Delta Smelt LCME output

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## New names:  
## Joining with `by = join\_by(Year)`  
## • `` -> `...1`  
## • `` -> `...13`  
## • `` -> `...14`  
## • `` -> `...15`  
## • `` -> `...16`

Table 3. Predicted population growth rate (lambda) for each cohort year by alternatives.

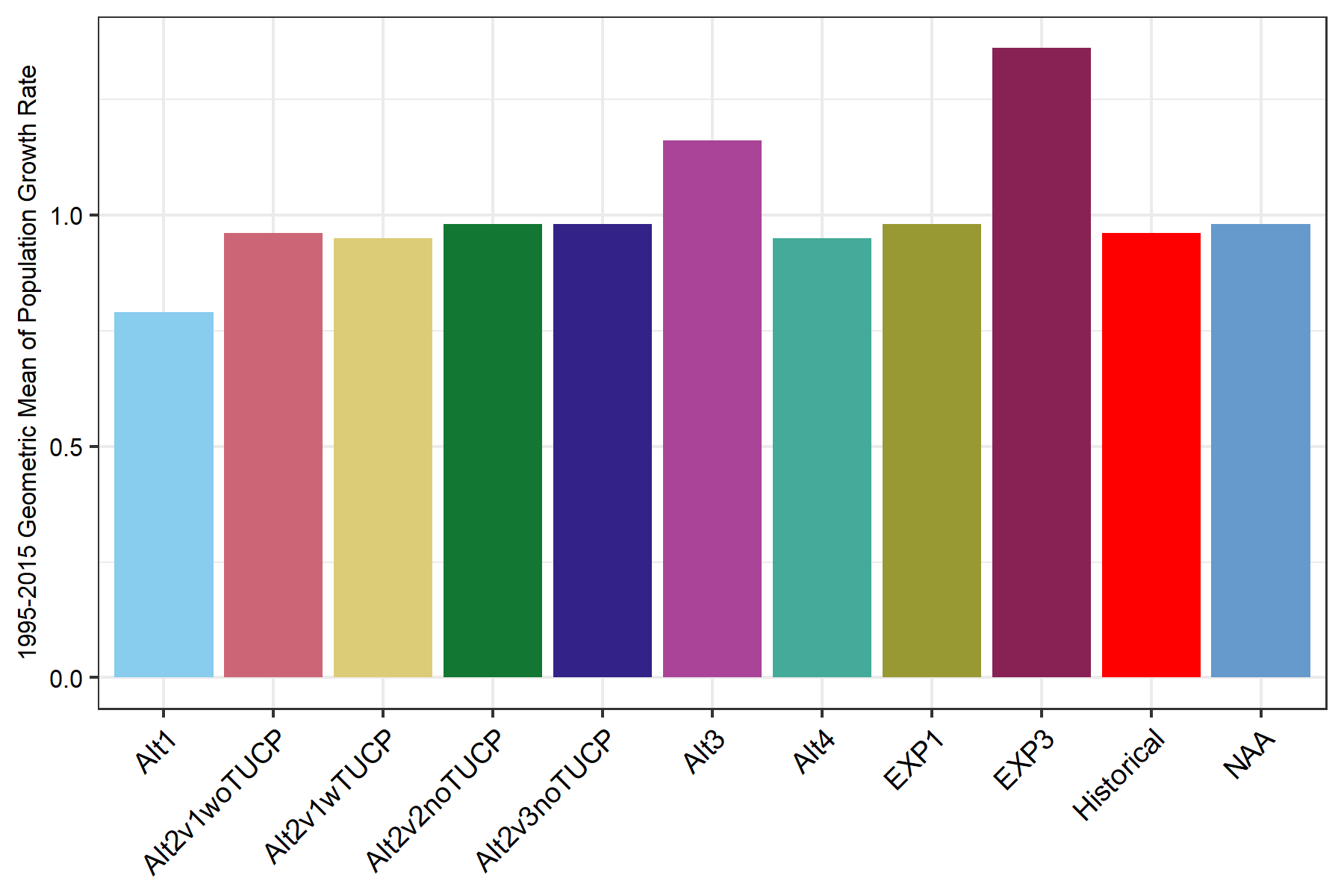
| Year | Historical | Alt1 | Alt2v1wTUCP | Alt2v1woTUCP | Alt2v2noTUCP | Alt2v3noTUCP | Alt3 | Alt4 | EXP1 | EXP3 | NAA | Sacramento Valley Water Year Index |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1995 | 3.56 | 1.63 | 1.78 | 1.79 | 1.80 | 1.78 | 2.25 | 1.84 | 4.62 | 4.40 | 1.86 | Wet |
| 1996 | 1.37 | 0.66 | 0.64 | 0.64 | 0.65 | 0.65 | 1.06 | 0.64 | 1.20 | 1.47 | 0.73 | Wet |
| 1997 | 0.68 | 0.38 | 0.56 | 0.57 | 0.57 | 0.57 | 0.78 | 0.59 | 0.60 | 1.03 | 0.59 | Wet |
| 1998 | 4.78 | 1.75 | 1.70 | 1.67 | 1.68 | 1.68 | 3.03 | 1.73 | 5.27 | 4.99 | 1.82 | Wet |
| 1999 | 0.79 | 0.56 | 0.69 | 0.70 | 0.68 | 0.70 | 0.89 | 0.69 | 1.04 | 1.40 | 0.79 | Wet |
| 2000 | 0.69 | 0.45 | 0.85 | 0.85 | 0.91 | 0.92 | 0.83 | 0.80 | 0.80 | 1.18 | 0.92 | Above Normal |
| 2001 | 0.11 | 0.12 | 0.31 | 0.31 | 0.33 | 0.35 | 0.50 | 0.30 | 0.32 | 0.53 | 0.31 | Dry |
| 2002 | 0.55 | 0.68 | 0.94 | 0.96 | 1.04 | 1.03 | 1.24 | 0.94 | 0.75 | 1.25 | 0.93 | Dry |
| 2003 | 0.87 | 0.71 | 1.45 | 1.46 | 1.54 | 1.54 | 1.58 | 1.45 | 1.50 | 2.32 | 1.51 | Above Normal |
| 2004 | 0.44 | 0.46 | 0.84 | 0.84 | 0.87 | 0.87 | 0.97 | 0.83 | 0.55 | 0.95 | 0.87 | Below Normal |
| 2005 | 1.94 | 1.04 | 1.27 | 1.27 | 1.34 | 1.36 | 1.58 | 1.28 | 2.70 | 2.90 | 1.31 | Above Normal |
| 2006 | 3.37 | 2.44 | 2.42 | 2.45 | 2.50 | 2.55 | 2.36 | 2.37 | 2.94 | 3.23 | 2.51 | Wet |
| 2007 | 0.51 | 0.54 | 0.54 | 0.54 | 0.54 | 0.54 | 0.56 | 0.54 | 0.33 | 0.56 | 0.55 | Dry |
| 2008 | 0.95 | 1.17 | 1.19 | 1.18 | 1.20 | 1.21 | 1.46 | 1.17 | 0.65 | 1.03 | 1.18 | Critically Dry |
| 2009 | 0.64 | 0.66 | 0.67 | 0.67 | 0.66 | 0.66 | 0.79 | 0.66 | 0.49 | 0.93 | 0.66 | Dry |
| 2010 | 1.26 | 1.36 | 1.43 | 1.43 | 1.42 | 1.38 | 1.48 | 1.44 | 1.60 | 1.70 | 1.43 | Below Normal |
| 2011 | 3.65 | 3.13 | 3.21 | 3.18 | 3.18 | 3.18 | 2.92 | 3.22 | 5.04 | 4.95 | 3.19 | Wet |
| 2012 | 0.95 | 1.07 | 1.07 | 1.08 | 1.08 | 1.07 | 1.17 | 1.07 | 0.58 | 0.97 | 1.11 | Below Normal |
| 2013 | 0.90 | 0.89 | 0.88 | 0.89 | 0.87 | 0.86 | 1.04 | 0.88 | 0.49 | 0.81 | 0.88 | Dry |
| 2014 | 0.43 | 0.51 | 0.48 | 0.53 | 0.51 | 0.52 | 0.66 | 0.48 | 0.33 | 0.49 | 0.48 | Critically Dry |
| 2015 | 0.66 | 0.62 | 0.56 | 0.61 | 0.61 | 0.60 | 0.66 | 0.55 | 0.35 | 0.52 | 0.55 | Critically Dry |

