

IMPROVE

Interagency Monitoring of Protected Visual Environments

2019 CALENDAR

IMPROVE is a collaborative association of state, tribal, and federal agencies, and international partners. US Environmental Protection Agency is the primary funding source, with contracting and research support from the National Park Service. The Air Quality Research Center (AQRC) at the University of California, Davis provides field maintenance and operator support, sample handling, elemental analysis, and data processing; Research Triangle Institute (RTI) performs ions analysis; and Desert Research Institute (DRI) performs carbon analysis. IMPROVE data and

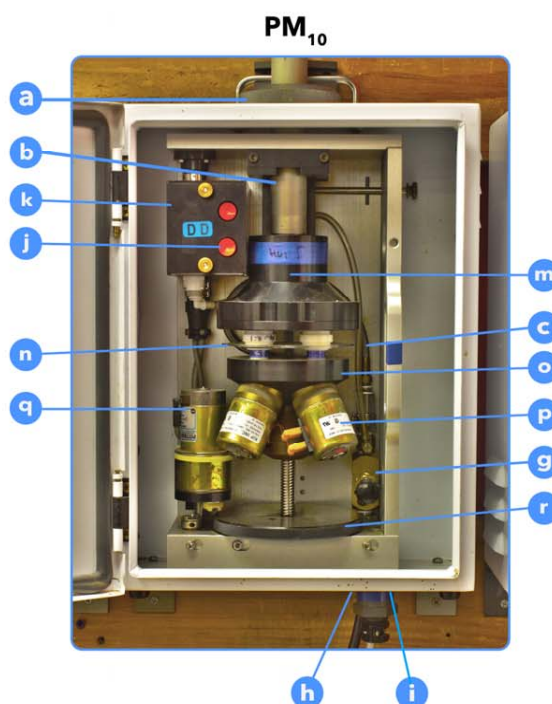
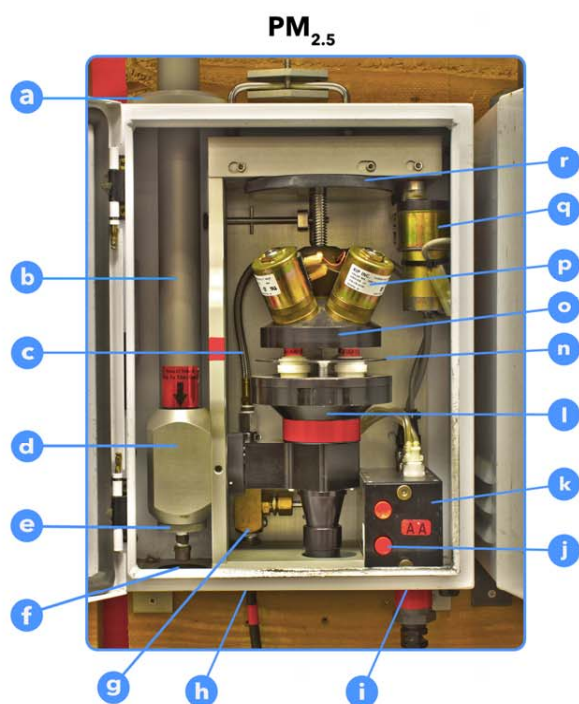
documentation are available from the website <http://vista.cira.colostate.edu/improve/> maintained by the Cooperative Institute for Research in the Atmosphere (CIRA).

For questions or problems with optical or scene monitoring equipment, contact Mark Tigges, Air Resource Specialists, Fort Collins, CO at 970-224-9300. For questions or problems with air sampler controllers, filters or flow checks, contact Air Quality Research Center, UC Davis at 530-752-1123, or visit <https://aqrc.ucdavis.edu/resources-for-operators>.





MODULE SCHEMATIC



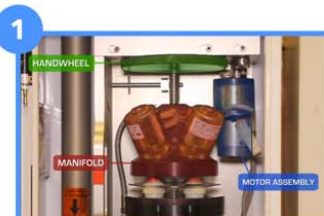
- a. stack compression sleeve
- b. inlet stack
- c. braided hose
- d. inlet tee
- e. tee plug
- f. black cap
- g. flow control valve
- h. pump hose connector
- i. module cable connector
- j. motor control buttons
- k. electronics box (E-Box)
- l. cyclone
- m. funnel
- n. cartridge with 4 filter cassettes
- o. solenoid manifold
- p. solenoid valve (4)
- q. motor assembly to raise solenoid manifold
- r. handwheel to raise solenoid manifold



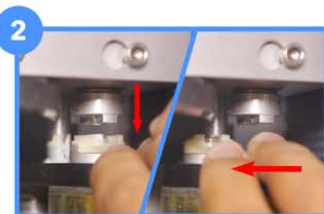
QUICK REFERENCE GUIDE



Disengaging Manifold Motor to Manually Raise/Lower the Manifold



1 Locate the motor assembly in the module.



2 Separate the motor assembly from the coupling sliding the assembly down. Then pivot it towards to the hand wheel.



2.a A gentle wiggle may be required to slide the assembly up or down.



