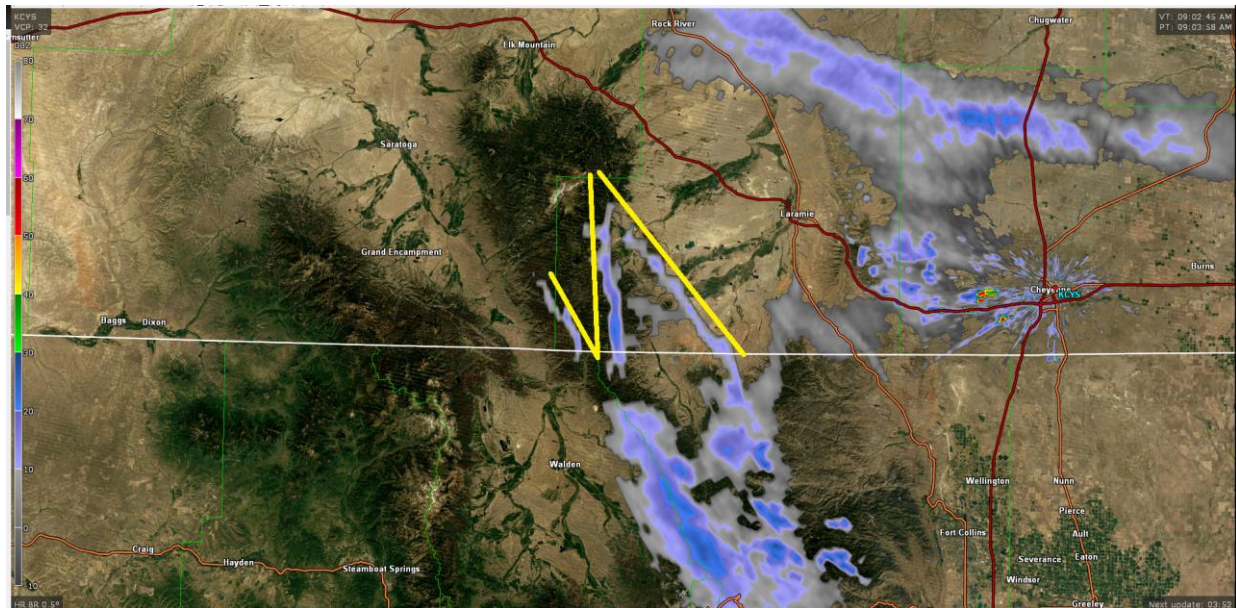


Abstract #362514

SERENDIPITOUS RADAR OBSERVATIONS OF AIRBORNE WINTER OROGRAPHIC CLOUD SEEDING IN THE MEDICINE BOW MOUNTAINS OF WYOMING

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Airborne winter orographic cloud seeding operations were conducted by Weather Modification International (WMI) over the Medicine Bow and Sierra Madre Mountains of southern Wyoming from November 2018 through March 2019. On multiple occasions the National Weather Service WSR-88D radar located in Cheyenne, Wyoming (KCYS) observed what appear to be linear seeding signatures over the Medicine Bow Range. This was unexpected, as the Medicine Bow target area is 130 km distant from the radar, and blocked at low elevations by the intervening Laramie Range. Radar returns of similar shapes, attributed to seeding, were recently observed during the SNOWIE campaign of 2017 (Tessendorf *et al.* 2019). On 28 November 2018, 14 February 2019, and 6 March 2019, the KCYS radar recorded linear echoes coincident in time, location, and orientation, with the release of glaciogenic seeding material from the seeding aircraft. For each of these cases the aircraft flight and seeding paths and flight level winds are compared to the radar observation to establish possible cause-and-effect relationships. The pyrotechnics used (manufactured by Ice Crystal Engineering L.L.C.) were of the same formulation as those used in the SNOWIE campaign. The ranges at which the apparent seeding signatures were observed were significantly greater, however. The attached KCYS reflectivity image recorded on 14 February 2019 provides an example of the apparent seeding signatures observed.



Tessendorf, S. et al., 2019: A transformational approach to winter orographic weather modification research: the SNOWIE Project. *Bull. Amer. Meteor. Soc.*, **100**, 71-92.