## Joining with `by = join\_by(Year)`  
## `summarise()` has grouped output by 'wet\_vs\_dry'. You can override using the  
## `.groups` argument.  
## `summarise()` has grouped output by 'TimePeriod'. You can override using the  
## `.groups` argument.

Table 4. Geometric mean of population growth rate (lambda) for each alternative.

| Category | Alt1 | Alt2v1woTUCP | Alt2v1wTUCP | Alt2v2noTUCP | Alt2v3noTUCP | Alt3 | Alt4 | EXP1 | EXP3 | Historical | NAA |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1995-2015 | 0.79 | 0.96 | 0.95 | 0.98 | 0.98 | 1.16 | 0.95 | 0.98 | 1.36 | 0.96 | 0.98 |
| Below Normal, Dry, or Critically Dry years | 0.63 | 0.76 | 0.74 | 0.77 | 0.77 | 0.90 | 0.74 | 0.52 | 0.82 | 0.58 | 0.75 |
| Wet and Above Normal years | 1.00 | 1.25 | 1.25 | 1.28 | 1.28 | 1.53 | 1.25 | 1.97 | 2.38 | 1.68 | 1.32 |
| 1995-2005 | 0.62 | 0.89 | 0.89 | 0.93 | 0.93 | 1.18 | 0.90 | 1.21 | 1.64 | 0.91 | 0.94 |
| 2006-2015 | 1.03 | 1.04 | 1.02 | 1.04 | 1.03 | 1.13 | 1.01 | 0.78 | 1.11 | 1.02 | 1.02 |

## tibble [11 × 3] (S3: tbl\_df/tbl/data.frame)  
## $ Category : chr [1:11] "1995-2015" "1995-2015" "1995-2015" "1995-2015" ...  
## $ Alternatives: Factor w/ 11 levels "Alt1","Alt2v1woTUCP",..: 1 2 3 4 5 6 7 8 9 10 ...  
## $ lambda : num [1:11] 0.79 0.96 0.95 0.98 0.98 1.16 0.95 0.98 1.36 0.96 ...

 Figure 10. Bar plot demonstrating the geometric mean of population growth rate (lambda) from 1995 to 2015 for the various alternatives (as seen in Table 4).

