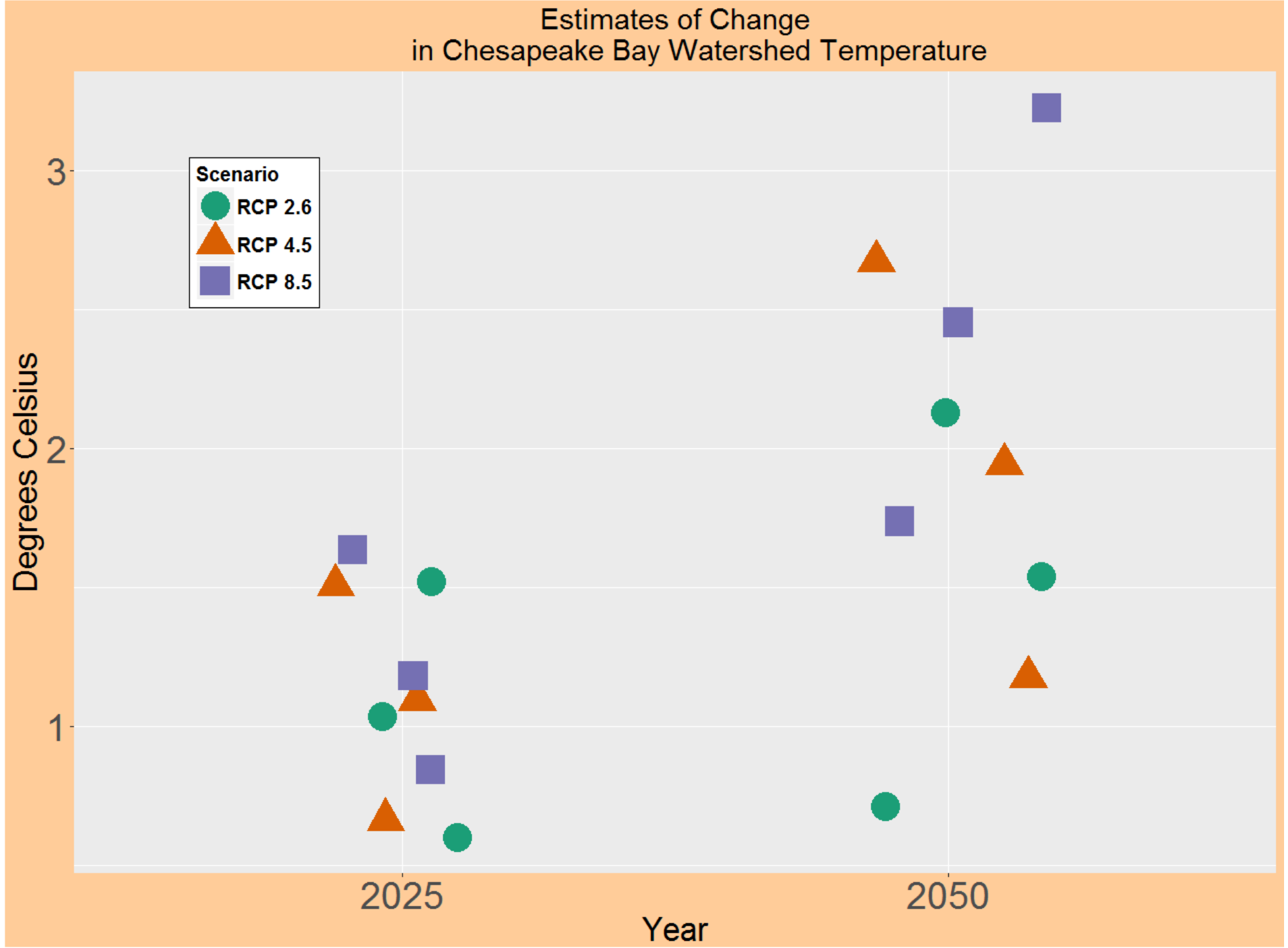
GCM Derived RCP 4.5 Temperature

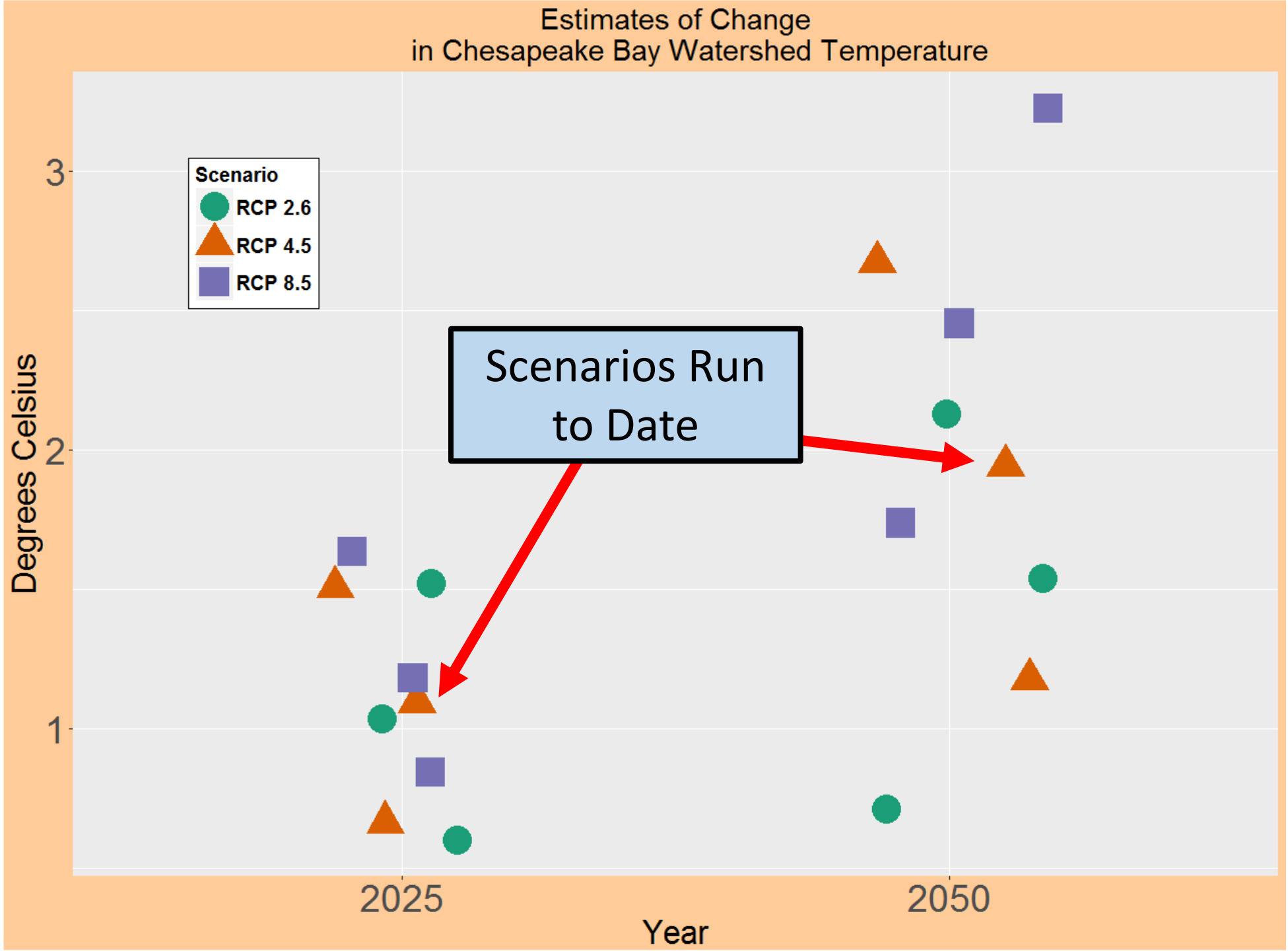
No Δ Intensity	Karl & Knight Δ Intensity	Model Δ Intensity	Samani-Hargreaves*
10^{th} Percentile	Median	90^{th} Percentile	10^{th} Percentile	Median	90^{th} Percentile