3 For the A, B, and C modules spin the hand wheel to the left to raise the manifold.



4 Spin the hand wheel to the right to lower the manifold.



4.a The spinning direction to raise and lower the manifold is opposite for the D module.



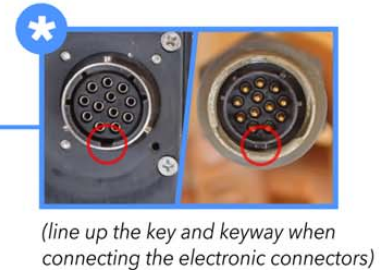
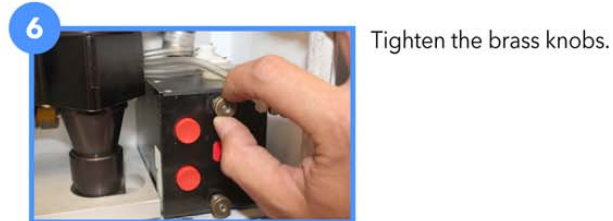
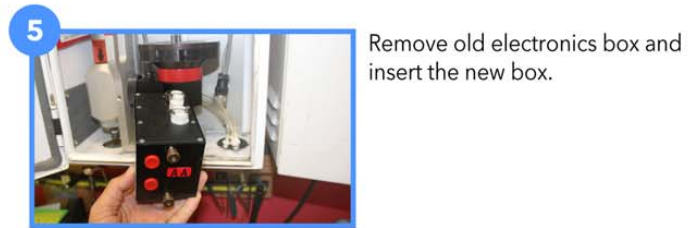
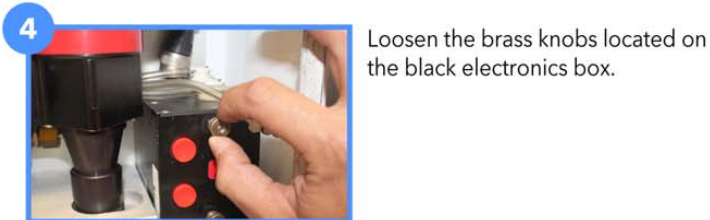
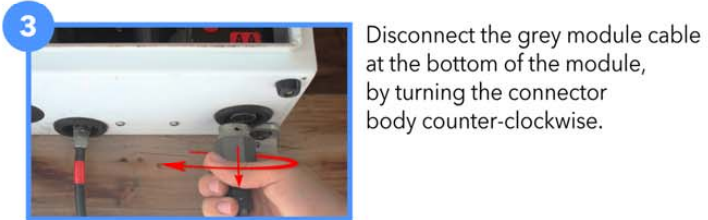
5 If the motor starts to work again it can be reengaged with the hand wheel. Pivot the motor assembly back to its original location.



6 Rotate the hand wheel until the coupling snaps into alignment.

Electronics-Box Replacement

(For A,B, and C modules. For the D module skip steps 3 and 9)



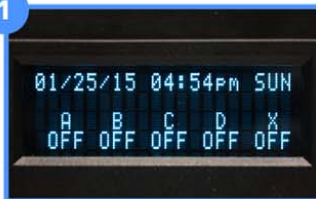
QUICK REFERENCE GUIDE: OLD CONTROLLER



Change Date/Time on Old Controller

(If the current time on your site is off by more than 5 minutes please call the Air Quality Group.)

1



Press **'Enter'** on the controller keypad to view the *Main Menu*.

4

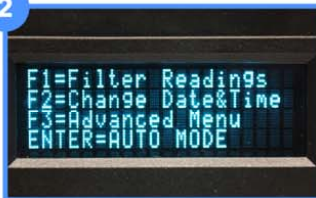


If necessary change the *GMT time zone offset* using **'F1'** and **'F2'** to increase and decrease hours.

Press **'F3'** to select plus or minus.

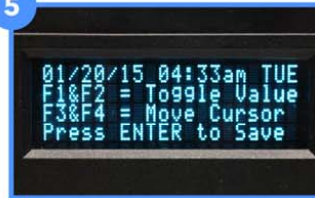
Press **'Enter'** to continue.

2



Press **'F2'** for *Change Date & Time*

5



Use **'F1'** and **'F2'** to set the current month. Then press **'F4'** to move onto the placeholder value for day, year, and time.

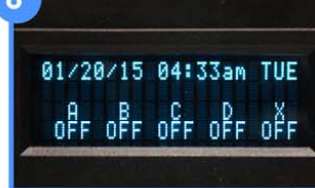
Press **'F3'** to select previous placeholder values and **'Enter'** to save.

3



Look up your time zone on the reference map and note the corresponding GMT offset in **Bold**.

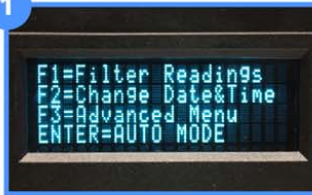
6



Press **'Enter'** once more to return to *Auto Mode*

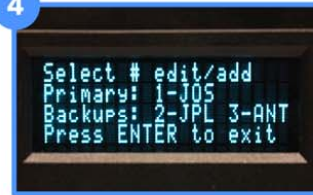
Change Operator Initials on Old Controller

1



Press **'Enter'** on the controller keypad to view the *Main Menu*.