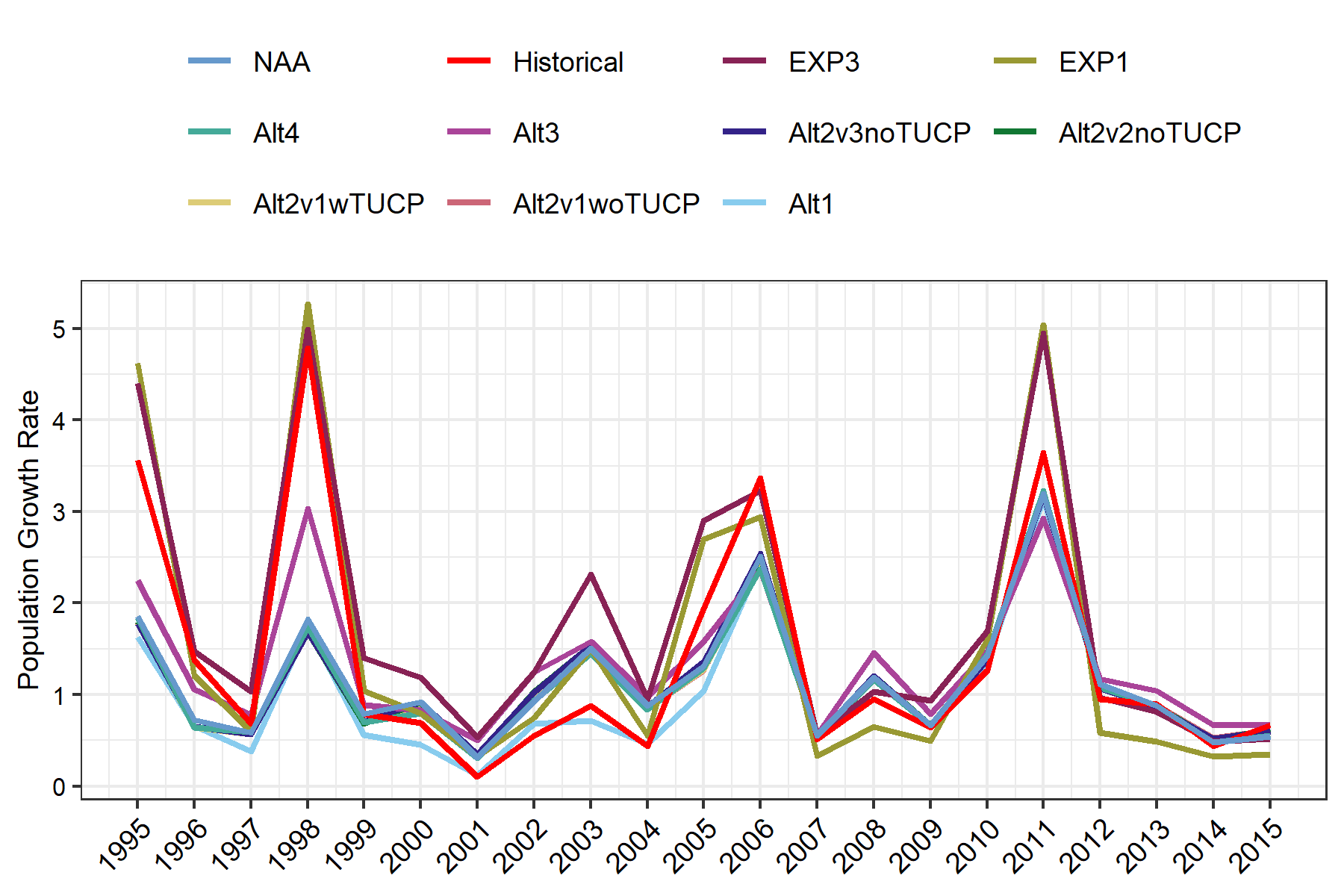
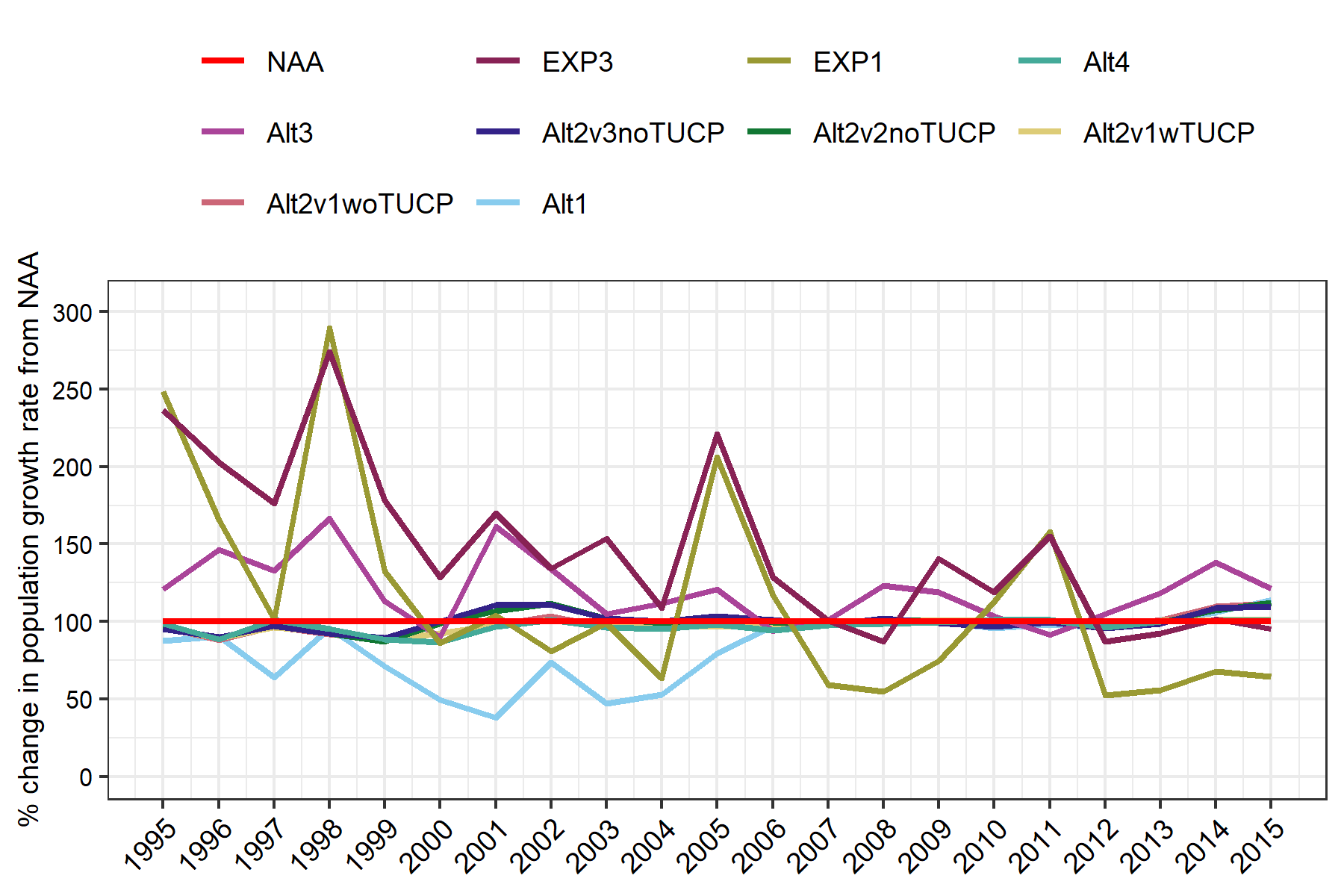
