Climate Change Considerations

303D, TMDL, AND TMDL IMPLEMENTATION PROGRAMS

DEQ MONTANA

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Climate Change and Water Quality Impacts in Montana

Changes in precipitation patterns | localized and seasonal effects

Drought conditions | low flows

Increasing temperatures | eutrophication and lack of refugia

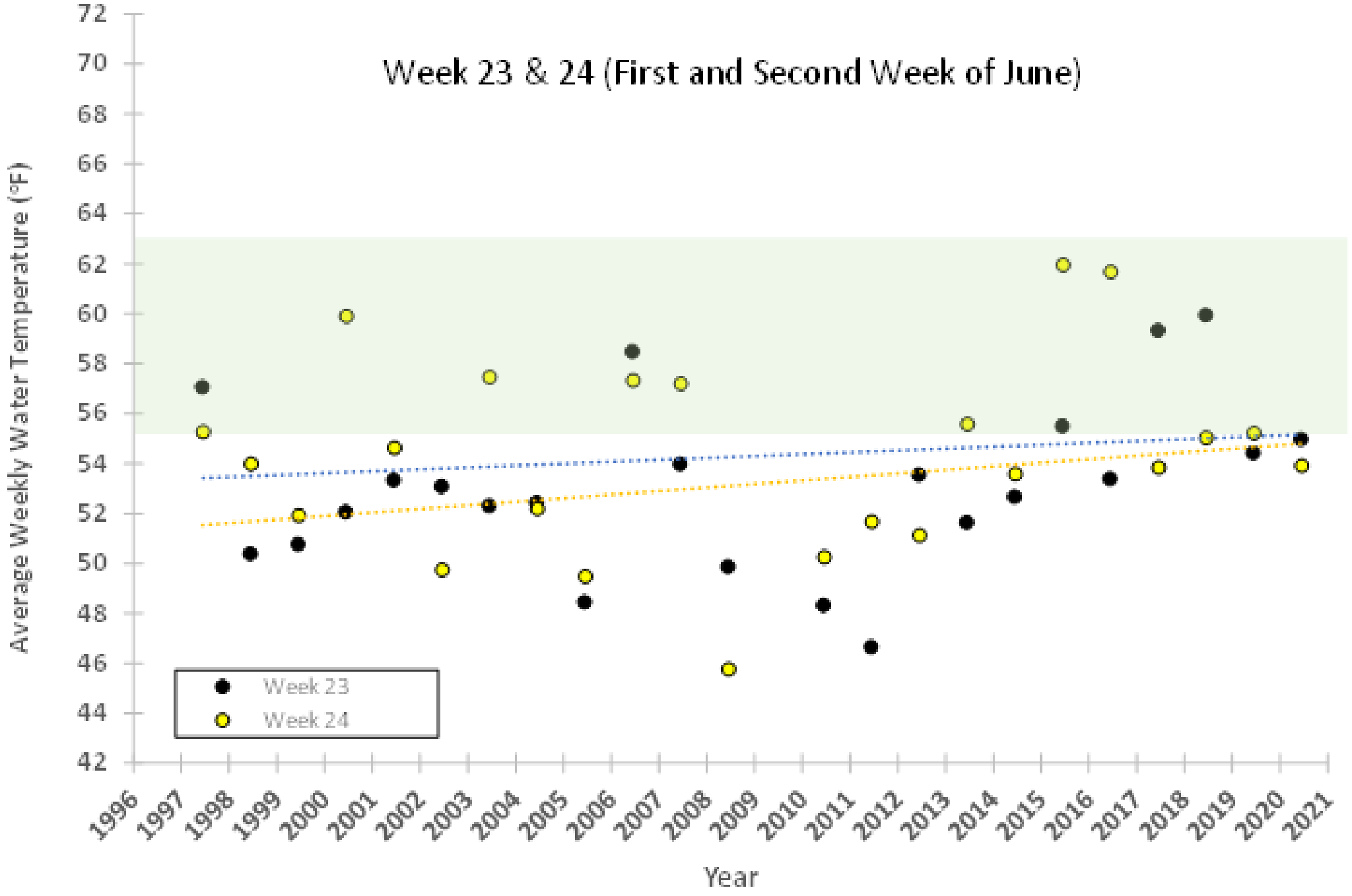
Smith River Water Temperatures

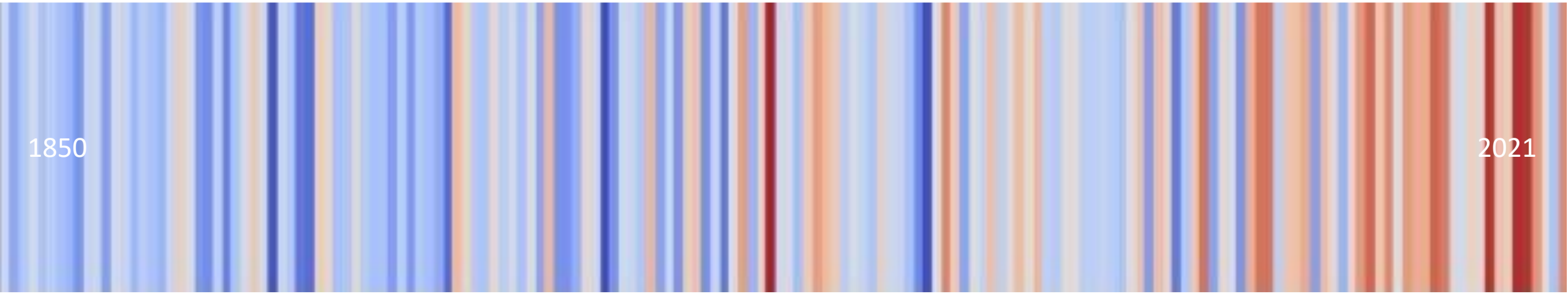
Scenic and coveted multiday float

2015 floaters began reporting nuisance algae

Seasonal temperature increases and existing nutrient levels support algae growth

Coincides with recreational flows


Week 23 & 24 (First and Second Week of June)
Average Weekly Water Temperature (°F)
72
70
68
66
64
62
60
58
56
54
52
50
48
46
44
42
Week 23
Week 24
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
Year



Climate Considerations - 303d/Assessments

Air and water temperature warming trends

More streams will likely be listed for temperature

Temperature assessments include modeling

Focus on variables we can control

Climate Considerations – TMDL Development

Local/regional climate

Land use

Shade

Channel geometry

Stream flow

Point sources

Climate Considerations – TMDL Development

South Fork Antelope Creek

- Temperature study
- QUAL2K model
- Include extreme low flow condition
- Result – not impaired
- Adaptive management

Climate Considerations – TMDL implementation

Focus on Climate Resiliency

- Restore natural stream processes
- Riparian vegetation

Climate Considerations – TMDL implementation

Restoring natural stream processes

- Ninemile Creek
- Heavily impacted by historical mining
- Multiphase restoration project
- Partner with FEMA and others
- Climate resiliency benefits

Climate Considerations – Future Program Planning

Identify, prioritize, protect

Bring climate priorities to the forefront of program goals

Adaptive management - reevaluating targets