

ATMOSPHERIC RIVERS AND ENHANCED INTEGRATED VAPOR TRANSPORT EPISODES: THEIR ROLE IN DAMAGING FRONTAL PASSAGES IN SOUTHERN CALIFORNIA WITH AN EMPHASIS ON STRONG WINDS

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Atmospheric Rivers are frequent visitors to the west coast, and on occasion, slip far enough south to affect Southern California. Perhaps the main impact of atmospheric rivers is heavy rain, but in southern California another significant impact is severe weather. Integrated water vapor transport (IVT) is a good indicator for determining moisture advection into the region, and is enhanced during frontal events. This IVT consists of imbedded strong flow from the wind input combined with high amounts of moisture. Combined with instability, this can result in the generation of damaging frontal passages, both from a convective standpoint and a synoptic scale wind standpoint. These episodes of enhanced IVT moving into the region can impact commerce, for example, associated with convection with low ceilings/visibilities in showers, or when strong winds develop. Hail and lightning can also be a problem. The same can be said for utility company impacts since the winds and stronger storms can result in tree damage, damage to powerlines, and even bring down the power poles themselves. The main purpose of this study is to make some brief comparisons of IVT to damaging impacts in the region. A dramatic increase in IVT was seen to be present with some of the more damaging frontal passages during the recent cool season (2015-2016), and will be explored.