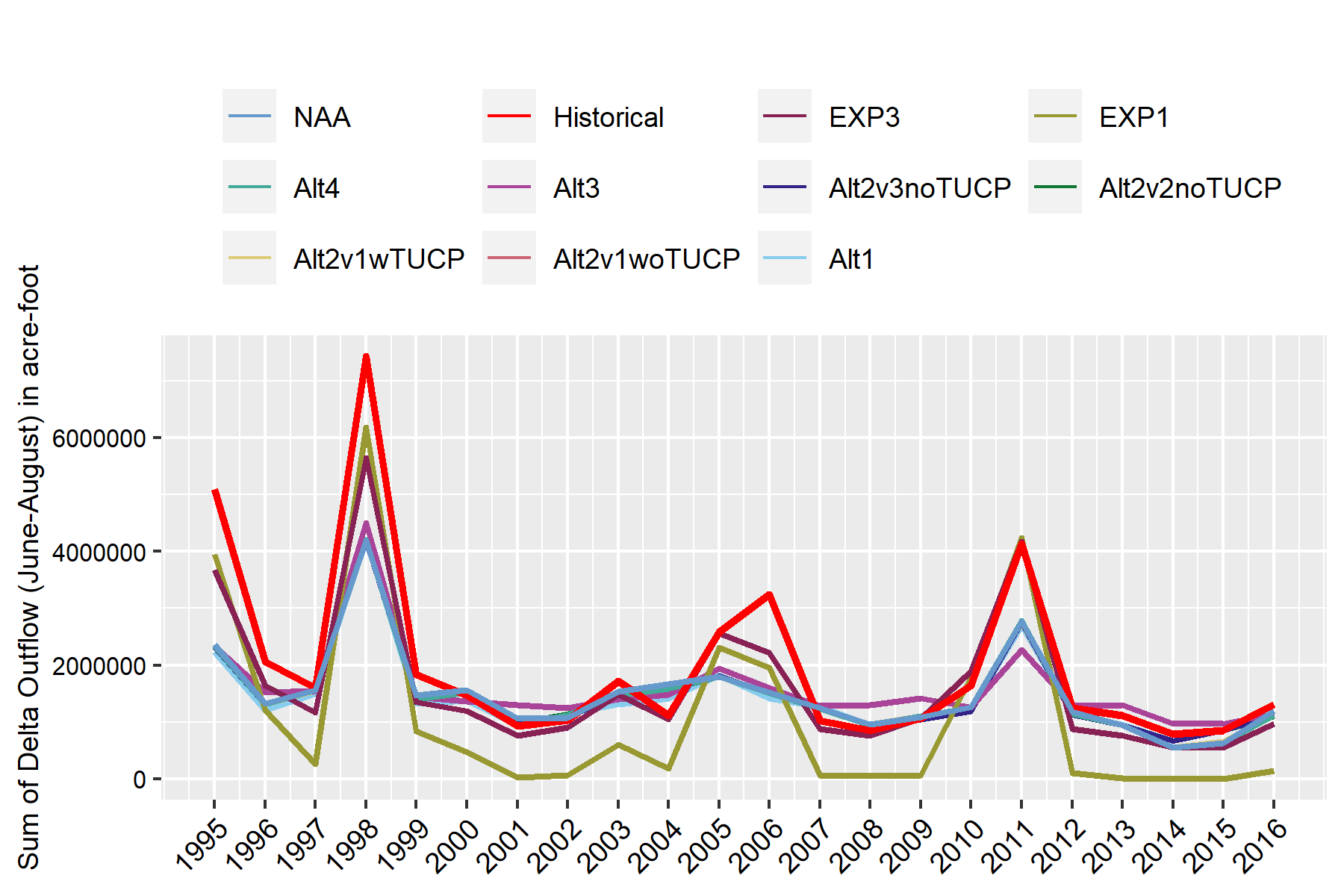
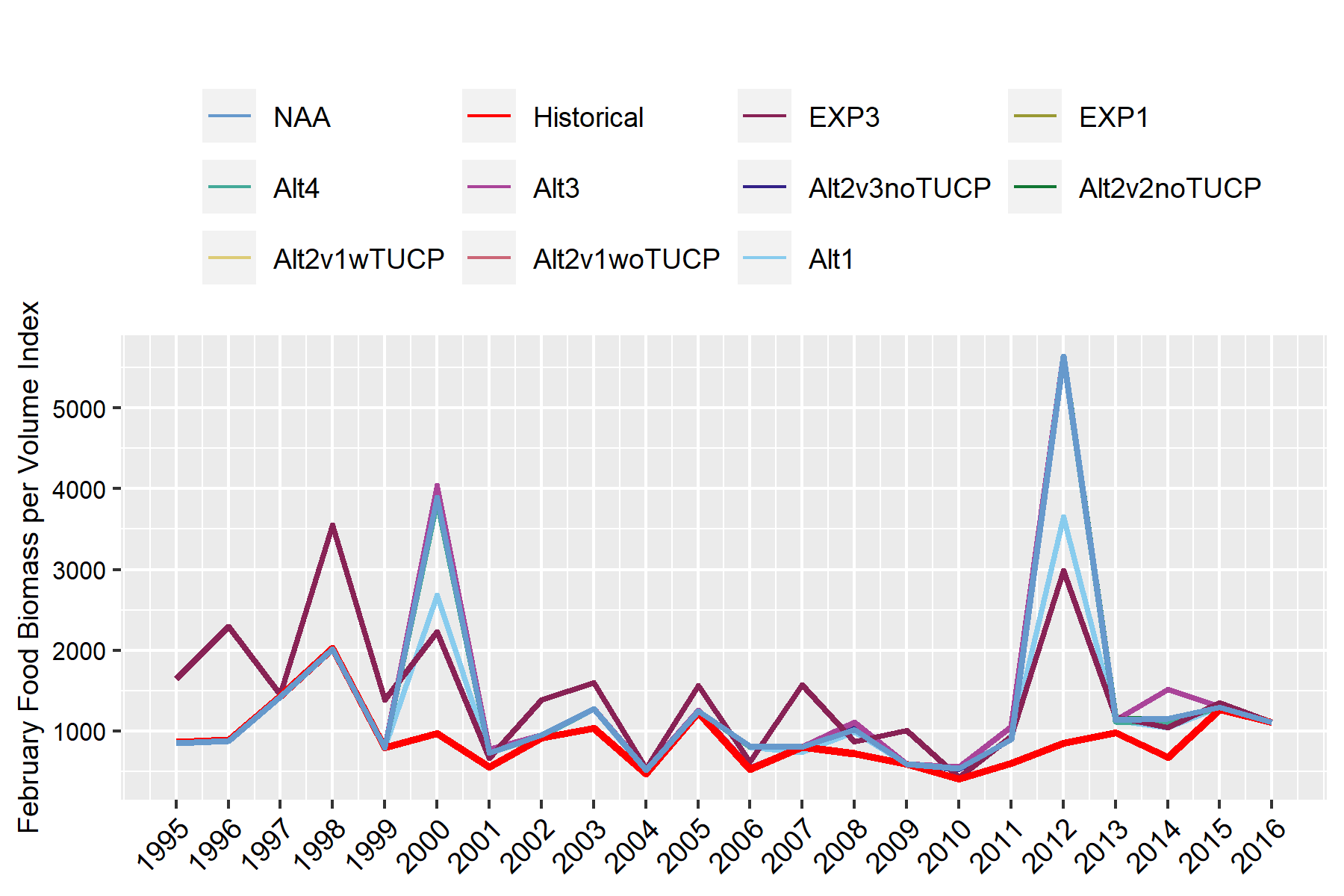


