Landfalling AR and Cutoff Low bring much-needed rainfall and improved air quality to the Pacific Northwest

- A landfalling AR and cutoff low produced light-to-moderate precipitation (0.50–2 inches) over portions of western Washington and Oregon
- Weak-to-moderate AR conditions persisted for more than 48 consecutive hours along the Oregon coast [AR3 based on the Ralph et al. (2019) AR Scale]
- Precipitation and changes in wind direction and humidity significantly improved the air quality and alleviated the wildfire threat in western Washington and Oregon
A landfalling AR brought a prolonged period of AR conditions to the Pacific Northwest during 14–17 Sep.

Although the IVT magnitude was not especially strong (max IVT < 700 kg m$^{-1}$ s$^{-1}$), some locations along the Oregon coast experienced weak-to-moderate AR conditions for more than 48 consecutive hours [AR3 based on the Ralph et al. (2019) AR Scale].

A second period of AR conditions around 00Z 18 Sep was associated with cyclonic flow around an offshore cutoff low.
CW3E Event Summary: 14–18 Sep 2020

GFS IVT/IWV Analyses

• An AR associated with a surface cyclone made landfall along the coast of Washington and Oregon on 14 Sep
• Low-to-midlevel southwesterly flow along the AR transported moist air into western Washington and Oregon, finally interrupting the period of very dry weather that had persisted through the first two weeks of September
• After the main AR decayed, additional moisture transport associated with the remnant cutoff low produced a second period of weak AR conditions along the Oregon coast
Despite the prolonged period of AR conditions, only about 0.50–2 inches of total precipitation fell across western Washington and Oregon during the 7-day period ending 1200 UTC (5 AM PDT) 21 Sep.

Portions of Oregon and Washington have experienced significantly drier than normal conditions (< 70% of normal precipitation) since the start of Water Year 2020.

Severe-to-extreme drought conditions have persisted over portions of western and central Oregon since May.
Although total precipitation accumulations were generally light, scattered thunderstorms produced locally heavy downpours, gusty winds, frequent lightning, and small hail in western Oregon during the morning of 18 Sep.

- NWS radar indicated a strong thunderstorm near Salem, OR, at approximately 1 AM PDT.
- NWS Portland received several reports of wind damage in Linn and Marion Counties.
- An NWS employee recorded 1.86 inches of rainfall during a 1-hour period near Happy Valley, OR.

<table>
<thead>
<tr>
<th>Time</th>
<th>Speed</th>
<th>Location</th>
<th>County</th>
<th>State</th>
<th>Lat</th>
<th>Lon</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>0815</td>
<td>UNK</td>
<td>1 W Salem</td>
<td>Marion</td>
<td>OR</td>
<td>4492</td>
<td>1230</td>
<td>6-8 INCH DIAMETER TREE BRANCHES BROKEN OFF DECIDUOUS TREES VIA SOCIAL MEDIA PICTURES (PQR)</td>
</tr>
<tr>
<td>0815</td>
<td>UNK</td>
<td>6 S Newberg</td>
<td>Marion</td>
<td>OR</td>
<td>4521</td>
<td>1229</td>
<td>SMALL TREE BRANCHES BROKEN IN THE TOWN OF ST PAUL VIA SOCIAL MEDIA PICTURES. TIME ESTIMATED (PQR)</td>
</tr>
<tr>
<td>0835</td>
<td>UNK</td>
<td>Lebanon</td>
<td>Linn</td>
<td>OR</td>
<td>4453</td>
<td>1229</td>
<td>NUMEROUS TREES SNAPPED AND UPROOTED AROUND TOWN VIA SOCIAL MEDIA (PQR)</td>
</tr>
</tbody>
</table>

Source: NWS Portland, OR, [https://www.weather.gov/pqr/](https://www.weather.gov/pqr/)

Source: NOAA/NWS Storm Prediction Center, [https://www.spc.noaa.gov/](https://www.spc.noaa.gov/)
Before this event, air quality over much of Washington and Oregon was in the very unhealthy to hazardous range due to numerous ongoing wildfires.

The precipitation and changes in wind direction and humidity associated with the landfalling AR and cutoff low led to a substantial improvement in air quality in these areas.

As of 21 Sep, there were only 3 active large fires in Washington (down from 13 one week prior).