4



Select which operator initial to edit or add. (1, 2, or 3)

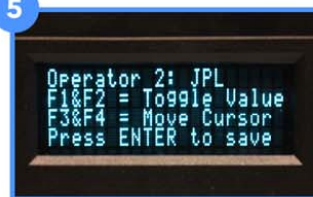
2



Press **'F3'** for *Advanced Menu* and type the code **'1123'**.

(Do not press **'enter'** after putting in the code as this will return to the *Main Menu*)

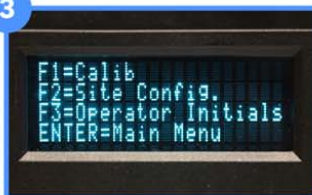
5



Use **'F1'** and **'F2'** to set the first character. Press **'F4'** to select the next character placeholder and adjust accordingly with **'F1'** and **'F2'**.

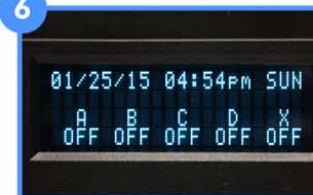
Press **'Enter'** to save.

3



Press **'F3'** to select *Operator Initials*

6



Press **'Enter'** twice more to return to *Auto Mode*.

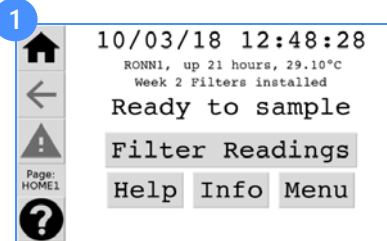


QUICK REFERENCE GUIDE: NEW CONTROLLER

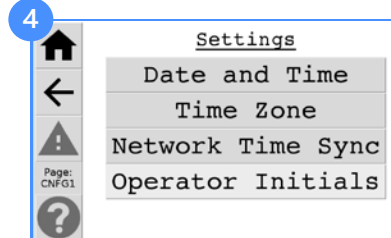


Change Date/Time on New Controller

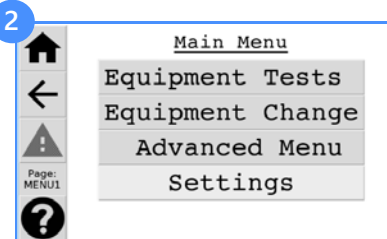
(If the controller is connected to the internet please only edit the time zone)



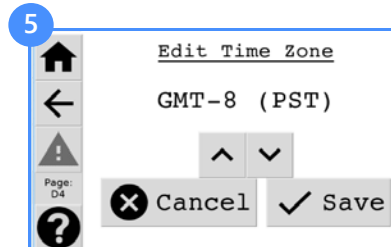
Press the '**Menu**' on the home screen.



Press '**Time Zone**'



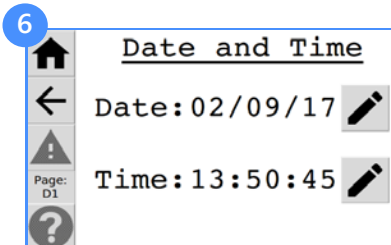
Press '**Settings**'



Use up/down arrows to select the time zone offset based on step 3



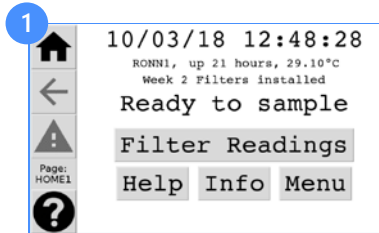
Look up your time zone on the reference map and note the corresponding GMT offset in **Bold**



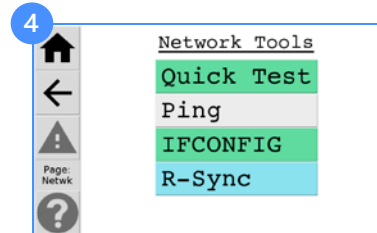
Only if your site is **not** connected to the internet do you select the "Date and Time" option in step 4 to manually edit the time.

Press the icon to edit the time

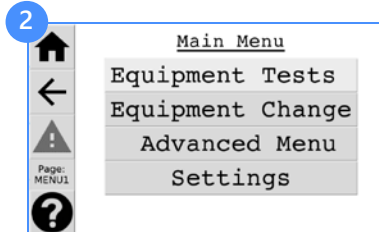
Test Network Connection and Send Data to Server



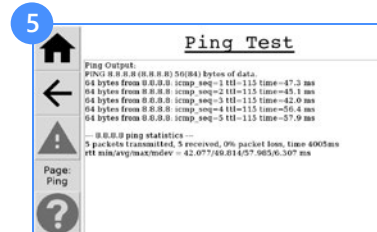
Press the 'Menu' on the home screen.