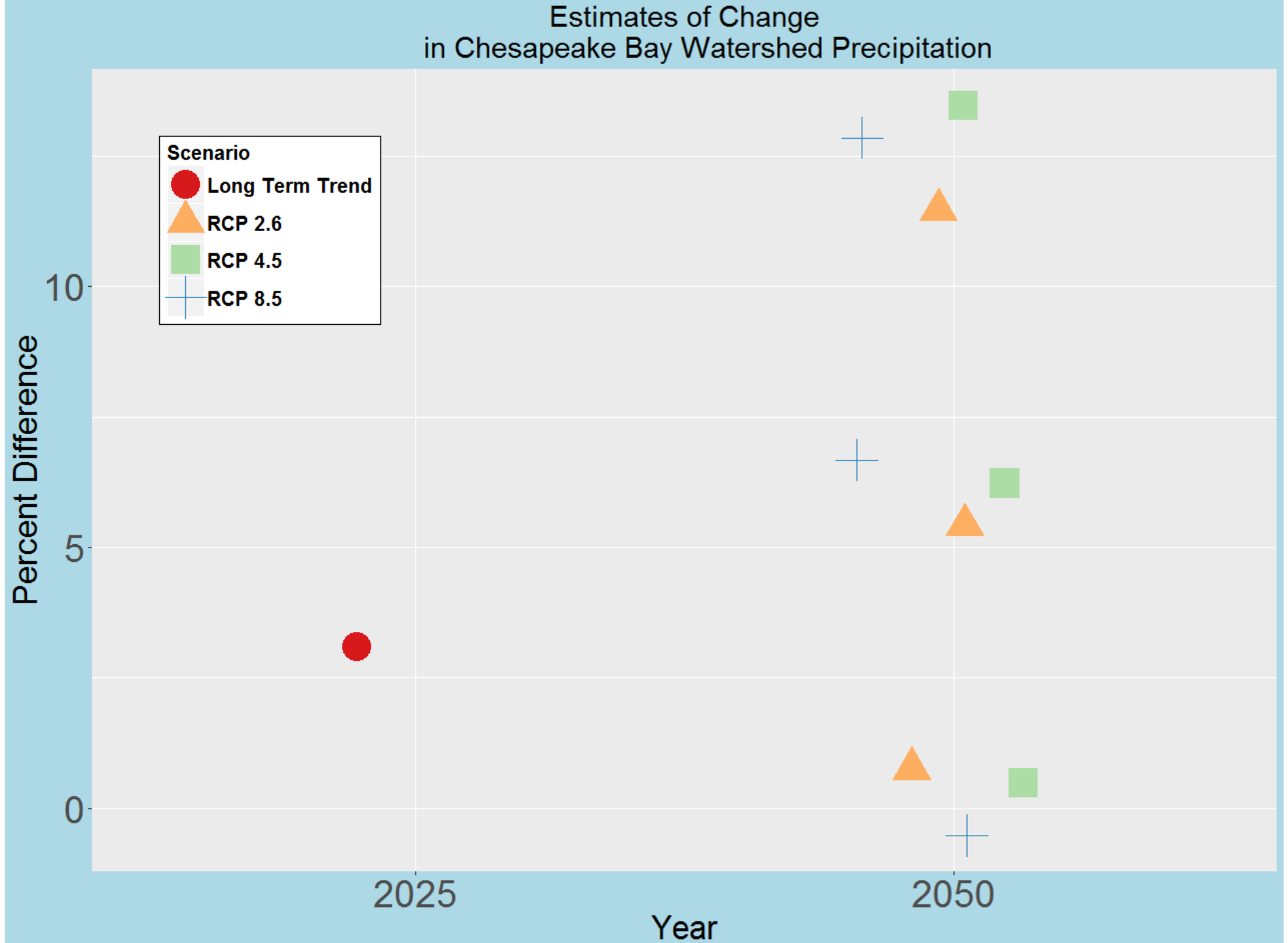
Process for Choosing Future Runs

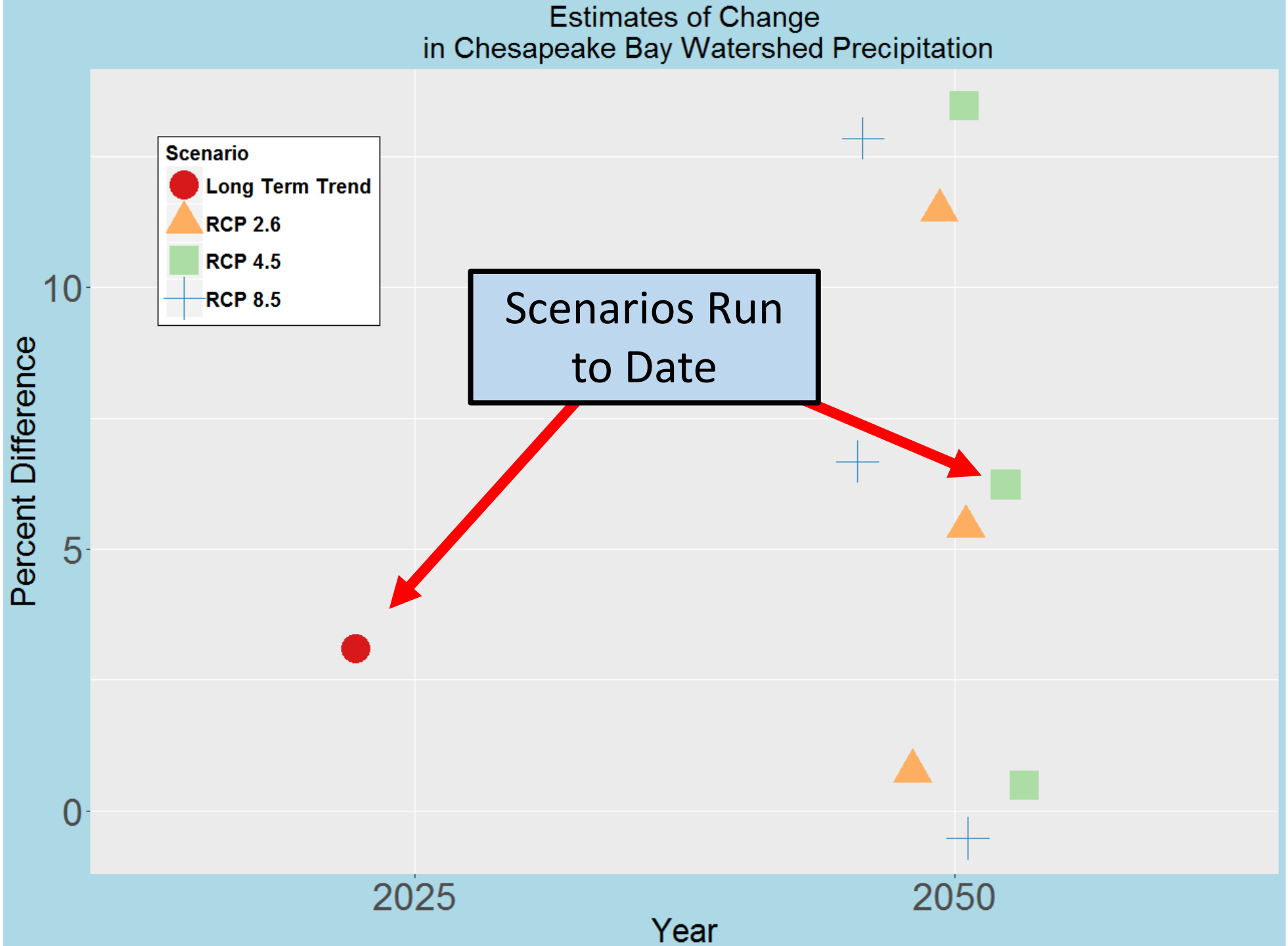
- Based on the WIP process and presentations made to the WQGIT, the Modeling Workgroup has efforts underway to frame a range of future climate change scenarios based on estimated 2025 and 2050 conditions.
- The implementation of the Samani-Hargreaves PET methodology was utilized, need to compare against precip-discharge relationship from Karen Rice's long term hydrology dataset
  - There is also the potential to compare downscaled PET data, though there could be issues in comparing different models
- Necessity to choose high-value scenarios to force the WSM


PET Methodologies Percent Difference, RCP 4.5
Percent Difference
14
12
10
8
6
4
2
0
2025
2050
Hamon
Samani-Hargreaves
RCP 4.5 GCM Ensemble


Estimates of Change
in Chesapeake Bay Watershed Temperature
Scenario
RCP 2.6
RCP 4.5
RCP 8.5
Degrees Celsius
3
2
1
2025
2050
Year


Estimates of Change
in Chesapeake Bay Watershed Temperature
Scenario
RCP 2.6
RCP 4.5
RCP 8.5
Scenarios Run
to Date
Degrees Celsius
3
2
1
2025
2050
Year


Estimates of Change
in Chesapeake Bay Watershed Precipitation
Scenario
Long Term Trend
RCP 2.6
RCP 4.5
RCP 8.5
Percent Difference
10
5
0
2025
2050
Year


Estimates of Change
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Scenario
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RCP 2.6
RCP 4.5
RCP 8.5
Scenarios Run
to Date
Percent Difference
10
5
0
2025
2050
Year

Timeline and Questions

- More scenarios to be run after the delivery of the final WSM
- Potential to run a few select WQSTM scenarios
- Suggestions?