



Secchi Data

How clear is Flathead Lake? **Secchi disks** are one tool that scientists use to measure how far light penetrates the water. Secchi depth measurements have been recorded consistently (usually monthly) at the Flathead Lake Mid-Lake Deep sample site since 1977. Citizen scientists have collected Secchi depth data around Flathead Lake during the local Secchi Dip-In event promoted by the Flathead Lakers and FLBS for the past couple of years. The North American Lake Management Society's annual Secchi Dip-in has been collecting Secchi depth data from lakes across the United States since 1994. Thanks to these organizations, communities are able to learn more about the lakes' **water transparency** and how it changes over time.



Measuring water transparency with a Secchi disk. PC: Flathead Lake Biological Station



Virtual Research Cruise: Light Profile and Water Clarity Data

Take a look at the following graphs to learn more about Flathead Lake's water transparency. Compare Flathead Lake to other lakes in Montana and across the country. Answer the questions to see if you can figure out how transparent the waters of Flathead Lake really are. You may notice these graphs are different than the ones you normally see. For these graphs we are plotting from the surface of the lake (0m) down the water column.



FLATHEAD LAKE
BIO STATION
UNIVERSITY OF MONTANA

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at the Flathead Lake Biological Station.



Figure 1

Monthly Average Secchi Depth Flathead Lake (2017-2019)