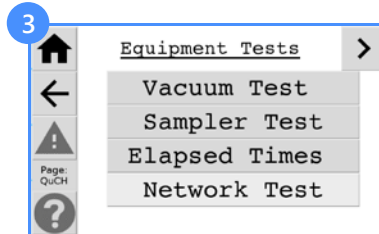
Press 'Ping'



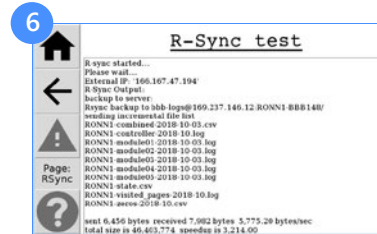
Press 'Equipment Tests'




Read the output of the test. If the 2nd to last line reads '**5 packets transmitted, 5 received, 0% packet loss**' then the controller is successfully connected to the internet



Press 'Network Test'



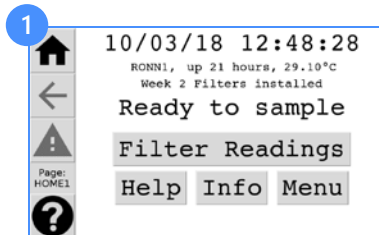
Press the  button to go back to 'Network Tools' then select the '**R-Sync**' option. This will send the controller data back to the server.



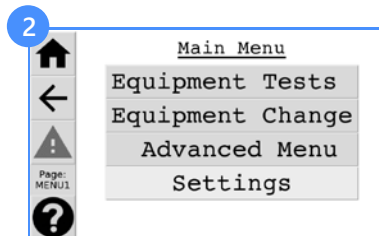
QUICK REFERENCE GUIDE: NEW CONTROLLER



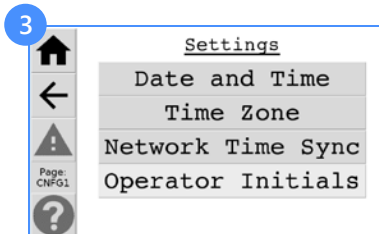
Manage Operator Initials on New Controller



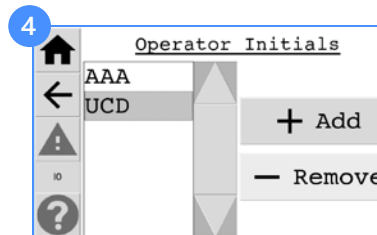
Press the 'Menu' on the home screen.



Press 'Settings'

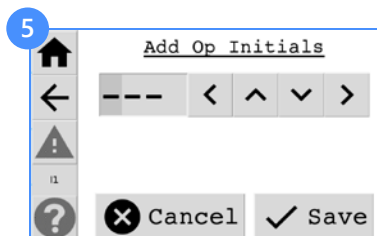


Press 'Operator Initials'



Select the initials you wish to remove, then press 'Remove'

If you wish to add initials press 'Add'



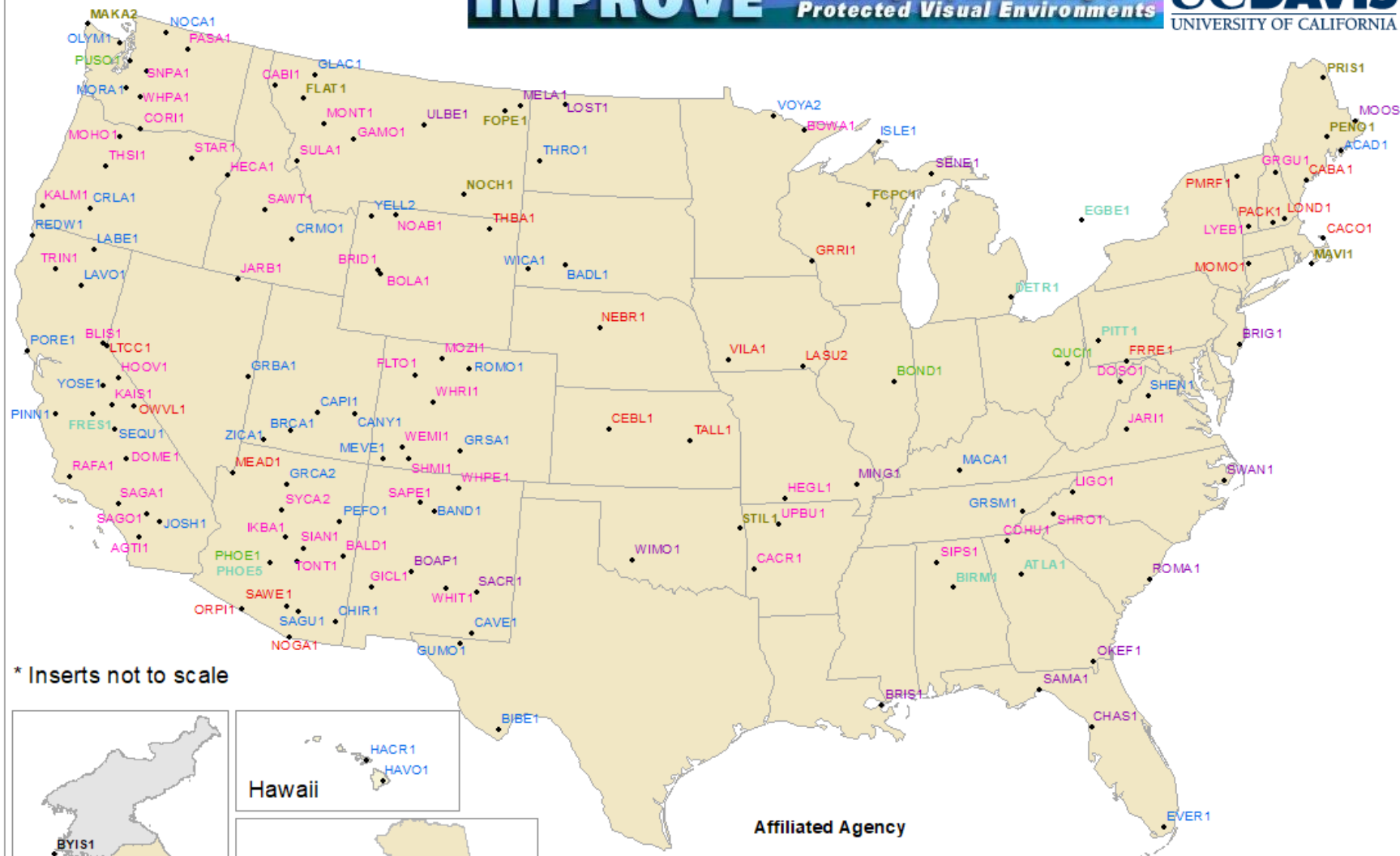
When adding initials use the up/down arrows to edit a letter, and left/right arrows to move the cursor.