Figure 11. Line plot of population growth rate (lambda) across alternatives (as seen in Table 3).

## Joining with `by = join\_by(Year)`

 Figure 12. Line plot showing % change calculated as the estimated population growth rate for a given alternative divided by estimated population growth rate for NAA (no action alternative)

 Figure 3. June-August sum of Delta outflow data produced from CalSim3 relative to the original dataset used to build the Delta Smelt LCME (labeled as “Historical”)

 Figure 4. February prey metric (biomass per volume) data composed of copepod adults, cladocerans, and mysids based on CalSim3 data and salinity-zooplankton model relative to the original dataset used to build the Delta Smelt LCME (labeled as “Historical”)

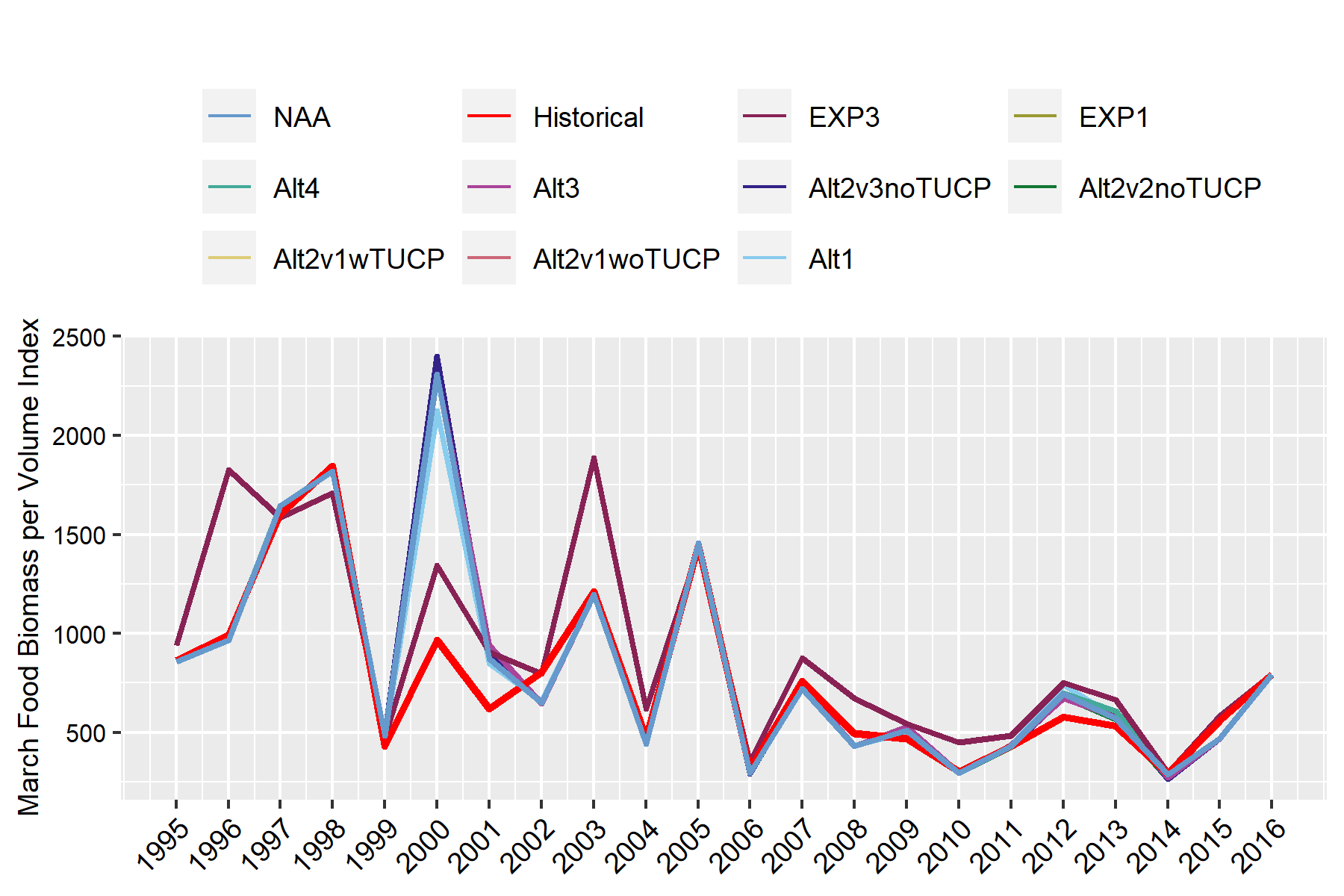


Figure 5. March prey metric (biomass per volume) data composed of copepod adults, cladocerans, and mysids based on CalSim3 data and salinity-zooplankton model relative to the original dataset used to build the Delta Smelt LCME (labeled as “Historical”)

