

# Month in a Minute at UVic

## April 2023

### Temperature

April this year was a bit chillier than we would have liked. April is a month when the sun rises and sets later and later and each day reaches a higher noon-sun angle. That means there's lots of solar radiation potential to warm things up. In fact, April and August are very similar in terms of solar potential (but in August the available solar energy decreases as days go by). So, we tend to look forward to getting out in warm weather. Unfortunately, this year we saw below average daily temperatures on most days (Fig. 2). The shaded region in the figure shows historical daily average extremes, the grey line is the expected daily average. The temperature was generally upward, and its not surprising that the warmest days are typically at the end of the month. Though there were more cool days than we'd like frost was unlikely and a lot of folks got started on their gardens. My cherry and plum tree started to bloom mid-month and the lack of late frost bodes well for fruit in summer.

Fig. 3 gives a comparison of all observed April monthly average temperatures. This year was the fourth coolest. Part of this may be due to cooler than usual ocean temperatures just west of Vancouver

Figure 1: A snapshot of the Month in a minute video.

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The month in a minute video is at https://www.youtube.com/watch?v= dt\_J1yk87Cw.

Island. Sea surface temperature anomalies are shown in Fig. 5 for April 13, 2023. There is today a large pool of anomalously warm water farther west in the Pacific and ENSO forecasts predict a (possibly very strong) El Niño later this summer. Finally, climate change is pushing global sea surface temperature (between 60° north and south) to record breaking highs. We've never seen the global ocean as warm as it was during April, 2003 (Fig. 5). This is likely just an indication of what's coming: extreme events now show us our future.







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## Solar Energy

The amount of solar radiation potential increases throughout April (in fact, until mid-June). Another reason for cooler than usual peak temperatures is the presence of absence of low cloud. These reflect







Figure 5: Global SST  $(60^{\circ} N-60^{\circ} S)$ . 2023 is shown with the heavy black line.

energy away from the surface during the day, and reduce the local peak temperature. At night, low clouds are a source of long-wave (infrared) radiation for the surface and reduce the likelihood of morning frost.

The shaded region on Figure 6 shows the range of observed daily values of total energy (kilowatt hours ). Over the past 22 years we've observed the maximum possible at least once on each day of the month. We see this is in the smooth increase in the top of the shaded region. On the other hand, the *wiggly* shape of the bottom shows us that we have not observed the darkest possible of each day. We have that to look forward to!

The orange line on the same figure gives the total daily energy at UVic during April this year. Few days reached the maximum possible. There were finally a couple of bright days at the end of the month.





#### Wind

There was a strong wind event this month. On 20, April we observed peak gust speed of  $110 \text{ km hr}^{-1}$  at Trial Island. This was driven by a small, relatively deep low just north west of Vancouver Island. Otherwise there was very little weather drama. April sees a lot of convective instability as the land and ocean warm up and the atmosphere adjusts to the increased solar forcing. This year there were forecasts of lightning but there was no standout event.

#### Rain

Rain continues to be scarce. April 2023 recorded only 20 mm of rain, against a 22 year average of 37 mm. This fell on a relatively high num-



ber of days, 12. This ties in with the generally sense of gloomy skies this month.



Figure 8: Days with rain.

Figure 7: Total rain.

Rain is climatologically more unlikely as we move through Spring into Summer. So we are now set up for record dry conditions in the region around UVic. Soil moisture is going to be low as the shown by the accumulated rain from July through April given in Fig. 9. It's the second lowest total amount since 2003. The good news is that there was enough rain to fill the regional water reservoir.



Figure 9: July through April total rain.