Please use 3 letter initials for clarity.

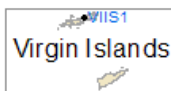
IMPROVE

Interagency Monitoring of
Protected Visual Environments

UC DAVIS
UNIVERSITY OF CALIFORNIA



* Inserts not to scale



Affiliated Agency

- | | |
|-------|-------------|
| FS | TRIBE |
| NPS | FWS |
| STATE | STN |
| EPA | South Korea |

Effective 9/25/2018



JANUARY 2019

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY																																																																																											
	31	New Year's Day 1 3-2-2 Week 3 2-3-2 Week 1	2	3	4	5																																																																																											
6 IMPROVE Particle Sampling Day	7 Alternate Sample Change Day	8 3-2-2 Week 1 2-3-2 Week 2 Change IMPROVE Particle cartridges	9 IMPROVE Particle Sampling Day	10	11	12 IMPROVE Particle Sampling Day																																																																																											
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MIDDLE CATHEDRAL: Near Yosemite NP, CA (YOSE1) *Josh Grant*

FEBRUARY 2019

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
27	28	29	30	31	1	2 IMPROVE Particle Sampling Day
3 Alternate Sample Change Day	4 Alternate Sample Change Day	5 3-2-2 Week 2 2-3-2 Week 3 Special cartridge change: move cassette 3 from old cartridge to new. IMPROVE Particle Sampling Day	6 Alternate Sample Change Day	7 Alternate Sample Change Day	8 IMPROVE Particle Sampling Day	9
10	11 IMPROVE Particle Sampling Day	12 3-2-2 Week 3 2-3-2 Week 1 Change IMPROVE Particle cartridges	13 Alternate Sample Change Day	14 IMPROVE Particle Sampling Day	15	16
17 IMPROVE Particle Sampling Day	18 President's Day Alternate Sample Change Day	19 3-2-2 Week 1 2-3-2 Week 2 Change IMPROVE Particle cartridges	20 IMPROVE Particle Sampling Day	21	22	23 IMPROVE Particle Sampling Day
24 Alternate Sample Change Day	25 Alternate Sample Change Day	26 3-2-2 Week 2 2-3-2 Week 3 Special cartridge change: move cassette 3 from old cartridge to new. IMPROVE Particle Sampling Day	27 Alternate Sample Change Day	28 Alternate Sample Change Day	<div> JANUARY 2019 <div> S M T W T F S </div> <div> <div>1</div><div>2</div><div>3</div><div>4</div><div>5</div> <div>6</div><div>7</div><div>8</div><div>9</div><div>10</div><div>11</div><div>12</div> <div>13</div><div>14</div><div>15</div><div>16</div><div>17</div><div>18</div><div>19</div> <div>20</div><div>21</div><div>22</div><div>23</div><div>24</div><div>25</div><div>26</div> <div>27</div><div>28</div><div>29</div><div>30</div><div>31</div> </div> </div> <div> MARCH 2019 <div> S M T W T F S </div> <div> <div>1</div><div>2</div> <div>3</div><div>4</div><div>5</div><div>6</div><div>7</div><div>8</div><div>9</div> <div>10</div><div>11</div><div>12</div><div>13</div><div>14</div><div>15</div><div>16</div> <div>17</div><div>18</div><div>19</div><div>20</div><div>21</div><div>22</div><div>23</div> <div>24</div><div>25</div><div>26</div><div>27</div><div>28</div><div>29</div><div>30</div> </div> </div>	