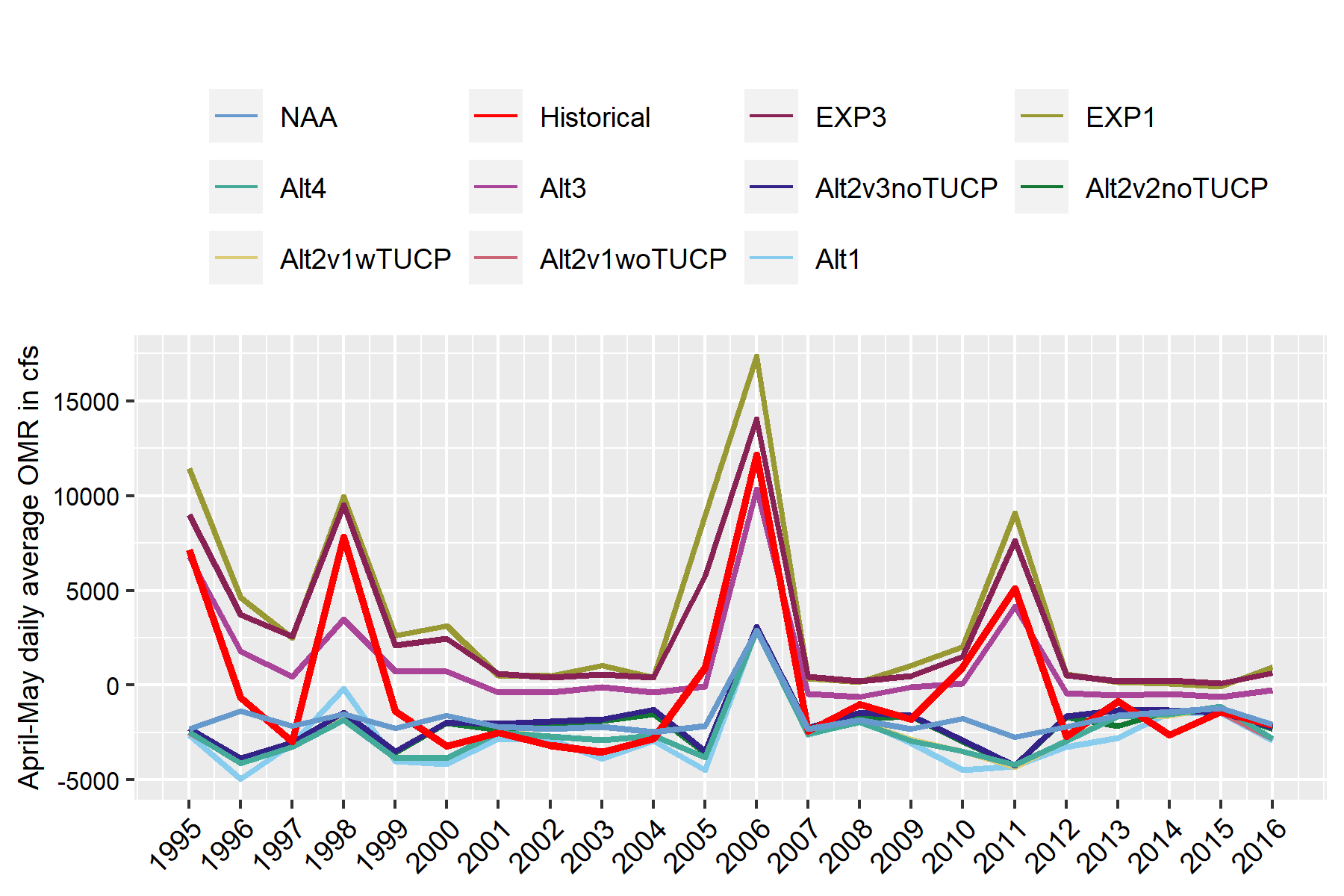
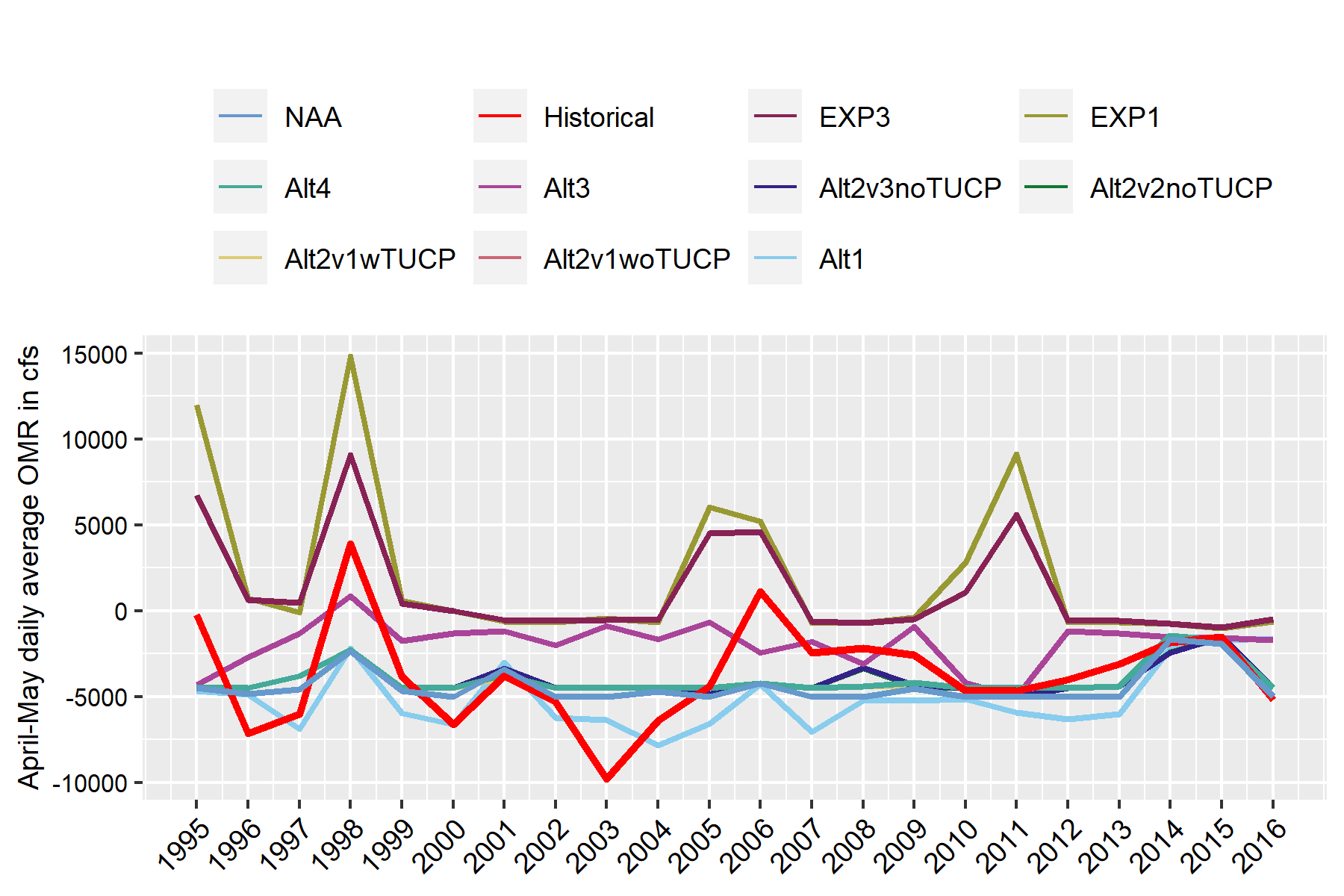
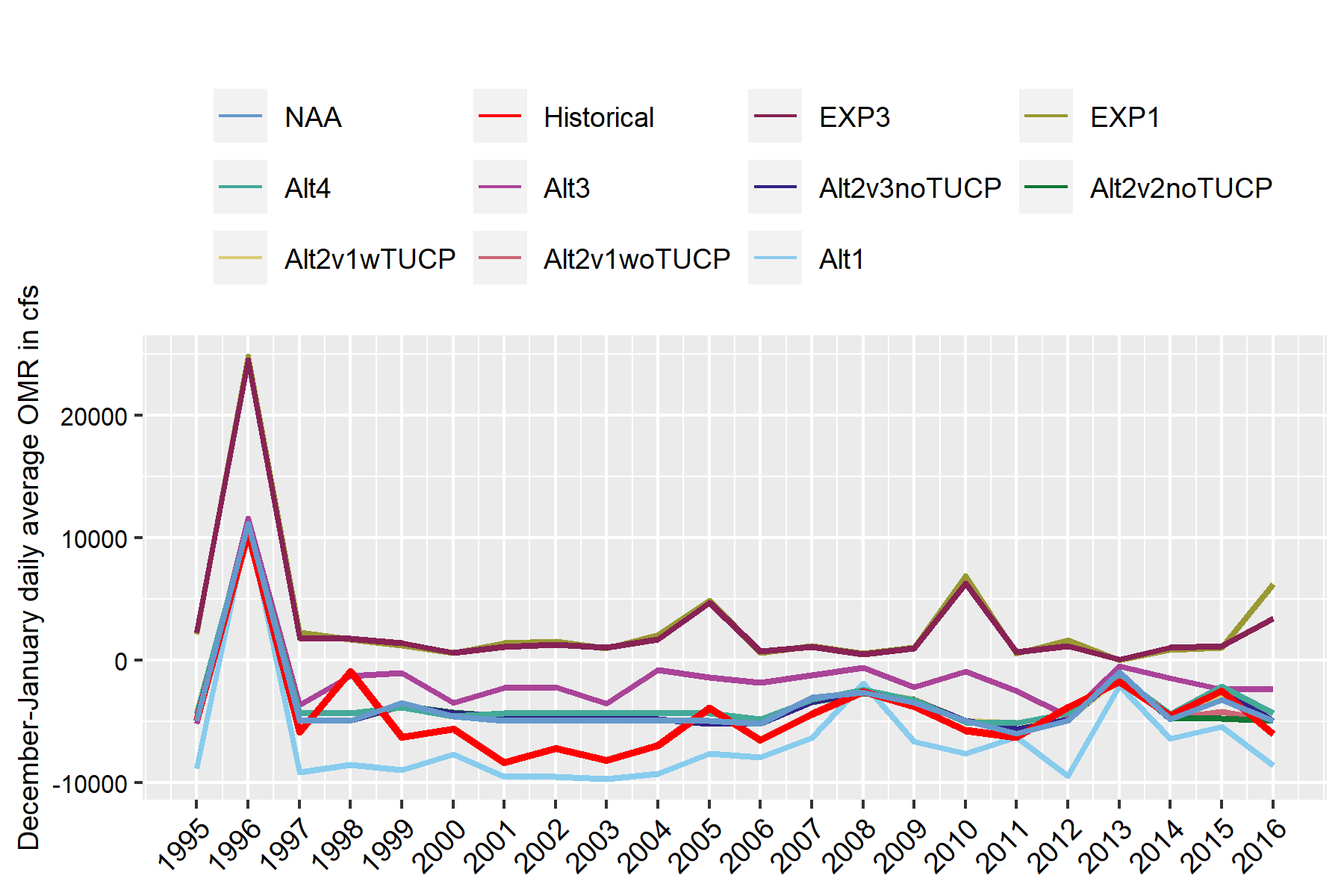
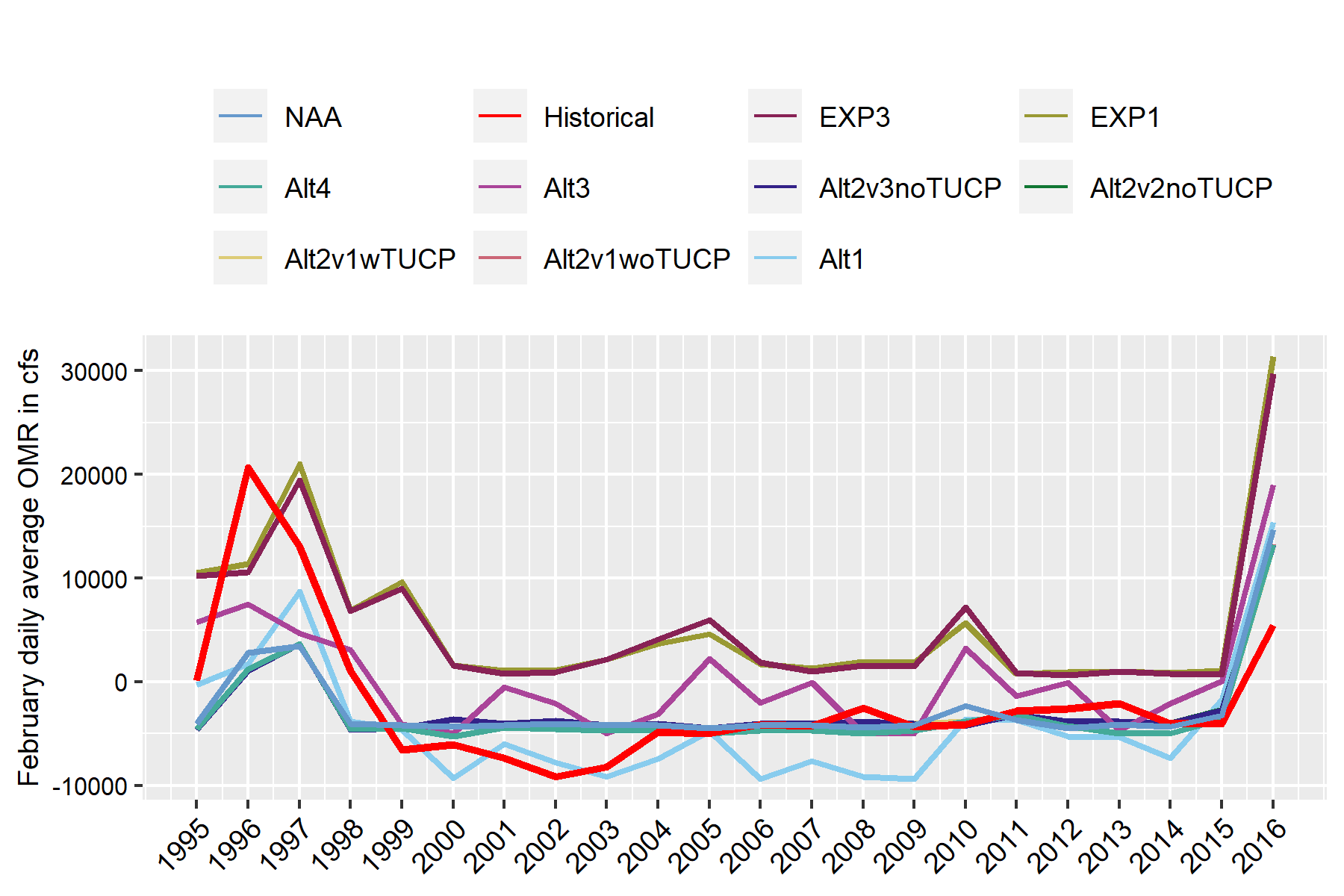
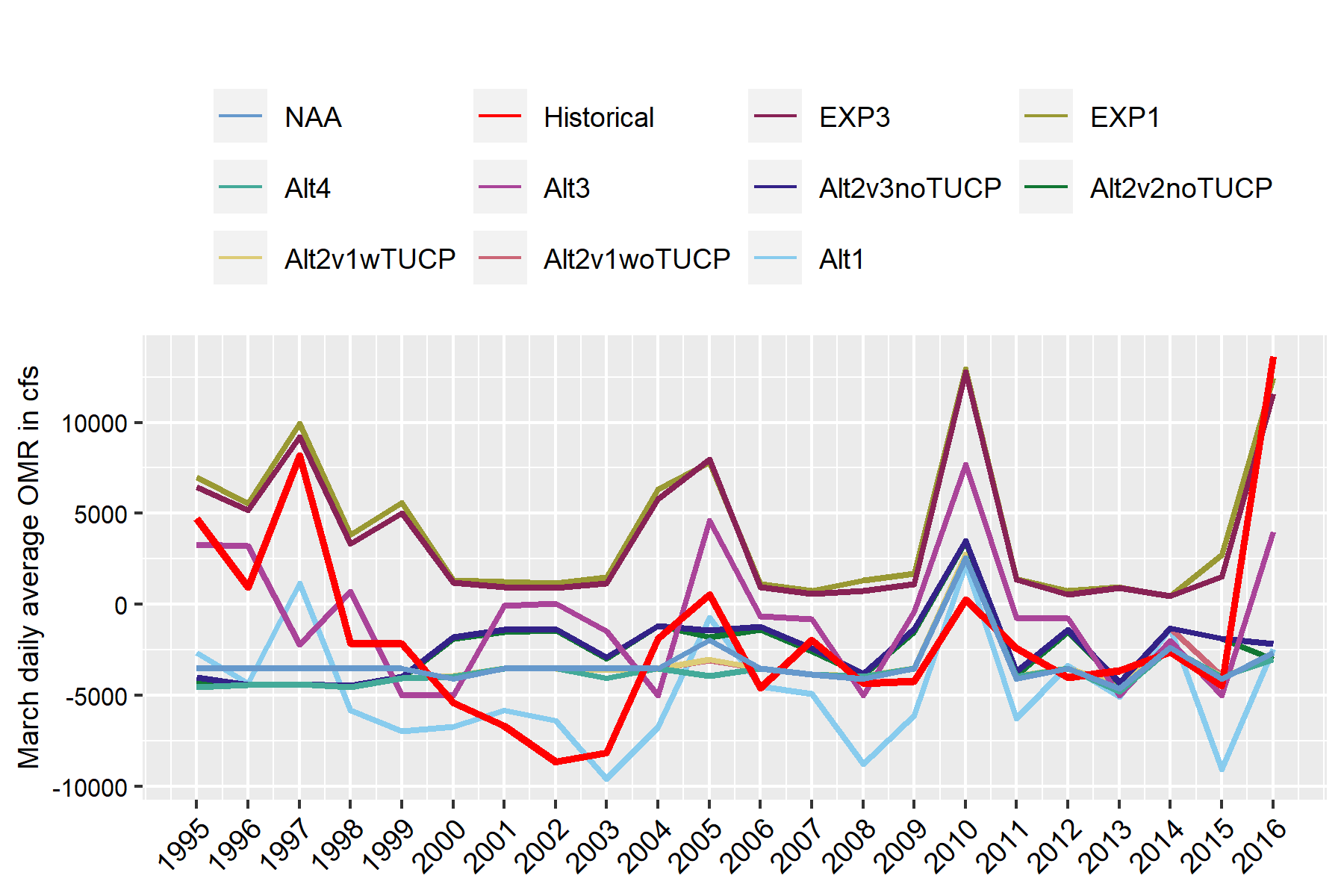


Figure 6. April-May daily average OMR flow data produced from CalSim3 relative to the original dataset used to build the Delta Smelt LCME (labeled as “Historical”)

 Figure 7. June daily average OMR flow data produced from CalSim3 relative to the original dataset used to build the Delta Smelt LCME (labeled as “Historical”)

 Figure 8. December-January daily average OMR flow data produced from CalSim3 relative to the original dataset used to build the Delta Smelt LCME (labeled as “Historical”)

 Figure 9. February daily average OMR flow data produced from CalSim3 relative to the original dataset used to build the Delta Smelt LCME (labeled as “Historical”)

 Figure 10. March daily average OMR flow data produced from CalSim3 relative to the original dataset used to build the Delta Smelt LCME (labeled as “Historical”)