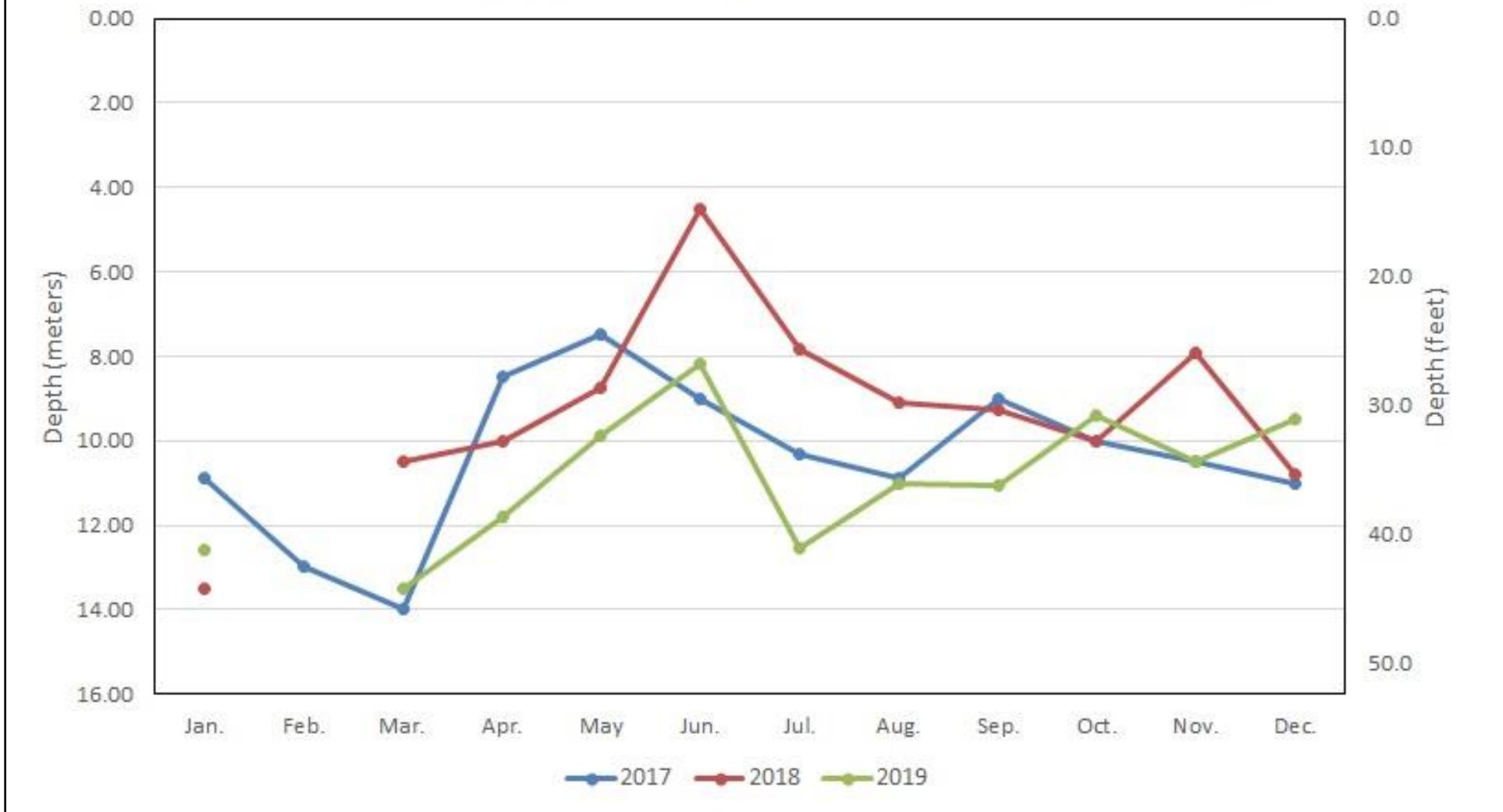


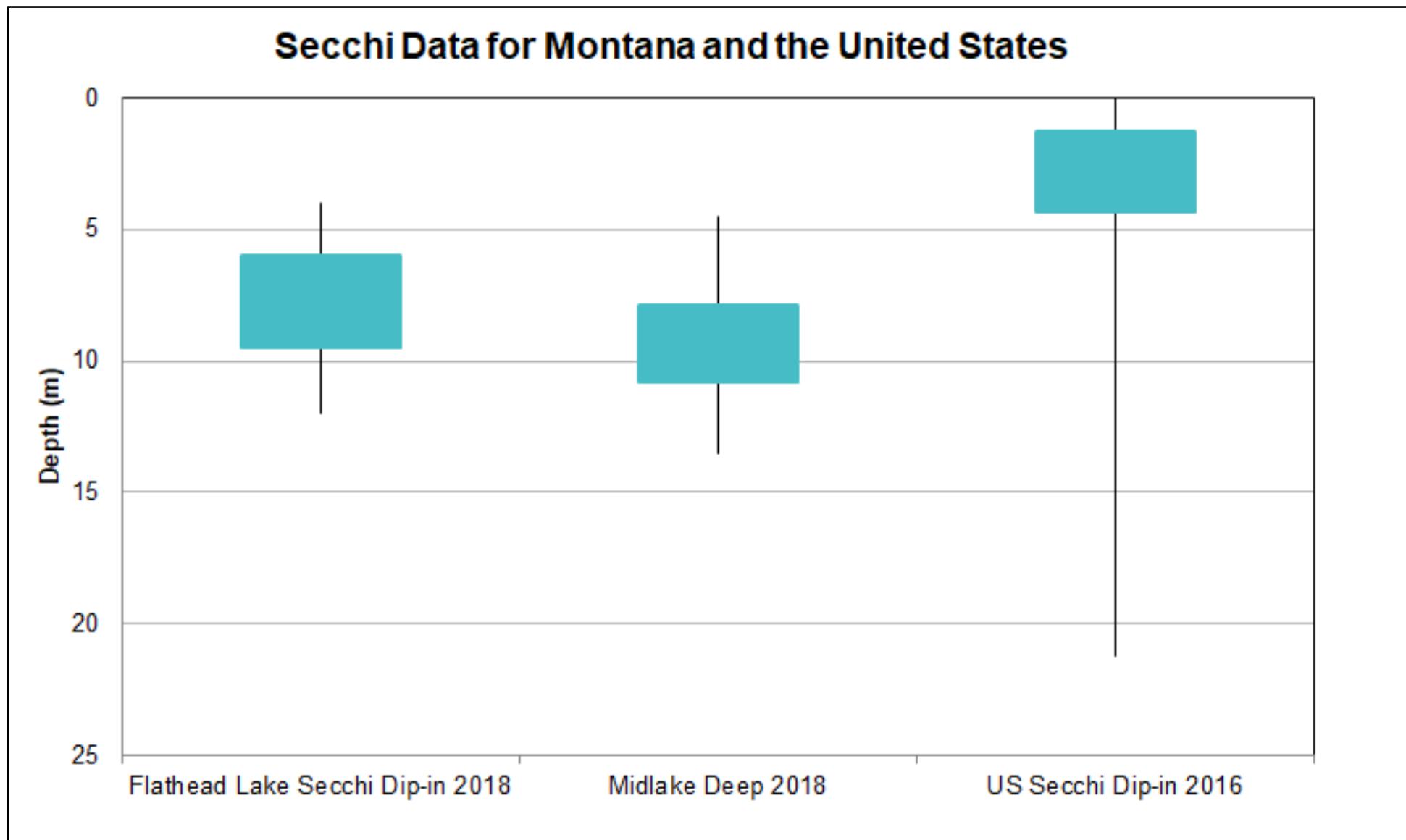


Figure 2

| Kalispell Average Precipitation (inches) | | | |
|--|-------------|-------------|-------------|
| <u>Month</u> | <u>2017</u> | <u>2018</u> | <u>2019</u> |
| Jan. | 0.98 | 1.42 | 1.23 |
| Feb. | 2.78 | 1.56 | 1.75 |
| Mar. | 2.72 | 0.76 | 0.5 |
| Apr. | 2.37 | 1.49 | 2.28 |
| May | 0.8 | 1.43 | 0.89 |
| Jun. | 1.48 | 1.96 | 2.8 |
| Jul. | 0.07 | 0.28 | 1.01 |
| Aug. | 0.16 | 0.19 | 0.69 |
| Sep. | 0.52 | 0.56 | 2.52 |
| Oct. | 1.23 | 1.57 | 0.92 |
| Nov. | 1.55 | 1.04 | 1 |
| Dec. | 2.37 | 0.78 | 0.94 |



Figure 3





Questions:

- 1.) Using Figure 1, in which month(s) is Flathead lake the **least** clear (i.e. the shallowest Secchi depths)?
- 2.) Using Figure 1, in which month(s) is Flathead Lake the **most** clear (i.e. the deepest Secchi depths)?
- 3.) Take a look at the Kalispell Average Precipitation chart (Figure 2). What relationship do you see between precipitation values and Secchi depth measurements?
- 4.) Examine the box and whisker plot with data from Mid-Lake Deep (Flathead Lake), the Flathead Lake Secchi Dip-In, and all the lakes that participate in the Secchi Dip-In across the United States (Figure 3). Which dataset has the deepest Secchi depth?
- 5.) How does the water transparency of Flathead Lake compare to lakes across the United States?
- 6.) List three things you can do to keep Flathead Lake clear.