MIDDLE TETON: Near Bridger Wilderness, WY (BRID1) *Josh Grant*

MARCH 2019

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY																																																																													
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31 IMPROVE Particle Sampling Day	1	2	3	4	<div> <div>FEBRUARY 2019</div> <table> <tr><th>S</th><th>M</th><th>T</th><th>W</th><th>T</th><th>F</th><th>S</th></tr> <tr><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td></tr> <tr><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td></tr> <tr><td>17</td><td>18</td><td>19</td><td>20</td><td>21</td><td>22</td><td>23</td></tr> <tr><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td></td><td></td></tr> </table> </div> <div> <div>APRIL 2019</div> <table> <tr><th>S</th><th>M</th><th>T</th><th>W</th><th>T</th><th>F</th><th>S</th></tr> <tr><td></td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td></tr> <tr><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td></tr> <tr><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td></tr> <tr><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td></tr> <tr><td>28</td><td>29</td><td>30</td><td></td><td></td><td></td><td></td></tr> </table> </div>		S	M	T	W	T	F	S	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28			S	M	T	W	T	F	S		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30				
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TUMALO FALLS: Near Three Sisters Wilderness, OR (THS11) Josh Grant

APRIL 2019

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY																																																																																											
31	1 <i>Alternate Sample Change Day</i>	2 3-2-2 Week 1 2-3-2 Week 2 Change IMPROVE Particle cartridges	3 IMPROVE Particle Sampling Day	4	5	6 IMPROVE Particle Sampling Day																																																																																											
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28 <i>Alternate Sample Change Day</i>	29 <i>Alternate Sample Change Day</i>	30 3-2-2 Week 2 2-3-2 Week 3 <i>Special cartridge change: move cassette 3 from old cartridge to new.</i> IMPROVE Particle Sampling Day	1	2	<div>MARCH 2019</div> <table> <tr><td>S</td><td>M</td><td>T</td><td>W</td><td>T</td><td>F</td><td>S</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td>1</td><td>2</td></tr> <tr><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td></tr> <tr><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td></tr> <tr><td>17</td><td>18</td><td>19</td><td>20</td><td>21</td><td>22</td><td>23</td></tr> <tr><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td></tr> <tr><td>31</td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table> <div>MAY 2019</div> <table> <tr><td>S</td><td>M</td><td>T</td><td>W</td><td>T</td><td>F</td><td>S</td></tr> <tr><td></td><td></td><td></td><td></td><td>1</td><td>2</td><td>3</td></tr> <tr><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td></tr> <tr><td>18</td><td>19</td><td>20</td><td>21</td><td>22</td><td>23</td><td>24</td></tr> <tr><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td><td>31</td></tr> </table>		S	M	T	W	T	F	S						1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31							S	M	T	W	T	F	S					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
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MAY 2019

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
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12 IMPROVE Particle Sampling Day	13 Alternate Sample Change Day	14 3-2-2 Week 1 2-3-2 Week 2 Change IMPROVE Particle cartridges	15 IMPROVE Particle Sampling Day	16	17	18 IMPROVE Particle Sampling Day
19 Alternate Sample Change Day	20 Alternate Sample Change Day	21 3-2-2 Week 2 2-3-2 Week 3 Special cartridge change: move cassette 3 from old cartridge to new. IMPROVE Particle Sampling Day	22 Alternate Sample Change Day	23 Alternate Sample Change Day	24 IMPROVE Particle Sampling Day	25
26	27 Memorial Day IMPROVE Particle Sampling Day	28 3-2-2 Week 3 2-3-2 Week 1 Change IMPROVE Particle cartridges	29 Alternate Sample Change Day	30 IMPROVE Particle Sampling Day	31	1



MIGHTY COLORADO: Near Grand Canyon NP, AZ (GRCA2) *Josh Grant*

JUNE 2019

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HEAT KILLS: Near Canyonlands NP, UT (CANY1) *Josh Grant*

JULY 2019

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30	1 <i>Alternate Sample Change Day</i>	2 3-2-2 Week 2 2-3-2 Week 3 <i>Special cartridge change: move cassette 3 from old cartridge to new.</i> IMPROVE Particle Sampling Day	3 <i>Alternate Sample Change Day</i>	4 Independence Day <i>Alternate Sample Change Day</i>	5 IMPROVE Particle Sampling Day	6																																																																																											
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EARLY WINTERS SPIRE: Near North Cascades NP, WA (NOCA1) *Josh Grant*

AUGUST 2019

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY																																																																																				
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SEPTEMBER 2019

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LOWER BOY SCOUT LAKE: Near Sequoia NP, CA (SEQU1) *Josh Grant*

OCTOBER 2019

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY																																																																																				
29	30	3-2-2 Week 3 2-3-2 Week 1 Change IMPROVE Particle cartridges	2 <i>Alternate Sample Change Day</i>	3 IMPROVE Particle Sampling Day	4	5																																																																																				
6 IMPROVE Particle Sampling Day	7 <i>Alternate Sample Change Day</i>	3-2-2 Week 1 2-3-2 Week 2 8 Change IMPROVE Particle cartridges	9 IMPROVE Particle Sampling Day	10	11	12 IMPROVE Particle Sampling Day																																																																																				
13 <i>Alternate Sample Change Day</i>	Columbus Day 14 <i>Alternate Sample Change Day</i>	3-2-2 Week 2 2-3-2 Week 3 15 <i>Special cartridge change: move cassette 3 from old cartridge to new.</i> IMPROVE Particle Sampling Day	16 <i>Alternate Sample Change Day</i>	17 <i>Alternate Sample Change Day</i>	18 IMPROVE Particle Sampling Day	19																																																																																				
20	21 IMPROVE Particle Sampling Day	3-2-2 Week 3 2-3-2 Week 1 22 Change IMPROVE Particle cartridges	23 <i>Alternate Sample Change Day</i>	24 IMPROVE Particle Sampling Day	25	26																																																																																				
27 IMPROVE Particle Sampling Day	28 <i>Alternate Sample Change Day</i>	3-2-2 Week 1 2-3-2 Week 2 29 Change IMPROVE Particle cartridges	30 IMPROVE Particle Sampling Day	31	<div>SEPTEMBER 2019</div> <table> <tr><th>S</th><th>M</th><th>T</th><th>W</th><th>T</th><th>F</th><th>S</th></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td></tr> <tr><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td></tr> <tr><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td><td>21</td></tr> <tr><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td></tr> <tr><td>29</td><td>30</td><td></td><td></td><td></td><td></td><td></td></tr> </table> <div>NOVEMBER 2019</div> <table> <tr><th>S</th><th>M</th><th>T</th><th>W</th><th>T</th><th>F</th><th>S</th></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td>1 2</td></tr> <tr><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td></tr> <tr><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td></tr> <tr><td>17</td><td>18</td><td>19</td><td>20</td><td>21</td><td>22</td><td>23</td></tr> <tr><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td></tr> </table>		S	M	T	W	T	F	S	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30						S	M	T	W	T	F	S							1 2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
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TEMPLE CRAG: Near Kaiser Wilderness, CA (KAIS1) *Josh Grant*

NOVEMBER 2019

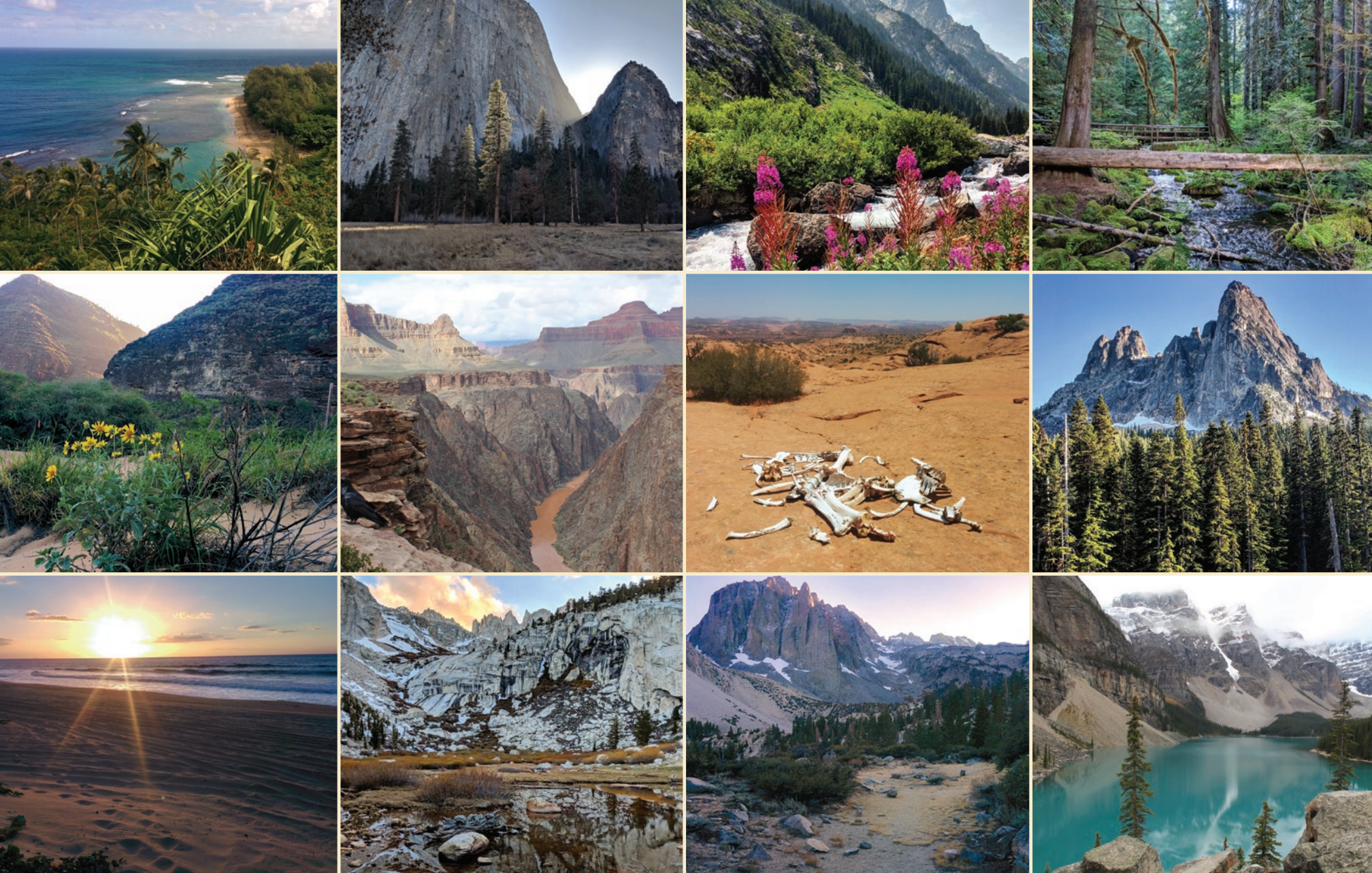
SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
<p>OCTOBER 2019</p> <p>S M T W T F S</p> <p>1 2 3 4 5</p> <p>6 7 8 9 10 11 12</p> <p>13 14 15 16 17 18 19</p> <p>20 21 22 23 24 25 26</p> <p>27 28 29 30 31</p>	<p>DECEMBER 2019</p> <p>S M T W T F S</p> <p>1 2 3 4 5 6 7</p> <p>8 9 10 11 12 13 14</p> <p>15 16 17 18 19 20 21</p> <p>22 23 24 25 26 27 28</p> <p>29 30 31</p>	29	30	31	1	2
3	4	<p>3-2-2 Week 2 2-3-2 Week 3</p> <p>Special cartridge change: move cassette 3 from old cartridge to new.</p> <p>IMPROVE Particle Sampling Day</p>	6	7	8	9
Alternate Sample Change Day	Alternate Sample Change Day	IMPROVE Particle Sampling Day	Alternate Sample Change Day	Alternate Sample Change Day	IMPROVE Particle Sampling Day	
10	<p>Veteran's Day</p> <p>IMPROVE Particle Sampling Day</p>	<p>3-2-2 Week 3 2-3-2 Week 1</p> <p>Change IMPROVE Particle cartridges</p>	13	14	15	16
			Alternate Sample Change Day	IMPROVE Particle Sampling Day		
17	18	<p>3-2-2 Week 1 2-3-2 Week 2</p> <p>Change IMPROVE Particle cartridges</p>	20	21	22	23
IMPROVE Particle Sampling Day	Alternate Sample Change Day		IMPROVE Particle Sampling Day			IMPROVE Particle Sampling Day
24	25	<p>3-2-2 Week 2 2-3-2 Week 3</p> <p>Special cartridge change: move cassette 3 from old cartridge to new.</p> <p>IMPROVE Particle Sampling Day</p>	27	Thanksgiving Day 28	29	30
Alternate Sample Change Day	Alternate Sample Change Day	IMPROVE Particle Sampling Day	Alternate Sample Change Day	Alternate Sample Change Day	IMPROVE Particle Sampling Day	



MORAINE LAKE: Near Barrier Lake, Canada (BALA1 – site discontinued) *Josh Grant*

DECEMBER 2019

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
1	2 IMPROVE Particle Sampling Day	3 3-2-2 Week 3 2-3-2 Week 1 Change IMPROVE Particle cartridges	4 Alternate Sample Change Day	5 IMPROVE Particle Sampling Day	6	7
8 IMPROVE Particle Sampling Day	9 Alternate Sample Change Day	10 3-2-2 Week 1 2-3-2 Week 2 Change IMPROVE Particle cartridges	11 IMPROVE Particle Sampling Day	12	13	14 IMPROVE Particle Sampling Day
15 Alternate Sample Change Day	16 Alternate Sample Change Day	17 3-2-2 Week 2 2-3-2 Week 3 Special cartridge change: move cassette 3 from old cartridge to new. IMPROVE Particle Sampling Day	18 Alternate Sample Change Day	19 Alternate Sample Change Day	20 IMPROVE Particle Sampling Day	21
22	23 IMPROVE Particle Sampling Day	24 3-2-2 Week 3 2-3-2 Week 1 Change IMPROVE Particle cartridges	25 Christmas Day Alternate Sample Change Day	26 IMPROVE Particle Sampling Day	27	28
29 IMPROVE Particle Sampling Day	30 Alternate Sample Change Day	31 3-2-2 Week 1 2-3-2 Week 2 Change IMPROVE Particle cartridges	1	2	3	NOVEMBER 2019 S M T W T F S 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30



Photographs taken by IMPROVE Field Engineer, Josh Grant. Cover Photo: VALHALLA (Sequoia NP) Josh Grant